



TEST REPORT

TEST OF A NON-CATALYTIC WOOD BURNING SINGLE BURN RATE STOVE FOR EMISSIONS AND EFFICIENCY

PER EPA METHODS 28R AND ASTM E2515 and ASTM E2780, MAY 2015

Client:

Spartherm

Maschweg 38 Melle 49324

Germany

Model Name: Spartherm S 600

Attention: Rafael Sanchez

TESTED BY:

Services Polytests inc.

695-B Gaudette

St-Jean-sur-Richelieu, QC, J3B 7S7

TEST DATES: September 16th and 17th 2024

REPORT DATE: September 25th 2024

Revision1: January 23rd 2025

Project number: PI-20305

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Revision list:

Revision1: January 23rd 2025

- Appendix 7 operators manual updated p.11 for Co detector wording section 3.3.

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1 INTRODUCTION

1.1 GENERAL

Laboratory

- Location: Services Polytests Inc., 695-B Gaudette, St-Jean-sur-Richelieu QC, Canada J3B 7S7
- Elevation: 100 feet above sea level

Test program

- Purpose: unit qualification NSPS 2020 & CSAB415.1-22
- Test dates: September 16th & 17th 2024
- Test methods used:
 - o Particulate emissions: ASTM E2780-10; ASTM E2515-11 methods 28R as referred into 40 CFR Part 60 Subpart AAA
 - o Efficiency: CSA B415.1-10

1.2 TEST UNIT INFORMATION

General

- Manufacturer: Spartherm
- Product type: non-catalytic single burn rate heater
- Combustion system: non-catalytic
- Unit tested: Spartherm S 600

Particularities

- Same firebox with same flue size and same air combustion control will be used to built an insert, aa free-standing wood stove and a zero-clearance wood fireplace. All three unit share the same design, exact same firebox, and no air control.
- Zero-clearance fireplace: Spartherm S 600 Z/C,
- Free standing stove: Spartherm S 600 Module
- Wood insert: Spartherm S 600 insert

1.3 RESULTS

Emission results obtained

- Average Emissions Rate: 1,8 g/hr
- Average Overall Efficiency: 68 %
- Average Emissions Rate CSA B415.1-22: 0,08 g/Mj

Conformity: NSPS Phase 2020, CSA B415.1-22

1.4 PRETEST INFORMATION

- Unit condition: The unit was received by carrier August 2024 in good condition. The 50hrs of aging was done at the laboratory at single setting burn rate, Fuel: BC FIR between 19% and 25%. (All data in Appendix 4).

Set up

- Venting system type: 6-inch steel pipe and insulated chimney
- System height from floor: 15 feet
- Particularities: none

2 SUMMARY OF TEST RESULTS

2.1 EMISSIONS

Run Number	Test Date (YY-MM-DD)	Emission Rate (g/hr)	Burn Rate (kg/hr)	1st hour Emission Rate (g/hr)	CSA B415.1 CO emission Gr/hr	CSA B415.1 emission Gr/Mj	Heat output (BTU/HR)	(OHE) % HHV
1	2024-09-16	1,65	1,749	2,56	42,42	0,08	20 345	61,87%
2	2024-09-17	1,80	1,826	2,34	51,93	0,08	21 299	62,05%

2.2 WEIGHTED AVERAGE CALCULATION

Test No.	Burn Rate (Kg/hr)	(E) Ave. Emission Rate g/hr	(OHE) % HHV	Heat Output (BTU/HR)	CSA B415.1 CO emission g/min
1	1,749	1,65	61,9%	20 345	0,7
2	1,826	1,80	62,1%	21 299	0,9
Weighted particulate emission average of 2 test runs: 1,8 grams per hour.					
Weighted average HHV efficiency of 2 test runs: 62 %.					
Average Co 0,8 gr/min					

2.3 TEST FACILITY CONDITIONS

Run Number	Room Temperature		Barometric pressure		Relative humidity		Air Velocity	
	Before (F)	After (F)	Before (in.Hg)	After (in.Hg)	Before (%)	After (%)	Before (ft/min)	After (ft/min)
1	71	72	29,737	29,707	59,1	56,3	0	0
2	74	74	29,825	29,884	59,3	58,3	0	0

2.4 FUEL QUALITIES

Run Number	Pre-test Load			Test Load						
	Loading Weight Wet Basis (lbs)	Moisture Content Dry Basis (%)	Coal bed Weight (lbs)	Weight Wet Basis (lbs)	Density Wet Basis (lbs/cuft)	Moisture Content Dry Basis (%)	Piece Length (in.)	Number of 2X4's	Number of 4x4's	Number of Spacers
1	8,26	19,64	1,4	6,60	6,945	19,35	14,375	3	0	12
2	8,22	19,83	1,4	6,60	6,947	19,96	14,375	3	0	12

2.5 DILUTION TUNNEL FLOW RATE MEASUREMENTS AND SAMPLING DATA (ASTM E2515)

Average dilution tunnel measurements				Sample Data			
Run Number	Burn Rate (Min)	Tunnel Velocity (ft/min)	Total Temperatures (°R)	Volume sampled (DSCF)		Particulate catch (mg)	
				1	2	1	2
1	86	1081,38	587,54	13,975	15,866	2,10	2,30
2	82	1002,53	592,91	13,325	14,986	2,40	2,60

2.6 DILUTION TUNNEL DUAL TRAIN PRECISION

Run Number	Sample Ratio		Total Emission (g)			
	Train 1	Train 2	Train 1	Train 2	% Deviation	Deviation g/kg
1	1142,35	1006,18	2,41	2,31	2,08%	0,039
2	1054,24	937,38	2,51	2,40	2,13%	0,042

2.7 GENERAL SUMMARY OF RESULTS

Run Number	Burn Rate (kg/hr)	Average Surface Temperature (F)	Change in surface Temperature (F)	Initial Draft (in. H2O)	static pressure tunnel (in. H2O) neg.	Primary Air Setting	Run Time (min)
1	1,749	412,76	-25,5	0,057	0,180	fix	86
2	1,826	414,81	-35,8	0,052	0,180	fix	82

3 PROCESS DESCRIPTION

3.1 DISCUSSION

The heater has been received in a good shape by a carrier in August 2024. Pre-burn was done at the lab with BC Fir crib at single setting burn rate for 50 hrs. The side walls of the combustion chamber are lined with Vermiculite. The air inlet is located at the back of the firebox. Post combustion is ensured by the secondary located at the top front of the firebox and tertiary air at the back of the firebox.

3.2 UNIT DIMENSIONS

Baffle

- Location: between top of combustion chamber and hearth
- Restriction: 1.5 X 17.25 inches at the front of unit
- Dimensions: covers the hearth area minus the restriction at front
- Material: Vermiculite 1 inch

Bricks

- Vermiculite lining bottom, back and side of the firebox.

Flue gas exhaust

- Location: top
- Dimensions: 6 in. diameter
- Material: Steel

Gasket

- Door: rope fiberglass
- Glass: rope fiberglass

Overall unit dimension

- Firebox dimensions: refer to appendix 12 for volume calculation details
- Usable volume: 0.94 cuft
- Appliance Overall dimension: 22.25-inch-wide x 16.25-inch-deep x 22.25-inch-high

Convection fan

- none

Catalyst

- none

3.3 AIR SUPPLY SYSTEM

Description

- Tertiary air: window wash design with air intake at the back of unit
- Secondary air: secondary baffle design with air intake at the back of unit. Refer appendix 6 for drawing details

Characterization

The following table shows the inlet and outlet sections of each system. The air introduction system number is referred to on a set of drawings in Appendix 6.

AIR INTRODUCTION SYSTEM		INLET (1) cm2			OUTLET (cm2)
Identification	Type	Imin	Imax	Controlled	
A *	Primary	0	0	No	0
B *	Secondary (air wash and front holes)	27,7 (shared with tertiary)	27,7 (shared with tertiary)	No	35 + 11,67
C *	Tertiary (rear wall holes)	27,7 (shared with secondary)	27,7 (shared with secondary)	No	4,3

* This section would be filled by measuring and comparing with the manufacturer's drawings included in the test report.

Legend

Identification: Tag name referred to on drawings in Appendix 14, section airflow pattern

Type: Characterization of air intake

Imin: Minimum air intake of a particular air channel

Imax: Maximum air intake of a particular air channel

Controlled: Determines if a provision for air control is present

Outlet: Total air outlet of a particular air channel

3.4 OPERATION DURING TEST

All runs have been found appropriate, no anomalies happened and all runs below have been validate and found compliant.

Run #1

This run was performed on September 16th 2024. It lasted 86 minutes and a burn rate result at 1,75 kg/hr & emission at 1,65 gr/hr. The air inlet damper was fix at the single setting.

Run #2

This run was performed on September 17th 2024. It lasted 82 minutes and a burn rate result at 1,83 kg/hr & emission at 1,80 gr/hr. The air inlet damper was fix at the single setting.

- Details: Refer to the front page of each test run data sheets found in appendix for the detailed test sequence showing air supply settings and adjustments, fuel bed adjustments and operational specifics of the test unit.

Test fuel cribs

- Type of wood: Douglas fir, grade c or better, 19 to 25% dry basis moisture content
- Description: for each test, description of the fuel crib is found on the front page of each test run data sheet together with photograph in appendix.

3.5 START-UP OPERATION

The complete manufacturer's firing procedure of each burn rate category is fully described in appendix 13.

3.6 SAMPLING LOCATIONS

Particulate samples are collected from the dilution tunnel. The tunnel has two elbows ahead of the sampling section. The sampling section is a continuous 8-inch diameter pipe straight over its entire length. Tunnel velocity pressure is determined by a standard pitot tube, thermocouple is installed on the pitot tube to measure the dry bulb temperature. MC is assumed, as allowed, to be 2%. Tunnel samplers are located downstream of the pitot tube and upstream from the end of this section. All detail of dilution tunnel can be found in appendix 8.

3.7 DRAWINGS

Various drawings of the stack gas sampling train and of dilution tunnel system are found in Appendix 6.

3.8 EMISSIONS EFFICIENCY TESTING EQUIPMENT LIST

The complete test equipment list together with all corresponding calibration data can be found in Appendix 3.

4 SAMPLING METHODS

4.1 PARTICULATE SAMPLING

Particulates were sampled in strict accordance with ASTM E2515. This method uses two identical sampling systems with Gelman A/E 61631 binder free (or equivalent), 47 mm diameter filters. The dryers used in the sample systems are filled with "Drierite" before each test run.

5 QUALITY ASSURANCE

5.1 INSTRUMENT CALIBRATION

5.1.1 GAS METERS

At the conclusion of each test program the gas meters are verified using the reference dry gas meter. This process involves sampling the train operation for 1 cubic foot of volume. With readings made to .01 fr', the resolution is 1 %, giving an accuracy higher than the 2% required by the standard.

5.1.2 SCALES

Before each test program, the different scales used are checked with traceable calibration weights to ensure their accuracy.

5.1.3 GAS ANALYZERS

The continuous analyzers are zeroed and spanned before each test with NBS traceable gases. A mid-scale multi-component calibration gas is then analyzed (values are recorded). At the conclusion of a test, the instruments are checked again with zero, span and calibration gases (values are recorded only). The drift in each meter is then calculated and must not exceed 5% of the scale used for the test.

5.2 TEST METHOD PROCEDURES

5.2.1 LEAK CHECK PROCEDURES

Before and after each test, each sample train is tested for leaks. Leakage rates are measured and must not exceed 0.02 CFM or 4% of the sampling rate. Leak checks are performed checking the entire sampling train. Pre-test and post-test leak checks are conducted with a vacuum of 5 inches of mercury. Vacuum is monitored during each test and the highest vacuum reached is then used for the post-test vacuum value. If leakage limits are not met, the test run is rejected. During these tests, the vacuum is typically less than 2 inches of mercury. Thus, leakage rates reported are expected to be much higher than actual leakage during the tests.

5.2.2 TUNNEL VELOCITY FLOW MEASUREMENT

The tunnel velocity is calculated from a center point pitot tube signal multiplied by an adjustment factor. This factor is determined by a traverse of the tunnel as prescribed in EPA Method 1. Final tunnel velocities and flow rates are calculated from EPA Method 2, Equation 6.9 and 6.10. (Tunnel cross sectional area is the average from both lines of traverse.) Pitot tubes are cleaned before each test and leak checks are conducted after each test.

5.2.3 PM SAMPLING PROPORTIONALITY (ASTM E2515)

Proportionalities were calculated in accordance with ASTM E2515. The data and results are found in appendix.

APPENDIX 1: Raw data, forms and results

Paramètres

Tous les facteurs de corrections et autres paramètres qui peuvent être modifiés par l'utilisateur du fichier sont regroupés ici.

Code verrouillage: SPA

Description du test

Test standard	EPA
Run #	1
Date	16-09-2024
Technicien	M.M
Project #	PI 20305

Description de l'unité

Manufacturier	SPARTHERM	
Modèle	600	
Combustion system	Non-Cat	
Appliance type	wood heater	
Firebox volume	0,94	cu ft.
Appliance weight empty	n.a	lbs
Appliance weight full	n.a	lbs

Paramètres du test

Logging time	1	min
Manufacturer's rated heat output	n.a	BTU/h Donnée fournie par le manfacturier
Targeted category	4	
Targeted output	n.a	BTU/h
Cp steel	n.a	BTU/lb-°F

Échantillonnage

Blank sampling rate	0,20	cuft/min
Internal probe diameter	0,18	in.
Calibration Factor (DGM #1):	0,986	
Equipment number (DGM #1):	EM 178	Dimensionless
Calibration Factor (DGM #2):	1,001	
Equipment number (DGM #2):	EM 318	Dimensionless
Calibration Factor (DGM #3):	0,988	
Equipment number (DGM #3):	EM 179	Dimensionless
Calibration Factor (DGM 1st Hr):	0,996	
Equipment number (DGM 1st Hr):	EM 130	Dimensionless

Tunnel

Targeted tunnel flow rate	140	scfm
Tunnel diameter	6	in.
Molecular weight	29	29 as per ASTM E2515
Pitot tube type	Standard	
Pitot tube coefficient	0,99	Dimensionless

Project nu. PI 20305
Date 16-09-2024
Technicien M.M

Fuel data

Fuel type	Dimension
Fuel specie	D. Fir
HHV	19810,0 kJ/kg
%C	48,7
%H	6,9
%O	43,9
%Ash	0,5
HHV	8519,2 Btu/lb
LHV	7451,0 Btu/lb

Default Fuel Values

	D. Fir	Oak/Maple
HHV	19 810	19 887
%C	48,73	50
%H	6,87	6,6
%O	43,9	42,9
%Ash	0,5	0,5
HHV (Btu/lb)	8519	8552
LHV (Btu/lb)	7451	7480

	Start	End
Barometer (kPa):	100,7	100,6
Barometer (in.Hg):	29,736699	29,70716882
Dry Bulb (F):	71	72,4
Humidity (%):	59,1	56,3
Air velocity (ft/min)	0	0

DGM #1st hour	Final:	242,240	cuft
	Initial:	230,220	cuft

DGM #1	Final:	731,159	cuft
	Initial:	716,167	cuft

DGM #2	Final:	27291,820	cuft
	Initial:	27275,008	cuft

DGM room	Final:	18844,454	cuft
	Initial:	18828,768	cuft

	Final:	242,240	cuft
	Initial:	230,220	cuft

	Final:	20704,130	Liter
	Initial:	20279,580	Liter

	Final:	772818,260	Liter
	Initial:	772342,190	Liter

	Final:	533615,510	Liter
	Initial:	533171,320	Liter

Numéro de la ligne dans "Raw data" à partir duquel les données du VRAI test commencent

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Autres données à rentrer: dans preload data, load data, traverse et filter set weight

Project nu.	PI 20305
Date	16-09-2024
Technicien	M.M

Load Density (wet):	39,7	lbs./ft3
Dry Wood Density:	33,2	lbs./ft3

Load

spacers

Project nu.	PI 20305
Date	16-09-2024
Technicien	m.m

Tunnel Traverse Worksheet (for velocity calculations)

Static Pressure: 0,18 in. H2O
 Barometer: 29,900 in. Hg

Pour un tunnel de 12" et plus, prendre 6 lectures

	TUNNEL VELOCITY	TUNNEL TEMP	SQUARE ROOT
	In. wc	°F	
A center			0,0000
B center			0,0000
A1			0,0000
A2			0,0000
A3			0,0000
A4			0,0000
A5			0,0000
A6			0,0000
B1			0,0000
B2			0,0000
B3			0,0000
B4			0,0000
B5			0,0000
B6			0,0000
AVERAGE	#DIV/0!	#DIV/0!	0,0000

PITOT CONSTANT=
0,944

Pour un tunnel moins de 12", prendre 4 lectures

	TUNNEL VELOCITY	TUNNEL TEMP	SQUARE ROOT
	In. wc	°F	
A center	0,078	69,12	0,2793
B center	0,079	69,29	0,2811
A1	0,064	69,12	0,2530
A2	0,067	69,13	0,2588
A3	0,071	69,13	0,2665
A4	0,065	69,23	0,2550
B1	0,065	69,3	0,2550
B2	0,072	69,2	0,2683
B3	0,074	69,2	0,2720
B4	0,066	69,2	0,2569
AVERAGE	0,0701	69,1880	0,2646

Project nu.	PI 20305
Date	16-09-2024
Technicien	M.M

Filter set weight

	System 1 (g) 1st hour			System 1 (g)			System 2 (g)			Ambient blank (g)	Date	Heure	Test end date & time
	probe	front/ Back	gasket	probe	front/ Back	gasket	probe	front/ Back	gasket	Filter			
Number	002	114-115	6	12	116-117	9	13	118-119	14	120			
Before (1)													
Before (2)													
Before (3)													
Before (4)													
Before (5)	61,0971	0,2545	4,1768	94,5352	0,2501	4,2184	95,1452	0,2491	4,2336	0,1241	2024-09-12	17:00	
Before (6)	61,0972	0,2546	4,1767	94,5353	0,2502	4,2185	95,1453	0,2492	4,2335	0,1240	2024-09-16	09:00	2024-09-16 13:45
After (1)	61,0973	0,2561	4,1826	94,5360	0,2511	4,2238	95,1464	0,2505	4,2363	0,1241	2024-09-16	14:00	
After (2)	61,0973	0,2556	4,1783	94,5353	0,2509	4,2200	95,1453	0,2505	4,2346	0,1241	2024-09-23	09:00	
After (3)	61,0973	0,2556	4,1783	94,5353	0,2509	4,2200	95,1453	0,2505	4,2346	0,1241	2024-09-24	09:00	
After (4)													
After (5)													
After (6)	61,0973	0,2556	4,1783	94,5353	0,2509	4,2200	95,1453	0,2505	4,2346	0,1241	2024-09-24	09:00	
Difference	0,0001	0,0010	0,0016	0,0000	0,0007	0,0015	0,0000	0,0013	0,0011	0,0001			
Total (mg)		2,7			2,2			2,4		0,1			
Total ajusté (mg)		2,60			2,10			2,30					

Project nu.

Date

Technicien

PI 20305

16-09-2024

M.M

Manufacturer: SPARTHERM
Model: 600

Run: 1
Project #: PI 20305
Test Duration: 86 min

Note: In the "Input data", "Calc. % O₂", "Fuel Properties", and "Mass Balance" columns, [e], [d], [g], [a], [b], [c], [h], [u], [w], [j], and [k] refer to their respective variables in Clauses

Overall Heating Efficiency: 61,87%
Combustion Efficiency: 98,94%
Heat Transfer Efficiency: 62,53%

	HHV	LHV
Eff	61,87%	66,87%
Comb Eff	98,94%	98,94%
HT Eff	62,53%	67,58%
Output	21 447	kJ/h
Burn Rate	1,75	kg/h
Grams CO	61	g
Input	34 666	kJ/h
MC wet	16,21	

Ultimate CO₂
CO_{2-ult} 19,64
F₀
1,059

Heat Output:	20 345 Btu/h
Heat Input:	32 885 Btu/h
Burn Duration:	1,43 h
Burn Rate:	3,86 lb/h
Stack Temp:	484,9 Deg. F

		Averages		0,22	5,74	3,01	20,55	14,69	250,47	22,87	0,96	0,61	#DIV/0!
INPUT DATA				Oxygen Calculation				Input Data		Combust	Heat	Net	
Elapsed Time	Weight Remaining (kg)	% CO [e]	% CO ₂ [d]	Excess Air EA	Total O ₂	Calc. % O ₂ [g]	Flue Gas (°C)	Room Temp (°C)	Eff %	Transfer %	Net Eff %		
0,00	2,99	0,26	1,58	966,0%	20,82	19,11	151,5	21,8	90,9%	41,5%	37,7%		
1,00	2,94	0,17	1,51	1063,6%	20,83	19,23	164,5	21,9	94,6%	34,0%	32,2%		
2,00	2,85	0,16	2,41	664,1%	20,77	18,28	228,5	21,7	96,6%	36,9%	35,7%		
3,00	2,71	0,12	3,71	412,9%	20,69	16,92	275,5	21,8	98,7%	46,2%	45,6%		
4,00	2,62	0,06	8,72	123,8%	20,36	11,61	284,2	21,7	99,8%	68,9%	68,8%		
5,00	2,57	0,04	8,99	117,6%	20,34	11,34	299,2	21,5	100,0%	68,2%	68,2%		
6,00	2,48	0,04	9,69	101,8%	20,30	10,59	312,3	21,7	100,0%	68,6%	68,6%		
7,00	2,39	0,03	9,48	106,7%	20,31	10,82	314,7	21,8	100,1%	68,0%	68,1%		
8,00	2,30	0,02	9,02	117,2%	20,34	11,31	316,8	21,8	100,2%	66,9%	67,0%		
9,00	2,21	0,02	9,18	113,5%	20,33	11,14	322,9	22,0	100,1%	66,8%	66,9%		
10,00	2,12	0,02	9,28	111,1%	20,33	11,03	327,4	22,0	100,1%	66,7%	66,7%		
11,00	2,03	0,02	9,00	117,7%	20,34	11,33	329,5	21,8	100,2%	65,8%	66,0%		
12,00	1,98	0,03	8,94	119,2%	20,35	11,40	331,9	21,8	100,1%	65,5%	65,6%		
13,00	1,89	0,02	9,18	113,4%	20,33	11,14	331,3	21,9	100,2%	66,1%	66,2%		
14,00	1,80	0,02	9,38	108,9%	20,32	10,93	333,9	21,8	100,1%	66,3%	66,4%		
15,00	1,71	0,02	9,44	107,6%	20,32	10,86	336,9	22,0	100,2%	66,2%	66,4%		
16,00	1,67	0,02	9,69	102,2%	20,30	10,60	341,1	21,7	100,1%	66,4%	66,5%		
17,00	1,58	0,02	9,86	98,8%	20,29	10,42	342,9	21,9	100,1%	66,6%	66,7%		
18,00	1,49	0,02	9,86	98,9%	20,29	10,42	344,5	21,9	100,1%	66,5%	66,6%		
19,00	1,39	0,03	9,79	99,9%	20,29	10,48	344,8	22,0	100,0%	66,4%	66,4%		
20,00	1,35	0,03	9,76	100,7%	20,29	10,52	344,0	21,9	100,0%	66,4%	66,4%		
21,00	1,26	0,04	9,75	100,6%	20,29	10,52	344,7	21,8	99,9%	66,3%	66,2%		
22,00	1,17	0,04	9,77	100,2%	20,29	10,50	345,0	21,8	100,0%	66,3%	66,3%		
23,00	1,08	0,04	9,87	98,1%	20,29	10,39	346,0	22,0	100,0%	66,4%	66,4%		
24,00	1,03	0,04	9,88	98,0%	20,28	10,38	345,6	21,8	100,0%	66,5%	66,5%		
25,00	0,94	0,05	9,82	98,9%	20,29	10,44	346,4	21,9	99,9%	66,3%	66,2%		
26,00	0,90	0,05	9,89	97,5%	20,28	10,36	345,5	22,0	99,9%	66,5%	66,4%		
27,00	0,85	0,05	9,94	96,5%	20,28	10,31	345,5	21,8	99,8%	66,6%	66,5%		
28,00	0,76	0,05	9,89	97,6%	20,28	10,37	345,1	21,8	99,9%	66,5%	66,5%		
29,00	0,71	0,04	9,99	95,8%	20,28	10,27	345,9	22,2	99,9%	66,7%	66,7%		
30,00	0,66	0,07	10,05	94,1%	20,27	10,19	347,5	22,2	99,7%	66,7%	66,5%		
31,00	0,58	0,07	9,83	98,3%	20,29	10,41	343,0	22,2	99,7%	66,6%	66,4%		
32,00	0,53	0,05	8,84	121,0%	20,35	11,49	332,3	22,2	99,9%	65,2%	65,2%		
33,00	0,49	0,03	7,37	165,5%	20,45	13,07	318,5	22,3	100,2%	62,4%	62,5%		
34,00	0,49	0,02	6,44	203,9%	20,51	14,06	306,5	22,3	100,3%	60,1%	60,4%		
35,00	0,44	0,02	5,72	242,4%	20,56	14,83	295,3	22,5	100,5%	58,1%	58,4%		
36,00	0,44	0,03	5,25	271,5%	20,59	15,32	284,2	22,6	100,3%	57,1%	57,3%		
37,00	0,41	0,05	4,93	294,6%	20,61	15,66	274,2	22,8	100,0%	56,5%	56,5%		
38,00	0,40	0,08	4,63	317,1%	20,63	15,96	264,1	22,8	99,5%	56,0%	55,7%		
39,00	0,40	0,12	4,35	340,1%	20,65	16,24	255,1	22,9	98,8%	55,4%	54,7%		
40,00	0,35	0,15	4,18	353,6%	20,65	16,40	247,4	23,0	98,1%	55,3%	54,3%		
41,00	0,36	0,18	4,15	353,3%	20,65	16,41	241,3	23,0	97,6%	56,2%	54,8%		
42,00	0,35	0,20	4,13	353,6%	20,65	16,42	236,2	23,1	97,1%	56,8%	55,2%		
43,00	0,35	0,23	4,15	348,4%	20,65	16,38	231,8	23,2	96,7%	57,7%	55,8%		
44,00	0,35	0,25	4,14	347,6%	20,65	16,39	228,0	23,3	96,3%	58,2%	56,1%		
45,00	0,35	0,26	4,13	347,4%	20,65	16,39	224,8	23,3	96,0%	58,6%	56,3%		
46,00	0,30	0,27	4,10	349,2%	20,65	16,41	221,7	23,3	95,8%	58,9%	56,5%		
47,00	0,30	0,28	4,11	346,9%	20,65	16,39	219,2	23,3	95,7%	59,5%	56,9%		
48,00	0,30	0,29	4,11	346,5%	20,65	16,39	217,2	23,4	95,5%	59,8%	57,1%		
49,00	0,30	0,30	4,11	345,0%	20,65	16,38	215,2	23,4	95,3%	60,1%	57,3%		
50,00	0,27	0,31	4,10	345,6%	20,65	16,40	213,5	23,4	95,1%	60,3%	57,3%		
51,00	0,26	0,32	4,09	344,9%	20,65	16,39	211,2	23,4	94,9%	60,6%	57,5%		
52,00	0,26	0,33	4,10	343,5%	20,65	16,38	209,8	23,5	94,8%	60,9%	57,7%		
53,00	0,26	0,33	4,12	341,8%	20,65	16,36	208,3	23,4	94,8%	61,2%	58,1%		
54,00	0,22	0,29	4,21	336,3%	20,64	16,29	207,2	23,5	95,6%	62,0%	59,3%		
55,00	0,22	0,27	4,26	333,6%	20,64	16,25	206,0	23,6	95,9%	62,4%	59,9%		
56,00	0,22	0,27	4,27	332,2%	20,64	16,23	204,8	23,6	96,0%	62,7%	60,2%		
57,00	0,20	0,27	4,34	326,0%	20,64	16,16	204,9	23,5	96,0%	63,1%	60,5%		
58,00	0,17	0,27	4,33	327,0%	20,64	16,17	204,1	23,6	96,1%	63,1%	60,7%		
59,00	0,17	0,27	4,34	326,2%	20,64	16,16	203,1	23,6	96,1%	63,3%	60,9%		
60,00	0,17	0,27	4,27	332,6%	20,64	16,24	201,7	23,7	96,0%	63,2%	60,6%		
61,00	0,17	0,29	4,15	341,8%	20,65	16,35	200,5	23,6	95,5%	62,7%	59,8%		
62,00	0,12	0,30	4,12	344,3%	20,65	16,38	199,4	23,7	95,3%	62,6%	59,7%		
63,00	0,12	0,31	4,11	344,8%	20,65	16,39	198,6	23,7	95,2%	62,7%	59,7%		
64,00	0,11	0,32	4,12	342,7%	20,65	16,37	197,8	23,7	95,1%	62,9%	59,8%		
65,00	0,09	0,32	4,13	341,0%	20,65	16,35	197,4	23,7	95,0%	63,1%	59,9%		
66,00	0,08	0,34	3,79	376,0%	20,67	16,71	193,5	23,7	94,3%	61,5%	58,0%		
67,00	0,08	0,39	3,51	403,9%	20,68	16,98	190,3	23,7	92,9%	60,0%	55,8%		
68,00	0,08	0,41	3,46	406,5%	20,68	17,01	188,9	23,7	92,3%	60,0%	55,3%		
69,00	0,08	0,43	3,47	404,3%	20,68	17,00	187,3	23,7	92,1%	60,3%	55,5%		
70,00	0,03	0,43	3,48	401,8%	20,68	16,98	185,5	23,7	92,0%	60,7%	55,9%		
71,00	0,03	0,44	3,48	401,4%	20,68	16,98	184,6	23,7	91,9%	60,9%	55,9%		
72,00	0,03	0,44	3,44	405,6%	20,68	17,02	183,5	23,7	91,7%	60,8%	55,8%		
73,00	0,03	0,45	3,42	407,3%	20,68	17,04	182,7	23,7	91,6%	60,8%	55,7%		
74,00	0,03	0,45	3,43	406,8%	20,68	17,03	181,7	23,8	91,5%	61,0%	55,8%		
75,00	0,03	0,46	3,41	407,9%	20,68	17,05	181,2	23,8	91,2%	60,9%	55,6%		
76,00	0,03	0,47	3,43	404,1%	20,68	17,02	179,8	23,8	91,2%	61,4%	#DIV/0!		
77,00	0,03	0,50	3,23	426,4%	20,69	17,21	178,4	23,8	90,0%	60,1%	#DIV/0!		
78,00	0,03	0,53	2,90	472,5%	20,71	17,55	174,7	23,8	88,5%	57,8%	#DIV/0!		
79,00	0,03	0,56	2,73	498,0%	20,72	17,72	172,2	23,8	87,4%	56,6%	#DIV/0!		
80,00	0,03	0,57	2,72	497,2%	20,72	17,72	170,1	23,8	87,1%	57,0%	#DIV/0!		
81,00	0,03	0,58	2,72	495,2%	20,72	17,71	168,5	23,8	86,9%	57,4%	#DIV/0!		
82,00	0,03	0,59	2,69	499,5%	20,72	17,74	167,2	23,8	86,6%	57,3%	#DIV/0!		
83,00	0,03	0,57	2,74	492,3%	20,72	17,69	166,2	23,9	87,1%	58,1%	#DIV/0!		
84,00	0,03	0,55	2,74	497,8%	20,72	17,71	165,5	23,9	87,7%	58,2%	#DIV/0!		
85,00	0,03	0,54	2,79	489,9%	20,72	17,66	165,0	23,9	87,9%	58,8%	51,7%		
86,00	0,00	0,54	2,86	477,6%	20,72	17,59	164,4	23,9	88,1%	59,6%	52,5%		

SFBA EPA EMISSION RESULTS

RESULTS

Average emission rate: 1,65 g/hr

Burn Rate : 1,75 Dry kg/hr

Test Duration: 86 min

PRESSURE FACTOR: DGM 1st hr 0,967
DGM 1 0,956
DGM 2 0,957
DGM 3 0,993

BAROMETRIC PRESSURE

Average: 29,72193381 in Hg
Start: 29,73669881 in Hg
End: 29,70716882 in Hg

TEMPERATURE FACTORS DGM 1st hr 0,988
DGM 1 0,989
DGM 2 0,985
DGM 3 0,990

DGM VALUES

DGM 1st hr Final: 242,240 Cuft
Initial: 230,220 Cuft

VOLUMES SAMPLED DGM 1st hr 11,442 SCft
DGM 1 13,975 SCft
DGM 2 15,866 SCft
DGM 3 15,247 SCft

DGM 1 Final: 731,159 Cuft
Initial: 716,167 Cuft

DGM 2 Final: 27291,820 Cuft
Initial: 27275,008 Cuft

TOTAL TUNNEL VOLUME : 15965

DGM #3 Final: 18844,454 Cuft
Initial: 18828,768 Cuft

SAMPLE RATIOS

Sample Train 1st Hr: 973,5
Sample Train 1: 1142,4
Sample Train 2: 1006,2

TEMPERATURES

DGM 1st hr 534,201 °R
DGM 1 533,693 °R
DGM 2 536,199 °R

Particulate concentration

Sample Train 1st Hr **0,000236** g/dscf
Sample Train 1 **0,000157** g/dscf
Sample Train 2 **0,000151** g/dscf
Room **0,000007** g/dscf

CALIBRATION FACTORS

DGM 1st hr 0,9963
DGM 1 0,9860
DGM 2 1,0011
DGM #3 0,9880

TOTAL EMISSIONS

Sample Train 1st Hr **2,56** g
Sample Train 1 **2,41** g
Sample Train 2 **2,31** g

TUNNEL FLOW RATE: 185,6 Dscfm

PARTICULATE CATCH

Total Sample Train 1: 2,20 mg
Total Sample Train 2: 2,40 mg
Total Sample Train 1 1st hour: 2,70 mg

EMISSION RATES

Sample Train 1st Hr **2,56** g/hr
Sample Train 1 **1,68** g/hr
Sample Train 2 **1,61** g/hr

DEVIATION: 2,08%

Cs Train 1 Train 2 Train 1st Hr
0,0001574 0,00015126 0,000236

* Time	Elapsed min	Raw data row	* Weight lbs	* CO %	* CO ₂ %	*1 Flue Gas °F	*2 Room Temp °F	*3 Tunnel Dry Bulb °F	*4 Unit Top °F	*5 Unit Back °F	*6 Unit R.Side °F	*7 Unit L.Side °F	*8 Unit Bottom °F	Mass flow Reading cuft/min	DGM 1st hour Inlet 1st hour °F	DGM 1st hour Outlet 1st hour °F	Filter 1st hour Temp °F	DGM 1 Reading cuft/min	DGM 1 Inlet °F	DGM 1 Outlet °F	Filter 1 Temp °F	Mass flow 2 Reading cuft/min	DGM 2 Inlet °F	DGM 2 Outlet °F	Filter 2 Temp °F	Tunnel Velocity in wc	Flue draft Pressure in wc	Filter 1st hr in wc	Filter 1 in Hg	Filter 2 in Hg	Change in Surface Temp °F
0	156.00		6.6	0.3	1.6	304.7	71.2	332.3	459.1	257.4	456.3	423.1	310.9	0.19	72.3	72.8	73.6	0.17	71.9	71.5	77.7	0.18	71.7	71.7	78.2	0.07	0.05	-0.79	-1.04	-0.99	0.0
1	157.01		6.5	0.2	1.5	328.5	71.5	324.2	455.1	257.4	456.3	423.1	310.9	0.19	72.5	73.0	79.7	0.17	72.0	71.9	79.2	0.18	71.8	71.7	80.6	0.06	0.05	-0.71	-1.04	-0.99	0.0
2	158.03		6.5	0.2	1.4	443.3	71.0	190.4	441.2	249.0	440.0	420.8	314.7	0.19	72.6	73.1	76.0	0.17	72.0	71.6	81.7	0.18	72.0	71.7	84.4	0.07	0.08	-0.72	-1.07	-0.95	-1.0
3	159.09		6.0	0.1	3.7	527.8	71.2	174.4	432.4	264.8	445.6	416.2	316.1	0.19	72.6	73.1	77.1	0.17	72.0	71.5	84.0	0.18	72.1	71.7	87.6	0.07	0.09	-0.72	-1.08	-0.95	-6.3
4	160.04		5.1	0.0	8.7	543.5	71.3	142.6	529.2	240.5	441.0	409.5	323.3	0.19	73.0	78.4	0.17	72.1	71.5	83.8	0.18	73.2	72.0	87.4	0.07	0.09	-0.71	-1.09	-0.96	7.3	
5	161.07		5.7	0.0	9.0	570.6	70.8	141.7	450.3	264.8	444.8	409.6	320.8	0.19	72.7	73.1	77.6	0.17	71.9	71.5	83.1	0.18	72.4	71.8	88.5	0.07	0.09	-0.71	-1.09	-0.95	-6.7
6	162.02		5.5	0.0	9.7	594.1	71.0	141.4	473.6	243.6	443.1	408.5	321.8	0.19	72.7	73.1	77.8	0.17	71.9	71.5	83.3	0.18	72.6	71.8	86.6	0.07	0.09	-0.71	-1.09	-0.96	-3.3
7	163.03		5.3	0.0	9.5	598.5	71.3	142.0	501.2	241.9	441.5	408.7	322.7	0.19	72.8	73.2	78.1	0.17	72.0	71.5	83.5	0.18	72.9	71.9	86.8	0.07	0.09	-0.71	-1.09	-0.96	-1.8
8	164.04		5.1	0.0	9.0	602.3	71.3	142.6	529.2	240.5	441.0	409.5	323.3	0.19	73.0	78.4	0.17	72.1	71.5	83.8	0.18	73.2	72.0	87.4	0.07	0.09	-0.71	-1.09	-0.96	7.3	
9	165.04		4.9	0.0	9.2	613.2	71.5	143.0	555.8	240.3	440.9	411.0	324.2	0.19	73.1	73.3	78.7	0.17	72.2	71.5	84.2	0.18	73.5	72.0	87.5	0.07	0.09	-0.72	-1.09	-0.96	13.0
10	166.06		4.7	0.0	9.3	621.3	71.6	144.2	580.5	239.2	440.6	413.7	324.4	0.19	73.2	73.3	79.1	0.17	72.4	71.5	84.5	0.18	73.8	72.1	88.0	0.07	0.09	-0.72	-1.09	-0.97	18.3
11	167.07		4.5	0.0	9.0	625.1	71.4	145.3	601.4	240.7	441.2	416.0	325.5	0.19	73.4	73.3	79.5	0.17	72.4	71.6	84.9	0.18	74.0	72.2	88.5	0.08	0.09	-0.73	-1.10	-0.98	23.6
12	168.04		4.4	0.0	8.9	629.4	71.2	144.6	619.6	240.1	442.7	418.7	326.2	0.19	73.5	73.4	79.8	0.17	72.3	71.6	85.2	0.18	74.1	72.3	88.8	0.07	0.09	-0.72	-1.09	-0.99	28.1
13	169.04		4.2	0.0	9.2	628.4	71.4	142.6	636.4	237.9	443.6	422.4	326.5	0.19	73.5	73.4	80.1	0.17	72.4	71.6	85.4	0.18	74.3	72.4	89.0	0.07	0.09	-0.72	-1.10	-0.97	32.0
14	170.04		4.0	0.0	9.4	633.0	71.3	146.1	652.9	236.6	446.3	424.9	326.3	0.19	73.5	73.5	80.4	0.17	72.4	71.6	85.8	0.18	74.5	72.4	89.2	0.08	0.09	-0.72	-1.10	-0.98	36.4
15	171.04		3.8	0.0	9.4	638.5	71.5	146.7	668.5	237.7	447.7	428.7	326.4	0.19	73.6	73.5	80.7	0.17	72.5	71.6	86.2	0.18	74.7	72.5	89.5	0.07	0.09	-0.72	-1.10	-0.98	40.4
16	172.04		3.7	0.0	9.7	646.1	71.1	148.2	684.8	236.4	449.4	432.7	325.9	0.19	73.5	73.5	80.9	0.17	72.6	71.6	86.5	0.18	74.9	72.6	89.8	0.07	0.10	-0.72	-1.09	-0.97	44.5
17	173.04		3.5	0.0	9.9	649.2	71.4	146.4	701.0	236.6	452.1	436.4	325.3	0.19	73.6	73.6	81.2	0.17	72.8	71.6	86.8	0.18	75.2	72.7	89.0	0.07	0.10	-0.73	-1.10	-0.98	48.9
18	174.04		3.3	0.0	9.9	652.1	71.5	147.3	715.5	236.9	454.4	440.2	325.1	0.19	73.6	73.6	81.4	0.17	72.9	71.6	87.1	0.18	75.3	72.7	88.9	0.07	0.09	-0.73	-1.10	-0.99	53.0
19	175.04		3.1	0.0	9.8	652.6	71.6	145.8	727.8	237.6	457.4	444.0	325.0	0.19	73.6	73.6	81.6	0.17	72.9	71.7	87.4	0.18	75.4	72.8	87.8	0.08	0.10	-0.73	-1.11	-0.99	57.0
20	176.04		3.0	0.0	9.8	651.2	71.5	148.0	739.3	237.9	460.2	446.3	325.3	0.19	73.7	73.7	81.8	0.17	72.9	71.7	87.7	0.18	75.6	72.9	87.4	0.07	0.09	-0.73	-1.11	-1.00	60.8
21	177.04		2.8	0.0	9.7	652.4	71.2	147.3	748.6	237.8	461.7	453.0	325.3	0.19	73.8	73.7	82.1	0.17	72.8	71.7	88.0	0.18	75.6	72.9	87.3	0.07	0.10	-0.73	-1.11	-1.00	63.9
22	178.04		2.6	0.0	9.8	653.1	71.2	147.5	756.8	237.7	464.7	457.4	324.8	0.19	73.8	73.7	82.2	0.17	72.9	71.6	88.2	0.18	75.8	73.0	87.2	0.07	0.09	-0.74	-1.11	-1.00	66.9
23	179.04		2.4	0.0	9.9	654.8	71.5	147.9	764.4	239.1	468.6	461.3	325.1	0.19	73.8	73.7	82.4	0.17	72.9	71.7	88.4	0.18	75.8	73.1	87.3	0.07	0.10	-0.75	-1.12	-1.01	70.3
24	180.04		2.2	0.0	9.9	654.2	72.0	148.1	772.0	239.1	468.6	461.3	325.1	0.19	73.8	73.7	82.4	0.17	72.9	71.7	88.4	0.18	75.8	73.1	87.3	0.07	0.10	-0.75	-1.12	-1.01	73.4
25	181.04		2.1	0.1	9.8	655.5	71.5	149.1	777.8	240.6	474.1	470.2	326.0	0.19	74.0	73.8	83.0	0.17	72.7	71.7	88.9	0.18	75.9	73.2	87.7	0.06	0.10	-0.76	-1.13	-1.03	76.4
26	182.04		2.0	0.1	9.9	653.8	71.6	147.4	783.5	241.1	477.6	474.8	326.1	0.19	74.0	73.9	83.2	0.17	72.7	71.7	89.1	0.18	76.0	73.3	87.8	0.07	0.10	-0.76	-1.14	-1.04	79.3
27	183.04		1.9	0.1	9.9	653.9	71.2	147.1	789.4	241.0	480.7	479.8	326.1	0.19	74.0	73.9	83.3	0.17	72.7	71.7	89.2	0.18	76.1	73.3	87.9	0.08	0.09	-0.77	-1.15	-1.05	82.0
28	184.04		1.7	0.0	9.5	653.0	71.3	146.3	795.8	240.3	483.0	481.3	325.9	0.19	73.9	73.9	83.4	0.17	72.8	71.7	89.4	0.18	76.2	73.4	87.9	0.08	0.10	-0.78	-1.16	-1.07	84.6
29	185.04		1.6	0.0	10.0	654.5	71.9	146.6	801.3	242.3	487.0	488.9	325.2	0.19	74.0	74.0	83.5	0.17	73.1	71.7	89.5	0.18	76.4	73.5	88.2	0.07	0.09	-0.80	-1.18	-1.09	87.2
30	186.04		1.5	0.1	10.1	657.5	72.0	147.8	806.8	242.5	489.4	491.1	325.2	0.19	74.1	74.0	83.6	0.17	73.1	71.8	89.8	0.18	76.5	73.6	88.5	0.07	0.10	-0.82	-1.19	-1.12	90.2
31	187.04		1.3	0.0	9.8	649.6	71.9	145.9	812.4	241.9	491.4	493.0	325.9	0.19	74.1	74.0	83.7	0.17	73.1	71.8	89.8	0.18	76.5	73.6	88.5	0.07	0.10	-0.82	-1.19	-1.12	93.1
32	188.04		1.2	0.1	8.8	630.1	72.0	143.1	812.4	244.5	495.5	502.9	325.3	0.19	74.2	74.1	83.8	0.17	73.4	71.9	89.8	0.18	76.8	73.7	88.5	0.07	0.09	-0.85	-1.22	-1.15	94.8
33	189.04		1.1	0.0	7.4	605.2	72.1	140.1	805.3	245.8	499.4	506.5	325.5	0.19	74.2	74.1	83.8	0.17	73.4	71.9	89.0	0.18	76.8	73.8	88.5	0.07	0.09	-0.85	-1.22	-1.15	95.1
34	190.04		1.1	0.0	6.4	583.7	72.1	139.6	792.5	247.7	503.1	509.2	325.9	0.19	74.3	74.1	83.9	0.17	73.4	72.0	88.1	0.18	76.9	73.9	88.5	0.07	0.09	-0.86	-1.23	-1.16	94.4
35	191.04		1.0	0.0	5.7	563.6	72.2	135.2	776.4	248.4	506.4	510.7	326.2	0.19	74.3	74.0	84.0	0.17	73.4	72.0	87.4	0.18	77.0	74.0	88.3	0.08	0.08	-0.86	-1.22	-1.16	91.6
36	192.04		1.0	0.0	5.3	543.5	72.7	133.0	757.2	249.3	508.9	511.4	326.9	0.19	74.6	74.2	84.0	0.17	73.6	72.1	86.9	0.18	77.2	74.2	88.0	0.07	0.08	-0.86	-1.23	-1.17	89.4
37	193.04		0.9	0.9	4.9	525.6	73.1	131.4	736.9	250.2	510.6	511.3	327.2	0.19	74.7	74.3	84.0	0.17	73.9	72.2	86.6	0.18	77.5	74.3	88.1	0.08	0.08	-0.86	-1.22	-1.16	85.9
38	194.04		0.8	0.7	4.6	507.4	73.0	128.9	715.8	250.5	510.5	512.5	327.6	0.19	74.8	74.4	84.0	0.17	74.0	72.3	86.3	0.18	77.6	74.4	88.0	0.08	0.08	-0.87	-1.21	-1.16	82.1
39	195.04		0.9	0.1	4.3	491.2	73.1	127.0	695.1	251.5	513.6	506.8	328.1	0.19	74.8	74.4	84.0	0.17	74.1	72.4	86.0	0.18	77.7	74.6	87.8	0.08	0.08	-0.87	-1.21	-1.16	78.8
40	196.04		0.8	0.2	4.2	477.3	73.4	125.3	674.8	252.7	514.3	507.9	328.3	0.19	74.9	74.5	83.														

DATA 2024-09-16 PI 20305 RUN 1 MODEL 600 SINGLE BURN RATE
unit preburn data

Time acquisition minutes	Flue	Room	Tunnel	scale	Right	Back	bottom	Top	Left
	temp	temp	dry bulb						
	°F	°F	°F	lbs	°F	°F	°F	°F	°F
1	69,84	68,98	69,20	4,20	70,72	71,01	70,70	70,73	70,80
2	76,77	69,32	69,87	4,17	70,72	70,98	70,72	70,81	70,82
3	79,26	69,38	70,05	4,37	70,77	71,01	70,74	70,94	70,94
4	95,19	69,36	73,01	4,07	70,79	70,97	70,81	71,31	71,14
5	129,78	69,47	80,41	3,97	70,88	70,98	71,00	72,74	71,80
6	153,79	69,02	76,16	3,87	71,13	70,90	71,40	74,46	73,06
7	259,59	69,22	86,63	3,67	71,75	70,97	72,12	78,50	75,00
8	307,86	69,12	91,02	3,47	73,02	71,22	73,20	86,84	78,72
9	408,45	69,25	104,18	3,27	75,05	71,82	74,65	99,54	83,43
10	527,48	69,18	120,24	2,97	78,34	72,72	76,42	120,87	88,79
11	587,29	69,35	130,08	2,77	83,24	74,03	78,34	155,02	95,04
12	596,84	69,60	134,09	2,57	89,89	75,89	80,44	199,52	102,68
13	597,77	69,94	136,90	2,37	98,89	78,41	82,88	248,30	111,88
14	637,17	69,95	141,67	2,17	109,49	81,28	85,50	299,18	122,10
15	611,22	70,15	140,11	1,98	121,51	84,47	88,70	349,25	133,60
16	599,54	69,90	138,76	1,84	133,44	88,07	92,30	389,92	145,65
17	606,53	70,06	140,77	1,67	144,64	91,27	96,12	424,97	156,85
18	632,11	70,43	143,19	1,57	156,53	94,75	100,04	456,20	167,51
19	617,38	70,21	140,60	1,37	169,86	98,18	104,02	490,39	178,20
20	614,97	70,25	140,93	1,27	183,40	101,61	108,18	520,77	189,03
21	610,27	70,21	224,98	1,07	195,52	109,24	112,42	549,83	200,13
22	452,91	70,58	203,25	7,87	207,46	116,98	116,36	556,54	212,09
23	403,08	70,48	171,59	9,17	218,82	121,52	120,81	544,57	222,45
24	509,45	70,21	142,66	9,07	228,94	122,04	125,04	528,37	230,93
25	539,16	70,28	139,80	8,98	237,55	122,85	129,31	519,94	239,46
26	529,06	70,22	136,52	8,78	245,69	123,82	133,07	512,74	248,03
27	575,64	70,70	141,86	8,57	252,55	124,98	137,17	508,45	255,89
28	565,39	70,66	139,98	8,47	258,14	126,73	140,60	509,92	263,49
29	561,28	70,87	139,67	8,28	263,40	128,54	143,35	512,38	269,88
30	559,77	71,11	139,85	8,18	267,88	131,25	146,21	513,60	276,06
31	560,62	70,94	139,22	7,97	272,04	133,34	148,51	515,16	282,44
32	571,36	70,92	141,12	7,87	276,07	135,47	150,47	518,43	288,24
33	590,43	70,97	142,49	7,67	279,80	137,48	151,82	523,48	294,05
34	599,69	70,89	143,41	7,48	283,07	139,69	153,56	530,31	299,65
35	594,25	70,48	145,65	7,27	286,21	141,89	154,74	535,49	305,71
36	586,56	70,90	143,38	7,17	289,62	144,37	156,53	539,16	311,53
37	589,84	70,83	142,39	6,97	293,54	146,44	157,48	543,74	318,43
38	595,09	70,92	144,70	6,78	297,81	148,71	159,02	549,81	324,77
39	604,81	70,66	144,84	6,67	302,25	150,66	160,55	556,85	331,41
40	610,89	70,69	146,13	6,47	307,06	152,66	161,60	565,70	338,06
41	613,72	70,60	145,67	6,27	312,08	154,46	162,57	574,60	344,84
42	622,40	70,83	146,92	6,08	317,14	156,37	164,34	583,78	350,59
43	625,68	70,72	148,33	5,97	322,04	158,57	165,28	593,52	356,64
44	627,61	70,80	148,53	5,77	327,07	160,39	166,91	603,38	362,54
45	636,29	70,75	149,81	5,67	332,31	162,24	168,30	613,31	368,13
46	640,93	71,08	148,78	5,48	337,28	164,94	170,29	623,28	372,88
47	645,31	70,87	150,23	5,27	342,13	166,78	171,87	632,96	378,43
48	652,35	70,83	151,32	5,17	346,83	168,59	173,00	643,32	383,97
49	659,31	71,03	152,30	4,97	351,94	170,16	173,71	654,13	390,05
50	664,42	71,17	153,18	4,87	356,57	172,21	175,74	664,68	395,18
51	669,79	71,02	153,67	4,67	361,32	174,31	177,12	676,21	400,31
52	671,84	70,83	154,69	4,47	365,94	176,77	178,88	689,15	405,57
53	679,11	71,34	154,58	4,27	370,47	178,61	180,72	701,66	410,02
54	683,24	71,48	156,38	4,17	375,60	180,56	182,11	715,00	414,38
55	676,14	70,78	155,86	4,06	380,27	182,32	183,13	730,24	419,04
56	667,78	71,42	154,47	3,87	385,30	183,88	185,50	742,02	423,68
57	675,50	71,42	185,80	3,77	389,98	189,84	188,10	746,08	426,92
58	677,82	71,61	158,82	3,57	394,27	189,90	189,88	751,25	429,04
59	671,21	71,49	154,55	3,47	398,77	190,72	191,83	760,78	431,30
60	651,34	71,49	150,35	3,38	403,58	191,67	193,16	765,76	433,71
61	626,90	71,53	146,41	3,27	407,84	193,19	196,02	762,42	435,49
62	608,74	71,33	144,44	3,17	412,80	194,96	198,72	752,83	436,58
63	596,94	71,14	142,87	3,07	418,31	195,66	200,06	741,04	439,16
64	589,70	71,14	140,06	3,06	423,00	197,07	202,82	729,33	439,88
65	583,48	71,35	138,27	2,97	428,32	198,43	205,43	718,41	440,73
66	578,44	71,36	137,77	2,87	432,52	200,09	208,36	708,61	441,00
67	571,75	71,28	135,18	2,77	436,72	201,69	211,35	699,28	441,65
68	568,10	71,36	135,20	2,67	440,99	203,49	213,67	690,11	441,78
69	563,08	71,15	133,98	2,57	445,03	204,78	216,10	682,33	441,55
70	560,69	71,28	133,70	2,47	449,12	206,11	218,63	675,38	442,25
71	556,12	71,44	133,78	2,47	453,15	208,16	221,29	669,20	441,41
72	550,80	71,44	131,78	2,37	456,61	209,63	224,58	663,21	440,86
73	547,64	71,49	132,19	2,27	460,00	211,36	226,50	657,17	441,17
74	542,99	71,62	130,74	2,17	463,52	212,35	228,85	651,58	440,73
75	538,38	71,61	130,10	2,17	466,29	213,92	232,34	646,06	441,07
76	537,72	71,81	129,74	2,07	468,72	215,02	235,10	640,80	440,76
77	531,13	71,76	129,01	2,07	470,96	216,68	238,89	635,70	440,67

DATA 2024-09-16 PI 20305 RUN 1 MODEL 600 SINGLE BURN RATE
unit preburn data

78	521,01	71,81	126,54	1,97	472,54	218,95	242,42	629,98	439,81
79	510,04	71,63	124,96	1,97	474,28	220,31	245,67	622,53	440,12
80	500,53	71,42	123,33	1,87	475,50	221,92	248,83	613,79	439,93
81	490,75	71,35	122,17	1,87	475,68	223,43	252,25	604,67	439,71
82	480,15	70,85	120,03	1,77	475,90	225,03	255,42	594,91	438,66
83	469,30	70,69	119,00	1,77	475,76	226,63	259,00	584,57	438,65
84	460,99	70,93	117,90	1,77	475,52	227,49	261,77	573,96	439,14
85	452,11	71,06	117,34	1,67	475,30	228,44	265,21	563,33	438,02
86	440,43	71,29	114,95	1,67	474,95	229,06	267,81	552,21	437,73
87	432,86	71,27	113,96	1,67	473,86	230,24	271,33	541,26	437,01
88	427,43	71,46	112,34	1,67	472,33	231,05	275,10	530,56	435,35
89	421,63	71,42	111,92	1,65	471,19	231,58	277,79	520,63	434,23
90	417,23	71,55	111,08	1,57	469,75	232,62	281,84	511,32	432,76
91	412,98	71,35	110,72	1,57	468,21	233,37	286,12	502,85	431,31
92	409,48	71,31	110,10	1,57	466,70	234,70	289,29	494,96	430,02
93	405,58	71,19	109,10	1,47	464,82	234,95	293,49	487,62	427,79
94	402,11	71,25	108,74	1,47	463,71	234,71	296,10	480,77	426,88
95	399,36	71,21	108,18	1,47	462,75	234,32	299,44	474,29	425,26
96	395,81	71,00	107,64	1,37	461,63	234,05	302,18	468,13	424,67
97	393,45	71,29	106,81	1,37	460,18	234,91	306,92	462,47	422,46



Date: 2024-09-16 Manufacturer: SPANTHERM Model: 600
Project #: PT 20305 Run: 1 Tech: MM Reviewer: SP

- Landing 42 LBS stand firm
- At 400 LBS, close Door
- At 12 LBS insert pre load
- close Door immediately
- At 146 LBS insert load
- At 3 min 45 Sec close Door

TEST LOAD CONFIGURATION

Date: 2024-09-16

 Manufacturer: SPANTHERM
PRE / POST CHECKS

 Model: 600

 Project #: PI 20305

 Run: 1

 Tech: MA

 Reviewer: DP

Moisture Meter Calibration Check:

Equipment #	Time	12%	22%
EM 334	7100	ok	ok

Pre-Test

Post-Test

Facility Conditions:

Air Velocity from less than 2 feet

Smoke Capture Check (tunnel velocity)

Picture.....

0 (max50 Fpm)	0 (max50 Fpm)
ok	NA
4 sides ok	ok

Wood Heater Conditions:

Date Wood Heater Stack Cleaned.....

Date Dilution Tunnel Cleaned.....

Induced Draft Check (max 0.005 H2O)

Traverse before ignition.....

2024-09-16
2024-09-16
ok
ok

Temperature System:

Ambient (65°-90°F)

ok	°F
----	----

Proportional Checks:

Thermocouple check.....

Pitot Clean.....

Pitot verification.....

Pictures for report.....

ok
ok
ok

Side	ok
Coal bed	ok
Load	ok
Load in stove	ok
Fuel adjustment	ok
	ok

Load Length 5/6 of firebox Length +/- 1 inch.....



Date: 04-09-16

Project #: PJ 2305

Leakage Checks Tunnel Samplers

Manufacturer: Spantek

Run: 1

Tech: M.R.

Model: 600

Reviewer: No

	System 1 st hour		System 1		System 2		Ambient	
	Pre-Test ASTM (-15) CSA B415 (-5)	Post-Test (Max test)	Pre-Test ASTM (-15) CSA B415 (-5)	Post-Test (Max test)	Pre-Test ASTM (-15) CSA B415 (-5)	Post-Test (Max test)	Pre-Test ASTM (-15) CSA B415 (-5)	Post-Test (Max test)
Unplugged Flow Rate = .25cfm	- 10	- 10	- 10	- 10	- 10	- 10	- 10	- 10
Vacuum (inches Hg.)								
Final 1 minute DGM (Liter)	0230 16	0242 27 0242 36	0202 10	0207 34	772338 50	772820 5	533169 60	533619 11
Initial 1 minute DGM (Liter)	0230 16	0242 27 0242 36	0202 10	0207 29	772338 46	772820 6	533169 50	533619 01
Change (Liter)	φ	φ	φ	005	404	003	010	010
Allowable leakage .04 x Sample rate or 0.28Lpm CSA B415 (0.56)								
Check OK	OL	OL	OL	OL	OL	OL	OL	OL



Date: 2024-09-16

Project #: PT 20305

Run: 1

Manufacturer: Spantherm

Tech: J.M.

Model: 600

Reviewer: DP

Leakage Checks Flue Gas Sampler

Plugged Probe	Pre-Test	Post Test
Vacuum (inches Hg.)	-5	-5
Rotameter Reading (mm/min.)	0	0
Flow Rate (lpm)	1.5	1.5
Allowable (.02 x Sample Rate)	30	30
Check OK	OK	OK

Leakage Checks Pitot

Plugged Probe	Pre-Test 3 H ₂ O static	Pre-Test 0.4-0.5 H ₂ O velocity	Post Test 3 H ₂ O Static	Post Test 0.4-0.5 H ₂ O velocity
Vacuum (inches Hg.)	3	0.5	3	0.5
Check OK (no change after 15 sec.)	OK	OK	OK	OK



Date: 2024-09-16

Project #: PJ 20305

Manufacturer: Spathechem

Run: 1 Tech: M.M

Model: 600

Reviewer: [Signature]

Scale Type	Audit		Measured Weight
	Equipment #	Weight	
Platform	EM-090	44 lbs, Class F	44 lbs
Platform	EM-205	10.00 Kg, Class F	10.00 Kg
Wood	EM-090	44 lbs, Class F	44 lbs
Analytical	EM-335	100 mg, Class S	100 mg
Analytical	EM-129	200 g, Class S	200 g

LIMITS OF WEIGHT RANGES

ANALYTICAL SCALE: 50%-150% of dry filter weight, ± 0.1 mg
PLATFORM SCALE: 20%-80% of ideal test load weight, ± 0.1 lbs or 1%
WOOD SCALE: 20%-80% of ideal test load weight, ± 0.01 lbs or 1%

Date: 2024-09-16 Manufacturer: Spantherm Model: 600
 Project #: PI 20305 Run: 1 Tech: M.M Reviewer: SD

FOR TUNNELS < 12 in

Barometric pressure (P_{bar}) _____ (KPa.) Static pressure (P_q) _____ (inches w.c.)
 Inside diameter: Port A _____ Port B _____
 Tunnel cross sectional area: .1963Ft²
 Pitot tube type: Standard

Traverse Point	Position (inches)			Velocity Head Δp (inches H ₂ O)	Tunnel Temperature (°F)
Tunnel diameter	6 po	7 po	8 po		
A - Centroid	3.00	3.50	4	0.078	69.12
B - Centroid	3.00	3.50	4	0.079	69.29
A-1	0.40	0.50	0.50	0.064	69.12
A-2	1.50	1.75	2	0.067	69.13
A-3	4.50	5.25	6	0.071	69.13
A-4	5.60	6.5	7.5	0.065	69.23
B-1	0.40	0.50	0.50	0.065	69.29
B-2	1.50	1.75	2	0.072	69.18
B-3	4.50	5.25	6	0.074	69.18
B-4	5.60	6.5	7.5	0.066	69.21
				AVERAGE	

Date: _____ Manufacturer: _____ Model: _____

Project #: _____ Run: _____ Tech: _____ Reviewer: _____

FOR TUNNELS 12 in

 Barometric pressure (P_{bar}) _____ (KPa.) Static pressure (P_q) _____ (inches w.c.)

Pitot tube type: Standard

Traverse Point	Position (inches)	Velocity Head Δp (inches H_2O)	Tunnel Temperature ($^{\circ}F$)
A Center	6		
B Center	6		
A-1	0.53		
A-2	1.75		
A-3	3.55		
A-4	8.45		
A-5	10.25		
A-6	11.47		
B-1	0.53		
B-2	1.75		
B-3	3.55		
B-4	8.45		
B-5	10.25		
B-6	11.47		

Date: 2024-09-16

 Manufacturer: SPANTHER

 Model: 600

 Project #: pt 20305

 Run: 1

 Tech: MM

 Reviewer: SP
Pre-Test (Adjust and Record)

	ZERO		SPAN		CAL. (Record Only)	
CO	0	0	3043	3000	1015	1000
Tolerance CO	0	+/- 0.02	004	+/- 0.15	0015	+/- 0.05
CO ₂	0	0	1803	1800	981	1000
Tolerance CO ₂	0	+/- 0.02	003	+/- 0.5	015	+/- 0.5
O ₂ informative CSA B415 calculated value	na	na	na	na	na	na
	Actual	Should Be	Actual	Should Be	Actual	Should Be

Post Test (Record Only)

	Zero	Span	Cal.	Zero Drift	Limit	Span Drift	Limit	Cal. Drift	Limit	OK?	Not OK*
CO	0	3039	1003	0	0.02	0.004	0.15	0.008	0.05	✓	
CO ₂	0	1801	980	0	0.02	0.02	0.5	0.01	0.5	✓	

TEST DATA LOG

Date: 2024-09-16 Manufacturer: SPANTHER Model: 600
Project #: PT 20305 Run: 1 Tech: M.M Reviewer: DR

RAW DRY GAS METER READINGS

		System 1 st hour	System 1	System 2	Blank
Test	Final (Liter)	0242.24	020704.13	772818.26	533615.51
	Initial (Liter)	0230.22	020279.58	772342.19	533171.32

AMBIENT CONDITIONS

	Before	After
Barometer (kPa):	1007	1006
Dry Bulb (F):	71	72.4
Humidity (%):	59	56.3

FUEL DATA

Date: 2024-09-16 Manufacturer: sp Anthem Model: 600
 Project #: PI 20305 Run: 1 Tech: MM Reviewer: DP

FUEL DESCRIPTION:

Type of wood:

PRE-TEST LOAD

Piece Size	Weight	Meter Moisture Content (% dry) *				
1 1/2 x 3 1/2 x 65 in.	0 896 lbs.	191	193	192	190	190
1 1/2 x 3 1/2 x 65 in.	0 618 lbs.	194	193	194	193	194
1 1/2 x 3 1/2 x 65 in.	0 636 lbs.	192	193	194	193	194
1 1/2 x 3 1/2 x 65 in.	0 662 lbs.	200	201	198	198	194
1 1/2 x 3 1/2 x 65 in.	0 632 lbs.	193	196	197	195	197
1 1/2 x 3 1/2 x 65 in.	0 626 lbs.	190	198	197	197	196
1 1/2 x 3 1/2 x 65 in.	0 676 lbs.	200	201	200	199	193
1 1/2 x 3 1/2 x 65 in.	0 624 lbs.	194	195	196	198	196
1 1/2 x 3 1/2 x 65 in.	1 436 lbs.	196	193	194	195	196
1 1/2 x 3 1/2 x 65 in.	1 454 lbs.	201	200	203	203	204
x x in.	lbs.					
x x in.	lbs.					
x x in.	lbs.					
x x in.	lbs.					
x x in.	lbs.					
x x in.	lbs.					
x x in.	lbs.					
x x in.	lbs.					
x x in.	lbs.					
x x in.	lbs.					
x x in.	lbs.					
x x in.	lbs.					
x x in.	lbs.					
x x in.	lbs.					

TEST LOAD WEIGHT: 8 256 lbs



FUEL DATA

Date: 2024-09-16 Manufacturer: Sp Antherm Model: 600
Project #: p1 20305 Run: 1 Tech: MJ Reviewer: SD

FUEL DESCRIPTION:

Type of wood:

TEST LOAD

Piece Size			Weight		Meter Moisture Content (% dry)*				
1 1/2	x 3 1/2	x 14 3/4 in.	1778	lbs.	196	192	193	194	195
1 1/2	x 3 1/2	x 14 3/4 in.	1714	lbs.	192	192	194	193	193
1 1/2	x 3 1/2	x 14 3/4 in.	1706	lbs.	191	190	190	191	192
	x	x in.		lbs.					
1 1/2	x 3 1/2	x 5 in.	0106	lbs.			191		
1 1/2	x 3 1/2	x 5 in.	0124	lbs.			192		
1 1/2	x 3 1/2	x 5 in.	0112	lbs.			192		
1 1/2	x 3 1/2	x 5 in.	0138	lbs.			193		
1 1/2	x 3 1/2	x 5 in.	0148	lbs.			194		
1 1/2	x 3 1/2	x 5 in.	0108	lbs.			193		
1 1/2	x 3 1/2	x 5 in.	0106	lbs.			200		
1 1/2	x 3 1/2	x 5 in.	0108	lbs.			201		
1 1/2	x 3 1/2	x 5 in.	0104	lbs.			200		
1 1/2	x 3 1/2	x 5 in.	0118	lbs.			203		
1 1/2	x 3 1/2	x 5 in.	0102	lbs.			204		
1 1/2	x 3 1/2	x 5 in.	0126	lbs.			203		
	x	x in.		lbs.					
	x	x in.		lbs.					
	x	x in.		lbs.					
	x	x in.		lbs.					
	x	x in.		lbs.					
	x	x in.		lbs.					
	x	x in.		lbs.					
	x	x in.		lbs.					
	x	x in.		lbs.					
	x	x in.		lbs.					
	x	x in.		lbs.					

TEST LOAD WEIGHT: 660 lbs Min 20%: Max 25%:

DILUTION TUNNEL PARTICULATE SAMPLER DATA

Manufacturer: Spantherm Model: 600 Reviewer: SP
Run: 1 Tech: MT

Date: 2024-09-12
Project #: PI 20305

TEST FILTERS						
SYSTEM 1 st hour				SYSTEM 1		
Pre-test Weight Record		Probe & Housing Number	Front & Back Filter Number	gaskets	Probe & Housing Number	Front & Back Filter Number
Date	Time					gaskets
2024-09-12	17:00	002	114-115	6	12	116-117
		610971	02545	41768	945352	42184
2024-09-16	9:00	610972	02546	41767	945353	42185

TEST FILTERS						
SYSTEM 1 st hour				SYSTEM 1		
Post-test Weight Record		Probe & Housing Number	Front & Back Filter Number	gaskets	Probe & Housing Number	Front & Back Filter Number
Date	Time					gaskets
2024-09-16	14:00	002	114-115	6	12	116-117
		610973	02561	41826	945360	42238
2024-09-23	9:00	610973	02556	41783	945353	42200
2024-09-24	9:00	610973	02556	41783	945353	42200

DILUTION TUNNEL PARTICULATE SAMPLER DATA

Date: 2024-09-12
Project #: PJ 20305
Manufacturer: SPANTherm
Run: 1
Model: 600
Tech: J.M.
Reviewer: *JS*

TEST FILTERS						
SYSTEM 2						
Pre-test Weight Record		Probe & Housing Number	Front & Back Filter Number	gaskets	Blank Filter	
Date	Time	13	118-119	14	120	
2024-09-12	17:00	951452	02491	4 2336	0 1241	
2024-09-16	9:00	951453	02492	4 2335	0 1240	
TEST FILTERS						
SYSTEM 2						
Post-test Weight Record		Probe & Housing Number	Front & Back Filter Number	gaskets	Blank Filter	End test time and date
Date	Time	13	118-119	14	120	2024-09-16
2024-09-16	17:00	951464	02505	4 2363	0 1241	13:45
2024-09-23	9:00	951453	02505	4 2346	0 1241	
2024-09-24	9:00	951453	02505	4 2346	0 1241	

Paramètres

Tous les facteurs de corrections et autres paramètres qui peuvent être modifiés par l'utilisateur du fichier sont regroupés ici.

Code verrouillage: SPA

Description du test

Test standard	EPA
Run #	2
Date	17-09-2024
Technicien	M.M
Project #	PI 20305

Description de l'unité

Manufacturier	SPARTERM	
Modèle	600	
Combustion system	Non-Cat	
Appliance type	wood heater	
Firebox volume	0,94	cu ft.
Appliance weight empty	n.a	lbs
Appliance weight full	n.a	lbs

Paramètres du test

Logging time	1	min
Manufacturer's rated heat output	n.a	BTU/h Donnée fournie par le manufacturier
Targeted category		
Targeted output	n.a	BTU/h
Cp steel	n.a	BTU/lb-°F

Échantillonnage

Blank sampling rate	0,20	cuft/min
Internal probe diameter	0,18	in.
Calibration Factor (DGM #1):	0,986	
Equipment number (DGM #1):	EM 178	Dimensionless
Calibration Factor (DGM #2):	1,001	
Equipment number (DGM #2):	EM 318	Dimensionless
Calibration Factor (DGM #3):	0,988	
Equipment number (DGM #3):	EM 179	Dimensionless
Calibration Factor (DGM 1st Hr):	0,996	
Equipment number (DGM 1st Hr):	EM 130	Dimensionless

Tunnel

Targeted tunnel flow rate	140	scfm
Tunnel diameter	6	in.
Molecular weight	29	29 as per ASTM E2515
Pitot tube type	Standard	
Pitot tube coefficient	0,99	Dimensionless

Project nu. PI 20305
Date 17-09-2024
Technicien M.M

Fuel data

Fuel type	Dimension
Fuel specie	D. Fir
HHV	19810,0 kJ/kg
%C	48,7
%H	6,9
%O	43,9
%Ash	0,5
HHV	8519,2 Btu/lb
LHV	7451,0 Btu/lb

Default Fuel Values

	D. Fir	Oak/Maple
HHV	19 810	19 887
%C	48,73	50
%H	6,87	6,6
%O	43,9	42,9
%Ash	0,5	0,5
HHV (Btu/lb)	8519	8552
LHV (Btu/lb)	7451	7480

	Start	End
Barometer (kPa):	101	101,2
Barometer (in.Hg):	29,825289	29,88434875
Dry Bulb (F):	72,1	74,2
Humidity (%):	59,3	58,3
Air velocity (ft/min)	0	0

DGM #1st hour	Final:	256,240	cuft
	Initial:	244,240	cuft

DGM #1	Final:	745,916	cuft
	Initial:	731,689	cuft

DGM #2	Final:	27308,144	cuft
	Initial:	27292,350	cuft

DGM room	Final:	18856,439	cuft
	Initial:	18844,984	cuft

Final:	256,240	cuft
Initial:	244,240	cuft

Final:	21122,000	Liter
Initial:	20719,130	Liter

Final:	773280,520	Liter
Initial:	772833,260	Liter

Final:	533954,880	Liter
Initial:	533630,510	Liter

Numéro de la ligne dans "Raw data" à partir duquel les données du VRAI test commencent

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Autres données à rentrer: dans preload data, load data, traverse et filter set weight

Project nu.	PI 20305
Date	17-09-2024
Technicien	M.M

Tunnel Traverse Worksheet (for velocity calculations)

Static Pressure: 0,18 in. H2O
 Barometer: 29,900 in. Hg

Pour un tunnel de 12" et plus, prendre 6 lectures

	TUNNEL VELOCITY	TUNNEL TEMP	SQUARE ROOT
	In. wc	°F	
A center			0,0000
B center			0,0000
A1			0,0000
A2			0,0000
A3			0,0000
A4			0,0000
A5			0,0000
A6			0,0000
B1			0,0000
B2			0,0000
B3			0,0000
B4			0,0000
B5			0,0000
B6			0,0000
AVERAGE	#DIV/0!	#DIV/0!	0,0000

PITOT CONSTANT=
0,934

Pour un tunnel moins de 12", prendre 4 lectures

	TUNNEL VELOCITY	TUNNEL TEMP	SQUARE ROOT
	In. wc	°F	
A center	0,068	69,43	0,2608
B center	0,068	70,61	0,2608
A1	0,055	69,43	0,2345
A2	0,058	69,83	0,2408
A3	0,062	69,83	0,2490
A4	0,053	70,21	0,2302
B1	0,053	70,6	0,2302
B2	0,062	70,8	0,2490
B3	0,061	70,8	0,2470
B4	0,054	70,9	0,2324
AVERAGE	0,0594	70,2410	0,2435

Project nu.	PI 20305
Date	17-09-2024
Technicien	M.M

Filter set weight

System 1 (g) 1st hour			System 1 (g)			System 2 (g)			Ambient blank (g)	Date	Heure	Test end date & time
probe	front/ Back	gasket	probe	front/ Back	gasket	probe	front/ Back	gasket	Filter			
10	121-122	4	18	123-124	10	36	125-126	13	127			
Before (1)												
Before (2)												
Before (3)												
Before (4)												
Before (5)	94,6389	0,2543	4,9495	108,9462	0,2527	4,1810	107,7231	0,2522	4,1855	0,1281	2024-09-16 17:00	
Before (6)	94,6388	0,2544	4,9495	108,9461	0,2527	4,1811	107,7231	0,2522	4,1854	0,1280	2024-09-17 09:00	2024-09-17 13:30
After (1)	94,6400	0,2550	4,9536	108,9465	0,2529	4,1865	107,7234	0,2523	4,1899	0,1282	2024-09-17 14:00	
After (2)	94,6389	0,2550	4,9525	108,9461	0,2529	4,1844	107,7231	0,2523	4,1880	0,1281	2024-09-23 09:00	
After (3)	94,6389	0,2544	4,9521	108,9461	0,2529	4,1834	107,7231	0,2523	4,1880	0,1281	2024-09-24 09:00	
After (4)	94,6389	0,2544	4,9521	108,9461	0,2529	4,1834	107,7231	0,2523	4,1880	0,1281	2024-09-25 08:00	
After (5)												
After (6)	94,6389	0,2544	4,9521	108,9461	0,2529	4,1834	107,7231	0,2523	4,1880	0,1281	2024-09-25 08:00	
Difference	0,0001	0,0000	0,0026	0,0000	0,0002	0,0023	0,0000	0,0001	0,0026	0,0001		
Total (mg)	2,7			2,5			2,7			0,1		
Total ajusté (mg)	2,60			2,40			2,60					

Project nu. PI 20305

Date 17-09-2024

Technicien M.M

Manufacturer: SPARTERM
Model: 600

Run: 2
Project #: PI 20305
Test Duration: 82 min

Note: In the "Input data", "Calc. % O₂", "Fuel Properties", and "Mass Balance" columns, [e], [d], [g], [a], [b], [c], [h], [u], [w], [j], and [k] refer to their respective variables in Clauses

Overall Heating Efficiency: 62,05%
Combustion Efficiency: 98,64%
Heat Transfer Efficiency: 62,91%

	HHV	LHV
Eff	62,05%	67,07%
Comb Eff	98,64%	98,64%
HT Eff	62,91%	67,99%
Output	22 453	kJ/h
Burn Rate	1,83	kg/h
Grams CO	71	g
Input	36 183	kJ/h
MC wet	16,64	

Ultimate CO₂
CO_{2-ult} 19,64
F₀
1,059

Heat Output:	21 299 Btu/h
Heat Input:	34 323 Btu/h
Burn Duration:	1,37 h
Burn Rate:	4,03 lb/h
Stack Temp:	490,0 Deg. F

		Averages		0,25	5,77	3,01	20,54	14,65	253,39	23,92	0,96	0,61	#DIV/0!
INPUT DATA				Oxygen Calculation				Input Data		Combust	Heat	Net	
Elapsed Time	Weight Remaining (kg)	% CO [e]	% CO ₂ [d]	Excess Air EA	Total O ₂	Calc. % O ₂ [g]	Flue Gas (°C)	Room Temp (°C)	Eff %	Transfer %	Net Eff %		
0,00	2,99	0,20	1,79	885,7%	20,81	18,92	166,9	23,1	94,1%	41,6%	39,2%		
1,00	2,98	0,14	0,92	1751,1%	20,87	19,88	137,7	23,2	94,1%	18,5%	17,4%		
2,00	2,94	0,11	1,55	1080,3%	20,83	19,22	175,1	23,3	97,6%	31,2%	30,5%		
3,00	2,85	0,10	2,49	656,3%	20,77	18,22	211,1	23,2	98,7%	43,2%	42,7%		
4,00	2,76	0,12	6,11	215,4%	20,53	14,36	254,3	23,3	99,1%	64,6%	64,0%		
5,00	2,67	0,07	8,60	126,5%	20,37	11,73	283,4	23,2	99,7%	68,8%	68,6%		
6,00	2,57	0,04	8,98	117,7%	20,34	11,34	297,2	23,3	100,0%	68,4%	68,4%		
7,00	2,48	0,03	8,57	128,3%	20,37	11,78	298,0	23,3	100,1%	67,5%	67,5%		
8,00	2,43	0,04	8,79	122,5%	20,36	11,55	308,1	23,3	100,0%	67,1%	67,1%		
9,00	2,35	0,03	9,05	116,3%	20,34	11,27	316,2	23,4	100,1%	67,1%	67,1%		
10,00	2,26	0,03	9,12	114,8%	20,34	11,21	319,9	23,3	100,1%	66,9%	67,0%		
11,00	2,17	0,03	9,09	115,3%	20,34	11,23	324,7	23,3	100,1%	66,5%	66,5%		
12,00	2,08	0,02	9,20	113,0%	20,33	11,12	328,3	23,4	100,1%	66,4%	66,5%		
13,00	1,98	0,02	9,21	112,8%	20,33	11,11	330,3	23,4	100,2%	66,3%	66,4%		
14,00	1,94	0,02	9,18	113,6%	20,33	11,14	332,2	23,4	100,2%	66,1%	66,2%		
15,00	1,85	0,02	9,23	112,4%	20,33	11,09	334,9	23,4	100,2%	65,9%	66,1%		
16,00	1,76	0,02	9,21	112,9%	20,33	11,11	336,0	23,5	100,2%	65,8%	66,0%		
17,00	1,67	0,02	9,08	116,0%	20,34	11,25	335,2	23,4	100,2%	65,6%	65,7%		
18,00	1,62	0,01	9,11	115,2%	20,34	11,22	335,9	23,5	100,2%	65,6%	65,8%		
19,00	1,53	0,01	9,10	115,6%	20,34	11,23	336,3	23,5	100,2%	65,5%	65,7%		
20,00	1,44	0,01	9,11	115,2%	20,34	11,22	336,3	23,5	100,2%	65,6%	65,7%		
21,00	1,39	0,01	9,14	114,6%	20,34	11,19	337,0	23,6	100,2%	65,6%	65,8%		
22,00	1,30	0,01	9,21	113,1%	20,33	11,12	338,7	23,7	100,2%	65,6%	65,8%		
23,00	1,26	0,01	9,18	113,6%	20,33	11,14	337,8	23,7	100,2%	65,6%	65,8%		
24,00	1,17	0,01	9,08	116,1%	20,34	11,25	338,0	23,7	100,3%	65,4%	65,6%		
25,00	1,12	0,01	9,05	116,8%	20,34	11,29	337,5	23,8	100,3%	65,3%	65,5%		
26,00	1,04	0,01	9,08	116,0%	20,34	11,25	337,7	23,8	100,3%	65,4%	65,6%		
27,00	0,99	0,01	9,16	114,1%	20,33	11,17	338,3	23,9	100,2%	65,6%	65,7%		
28,00	0,92	0,01	9,26	111,8%	20,33	11,06	338,4	24,0	100,2%	65,8%	65,9%		
29,00	0,85	0,01	9,39	108,9%	20,32	10,92	340,1	24,0	100,2%	65,9%	66,1%		
30,00	0,80	0,01	9,51	106,4%	20,31	10,80	340,5	24,1	100,2%	66,2%	66,3%		
31,00	0,76	0,01	9,51	106,3%	20,31	10,80	340,7	24,2	100,2%	66,2%	66,3%		
32,00	0,67	0,01	9,24	112,2%	20,33	11,08	336,3	24,1	100,2%	65,9%	66,1%		
33,00	0,62	0,02	8,73	124,4%	20,36	11,62	331,0	24,0	100,2%	65,2%	65,3%		
34,00	0,58	0,02	8,37	134,1%	20,39	12,01	327,6	24,1	100,2%	64,5%	64,7%		
35,00	0,53	0,02	7,88	148,6%	20,42	12,53	322,5	24,0	100,3%	63,6%	63,8%		
36,00	0,53	0,02	7,03	178,4%	20,47	13,43	312,5	24,1	100,3%	61,9%	62,0%		
37,00	0,49	0,04	6,16	216,9%	20,53	14,35	301,3	24,1	100,2%	59,6%	59,7%		
38,00	0,49	0,05	5,51	253,4%	20,57	15,04	289,5	24,0	100,1%	57,9%	57,9%		
39,00	0,44	0,05	4,92	294,7%	20,61	15,66	278,8	24,1	100,0%	55,9%	55,9%		
40,00	0,44	0,07	4,51	328,2%	20,64	16,09	267,9	24,0	99,7%	54,7%	54,5%		
41,00	0,44	0,10	4,24	352,7%	20,65	16,36	257,5	24,1	99,1%	54,3%	53,8%		
42,00	0,44	0,15	3,97	376,9%	20,67	16,62	248,1	24,0	98,1%	53,6%	52,6%		
43,00	0,44	0,19	3,93	376,8%	20,67	16,64	240,9	24,0	97,3%	54,5%	53,0%		
44,00	0,40	0,22	3,92	373,9%	20,67	16,63	234,9	24,0	96,6%	55,5%	53,6%		
45,00	0,40	0,25	3,91	372,2%	20,67	16,63	230,2	24,1	96,1%	56,2%	54,0%		
46,00	0,40	0,27	3,96	364,4%	20,66	16,57	225,9	24,0	95,7%	57,3%	54,8%		
47,00	0,37	0,29	3,94	364,5%	20,66	16,58	222,1	24,0	95,3%	57,7%	55,0%		
48,00	0,35	0,31	3,97	359,1%	20,66	16,53	218,9	24,0	95,0%	58,5%	55,6%		
49,00	0,35	0,33	3,96	358,2%	20,66	16,54	215,9	24,0	94,6%	58,9%	55,7%		
50,00	0,30	0,35	3,97	355,2%	20,66	16,51	213,5	24,0	94,3%	59,4%	56,0%		
51,00	0,35	0,36	3,96	354,1%	20,65	16,51	211,6	23,9	94,0%	59,7%	56,1%		
52,00	0,30	0,37	3,95	354,7%	20,65	16,52	209,1	23,8	93,8%	59,9%	56,2%		
53,00	0,30	0,39	3,96	351,8%	20,65	16,50	207,5	23,9	93,6%	60,3%	56,5%		
54,00	0,26	0,40	3,95	351,4%	20,65	16,50	206,0	23,9	93,4%	60,5%	56,5%		
55,00	0,26	0,41	3,94	351,9%	20,65	16,51	204,2	23,9	93,2%	60,7%	56,6%		
56,00	0,26	0,42	3,91	353,7%	20,65	16,53	202,9	24,0	93,0%	60,7%	56,5%		
57,00	0,26	0,42	3,90	354,7%	20,65	16,55	201,6	24,1	92,8%	60,9%	56,5%		
58,00	0,26	0,44	3,89	353,8%	20,65	16,54	200,3	24,1	92,6%	61,1%	56,5%		
59,00	0,26	0,44	3,87	355,0%	20,65	16,56	198,9	24,0	92,4%	61,2%	56,5%		
60,00	0,22	0,46	3,84	357,2%	20,66	16,59	197,2	24,1	92,1%	61,2%	56,4%		
61,00	0,22	0,48	3,81	358,3%	20,66	16,61	196,2	24,1	91,8%	61,2%	56,2%		
62,00	0,20	0,49	3,78	359,3%	20,66	16,63	195,5	24,2	91,4%	61,2%	55,9%		
63,00	0,17	0,51	3,75	362,0%	20,66	16,66	194,5	24,3	91,1%	61,1%	55,7%		
64,00	0,17	0,51	3,81	354,6%	20,65	16,59	193,4	24,3	91,2%	61,7%	56,3%		
65,00	0,17	0,52	3,77	357,7%	20,66	16,63	192,7	24,3	90,9%	61,5%	55,9%		
66,00	0,17	0,54	3,69	364,4%	20,66	16,70	191,4	24,3	90,5%	61,2%	55,4%		
67,00	0,17	0,57	3,66	364,7%	20,66	16,72	190,4	24,4	89,9%	61,2%	55,1%		
68,00	0,17	0,58	3,63	365,7%	20,66	16,74	189,4	24,3	89,5%	61,2%	54,8%		
69,00	0,12	0,58	3,58	371,6%	20,66	16,79	188,1	24,4	89,4%	61,1%	54,6%		
70,00	0,12	0,60	3,52	376,9%	20,67	16,85	186,8	24,3	89,0%	60,8%	54,2%		
71,00	0,12	0,61	3,52	375,3%	20,67	16,84	185,8	24,2	88,8%	61,0%	54,2%		
72,00	0,08	0,62	3,53	373,5%	20,67	16,83	185,1	24,3	88,7%	61,2%	54,3%		
73,00	0,08	0,63	3,53	372,5%	20,67	16,82	184,4	24,3	88,5%	61,3%	54,3%		
74,00	0,08	0,63	3,51	374,7%	20,67	16,84	183,9	24,4	88,5%	61,3%	54,2%		
75,00	0,08	0,62	3,52	374,5%	20,67	16,84	183,7	24,4	88,7%	61,4%	54,5%		
76,00	0,03	0,61	3,58	369,1%	20,66	16,78	183,3	24,5	88,9%	61,9%	55,0%		
77,00	0,03	0,61	3,54	373,6%	20,67	16,82	182,1	24,5	88,9%	61,8%	55,0%		
78,00	0,03	0,57	3,42	392,2%	20,68	16,97	180,1	24,5	89,2%	61,3%	54,7%		
79,00	0,03	0,58	3,37	397,7%	20,68	17,02	179,3	24,6	88,9%	61,1%	54,3%		
80,00	0,03	0,60	3,36	396,7%	20,68	17,02	178,6	24,5	88,6%	61,1%	#DIV/0!		
81,00	0,03	0,61	3,36	395,1%	20,68	17,01	176,3	24,4	88,4%	61,5%	54,4%		
82,00	0,00	0,56	2,95	459,2%	20,71	17,48	173,0	24,4	88,0%	58,7%	51,7%		

SFBA EPA EMISSION RESULTS

RESULTS

Average emission rate: 1,80 g/hr

Burn Rate : 1,83 Dry kg/hr

Test Duration: 82 min

PRESSURE FACTOR: DGM 1st hr 0,969
 DGM 1 0,963
 DGM 2 0,966
 DGM 3 0,998

BAROMETRIC PRESSURE

Average: 29,85481876 in Hg
 Start: 29,82528877 in Hg
 End: 29,88434875 in Hg

TEMPERATURE FACTORS DGM 1st hr 0,984
 DGM 1 0,986
 DGM 2 0,981
 DGM 3 0,987

DGM VALUES

DGM 1st hr Final: 256,240 Cuft
 Initial: 244,240 Cuft

VOLUMES SAMPLED DGM 1st hr 11,403 SCft
 DGM 1 13,325 SCft
 DGM 2 14,986 SCft
 DGM 3 11,144 SCft

DGM 1 Final: 745,916 Cuft
 Initial: 731,689 Cuft

DGM 2 Final: 27308,144 Cuft
 Initial: 27292,350 Cuft

TOTAL TUNNEL VOLUME : 14047

DGM #3 Final: 18856,439 Cuft
 Initial: 18844,984 Cuft

SAMPLE RATIOS

Sample Train 1st Hr: 901,4
 Sample Train 1: 1054,2
 Sample Train 2: 937,4

TEMPERATURES

DGM 1st hr 536,593 °R
 DGM 1 535,427 °R
 DGM 2 538,144 °R

Particulate concentration

Sample Train 1st Hr 0,000237 g/dscf
 Sample Train 1 0,000188 g/dscf
 Sample Train 2 0,000180 g/dscf
 Room 0,000009 g/dscf

CALIBRATION FACTORS

DGM 1st hr 0,9963
 DGM 1 0,9860
 DGM 2 1,0011
 DGM #3 0,9880

TOTAL EMISSIONS

Sample Train 1st Hr 2,34 g
 Sample Train 1 2,51 g
 Sample Train 2 2,40 g

TUNNEL FLOW RATE: 171,3 Dscfm

PARTICULATE CATCH

Total Sample Train 1: 2,50 mg
 Total Sample Train 2: 2,70 mg
 Total Sample Train 1 1st hour: 2,70 mg

EMISSION RATES

Sample Train 1st Hr 2,34 g/hr
 Sample Train 1 1,84 g/hr
 Sample Train 2 1,76 g/hr

DEVIATION: 2,13%

Cs Train 1 Train 2 Train 1st Hr
 0,0001876 0,00018017 0,0002368

* Time	Elapsed min	Raw data row	* Weight lbs	* CO %	* CO ₂ %	*1 Flue Gas °F	*2 Room Temp °F	*3 Tunnel Dry Bulb °F	*4 Unit Top °F	*5 Unit Back °F	*6 Unit R-Side °F	*7 Unit L-Side °F	*8 Unit Bottom °F	Mass flow Reading cuft/min	DGM 1st hour Inlet 1st hour °F	DGM 1st hour Outlet 1st hour °F	Filter 1st hour Temp °F	DGM 1 Reading cuft/min	DGM 1 Inlet 1st hour °F	DGM 1 Outlet 1st hour °F	Filter 1 Temp °F	Mass flow 2 Reading cuft/min	DGM 2 Inlet 1st hour °F	DGM 2 Outlet 1st hour °F	Filter 2 Temp °F	Tunnel Velocity in wc	Flue draft Pressure in wc	Filter 1st hr in. Hg	Filter 1 in. Hg	Filter 2 in. Hg	Change in Surface Temp. °F
0	167.00		6.6	0.2	1.8	332.5	73.5	145.8	513.2	251.6	453.6	440.7	325.9	0.19	74.6	75.0	77.0	0.17	73.5	73.2	80.3	0.18	73.7	73.5	78.8	0.07	0.04	-0.89	-1.02	-1.02	0.0
1	168.0		6.2	0.1	0.9	329.6	73.9	142.5	513.8	251.5	453.8	440.7	326.1	0.19	75.1	75.2	77.8	0.17	73.9	73.4	82.4	0.18	73.7	73.4	81.1	0.07	0.05	-0.74	-0.99	-0.96	0.7
2	169.0		6.5	0.1	1.6	347.2	73.9	169.1	485.8	270.0	452.7	439.1	333.0	0.19	75.2	75.2	78.8	0.17	73.8	73.3	84.7	0.18	74.0	73.5	83.1	0.06	0.06	-0.76	-1.00	-0.88	-0.1
3	170.0		6.3	0.1	2.5	411.9	73.8	191.4	470.5	280.7	446.3	436.5	335.2	0.19	75.2	75.2	80.1	0.17	73.9	73.3	87.7	0.18	74.1	73.5	85.6	0.06	0.07	-0.77	-1.02	-0.90	-3.1
4	171.0		5.3	0.0	8.8	586.5	74.0	145.8	516.8	245.9	434.9	417.8	343.6	0.19	75.7	75.4	81.0	0.17	74.3	73.5	88.5	0.18	75.4	73.9	86.4	0.06	0.09	-0.77	-1.02	-0.90	-6.2
5	172.0		5.9	0.1	8.6	542.1	73.8	145.9	525.6	244.3	443.4	427.1	339.0	0.19	75.4	75.3	80.3	0.17	74.1	73.4	87.8	0.18	74.6	73.7	85.4	0.07	0.09	-0.76	-1.02	-0.89	-12.2
6	173.0		5.7	0.0	9.0	567.0	73.9	145.7	476.5	249.5	440.6	423.3	341.8	0.19	75.5	75.3	80.4	0.17	74.2	73.4	87.9	0.18	74.9	73.8	85.7	0.06	0.09	-0.76	-1.02	-0.90	-10.7
7	174.0		5.5	0.0	8.6	568.3	73.9	144.8	496.2	247.3	437.8	420.0	342.6	0.19	75.6	75.4	80.7	0.17	74.2	73.4	88.1	0.18	75.2	73.8	86.0	0.06	0.09	-0.76	-1.02	-0.89	-8.2
8	175.0		5.3	0.0	8.8	586.5	74.0	145.8	516.8	245.9	434.9	417.8	343.6	0.19	75.7	75.4	81.0	0.17	74.3	73.5	88.5	0.18	75.4	73.9	86.4	0.06	0.09	-0.77	-1.02	-0.90	-7.2
9	176.0		5.2	0.0	9.1	601.1	74.1	147.1	539.4	244.1	433.8	416.9	343.3	0.19	75.8	75.4	81.4	0.17	74.3	73.5	89.0	0.18	75.7	74.0	86.4	0.06	0.09	-0.77	-1.02	-0.90	-1.5
10	177.0		5.0	0.0	9.1	607.8	74.0	148.3	561.4	245.4	433.4	414.1	343.9	0.19	75.9	75.5	81.7	0.17	74.4	73.5	89.5	0.18	75.9	74.1	87.8	0.07	0.09	-0.77	-1.03	-0.91	-2.6
11	178.0		4.8	0.0	9.1	616.4	74.0	150.3	582.5	245.4	433.1	415.1	344.4	0.19	76.0	75.5	82.2	0.17	74.4	73.6	89.8	0.18	76.1	74.2	87.9	0.06	0.08	-0.78	-1.04	-0.91	7.1
12	179.0		4.6	0.0	9.2	622.9	74.1	151.4	602.8	245.9	434.5	414.8	344.2	0.19	76.1	75.6	82.5	0.17	74.5	73.6	89.6	0.18	76.3	74.3	88.3	0.06	0.09	-0.77	-1.03	-0.91	11.4
13	180.0		4.4	0.0	9.2	626.6	74.1	152.5	622.6	245.2	435.4	417.2	343.7	0.19	76.3	75.6	82.9	0.17	74.5	73.6	89.5	0.18	76.6	74.4	88.8	0.06	0.09	-0.78	-1.03	-0.91	15.8
14	181.0		4.3	0.0	9.2	629.9	74.2	152.7	641.1	245.2	436.3	420.6	342.3	0.19	76.3	75.7	83.2	0.17	74.7	73.7	89.6	0.18	76.8	74.5	89.2	0.07	0.08	-0.78	-1.04	-0.92	19.7
15	182.0		4.1	0.0	9.2	634.9	74.1	154.1	658.3	242.7	438.4	423.7	342.9	0.19	76.5	75.7	83.6	0.17	74.8	73.7	89.4	0.18	77.1	74.6	89.6	0.06	0.09	-0.79	-1.04	-0.93	24.2
16	183.0		3.9	0.0	9.2	636.9	74.3	152.9	674.0	244.0	440.6	425.6	341.1	0.19	76.6	75.8	84.0	0.17	74.9	73.8	89.4	0.18	77.4	74.8	89.9	0.05	0.09	-0.79	-1.04	-0.93	28.6
17	184.0		3.7	0.0	9.1	635.3	74.1	153.7	688.4	244.1	443.8	428.1	342.6	0.19	76.6	75.8	84.3	0.17	74.9	73.8	89.2	0.18	77.5	74.9	87.4	0.07	0.09	-0.80	-1.04	-0.93	32.4
18	185.0		3.6	0.0	9.1	636.6	74.4	154.5	700.9	244.6	446.5	431.4	341.3	0.19	76.7	75.9	84.7	0.17	75.0	73.8	88.9	0.18	77.7	75.0	86.1	0.06	0.09	-0.80	-1.03	-0.93	35.9
19	186.0		3.4	0.0	9.1	637.3	74.3	154.4	712.4	244.1	449.5	434.3	341.4	0.19	76.8	75.9	85.0	0.17	75.0	73.9	88.6	0.18	77.8	75.1	85.5	0.06	0.09	-0.81	-1.04	-0.93	39.3
20	187.0		3.2	0.0	9.1	637.4	74.4	155.5	722.6	244.3	452.7	438.0	341.0	0.19	76.8	76.0	85.3	0.17	75.0	73.9	88.5	0.18	78.0	75.2	85.4	0.06	0.10	-0.81	-1.04	-0.94	42.7
21	188.0		3.1	0.0	9.1	638.6	74.6	154.5	731.6	245.4	455.6	440.5	340.4	0.19	76.9	76.1	85.7	0.17	75.2	73.9	88.5	0.18	78.2	75.4	85.3	0.06	0.10	-0.82	-1.04	-0.94	45.5
22	189.0		2.9	0.0	9.2	641.7	74.6	153.4	741.0	242.9	458.3	444.8	340.4	0.19	77.0	76.1	86.0	0.17	75.2	74.0	88.6	0.18	78.4	75.5	85.3	0.06	0.09	-0.86	-1.04	-0.94	48.5
23	190.0		2.8	0.0	9.2	640.1	74.6	155.3	749.7	244.9	461.5	445.9	340.0	0.19	77.1	76.2	86.3	0.17	75.2	74.0	88.8	0.18	78.4	75.6	85.5	0.07	0.09	-0.82	-1.04	-0.94	51.4
24	191.0		2.4	0.0	9.2	640.7	74.7	155.1	751.1	244.7	463.1	447.3	338.7	0.19	77.2	76.3	86.5	0.17	75.3	74.1	88.9	0.18	78.5	75.7	85.7	0.07	0.09	-0.82	-1.05	-0.95	54.7
25	192.0		2.5	0.0	9.0	639.6	74.8	154.5	763.7	244.0	467.3	453.4	338.1	0.19	77.3	76.3	86.8	0.17	75.4	74.1	89.1	0.18	78.7	75.8	85.8	0.09	0.09	-0.83	-1.04	-0.94	56.3
26	193.0		2.3	0.0	9.1	639.8	74.8	156.7	769.2	244.5	470.5	455.5	337.6	0.19	77.3	76.4	87.0	0.17	75.4	74.2	89.4	0.18	78.9	75.9	86.1	0.06	0.09	-0.84	-1.04	-0.94	58.5
27	194.0		2.2	0.0	9.2	640.9	75.0	154.6	774.4	244.2	473.6	459.3	336.5	0.19	77.3	76.4	87.2	0.17	75.6	74.2	89.7	0.18	79.1	76.1	86.3	0.07	0.09	-0.84	-1.04	-0.95	60.6
28	195.0		2.0	0.0	9.3	641.2	75.1	154.2	779.4	245.2	476.4	461.3	336.4	0.19	77.4	76.5	87.5	0.17	75.7	74.3	89.8	0.18	79.2	76.2	86.4	0.07	0.09	-0.84	-1.04	-0.95	62.8
29	196.0		1.9	0.0	9.4	644.1	75.2	154.4	785.1	244.0	477.5	467.2	335.2	0.19	77.5	76.6	87.5	0.17	75.8	74.4	90.0	0.18	79.4	76.3	86.7	0.06	0.09	-0.84	-1.04	-0.95	64.8
30	197.0		1.8	0.0	9.5	644.9	75.4	155.7	791.5	243.8	480.1	470.6	334.1	0.19	77.6	76.6	87.7	0.17	75.9	74.4	89.3	0.18	79.5	76.4	87.0	0.06	0.10	-0.85	-1.04	-0.96	67.0
31	198.0		1.5	0.0	9.5	645.0	75.5	155.1	797.2	243.5	482.9	472.5	333.7	0.19	77.6	76.7	87.7	0.17	76.0	74.5	89.7	0.18	79.6	76.5	87.1	0.06	0.10	-0.85	-1.05	-0.96	69.2
32	199.0		1.5	0.0	9.2	637.3	75.3	154.1	801.8	244.7	484.9	476.6	334.8	0.19	77.7	76.7	88.0	0.17	76.1	74.5	89.3	0.18	79.8	76.6	87.5	0.06	0.09	-0.86	-1.05	-0.96	71.6
33	200.0		1.4	0.0	8.7	627.8	75.3	151.0	802.8	245.8	487.6	479.0	335.0	0.19	77.7	76.8	88.2	0.17	76.1	74.6	89.8	0.18	79.9	76.7	87.5	0.06	0.09	-0.88	-1.07	-0.98	73.0
34	201.0		1.3	0.0	8.4	621.6	75.4	150.1	802.5	247.4	490.6	481.4	334.7	0.19	77.8	76.8	88.3	0.17	76.1	74.6	89.9	0.18	80.0	76.8	87.7	0.06	0.09	-0.89	-1.07	-0.99	74.4
35	202.0		1.2	0.0	7.9	618.2	75.4	148.2	800.4	248.2	492.9	484.3	334.2	0.19	77.8	76.9	88.4	0.17	76.1	74.7	89.9	0.18	80.1	76.9	87.8	0.06	0.09	-0.91	-1.08	-1.00	74.9
36	203.0		1.2	0.0	7.0	594.5	75.0	146.1	793.0	248.7	495.9	486.2	334.2	0.19	77.8	76.9	88.5	0.17	76.1	74.7	89.9	0.18	80.1	77.0	87.8	0.06	0.09	-0.98	-1.08	-1.01	74.6
37	204.0		1.1	0.0	6.2	574.3	75.4	142.4	779.0	248.3	498.5	488.7	333.9	0.19	77.7	76.9	88.4	0.17	76.2	74.8	89.6	0.18	80.2	77.1	87.7	0.07	0.09	-0.92	-1.07	-1.00	72.6
38	205.0		1.1	0.0	5.5	553.1	75.0	140.4	760.3	249.6	500.7	489.2	333.7	0.19	77.6	76.9	88.2	0.17	76.1	74.8	89.4	0.18	80.2	77.2	87.7	0.07	0.08	-0.93	-1.08	-1.02	69.7
39	206.0		1.0	0.1	4.9	533.8	75.3	136.5	739.7	249.9	502.4	490.2	333.4	0.19	77.5	76.9	88.3	0.17	76.2	74.8	89.3	0.18	80.3	77.3	87.6	0.06	0.08	-0.92	-1.07	-1.01	66.1
40	207.0		1.0	0.1	4.5	514.3	75.2	134.3	717.8	249.8	504.1	490.3	333.5	0.19	77.5	77.0	88.1	0.17	76.3</												

DATA 2024-09-17 PI 20305 RUN 2 MODEL 600 SINGLE BURN RATE
unit preburn data

Time acquisition minutes	Flue	Room	scale	Vacuum 1st hour	Right	Back	bottom	Top	Left
	temp	temp							
	°F	°F	lbs	in. Wc	°F	°F	°F	°F	°F
1	70,45	69,27	4,07	0,13	72,45	73,20	72,58	71,98	72,57
2	76,87	69,47	4,07	0,11	72,42	73,18	72,56	72,02	72,54
3	89,66	69,43	3,97	0,10	72,43	73,06	72,54	72,19	72,68
4	147,57	69,33	3,87	0,10	72,40	72,97	72,54	73,70	73,63
5	313,47	69,43	3,57	0,10	72,39	72,56	72,68	77,06	77,26
6	491,10	69,54	3,27	0,09	72,80	72,60	72,95	87,90	83,49
7	570,98	69,64	3,07	0,09	74,13	73,08	73,49	111,78	91,66
8	598,47	70,01	2,87	0,09	76,34	74,03	74,35	148,21	101,31
9	605,59	70,04	2,67	0,09	79,24	75,38	75,48	192,19	112,50
10	582,83	70,15	2,47	0,10	83,52	77,01	76,89	239,24	124,94
11	567,24	69,97	2,27	0,10	89,54	79,23	78,58	282,03	137,64
12	576,17	70,00	2,08	0,10	96,89	81,36	80,39	321,39	149,29
13	581,90	70,12	1,97	0,11	105,39	83,69	82,42	359,25	160,60
14	572,32	70,17	1,77	0,10	114,96	86,10	84,63	393,62	172,11
15	565,06	70,22	1,74	0,11	125,34	88,73	87,07	423,39	184,25
16	567,20	70,36	1,57	0,10	136,10	91,36	89,65	447,20	196,16
17	555,75	70,37	1,47	0,11	146,93	94,17	92,39	466,42	208,15
18	549,54	70,45	1,37	0,11	158,21	97,02	95,34	481,15	219,98
19	561,08	70,52	1,24	0,12	169,75	99,72	98,51	494,41	231,31
20	575,46	70,52	2,16	0,12	180,86	104,29	101,77	511,10	242,89
21	443,07	70,55	6,70	0,12	192,41	112,74	105,46	522,72	254,24
22	324,35	70,74	9,27	0,12	202,03	119,96	108,31	512,60	263,29
23	277,45	70,65	9,17	0,12	211,50	126,55	111,98	495,64	270,63
24	254,95	70,71	9,11	0,12	219,51	132,39	115,67	474,99	275,59
25	239,55	70,74	9,17	0,12	226,52	137,66	119,83	454,42	279,47
26	258,26	70,52	9,07	0,12	233,10	135,47	123,74	432,72	280,83
27	260,46	70,42	9,07	0,12	236,84	135,80	127,45	411,07	281,79
28	228,08	70,20	8,98	0,12	237,58	141,47	129,65	391,29	282,08
29	239,54	70,24	8,98	0,12	238,04	145,22	132,12	373,52	280,46
30	241,09	70,33	8,88	0,12	238,50	144,95	135,76	357,20	277,60
31	249,49	70,13	8,78	0,12	238,30	144,32	138,96	341,83	273,99
32	247,93	70,19	8,77	0,12	238,47	141,81	142,19	328,07	270,55
33	237,61	70,15	8,77	0,12	237,63	140,65	145,31	315,49	267,42
34	234,64	70,09	8,67	0,12	236,44	139,85	148,16	303,89	263,94
35	240,68	70,04	8,67	0,12	235,01	139,11	150,52	293,48	261,22
36	243,36	70,23	8,57	0,12	233,44	138,43	152,73	284,37	258,17
37	238,48	70,31	8,57	0,12	231,43	138,08	154,91	276,37	255,36
38	234,19	70,17	8,54	0,12	229,36	137,68	156,88	268,94	252,20
39	247,06	70,25	8,47	0,12	227,24	136,98	158,68	262,00	249,86
40	254,37	70,42	8,47	0,12	225,01	136,33	160,24	255,89	247,90
41	257,30	70,28	8,47	0,12	222,60	135,84	161,86	250,87	246,31
42	275,57	70,34	8,28	0,12	220,27	134,92	163,20	247,12	245,06
43	314,66	70,54	8,19	0,12	218,06	133,56	164,59	245,59	244,84
44	337,48	70,51	8,18	0,12	215,93	132,87	165,85	246,32	243,55
45	338,87	70,37	8,07	0,12	214,19	132,14	167,36	248,39	242,43
46	314,82	70,56	8,07	0,12	213,01	132,13	168,51	250,72	242,62
47	296,40	70,56	7,97	0,12	211,91	132,34	169,87	252,02	242,10
48	281,23	70,58	7,97	0,12	211,02	132,37	170,89	252,26	241,95
49	269,05	70,67	7,87	0,12	210,18	132,40	171,98	251,38	242,21
50	264,35	70,67	7,78	0,12	209,30	132,33	172,83	249,73	242,08
51	263,32	70,82	7,77	0,12	208,33	132,52	173,79	247,59	242,16
52	264,78	70,85	7,77	0,12	207,53	132,18	174,51	245,40	242,60
53	270,42	70,90	7,67	0,12	206,60	132,06	175,16	243,64	242,00
54	278,39	71,05	7,58	0,12	205,80	131,65	176,02	242,52	241,68
55	293,93	71,15	7,48	0,12	205,00	131,51	176,85	242,04	241,45
56	297,27	71,10	7,48	0,12	204,65	131,04	177,70	242,26	241,43
57	304,59	71,09	7,38	0,12	204,33	130,64	178,28	243,09	241,80
58	320,21	71,09	7,37	0,13	204,09	130,44	179,03	244,66	242,49
59	395,72	71,20	7,17	0,13	203,93	129,49	179,60	249,92	243,37
60	445,34	71,23	7,07	0,12	203,67	128,62	180,04	262,48	244,84
61	470,09	71,23	6,97	0,13	203,80	128,46	180,75	280,80	246,58
62	488,33	71,40	6,78	0,13	204,18	128,20	181,63	302,35	248,75
63	517,45	71,47	6,67	0,13	205,03	128,34	182,45	324,57	251,42
64	515,37	71,52	6,47	0,13	206,84	128,56	183,08	345,15	255,16
65	525,68	71,54	6,37	0,14	209,44	128,84	184,11	364,03	259,32
66	533,75	71,38	6,27	0,13	212,85	129,51	185,47	381,57	264,06
67	566,16	71,69	6,07	0,13	217,00	130,20	186,43	400,20	268,75
68	603,04	71,73	5,87	0,14	221,51	131,37	187,47	425,68	274,26
69	610,68	71,86	5,75	0,14	226,74	132,42	188,57	454,73	280,63
70	614,40	71,93	5,57	0,14	232,37	133,76	190,02	482,58	287,49
71	624,30	72,04	5,37	0,15	238,62	135,48	191,46	508,09	294,79
72	641,98	72,12	5,27	0,15	245,47	136,86	193,06	534,86	302,41
73	656,62	72,39	5,02	0,16	252,43	138,90	194,80	564,43	310,22
74	666,94	72,62	4,87	0,11	260,36	140,80	196,77	595,07	317,06
75	679,44	72,68	4,67	0,17	268,18	142,52	198,93	624,14	323,99
76	694,26	72,78	4,47	0,17	275,89	144,79	200,77	653,31	331,57
77	706,55	72,86	4,27	0,18	284,18	146,84	203,30	681,17	337,89
78	716,52	72,80	4,12	0,17	292,56	149,18	205,49	707,39	344,76
79	726,00	72,77	3,97	0,18	300,91	151,18	208,02	732,44	352,37

DATA 2024-09-17 PI 20305 RUN 2 MODEL 600 SINGLE BURN RATE
unit preburn data

80	733,81	72,85	3,77	0,15	309,48	154,00	210,89	756,32	357,89
81	741,16	73,00	3,57	0,19	317,99	156,74	213,83	778,35	364,72
82	749,27	73,09	3,37	0,20	326,39	159,69	216,55	797,35	370,91
83	746,21	72,97	3,27	0,21	334,60	162,88	219,31	813,44	377,59
84	737,14	73,07	3,07	0,20	342,97	165,31	222,30	826,63	384,49
85	721,46	73,28	2,88	0,21	351,56	167,89	225,44	835,24	389,83
86	703,90	73,36	2,77	0,17	360,01	170,46	228,40	838,33	395,74
87	687,88	73,28	2,67	0,21	367,96	173,95	231,44	836,96	400,67
88	672,11	73,11	2,57	0,17	376,02	176,51	234,38	832,95	405,88
89	650,65	73,09	2,47	0,22	383,95	178,78	237,06	825,96	411,07
90	630,81	73,18	2,37	0,22	391,58	181,66	240,70	813,79	415,10
91	612,95	73,10	2,29	0,22	398,63	184,58	243,89	799,38	419,50
92	595,59	73,06	2,27	0,22	405,43	186,44	247,01	782,20	423,74
93	581,07	73,19	2,17	0,23	412,08	189,10	250,60	763,79	426,39
94	567,25	73,32	2,15	0,22	417,77	191,19	254,30	745,01	428,58
95	554,20	73,24	2,07	0,22	422,48	194,22	258,27	726,44	430,17
96	541,87	73,18	1,97	0,23	427,24	196,25	261,59	708,01	432,81
97	530,74	73,21	1,97	0,22	431,49	199,03	265,87	690,35	434,24
98	519,58	73,28	1,87	0,22	435,60	201,45	268,95	673,13	436,56
99	509,49	73,40	1,87	0,23	439,09	204,44	273,27	656,91	436,92
100	499,92	73,41	1,77	0,23	442,24	207,10	277,22	641,42	438,02
101	491,23	73,42	1,77	0,22	445,02	209,53	281,46	626,54	438,73
102	481,33	73,52	1,72	0,23	447,68	211,51	284,78	612,30	440,25
103	471,80	73,47	1,67	0,22	450,34	213,74	288,98	598,98	440,82
104	464,47	73,48	1,67	0,22	452,24	216,16	293,51	586,25	441,02
105	460,25	73,39	1,57	0,22	453,41	218,71	298,05	574,39	440,78
106	454,99	73,38	1,57	0,22	454,53	220,77	302,18	563,42	441,39
107	449,73	73,44	1,57	0,22	455,34	222,99	306,19	553,24	441,11
108	444,69	73,30	1,47	0,09	455,75	225,17	310,21	543,78	440,88
109	436,96	73,41	1,47	0,08	455,94	226,22	314,61	535,02	440,65
110	430,43	73,69	1,47	0,08	455,95	228,24	317,75	526,55	440,65
111	425,62	73,70	1,37	0,08	455,91	229,74	321,96	518,62	439,35



Date: 2024-09-17

Manufacturer: SPANTHERM

Model: 600

Project #: PI 20305

Run: 2

Tech: MM

Reviewer: Y

- kindling 42LBS stand fire
- At 32LBS close door
- At 12LBS insert preload
- After 4 min close door
- At 14LBS insert load
- At 3 min 45 sec close door

TEST LOAD CONFIGURATION

Date: 2024-09-17

 Project #: PI 20305

 Manufacturer: SPANTHERM

 Run: 2

 Tech: MM
PRE / POST CHECKS

 Model: 600

 Reviewer: NP

Moisture Meter Calibration Check:

Equipment #	Time	12%	22%
EM-334	7100	o/k	o/k

Pre-Test

Post-Test

Facility Conditions:

Air Velocity from less than 2 feet

Smoke Capture Check (tunnel velocity)

Picture.....

0 (max50 Fpm)	0 (max50 Fpm)
o/k	NA
4 sides o/k	o/k

Wood Heater Conditions:

Date Wood Heater Stack Cleaned.....

Date Dilution Tunnel Cleaned.....

 Induced Draft Check (max 0.005 H₂O)

Traverse before ignition.....

2024-09-16
2024-09-16
o/k
o/k

Temperature System:

Ambient (65°-90°F)

o/k	°F
-----	----

Proportional Checks:

Thermocouple check.....

Pitot Clean.....

Pitot verification.....

Pictures for report.....

o/k	
o/k	
o/k	
Side	o/k
Coal bed	o/k
Load	o/k
Load in stove	o/k
Fuel adjustment	o/k
	o/k

Load Length 5/6 of firebox Length +/- 1 inch.....



Date: 2024-09-17

Project #: 2024-09-17

Leakage Checks Tunnel Samplers

Manufacturer: SPAntherm

Run: 2

Tech: JMN

Model: 600

Reviewer: JP

	System 1 st hour			System 1			System 2			Ambient	
Unplugged Flow Rate = .25cfm	Pre-Test ASTM (-15) CSA B415 (-5)	Post-Test (Max test)	Pre-Test ASTM (-15) CSA B415 (-5)	Post-Test (Max test)	Pre-Test ASTM (-15) CSA B415 (-5)	Post-Test (Max test)	Pre-Test ASTM (-15) CSA B415 (-5)	Post-Test (Max test)	Pre-Test ASTM (-15) CSA B415 (-5)	Post-Test (Max test)	
Vacuum (inches Hg.)	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	
Final 1 minute DGM (Liter)	0044 10 0043 10	0056 34	0071 31	0012 16	7728 28 10	7730 4 16	5326 28 36	5539 58 10			
Initial 1 minute DGM (Liter)	0044 10 0043 10	0056 34	0071 31	0012 16	7728 28 10	7730 4 16	5326 28 36	5539 58 10			
Change (Liter)	0	0	0	0	0	0	0	0	0	0	
Allowable leakage .04 x Sample rate or 0.28Lpm CSA B415 (0.56)											
Check OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	



Date: 2024.09.17

Project #: PT 20305

Manufacturer: Spentherm

Run: 2

Tech: M.H

Model: 600

Reviewer: [Signature]

Leakage Checks Flue Gas Sampler

Plugged Probe	Pre-Test	Post Test
Vacuum (inches Hg.)	-5	-5
Rotameter Reading (mm/min.)	0	0
Flow Rate (lpm)	1.5	1.5
Allowable (.02 x Sample Rate)	30	30
Check OK	OK	OK

Leakage Checks Pitot

Plugged Probe	Pre-Test 3 H2O static	Pre-Test 0.4-0.5 H2O velocity	Post Test 3 H2O Static	Post Test 0.4-0.5 H2O velocity
Vacuum (inches Hg.)	3	0.4	3	0.5
Check OK (no change after 15 sec.)	OK	OK	OK	OK



Date: 2024-09-17

Project #: PT 20305

Manufacturer: SPANTRON

Run: 2 Tech: M.M

Model: 600

Reviewer: [Signature]

Scale Type	Audit		Measured Weight
	Equipment #	Weight	
Platform	EM-090	44 lbs, Class F	44 lbs
Platform	EM-205	10.00 Kg, Class F	10.00 Kg
Wood	EM-090	44 lbs, Class F	44 lbs
Analytical	EM-335	100 mg, Class S	100 mg
Analytical	EM-129	200 g, Class S	200 g

LIMITS OF WEIGHT RANGES

ANALYTICAL SCALE: 50%-150% of dry filter weight, ± 0.1 mg
PLATFORM SCALE 20%-80% of ideal test load weight, ± 0.1 lbs or 1%
WOOD SCALE 20%-80% of ideal test load weight, ± 0.01 lbs or 1%

Date: 2024-09-17

 Manufacturer: Spantherm

 Model: 600

 Project #: PI 20305

 Run: 2

 Tech: A.M

 Reviewer: SP

FOR TUNNELS < 12 in

 Barometric pressure (P_{bar}) _____ (KPa.) Static pressure (P_q) _____ (inches w.c.)

Inside diameter: Port A _____ Port B _____

 Tunnel cross sectional area: .1963Ft²

Pitot tube type: Standard

Traverse Point	Position (inches)			Velocity Head Δp (inches H ₂ O)	Tunnel Temperature (°F)
Tunnel diameter	6 po	7 po	8 po		
A- Centroid	3.00	3.50	4	0.068	69.43
B - Centroid	3.00	3.50	4	0.068	70.61
A-1	0.40	0.50	0.50	0.055 0.058 mm	69.43
A-2	1.50	1.75	2	0.058	69.83
A-3	4.50	5.25	6	0.062	69.83
A-4	5.60	6.5	7.5	0.053	70.21
B-1	0.40	0.50	0.50	0.053	70.61
B-2	1.50	1.75	2	0.062	70.80
B-3	4.50	5.25	6	0.061	70.86
B-4	5.60	6.5	7.5	0.054	70.86
				AVERAGE	

Date: _____ Manufacturer: _____ Model: _____

Project #: _____ Run: _____ Tech: _____ Reviewer: _____

FOR TUNNELS 12 in

 Barometric pressure (P_{bar}) _____ (KPa.) Static pressure (P_q) _____ (inches w.c.)

Pitot tube type: Standard

Traverse Point	Position (inches)	Velocity Head Δp (inches H_2O)	Tunnel Temperature ($^{\circ}F$)
A Center	6		
B Center	6		
A-1	0.53		
A-2	1.75		
A-3	3.55		
A-4	8.45		
A-5	10.25		
A-6	11.47		
B-1	0.53		
B-2	1.75	N.A	
B-3	3.55		
B-4	8.45		
B-5	10.25		
B-6	11.47		

Date: 2024-09-17 Manufacturer: SpAtherm Model: 600
 Project #: 0120305 Run: 2 Tech: M.M. Reviewer: SD

Pre-Test (Adjust and Record)

	ZERO		SPAN		CAL. (Record Only)	
CO	0	0	3033	3000	1024	1000
Tolerance CO	0	+/- 0.02	0033	+/- 0.15	0.024	+/- 0.05
CO ₂	0	0	1800	1800	989	1000
Tolerance CO ₂	0	+/- 0.02	φ	+/- 0.5	0.11	+/- 0.5
O ₂ informative CSA B415 calculated value	na	na	na	na	na	na
	Actual	Should Be	Actual	Should Be	Actual	Should Be

Post Test (Record Only)

	Zero	Span	Cal.	Zero Drift	Limit	Span Drift	Limit	Cal. Drift	Limit	OK?	Not OK*
CO	0	3030	1018	0	0.02	0.003	0.15	0.006	0.05	✓	
CO ₂	0	1796	986	0	0.02	0.04	0.5	0.03	0.5	✓	

TEST DATA LOG

Date: 2024-09-17 Project #: PI 20308 Manufacturer: Spantherm Model: 600
Run: 2 Tech: M.M Reviewer: DP

RAW DRY GAS METER READINGS

Test	System 1 st hour	System 1	System 2	Blank
	Final (Liter)			
	0256.24	021122.00	773280.52	533954.88
	0244.24	020719.13 0227	772833.26	533630.51
	Initial (Liter)			

AMBIENT CONDITIONS

	Before	After
Barometer (kPa):	1010	1012
Dry Bulb (F):	72.1	74.2
Humidity (%):	59.3	58.3

FUEL DATA

 Date: 2024-09-17

 Manufacturer: SP Anthem

 Model: 600

 Project #: PI 20305

 Run: 2

 Tech: M.M

 Reviewer: SP
FUEL DESCRIPTION:

Type of wood:

PRE-TEST LOAD

Piece Size	Weight	Meter Moisture Content (% dry) *				
1 1/2 x 3 1/2 x 6 1/2 in.	0650 lbs.	196	194	196	196	193
1 1/2 x 3 1/2 x 6 1/2 in.	0666 lbs.	200	199	196	198	199
1 1/2 x 3 1/2 x 6 1/2 in.	0660 lbs.	200	200	201	201	200
1 1/2 x 3 1/2 x 6 1/2 in.	0666 lbs.	192	192	193	194	194
1 1/2 x 3 1/2 x 6 1/2 in.	0670 lbs.	195	194	191	191	190
1 1/2 x 3 1/2 x 6 1/2 in.	0662 lbs.	194	193	193	192	190
1 1/2 x 3 1/2 x 6 1/2 in.	0658 lbs.	193	193	194	193	192
1 1/2 x 3 1/2 x 6 1/2 in.	0666 lbs.	201	200	200	201	202
1 1/2 x 3 1/2 x 14 3/4 in.	1466 lbs.	200	200	203	206	203
1 1/2 x 3 1/2 x 14 3/4 in.	1452 lbs.	204	203	204	204	203
x x in.	lbs.					
x x in.	lbs.					
x x in.	lbs.					
x x in.	lbs.					
x x in.	lbs.					
x x in.	lbs.					
x x in.	lbs.					
x x in.	lbs.					
x x in.	lbs.					
x x in.	lbs.					
x x in.	lbs.					
x x in.	lbs.					
x x in.	lbs.					
x x in.	lbs.					

 TEST LOAD WEIGHT: 822 lbs

FUEL DATA

Date: 2024-09-17 Manufacturer: SpAtherm Model: 600
 Project #: PI 20305 Run: 2 Tech: M.H Reviewer: DP

FUEL DESCRIPTION:

Type of wood:

TEST LOAD

Piece Size			Weight		Meter Moisture Content (% dry)*				
1 1/2	X 3 1/2	X 1 1/4 3/4 in.	1680	lbs.	20	20	20	20	20
1 1/2	X 3 1/2	X 1 1/4 3/4 in.	172	lbs.	195	193	198	196	194
1 1/2	X 3 1/2	X 1 1/4 3/4 in.	1746	lbs.	20	20	20	20	20
	X	X in.		lbs.					
1 1/2	X 3 1/2	X 5 in.	0118	lbs.			20		
1 1/2	X 3 1/2	X 5 in.	0108	lbs.			20		
1 1/2	X 3 1/2	X 5 in.	0128	lbs.			196		
1 1/2	X 3 1/2	X 5 in.	0108	lbs.			194		
1 1/2	X 3 1/2	X 5 in.	0108	lbs.			192		
1 1/2	X 3 1/2	X 5 in.	0118	lbs.			198		
1 1/2	X 3 1/2	X 5 in.	0116	lbs.			193		
1 1/2	X 3 1/2	X 5 in.	0114	lbs.			198		
1 1/2	X 3 1/2	X 5 in.	0158	lbs.			197		
1 1/2	X 3 1/2	X 5 in.	0138	lbs.			198		
1 1/2	X 3 1/2	X 5 in.	0118	lbs.			20		
1 1/2	X 3 1/2	X 5 in.	0122	lbs.			20		
	X	X in.		lbs.					
	X	X in.		lbs.					
	X	X in.		lbs.					
	X	X in.		lbs.					
	X	X in.		lbs.					
	X	X in.		lbs.					
	X	X in.		lbs.					
	X	X in.		lbs.					
	X	X in.		lbs.					
	X	X in.		lbs.					
	X	X in.		lbs.					

TEST LOAD WEIGHT: 660 lbs Min 20%: Max 25%:

Date: 2024-09-16
Project #: PT 20305

DILUTION TUNNEL PARTICULATE SAMPLER DATA

Manufacturer: Spaetherm Model: 600
Run: 2 Tech: MM Reviewer: SP

TEST FILTERS						
SYSTEM 1 st hour				SYSTEM 1		
Pre-test Weight Record		Probe & Housing Number	Front & Back Filter Number	gaskets	Probe & Housing Number	Front & Back Filter Number
Date	Time					
2024-09-16	17:00	94 6389	0 2543	4 9495	18	123- 124
2024-09-17	9:00	94 6388	0 2544	4 9495	108 9462	0 2527
					108 9461	0 2527

TEST FILTERS						
SYSTEM 1 st hour				SYSTEM 1		
Post-test Weight Record		Probe & Housing Number	Front & Back Filter Number	gaskets	Probe & Housing Number	Front & Back Filter Number
Date	Time					
2024-09-17	14:00	94 6400	0 2550	4 9536	18	123- 124
2024-09-23	9:00	94 6389	0 2550	4 9525	108 9465	0 2529
2024-09-24	9:00	94 6389	0 2544	4 9521	108 9461	0 2529
2024-09-25	8:00	94 6389	0 2544	4 9521	108 9461	0 2529

DILUTION TUNNEL PARTICULATE SAMPLER DATA

Manufacturer: SPMtherm Model: 600 Tech: ML Reviewer: SP

Date: 2024-09-16 Project #: PT 20305

Run: 2

TEST FILTERS					
SYSTEM 2			SYSTEM 2		
Pre-test Weight Record	Probe & Housing Number	Front & Back Filter Number	gaskets	Blank Filter	
Date	Time				
2024-09-16	17:30	125-126	13	127	
2024-09-17	9:30	02523	4 1855	0 1281	
		02523	4 1854	0 1280	
TEST FILTERS					
SYSTEM 2			SYSTEM 2		
Post-test Weight Record	Probe & Housing Number	Front & Back Filter Number	gaskets	Blank Filter	End test time and date
Date	Time				
2024-09-17	14:30	125-126	13	127	2024-09-17
2024-09-23	9:30	02523	4 1899	0 1282	13:30
2024-09-24	9:30	02523	4 1880	0 1281	
2024-09-25	8:30	02523	4 1880	0 1281	
		02523	4 1880	0 1281	

APPENDIX 2: Proportionality results

Average	Average	Average	Average								Average
18,02	Inlet +	Inlet +	Inlet +								0,273
	Outlet	Outlet	Outlet	Average	Average	Average	#1st Hr	#1	#2		
Tunnel	Temp.	Temp.	Temp.	98,89	102,34	98,09	System 1st Hr	System 1	System 2		SQRT
Velocity	Meter 1st Hr	Meter 1	Meter 2	Proportional Rates			Vol.Std.	Vol.Std.	Vol.Std.		Delta-P
				PR1st hour	PR1	PR2				Time	
Ft/Sec	Deg. R	Deg. R	Deg. R	%	%	%	(ft3)	(ft3)	(ft3)	min	(in H2O)2
18,056	532,778	531,7	531,7				0,182	0,161	0,178	0	0,272
18,064	532,778	531,8	531,7	101,5	106,5	102,6	0,182	0,161	0,178	1	0,268
18,524	532,838	531,8	531,9	105,1	110,3	105,9	0,182	0,161	0,178	2	0,267
17,895	532,837	531,8	531,9	106,1	111,4	107,2	0,182	0,161	0,178	3	0,261
18,141	532,862	531,7	532,0	99,7	104,8	100,8	0,182	0,161	0,178	4	0,271
17,231	532,919	531,7	532,1	104,5	109,8	105,9	0,182	0,161	0,178	5	0,258
17,949	532,922	531,7	532,2	100,4	105,4	101,3	0,182	0,161	0,178	6	0,269
18,141	533,011	531,7	532,4	99,5	104,3	100,4	0,182	0,161	0,178	7	0,272
18,088	533,088	531,8	532,6	99,8	104,6	100,6	0,182	0,161	0,178	8	0,271
18,040	533,182	531,9	532,7	100,1	105,1	101,2	0,182	0,161	0,178	9	0,270
18,111	533,253	532,0	533,0	99,8	105,0	100,7	0,182	0,161	0,178	10	0,271
18,627	533,356	532,0	533,1	97,1	102,2	98,1	0,182	0,161	0,178	11	0,278
18,179	533,435	532,0	533,2	99,6	104,6	100,6	0,182	0,161	0,178	12	0,272
18,213	533,464	532,0	533,3	99,1	104,0	99,8	0,182	0,161	0,178	13	0,272
18,635	533,485	532,0	533,4	97,3	102,3	98,4	0,182	0,161	0,178	14	0,278
17,435	533,529	532,1	533,6	103,9	109,4	105,0	0,182	0,161	0,178	15	0,260
17,915	533,522	532,1	533,8	101,5	106,8	102,6	0,182	0,161	0,178	16	0,267
17,974	533,591	532,2	533,9	101,0	106,2	101,9	0,182	0,161	0,178	17	0,268
18,157	533,646	532,3	534,0	100,0	105,1	101,0	0,182	0,161	0,178	18	0,271
18,449	533,632	532,3	534,1	98,2	103,2	99,2	0,182	0,161	0,178	19	0,275
17,698	533,694	532,3	534,2	102,7	108,0	103,8	0,182	0,161	0,178	20	0,264
17,975	533,752	532,2	534,2	101,0	106,3	101,9	0,182	0,161	0,178	21	0,268
17,710	533,752	532,3	534,4	102,5	107,9	103,2	0,182	0,161	0,177	22	0,264
18,292	533,779	532,3	534,4	99,4	104,6	100,2	0,182	0,161	0,177	23	0,272
18,355	533,864	532,2	534,5	99,0	104,1	99,7	0,182	0,161	0,177	24	0,273
17,063	533,916	532,2	534,5	106,6	112,5	107,8	0,182	0,162	0,177	25	0,254
17,515	533,947	532,2	534,6	103,6	109,5	104,9	0,182	0,162	0,178	26	0,261
18,407	533,926	532,2	534,7	98,7	103,8	99,6	0,182	0,162	0,178	27	0,274
18,149	533,923	532,3	534,8	99,9	105,2	100,7	0,182	0,162	0,178	28	0,271
17,703	533,995	532,4	534,9	102,3	107,6	103,4	0,181	0,161	0,178	29	0,264
18,227	534,058	532,5	535,1	99,7	104,7	100,4	0,182	0,161	0,177	30	0,272
17,222	534,069	532,6	535,2	105,1	110,6	106,1	0,182	0,161	0,177	31	0,257
18,041	534,110	532,6	535,3	100,0	104,9	100,3	0,182	0,161	0,177	32	0,270
17,921	534,148	532,6	535,3	100,0	105,3	100,8	0,182	0,161	0,177	33	0,269
18,104	534,208	532,7	535,4	98,9	104,2	99,7	0,182	0,161	0,177	34	0,272
17,912	534,339	532,8	535,5	99,2	104,6	100,3	0,181	0,161	0,177	35	0,270
17,650	534,427	532,9	535,7	100,4	105,6	101,3	0,182	0,161	0,178	36	0,266
18,230	534,504	533,0	535,9	96,9	101,9	97,4	0,182	0,161	0,177	37	0,275
18,313	534,562	533,2	536,0	96,1	101,0	96,7	0,182	0,161	0,177	38	0,277
18,286	534,610	533,3	536,1	95,7	100,7	96,7	0,181	0,161	0,177	39	0,277
18,373	534,679	533,4	536,3	95,1	100,0	95,7	0,182	0,161	0,177	40	0,279
17,373	534,765	533,5	536,4	100,2	105,6	101,1	0,181	0,161	0,177	41	0,264
17,533	534,853	533,6	536,6	99,2	104,3	99,6	0,182	0,161	0,177	42	0,267
17,960	534,934	533,8	536,7	96,6	101,8	97,4	0,181	0,161	0,177	43	0,273
17,514	534,983	533,9	536,8	99,0	104,0	99,5	0,181	0,161	0,177	44	0,267
18,110	535,065	534,0	537,0	95,4	100,4	96,2	0,181	0,161	0,177	45	0,276
17,543	535,118	534,0	537,1	98,5	103,4	99,2	0,181	0,161	0,177	46	0,268
18,333	535,172	534,1	537,2	94,1	98,9	94,8	0,181	0,161	0,177	47	0,280
18,140	535,229	534,2	537,3	95,1	99,9	95,8	0,181	0,161	0,177	48	0,277
17,769	535,271	534,3	537,4	96,9	101,9	97,6	0,181	0,161	0,177	49	0,272
17,819	535,322	534,3	537,5	96,6	101,5	97,3	0,181	0,161	0,177	50	0,272
18,364	535,349	534,4	537,6	93,6	98,5	94,1	0,181	0,161	0,177	51	0,281
18,166	535,388	534,5	537,7	94,5	99,6	95,2	0,181	0,161	0,177	52	0,278
17,919	535,454	534,5	537,7	95,6	100,5	96,3	0,181	0,161	0,177	53	0,274
18,393	535,479	534,6	537,9	93,3	97,9	93,9	0,181	0,161	0,177	54	0,282
18,030	535,522	534,7	538,0	95,0	99,9	95,8	0,181	0,161	0,177	55	0,276
17,971	535,548	534,8	538,1	95,4	100,2	95,8	0,181	0,161	0,177	56	0,275
18,132	535,588	534,8	538,1	94,1	99,1	94,5	0,181	0,161	0,176	57	0,278
18,313	535,591	534,9	538,2	93,4	98,1	93,8	0,181	0,161	0,176	58	0,281
17,706	535,607	535,0	538,3	96,5	101,5	96,9	0,181	0,161	0,176	59	0,272
18,255	535,636	535,0	538,4	93,6	98,3	94,1	0,181	0,161	0,176	60	0,280
18,244	535,430	535,1	538,5	0,0	98,6	94,1	0,000	0,161	0,176	61	0,280
18,233	535,286	535,1	538,5	0,0	98,3	94,0	0,000	0,161	0,176	62	0,280
17,457	535,233	535,2	538,5	0,0	102,6	98,6	0,000	0,161	0,177	63	0,268
18,286	535,218	535,2	538,5	0,0	98,0	94,1	0,000	0,161	0,177	64	0,281
18,107	535,211	535,2	538,5	0,0	98,8	94,7	0,000	0,161	0,177	65	0,278
17,917	535,208	535,3	538,5	0,0	99,8	95,3	0,000	0,161	0,176	66	0,275
18,232	535,212	535,3	538,5	0,0	97,9	93,6	0,000	0,161	0,176	67	0,280
18,075	535,239	535,3	538,5	0,0	98,8	94,6	0,000	0,161	0,176	68	0,278
17,822	535,267	535,3	538,5	0,0	100,0	95,8	0,000	0,161	0,177	69	0,274
18,240	535,297	535,4	538,6	0,0	97,6	93,5	0,000	0,161	0,176	70	0,281
17,759	535,317	535,4	538,6	0,0	100,4	96,0	0,000	0,161	0,176	71	0,273
17,577	535,338	535,4	538,6	0,0	101,4	97,0	0,000	0,161	0,176	72	0,271
18,234	535,367	535,4	538,6	0,0	97,8	93,4	0,000	0,161	0,176	73	0,281
17,986	535,396	535,5	538,7	0,0	98,9	94,9	0,000	0,161	0,177	74	0,277
18,165	535,427	535,5	538,7	0,0	97,9	93,7	0,000	0,161	0,177	75	0,280
18,288	535,442	535,5	538,7	0,0	97,3	93,0	0,000	0,161	0,176	76	0,282
18,271	535,473	535,6	538,7	0,0	97,2	93,3	0,000	0,161	0,177	77	0,282
18,021	535,494	535,6	538,8	0,0	98,4	94,4	0,000	0,161	0,177	78	0,278

18,255	535,506	535,6	538,8	0,0	97,0	93,1	0,000	0,161	0,177	79	0,282
18,008	535,533	535,6	538,8	0,0	98,6	94,1	0,000	0,161	0,176	80	0,278
18,238	535,574	535,7	538,8	0,0	97,0	92,8	0,000	0,161	0,176	81	0,282
18,060	535,596	535,7	538,9	0,0	98,1	93,7	0,000	0,161	0,176	82	0,279
17,820	535,626	535,7	538,9	0,0	99,2	95,1	0,000	0,161	0,176	83	0,275
18,130	535,636	535,8	538,9	0,0	97,5	93,4	0,000	0,161	0,177	84	0,280
18,104	535,664	535,8	538,9	0,0	97,5	93,3	0,000	0,161	0,176	85	0,280
18,159	535,699	535,8	539,0	0,0	97,2	93,2	0,000	0,161	0,176	86	0,281

Average	Average	Average	Average								Average
16,71	Inlet +	Inlet +	Inlet +								0,256
	Outlet	Outlet	Outlet	Average	Average	Average	#1st Hr	#1	#2		
	Temp.	Temp.	Temp.	99,25	102,43	99,09	System 1st Hr	System 1	System 2		SQRT
Velocity	Meter 1st Hr	Meter 1	Meter 2	Proportional Rates			Vol.Std.	Vol.Std.	Vol.Std.		Delta-P
				PR1st hour	PR1	PR2				Time	
Ft/Sec	Deg. R	Deg. R	Deg. R	%	%	%	(ft3)	(ft3)	(ft3)	min	(in H2O)2
16,917	535,102	533,3	533,6				0,182	0,162	0,177	0	0,256
15,579	535,102	533,5	533,6	106,8	111,9	108,4	0,182	0,162	0,178	1	0,236
16,839	535,196	533,6	533,7	103,1	107,8	105,1	0,182	0,162	0,178	2	0,250
17,414	535,228	533,6	533,8	103,3	108,1	105,2	0,182	0,161	0,179	3	0,254
16,783	535,286	533,7	534,0	100,3	104,9	102,0	0,182	0,162	0,178	4	0,253
16,988	535,316	533,7	534,1	98,4	103,0	100,2	0,182	0,161	0,178	5	0,257
16,319	535,395	533,8	534,3	102,4	107,1	104,1	0,182	0,161	0,178	6	0,247
16,306	535,459	533,8	534,5	102,4	107,1	103,7	0,182	0,161	0,178	7	0,247
16,661	535,544	533,9	534,6	100,3	104,9	101,9	0,182	0,161	0,178	8	0,252
16,131	535,605	533,9	534,8	103,8	108,6	105,3	0,182	0,161	0,178	9	0,244
17,026	535,668	534,0	535,0	98,6	103,2	100,0	0,182	0,161	0,178	10	0,257
15,605	535,754	534,0	535,2	107,8	113,1	109,7	0,182	0,162	0,178	11	0,235
16,870	535,827	534,0	535,3	100,0	104,6	101,8	0,182	0,162	0,178	12	0,254
16,062	535,936	534,1	535,5	105,2	110,1	106,9	0,182	0,161	0,178	13	0,242
17,154	536,016	534,2	535,7	98,5	103,2	99,9	0,182	0,162	0,178	14	0,258
16,773	536,102	534,3	535,9	100,9	105,8	102,4	0,182	0,162	0,178	15	0,252
15,566	536,182	534,3	536,1	108,6	113,7	110,1	0,182	0,161	0,178	16	0,234
17,102	536,217	534,3	536,2	98,9	103,6	100,1	0,182	0,161	0,177	17	0,257
16,585	536,314	534,4	536,3	102,0	106,9	103,6	0,182	0,161	0,177	18	0,249
16,567	536,352	534,4	536,5	102,1	107,1	103,8	0,182	0,161	0,178	19	0,249
16,029	536,431	534,5	536,6	105,7	111,0	107,3	0,182	0,162	0,178	20	0,241
16,505	536,496	534,5	536,8	102,6	107,6	104,2	0,182	0,162	0,178	21	0,248
16,423	536,572	534,6	536,9	102,9	107,8	104,4	0,182	0,161	0,178	22	0,247
17,124	536,642	534,6	537,0	99,0	103,7	100,6	0,182	0,161	0,178	23	0,257
16,983	536,730	534,7	537,2	99,5	104,6	101,2	0,181	0,162	0,178	24	0,255
16,901	536,781	534,7	537,3	99,9	105,0	101,7	0,181	0,162	0,178	25	0,254
16,466	536,821	534,8	537,4	103,1	108,1	104,4	0,182	0,162	0,177	26	0,247
17,181	536,847	534,9	537,6	98,4	103,4	100,0	0,181	0,162	0,177	27	0,258
16,419	536,923	535,0	537,7	102,8	107,8	104,6	0,181	0,161	0,178	28	0,247
16,083	537,017	535,1	537,8	105,1	110,1	106,6	0,181	0,161	0,178	29	0,242
16,313	537,088	535,1	537,9	103,9	108,7	105,3	0,182	0,161	0,177	30	0,245
17,429	537,123	535,2	538,1	97,1	101,8	98,6	0,181	0,161	0,177	31	0,262
16,218	537,189	535,3	538,2	104,2	109,0	105,7	0,182	0,161	0,177	32	0,244
16,798	537,231	535,3	538,3	100,0	104,8	101,6	0,181	0,161	0,177	33	0,253
16,549	537,291	535,4	538,4	101,4	106,3	102,9	0,181	0,161	0,177	34	0,249
17,151	537,358	535,4	538,5	97,6	102,2	98,6	0,181	0,161	0,177	35	0,259
16,668	537,341	535,4	538,5	100,0	104,8	101,5	0,181	0,161	0,177	36	0,252
16,944	537,309	535,5	538,6	97,9	102,7	99,1	0,182	0,161	0,177	37	0,257
16,799	537,282	535,5	538,7	98,2	103,0	99,6	0,181	0,161	0,177	38	0,255
16,057	537,238	535,5	538,8	102,2	107,3	103,3	0,181	0,161	0,177	39	0,245
17,280	537,207	535,6	538,9	94,6	99,3	95,8	0,181	0,161	0,177	40	0,264
16,780	537,188	535,6	538,9	96,9	101,6	98,3	0,181	0,161	0,177	41	0,257
16,752	537,182	535,6	538,9	96,6	101,5	98,1	0,181	0,161	0,177	42	0,257
16,919	537,187	535,7	539,0	95,6	100,0	96,8	0,182	0,161	0,177	43	0,260
17,064	537,165	535,7	539,1	94,2	98,8	95,5	0,181	0,161	0,177	44	0,263
16,607	537,175	535,7	539,2	96,7	101,4	98,0	0,182	0,161	0,177	45	0,256
16,777	537,140	535,8	539,2	95,4	100,1	96,4	0,182	0,161	0,177	46	0,259
17,265	537,155	535,8	539,3	92,5	97,0	93,7	0,181	0,161	0,177	47	0,267
16,869	537,107	535,8	539,3	94,5	99,3	95,8	0,181	0,162	0,177	48	0,261
17,127	537,097	535,8	539,4	93,1	97,6	94,0	0,181	0,161	0,177	49	0,265
17,051	537,106	535,8	539,4	93,3	97,8	94,4	0,181	0,161	0,177	50	0,264
16,338	537,086	535,8	539,4	97,5	102,0	98,7	0,182	0,161	0,177	51	0,253
16,716	537,054	535,8	539,5	95,1	99,6	96,2	0,182	0,161	0,177	52	0,259
17,021	537,037	535,8	539,5	93,2	97,7	94,3	0,182	0,161	0,177	53	0,264
16,695	537,004	535,9	539,5	95,0	99,5	95,9	0,182	0,161	0,177	54	0,259
16,097	536,977	535,9	539,6	98,4	103,2	99,3	0,182	0,161	0,177	55	0,250
16,624	536,976	535,9	539,6	95,2	99,8	96,4	0,181	0,161	0,177	56	0,258
17,129	536,984	536,0	539,7	92,4	96,8	93,5	0,181	0,161	0,177	57	0,266
17,058	536,988	536,1	539,7	92,7	97,2	93,8	0,181	0,161	0,177	58	0,265
16,603	537,007	536,1	539,8	95,1	99,8	96,5	0,181	0,161	0,177	59	0,258
17,111	537,015	536,1	539,9	92,2	96,6	93,6	0,181	0,161	0,177	60	0,266
17,034	536,801	536,2	539,9	0,0	97,1	93,5	0,000	0,161	0,177	61	0,265
17,090	536,705	536,3	540,0	0,0	96,6	93,1	0,000	0,161	0,176	62	0,266
16,327	536,660	536,4	540,0	0,0	101,1	97,8	0,000	0,161	0,177	63	0,254
16,062	536,643	536,4	540,0	0,0	102,7	99,1	0,000	0,161	0,177	64	0,250
16,891	536,652	536,5	540,1	0,0	97,7	94,4	0,000	0,161	0,177	65	0,263
16,943	536,647	536,6	540,1	0,0	97,2	93,9	0,000	0,161	0,177	66	0,264
16,443	536,677	536,6	540,1	0,0	100,1	96,9	0,000	0,161	0,177	67	0,256
16,565	536,671	536,7	540,1	0,0	99,2	95,9	0,000	0,161	0,177	68	0,258
17,140	536,688	536,7	540,2	0,0	96,0	92,6	0,000	0,161	0,177	69	0,267
17,174	536,681	536,8	540,2	0,0	95,7	92,4	0,000	0,161	0,177	70	0,268
16,028	536,698	536,7	540,2	0,0	102,7	99,1	0,000	0,161	0,177	71	0,250
16,861	536,701	536,7	540,1	0,0	97,5	94,1	0,000	0,161	0,177	72	0,263
17,105	536,695	536,7	540,1	0,0	95,9	92,7	0,000	0,161	0,177	73	0,267
16,854	536,727	536,8	540,2	0,0	97,3	94,1	0,000	0,161	0,177	74	0,263
16,602	536,740	536,8	540,2	0,0	98,8	95,4	0,000	0,161	0,177	75	0,259
17,102	536,766	536,9	540,2	0,0	95,9	92,7	0,000	0,161	0,177	76	0,267
17,153	536,779	536,9	540,3	0,0	95,4	92,3	0,000	0,161	0,177	77	0,268
16,965	536,801	537,0	540,3	0,0	96,4	93,4	0,000	0,161	0,177	78	0,265

15,815	536,794	537,0	540,4	0,0	103,4	100,1	0,000	0,161	0,177	79	0,247
16,806	536,808	537,1	540,4	0,0	97,3	94,2	0,000	0,161	0,177	80	0,262
17,197	536,821	537,1	540,4	0,0	95,2	91,7	0,000	0,161	0,177	81	0,269
16,502	536,837	537,1	540,4	0,0	98,9	95,7	0,000	0,161	0,177	82	0,258

APPENDIX 3: Calibration data



Instrumentation
Saint-Laurent inc.
Certified ISO 17025



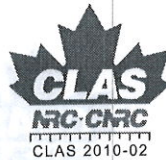
80 rue de la montagne
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Fax: (450) 473-5207
info@instrumentationsaintlaurent.com

CALIBRATION CERTIFICATE

CERTIFICATE #	CE-EM-006 2024-05-23		
CLIENT		CALIBRATION SPECIFICATION	
Company:	Services Polytests Inc	Service Procedure:	4IN9106
Address:	695 B rue Gaudette	Required Accuracy:	+/-0.25"H2O
	St-Jean-sur-Richelieu, Québec, J3B 7S7	Calibration Frequency:(days)	365
INSTRUMENT SPECIFICATION			
Instrument Type:	Indicator	Input Type:	Pression
Manufacturer:	Dwyer	Output Type:	Digitale
Model #:	MS-321-LCD	Measurement Type:	Pressure
Serial #:	E47U020014	Range:	0-0.5"H2O
Location:	N.A.	Version:	Machine: N.A.
CALIBRATORS SPECIFICATION			
Calibrator:	Fluke Pression	Certification #:	2023009508
Serial #:	3330050	Certification Date:	2023-11-23
Certified by:	Alpha Controls	Next Certification:	2024-11-23
Comments:			
Calibrator:	Fluke 744	Certification #:	AC24041903
Serial #:	8180008	Certification Date:	2024-05-09
Certified by:	alpha Controls	Next Certification:	2025-05-09
Comments:			



Instrumentation
Saint-Laurent inc.
Certified ISO 17025



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CALIBRATION CERTIFICATE

CERTIFICATE #	CE-EM-006 2024-05-23
---------------	----------------------

CALIBRATION RESULTS							
Entry Source	Given Value	Initial Value	Ini. Deviation Error	Final Value	Fin. Deviation Error	Accuracy	Uncertainty
Conformity	Comment						
0.0000 "H2O	0.000 "H2O	-0.002 "H2O	-0.002 "H2O	-0.002 "H2O	-0.002 "H2O	+/-0.25 "H2O	± 0.5 "H2O
Compliant	Verification of the indicator						
0.2500 "H2O	0.250 "H2O	0.247 "H2O	-0.003 "H2O	0.247 "H2O	-0.003 "H2O	+/-0.25 "H2O	± 0.5 "H2O
Compliant	Verification of the indicator						
0.5000 "H2O	0.500 "H2O	0.500 "H2O	0.000 "H2O	0.500 "H2O	0.000 "H2O	+/-0.25 "H2O	± 0.5 "H2O
Compliant	Verification of the indicator						
0.7500 "H2O	0.750 "H2O	0.750 "H2O	0.000 "H2O	0.750 "H2O	0.000 "H2O	+/-0.25 "H2O	± 0.5 "H2O
Compliant	Verification of the indicator						
1.0000 "H2O	1.000 "H2O	0.996 "H2O	-0.004 "H2O	0.996 "H2O	-0.004 "H2O	+/-0.25 "H2O	± 0.5 "H2O
Compliant	Verification of the indicator						
0.7500 "H2O	0.7500 "H2O	0.750 "H2O	0.000 "H2O	0.750 "H2O	0.000 "H2O	+/-0.25 "H2O	± 0.5 "H2O
Compliant	Verification of the indicator						
0.5000 "H2O	0.5000 "H2O	0.500 "H2O	0.000 "H2O	0.500 "H2O	0.000 "H2O	+/-0.25 "H2O	± 0.5 "H2O
Compliant	Verification of the indicator						
0.2500 "H2O	0.2500 "H2O	0.247 "H2O	-0.0030 "H2O	0.247 "H2O	-0.0030 "H2O	+/-0.25 "H2O	± 0.5 "H2O
Compliant	Verification of the indicator						
0.0000 "H2O	0.0000 "H2O	-0.002 "H2O	-0.0020 "H2O	-0.002 "H2O	-0.0020 "H2O	+/-0.25 "H2O	± 0.5 "H2O
Compliant	Verification of the indicator						
0.0000 "H2O	0.0000 V.DC.	0.0021 V.DC.	+0.0021 V.DC.	0.0021 V.DC.	+0.0021 V.DC.	+/-0.25 V.DC.	0.5 V.DC.
Compliant	Verification of the analogic output						
0.2500 "H2O	2.5000 V.DC.	2.4823 V.DC.	-0.0177 V.DC.	2.4823 V.DC.	-0.0177 V.DC.	+/-0.25 V.DC.	0.5 V.DC.
Compliant	Verification of the analogic output						
0.5000 "H2O	5.0000 V.DC.	4.9896 V.DC.	-0.0104 V.DC.	4.9896 V.DC.	-0.0104 V.DC.	+/-0.25 V.DC.	0.5 V.DC.
Compliant	Verification of the analogic output						
0.7500 "H2O	7.5000 V.DC.	7.4895 V.DC.	-0.0105 V.DC.	7.4895 V.DC.	-0.0105 V.DC.	+/-0.25 V.DC.	0.5 V.DC.
Compliant	Verification of the analogic output						
1.0000 "H2O	10.0000 V.DC.	9.9608 V.DC.	-0.0392 V.DC.	9.9608 V.DC.	-0.0392 V.DC.	+/-0.25 V.DC.	0.5 V.DC.
Compliant	Verification of the analogic output						
0.7500 "H2O	7.5000 V.DC.	7.4892 V.DC.	-0.0108 V.DC.	7.4892 V.DC.	-0.0108 V.DC.	+/-0.25 V.DC.	0.5 V.DC.
Compliant	Verification of the analogic output						
0.5000 "H2O	5.0000 V.DC.	4.9893 V.DC.	-0.0107 V.DC.	4.9893 V.DC.	-0.0107 V.DC.	+/-0.25 V.DC.	0.5 V.DC.
Compliant	Verification of the analogic output						
0.2500 "H2O	2.5000 V.DC.	2.4825 V.DC.	-0.0175 V.DC.	2.4825 V.DC.	-0.0175 V.DC.	+/-0.25 V.DC.	0.5 V.DC.
Compliant	Verification of the analogic output						
0.0000 "H2O	0.0000 V.DC.	0.0022 V.DC.	+0.0022 V.DC.	0.0022 V.DC.	+0.0022 V.DC.	+/-0.25 V.DC.	0.5 V.DC.
Compliant	Verification of the analogic output						

Environmental Conditions: Temperature: 22 °C Humidity: 47 %RH

Comments:

5F09106

Version: 2024.04.05



Instrumentation
Saint-Laurent inc.
Certified ISO 17025



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CALIBRATION CERTIFICATE

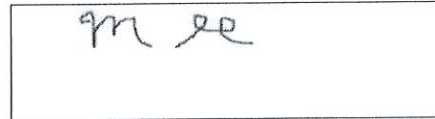
CERTIFICATE #	CE-EM-006 2024-05-23
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CALIBRATION DATE/ISSUANCE OF CERTIFICATE	
Calibration Date:	2024-05-23
Next Calibration:	2025-05-23
Certificate Date:	2024-05-23

CALIBRATION CONFORMITY		
	Before	After
Compliant:	X	X
Non Compliant:		

- Instrumentation St. Laurent Inc. Certify that the above instrument, meets or exceeds the specifications established by the manufacturer. The company's quality system complies with the requirements of ISO 17025 :2017 and the standards used to perform the calibration is traceable to NRC and / or NIST.
- Reported uncertainties represent a 95 % of confidence level assuming a normal distribution $k=2$.
- The declaration of conformity does not include Instrumentation St-Laurent Inc. uncertainty measurement. Decision rule is based on binary statement for simple acceptance rule against ILAC G8 standard and test tolerance limits are based on customer specifications, unless otherwise specified.
- The results presented in this certificate relate only to objects subject to calibration.
- It is the customer's responsibility to ensure that calibrated equipment meets its intended use.
- The date format used in this certificate is: YYYY-MM-DD.

Assessment Service Calibration Laboratory (ASCL) of the National Research Council of Canada (NRC) has assessed and certified calibration laboratory's ability and traceability to the International System of Units (SI) or to standards acceptable according to ASCL. This calibration certificate is issued in accordance with the terms of ASCL certification and accreditation requirements of the Standards Council of Canada (SCC). ASCL and SCC does not guarantee the accuracy of individual calibrations by accredited laboratories.

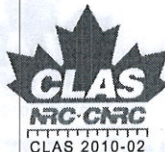


Marc Gingras - Technicien

[Signature] May 28th 2024



Instrumentation
Saint-Laurent inc.
Certified ISO 17025



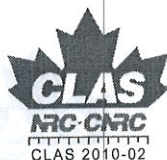
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Phone: (450) 473-6169
Fax: (450) 473-5207
info@instrumentationsaintlaurent.com

CALIBRATION CERTIFICATE

CERTIFICATE #		CE-EM-015 2024-05-23	
CLIENT		CALIBRATION SPECIFICATION	
Company:	Services Polytests Inc	Service Procedure:	4IN9101
Address:	695 B rue Gaudette	Required Accuracy:	+/- 2°C
	St-Jean-sur-Richelieu, Québec, J3B 7S7	Calibration Frequency:(days)	365
INSTRUMENT SPECIFICATION			
Instrument Type:	Recorder	Input Type:	Temp
Manufacturer:	Keithley	Output Type:	Digitale
Model #:	7700	Measurement Type:	Temperature
Serial #:	1213648	Range:	Divers
Location:	N/A	Version:	Machine: N.A.
CALIBRATORS SPECIFICATION			
Calibrator:	Fluke 744	Certification #:	AC24041903
Serial #:	8180008	Certification Date:	2024-05-09
Certified by:	alpha Controls	Next Certification:	2025-05-09
Comments:			



Instrumentation
Saint-Laurent inc.
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CALIBRATION CERTIFICATE

CERTIFICATE #		CE-EM-015 2024-05-23							
CALIBRATION RESULTS									
Entry Source	Given Value	Initial Value	Ini. Deviation Error	Final Value	Fin. Deviation Error	Accuracy	Uncertainty		
Conformity	Comment								
-190.0 °C	-310.0 °F	-311.6 °F	-1.6 °F	-311.6 °F	-1.6 °F	+/- 2.0 °F	+/- 0.4 °F		
Compliant	Input#1TypeK								
0.0 °C	32.0 °F	31.2 °F	-0.8 °F	31.2 °F	-0.8 °F	+/- 2.0 °F	+/- 0.3 °F		
Compliant	Input#1TypeK								
750.0 °C	1382.0 °F	1381.3 °F	-0.7 °F	1381.3 °F	-0.7 °F	+/- 2.0 °F	+/- 0.3 °F		
Compliant	Input#1TypeK								
100.0 °C	212.0 °F	211.5 °F	-0.5 °F	211.5 °F	-0.5 °F	+/- 2.0 °F	+/- 0.3 °F		
Compliant	Input#2 TypeK								
100.0 °C	212.0 °F	211.5 °F	-0.5 °F	211.5 °F	-0.5 °F	+/- 2.0 °F	+/- 0.3 °F		
Compliant	Input#3 TypeK								
100.0 °C	212.0 °F	211.6 °F	-0.4 °F	211.6 °F	-0.4 °F	+/- 2.0 °F	+/- 0.3 °F		
Compliant	Input#4 TypeK								
100.0 °C	212.0 °F	211.5 °F	-0.5 °F	211.5 °F	-0.5 °F	+/- 2.0 °F	+/- 0.3 °F		
Compliant	Input#5TypeK								
100.0 °C	212.0 °F	211.6 °F	-0.4 °F	211.6 °F	-0.4 °F	+/- 2.0 °F	+/- 0.3 °F		
Compliant	Input#6TypeK								
100.0 °C	212.0 °F	211.5 °F	-0.5 °F	211.5 °F	-0.5 °F	+/- 2.0 °F	+/- 0.3 °F		
Compliant	Input#7TypeK								
5.000 V.DC.	5.000 V.DC.	5.000 V.DC.	0.000 V.DC.	5.000 V.DC.	0.000 V.DC.	+/- 0.500	0.1 V.DC.		
Compliant	Input#8. VDC								
100.0 °C	212.0 °F	211.8 °F	-0.2 °F	211.8 °F	-0.2 °F	+/- 2.0 °F	+/- 0.2 °F		
Compliant	Input#9TypeJ								
100.0 °C	212.0 °F	211.9 °F	-0.1 °F	211.9 °F	-0.1 °F	+/- 2.0 °F	+/- 0.2 °F		
Compliant	Input#10TypeJ								
100.0 °C	212.0 °F	211.7 °F	-0.3 °F	211.7 °F	-0.3 °F	+/- 2.0 °F	+/- 0.2 °F		
Compliant	Input#11TypeJ								
5.000 V.DC.	5.000 V.DC.	4.999 V.DC.	-0.001 V.DC.	4.999 V.DC.	-0.001 V.DC.	+/- 0.500	+/- 0.2 V.DC.		
Compliant	Input#12TypeJ								
5.000 V.DC.	5.000 V.DC.	4.999 V.DC.	-0.001 V.DC.	4.999 V.DC.	-0.001 V.DC.	+/- 0.500	+/- 0.2 V.DC.		
Compliant	Input#13 TypeJ								
5.000 V.DC.	5.000 V.DC.	5.000 V.DC.	0.000 V.DC.	5.000 V.DC.	0.000 V.DC.	+/- 0.500	0.1 V.DC.		
Compliant	Input#14 VDC								
100.0 °C	212.0 °F	212.0 °F	0.0 °F	212.0 °F	0.0 °F	+/- 2.0 °F	+/- 0.2 °F		
Compliant	Input#15 TypeJ								
100.0 °C	212.0 °F	212.0 °F	0.0 °F	212.0 °F	0.0 °F	+/- 2.0 °F	+/- 0.2 °F		
Compliant	Input#16TypeJ								
100.0 °C	212.0 °F	212.0 °F	0.0 °F	212.0 °F	0.0 °F	+/- 2.0 °F	+/- 0.2 °F		
Compliant	Input#17TypeJ								
100.0 °C	212.0 °F	212.0 °F	0.0 °F	212.0 °F	0.0 °F	+/- 2.0 °F	+/- 0.2 °F		
Compliant	Input#18TypeJ								

5F09101

Version: 2024.04.05



Instrumentation
Saint-Laurent inc.
Certified ISO 17025



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info@instrumentationsaintlaurent.com

CALIBRATION CERTIFICATE

CERTIFICATE #	CE-EM-015 2024-05-23						
CALIBRATION RESULTS							
Entry Source	Given Value	Initial Value	Ini. Deviation Error	Final Value	Fin. Deviation Error	Accuracy	Uncertainty
Conformity	Comment						
5.000 V.DC.	5.000 V.DC.	5.000 V.DC.	0.000 V.DC.	5.000 V.DC.	0.000 V.DC.	+/- 0.500	0.1 V.DC.
Compliant	Input#19 VDC						
100.0 °C	212.0 °F	212.1 °F	+0.1 °F	212.1 °F	+0.1 °F	+/- 2.0 °F	+/- 0.2 °F
Compliant	Input#20 Type T						
12.000 mA	12.000 mA	12.000 mA	0.000 mA	12.000 mA	0.000 mA	+/- 0.100 mA	1.00 mA
Compliant	Input#21 mA						
12.000 mA	12.000 mA	12.000 mA	0.000 mA	12.000 mA	0.000 mA	+/- 0.100 mA	1.00 mA
Compliant	Input#22 mA						
Environmental Conditions: Temperature: 22 °C Humidity: 47 %RH							
Comments: Test avec EM-147							

CALIBRATION DATE/ISSUANCE OF CERTIFICATE	
Calibration Date:	2024-05-23
Next Calibration:	2025-05-23
Certificate Date:	2024-05-23

CALIBRATION CONFORMITY		
Compliant:	Before	After
	X	X
Non Compliant:		

- Instrumentation St. Laurent Inc. Certify that the above instrument, meets or exceeds the specifications established by the manufacturer. The company's quality system complies with the requirements of ISO 17025 :2017 and the standards used to perform the calibration is traceable to NRC and / or NIST.
- Reported uncertainties represent a 95 % of confidence level assuming a normal distribution k=2.
- The declaration of conformity does not include Instrumentation St-Laurent Inc. uncertainty measurement. Decision rule is based on binary statement for simple acceptance rule against ILAC G8 standard and test tolerance limits are based on customer specifications, unless otherwise specified.
- The results presented in this certificate relate only to objects subject to calibration.
- It is the customer's responsibility to ensure that calibrated equipment meets its intended use.
- The date format used in this certificate is: YYYY-MM-DD.

Assessment Service Calibration Laboratory (ASCL) of the National Research Council of Canada (NRC) has assessed and certified calibration laboratory's ability and traceability to the International System of Units (SI) or to standards acceptable according to ASCL. This calibration certificate is issued in accordance with the terms of ASCL certification and accreditation requirements of the Standards Council of Canada (SCC). ASCL and SCC does not guarantee the accuracy of individual calibrations by accredited laboratories.

M. G.

Marc Gingras - Technicien

[Signature] May 28th 2024

Mettler-Toledo Inc.
Service Division
1900 Polaris Parkway
Columbus, OH, 43240
1-800-METTLER



Accredited by the American Association
for Laboratory Accreditation (A2LA)
CALIBRATION CERT #1788.01

ISO 17025 Accredited
ANSI/NCSL Z540-1 Accredited

Accuracy Calibration Certificate

Customer

Company: Services Polytests
Address: 695-B Rue Gaudette
City: Saint-Jean-Sur-Richelieu Contact: Danick Power
Zip / Postal: J3B 7S7
State / Province: Quebec

Weighing Device

Manufacturer: Ohaus Instrument Type: Weighing Instrument
Model: AR2140 Asset Number: EM-051
Serial No.: M3658329010091 Terminal Model: NA
Building: N/A Terminal Serial No.: NA
Floor: N/A Terminal Asset No.: NA
Room: N/A

Range	Max. Capacity	Readability (d)
1	210 g	0.0001 g

Procedure

Calibration Guideline: ASTM E898 - 20
METTLER TOLEDO Work Instruction: 30260953

This calibration certificate including procedures and uncertainty estimation also complies with EURAMET cg-18 v 4.0.

This calibration certificate contains measurements for As Found and As Left calibrations.

The sensitivity/span of the weighing instrument was adjusted before As Left calibration with an external weight. As Left 200g

	Temperature		Humidity	
As Found	Start: 22.5 °C	End: 23.7 °C	Start: 35.5 %	End: 32.4 %
As Left	Start: 23.9 °C	End: 24.0 °C	Start: 32.4 %	End: 31.6 %

Environmental conditions have been verified to ensure the accuracy of the calibration.

This certificate is issued in accordance with the conditions of accreditation granted by A2LA, which is based on ISO/IEC 17025. A2LA has assessed the measurement capability of the laboratory and its traceability to recognized national standards.

As Found Calibration Date: 29-04-2024
As Left Calibration Date: 29-04-2024
Issue Date: 29-04-2024
Requested Next Calibration Date: 30-04-2025

Authorized A2LA Signatory:

Wali Ariane

Measurement Results

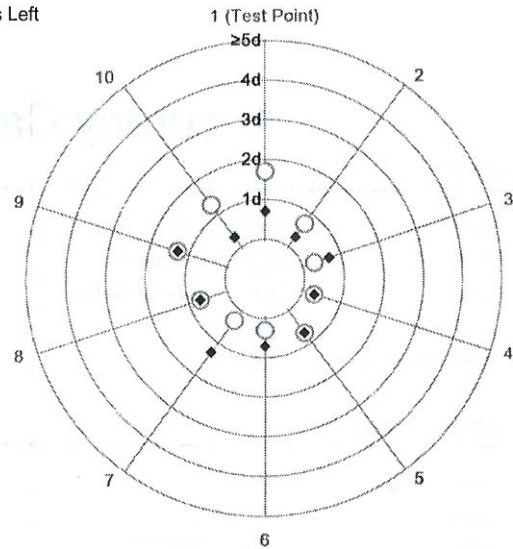
Repeatability

Test Load: 100 g

	As Found	As Left
1	100.0002 g	99.9999 g
2	100.0003 g	100.0000 g
3	100.0004 g	99.9999 g
4	100.0004 g	100.0000 g
5	100.0003 g	99.9999 g
6	100.0004 g	99.9999 g
7	100.0004 g	100.0001 g
8	100.0003 g	99.9999 g
9	100.0005 g	100.0001 g
10	100.0005 g	100.0000 g

Standard Deviation	0.00009 g	0.00008 g
--------------------	-----------	-----------

○ As Found
◆ As Left



The "d" in the graph represents the readability of the range/interval in which the test was performed.

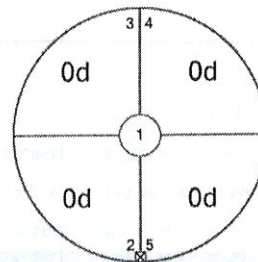
The results of this graph are based upon the absolute values of the differences from the mean value.

Eccentricity

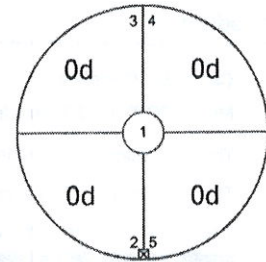
Test Load: 100 g

Position	As Found	As Left
1	0.0000 g	0.0000 g
2	0.0000 g	0.0000 g
3	0.0000 g	0.0000 g
4	0.0000 g	0.0000 g
5	0.0000 g	0.0000 g

Maximum Deviation	0.0000 g	0.0000 g
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As Found



As Left

The "d" in the graph represents the readability of the range/interval in which the test was performed.

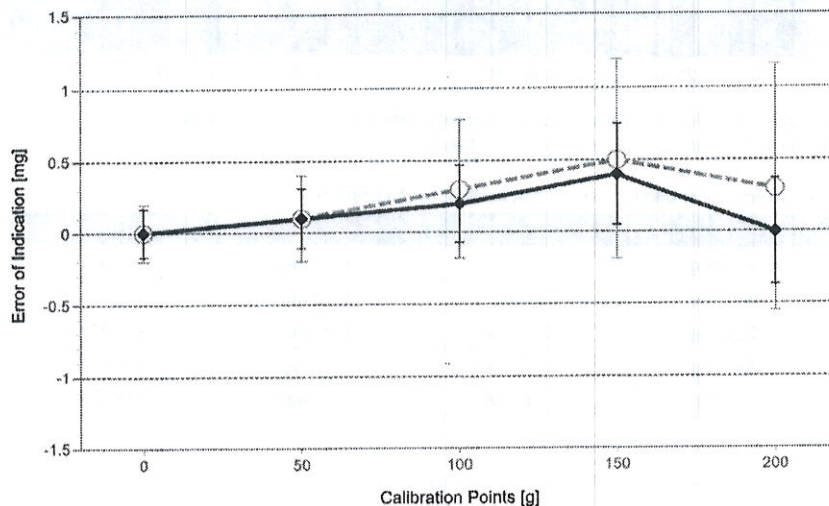
Error of Indication

As Found

	Reference Value	Indication	Error of Indication	Expanded Uncertainty	k
1	0.0000 g	0.0000 g	0.0000 g	0.20 mg	2
2	50.0000 g	50.0001 g	0.0001 g	0.30 mg	2
3	99.9999 g	100.0002 g	0.0003 g	0.48 mg	2
4	149.9999 g	150.0004 g	0.0005 g	0.69 mg	2
5	200.0002 g	200.0005 g	0.0003 g	0.85 mg	2

As Left

	Reference Value	Indication	Error of Indication	Expanded Uncertainty	k
1	0.0000 g	0.0000 g	0.0000 g	0.17 mg	2
2	50.0000 g	50.0001 g	0.0001 g	0.21 mg	2
3	99.9999 g	100.0001 g	0.0002 g	0.27 mg	2
4	149.9999 g	150.0003 g	0.0004 g	0.35 mg	2
5	200.0002 g	200.0002 g	0.0000 g	0.37 mg	2



The uncertainty stated is the expanded uncertainty at calibration obtained by multiplying the standard combined uncertainty by the coverage factor k - which can be larger than 2 according to ASTM E898 and EURAMET cg-18. The value of the measurand lies within the assigned range of values with a probability of approximately 95%.

The user is responsible for maintaining environmental conditions and the settings of the weighing instrument when it was calibrated.
The results of this calibration certificate relate only to the calibrated item.

Test Equipment

All weights used for metrological testing are traceable to national or international standards. The weights were calibrated and certified by an accredited calibration laboratory.

Weight Set 1: OIML E2

Weight Set No.:	381	Date of Issue:	11-08-2023
Certificate Number:	220705189	Calibration Due Date:	31-08-2024

Remarks

Balance cleaned and calibrated.

End of Accredited Section

The information below and any attachments to this calibration certificate are not part of the accredited calibration.

Measurement Uncertainty of the Weighing Instrument in Use

Stated is the expanded uncertainty with $k=2$ in use. The formula shall be used for the estimation of the uncertainty under consideration of the errors of indication. The value R represents the net load indication in the unit of measure of the device.

Temperature coefficient for the evaluation of the measurement uncertainty in use: $3.0 \cdot 10^{-6} / K$

Temperature range on site for the evaluation of the measurement uncertainty in use: 4 K

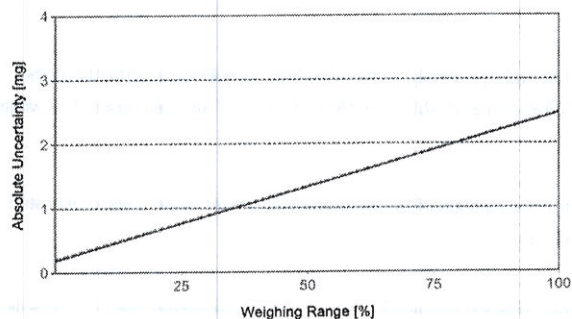
Linearization of Uncertainty Equation

	Range		As Found	As Left
	d	Max		
1	0.0001 g	210 g	$U_1 = 0.21 \text{ mg} + 0.0108 \text{ mg/g} \cdot R$	$U_1 = 0.18 \text{ mg} + 0.0109 \text{ mg/g} \cdot R$

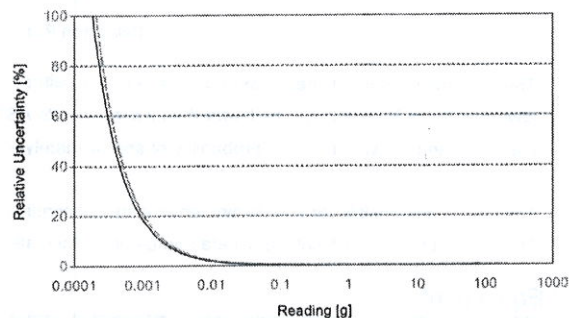
To optimize the stability of the linearization, besides of the zero load only increasing measurement points with a test load of 5% of the measurement range or larger are taken for the calculation of the linear equation.

Absolute and Relative Measurement Uncertainty in Use for Various Net Indications (Examples)

Net Indication	As Found		As Left	
0.0210 g	0.21 mg	1.0%	0.18 mg	0.86%
0.2100 g	0.21 mg	0.10%	0.18 mg	0.087%
2.1000 g	0.23 mg	0.011%	0.20 mg	0.0097%
21.0000 g	0.44 mg	0.0021%	0.41 mg	0.0019%
210.0000 g	2.5 mg	0.0012%	2.5 mg	0.0012%



As Found



As Left

Custom Tolerance Assessment

Assessment done without considering measurement uncertainty.

One or more of the measurements from the attached calibration certificate were assessed against customer-defined tolerances.

	As Found	As Left
Overall	✓	✓
Repeatability	✓	✓
Eccentricity	✓	✓
Error of Indication	✓	✓

Measurement Results

Repeatability

Test Load: 100 g

	As Found	As Left
1	100.0002 g	99.9999 g
2	100.0003 g	100.0000 g
3	100.0004 g	99.9999 g
4	100.0004 g	100.0000 g
5	100.0003 g	99.9999 g
6	100.0004 g	99.9999 g
7	100.0004 g	100.0001 g
8	100.0003 g	99.9999 g
9	100.0005 g	100.0001 g
10	100.0005 g	100.0000 g

Standard Deviation	0.00009 g	0.00008 g
Tolerance	0.00010 g ✓	0.00010 g ✓

Eccentricity

Test Load: 100 g

Position	As Found	As Left
1	0.0000 g	0.0000 g
2	0.0000 g	0.0000 g
3	0.0000 g	0.0000 g
4	0.0000 g	0.0000 g
5	0.0000 g	0.0000 g

Maximum Deviation	0.0000 g	0.0000 g
Tolerance	0.0003 g ✓	0.0003 g ✓

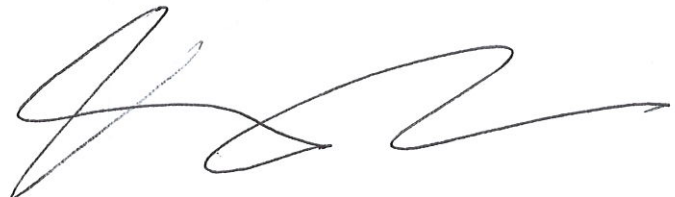
Error of Indication

As Found

	Reference Value	Indication	Error of Indication	Tolerance
1	0.0000 g	0.0000 g	0.0000 g	0.0001 g ✓
2	50.0000 g	50.0001 g	0.0001 g	0.0002 g ✓
3	99.9999 g	100.0002 g	0.0003 g	0.0004 g ✓
4	149.9999 g	150.0004 g	0.0005 g	0.0006 g ✓
5	200.0002 g	200.0005 g	0.0003 g	0.0004 g ✓

As Left

	Reference Value	Indication	Error of Indication	Tolerance
1	0.0000 g	0.0000 g	0.0000 g	0.0001 g ✓
2	50.0000 g	50.0001 g	0.0001 g	0.0002 g ✓
3	99.9999 g	100.0001 g	0.0002 g	0.0004 g ✓
4	149.9999 g	150.0003 g	0.0004 g	0.0006 g ✓
5	200.0002 g	200.0002 g	0.0000 g	0.0004 g ✓



29 April 2024

CALIBRATION CERTIFICATE

9900 Chemin de la Côte-de-Liesse, Montréal, QC H8T 1A1
www.dispersion.ca 1.866.390.5066

Client :	Polytests	Certificate Number :	157-77C603-223
Address :	695 B rue Gaudette Saint-Jean-sur-Richelieu, QC J3B7S7	Calibration date :	04-03-2022

Technician:
Coutu, Daniel

David Llorens

David Llorens, Quality Manager

SERVICE DESCRIPTION:

Masses description :	ASTM E617	Date approved :	04-03-2022
Precision class :	ASTM 6	Next Calibration :	04-03-2027
Density :	7.95g/cm ³	CCN accreditation # :	668
Identification (if unique) :	EM-090	CLAS Certification # :	2010-01

Test conditions :	Temp °C: 21.05	kPa Pressure: 102.3	Humidity: 49.4
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NOTES:

For weight calibration, we use the procedure "Comparaison individuelle" PDL-09-MG-001 and the procedure "Détermination des incertitudes" PDL-09-MG-002. This certificate cannot be copied without written approval from Dispersion Laboratory. The results presented in these pages relate only to objects subjected to calibration.

REMARKS:

March 2022

9900 Chemin de la Côte-de-Liesse, Montréal, QC H8T 1A1
www.dispersion.ca 1.866.390.5066

Client :	Polytests	Certificate Number :	157-77C603-223
Address :	695 B rue Gaudette Saint-Jean-sur-Richelieu, QC J3B7S7	CCN Accreditation # :	668
		CLAS Certification # :	2010-01
		Precision class :	ASTM 6
		Calibration date :	04-03-2022
Mass :	2 kg	Follow-up date :	04-03-2027

CALIBRATION RESULTS, CONVENTIONAL MASS:

[illegible]

9900 Chemin de la Côte-de-Liesse, Montréal, QC H8T 1A1
www.dispersion.ca 1.866.390.5066

Client :	Polytests	Certificate Number :	157-77C603-223
Address :	695 B rue Gaudette Saint-Jean-sur-Richelieu, QC J3B7S7	CCN Accreditation # :	668
		CLAS Certification # :	2010-01
		Precision class :	ASTM 6
		Calibration date :	04-03-2022
Mass :	2 kg	Follow-up date :	04-03-2027

CALIBRATION RESULTS, CORRECTIONS:

[illegible]

CALIBRATION CERTIFICATE

9900 Chemin de la Côte-de-Liesse, Montréal, QC H8T 1A1
www.dispersion.ca 1.866.390.5066

BALANCES

The following balances are used for calibration purposes :

> 5 kg to 25 kg :	Mettler Toledo XP32003L, SNR 1123271214, max. 32100 g, d = 0.005 g
> 1 kg to 5 kg :	Mettler Toledo PR5003, SNR 1115311634, max. 5100 g, d = 0.001 g
> 300 g to 2 kg :	Mettler Toledo XP2004S, SNR B131185222, max. 2100 g, d = 0.1 mg
> 100 g to 200 g :	Mettler Toledo AT201 SNR BA1115230146, max. 205 g, d = 0.01 mg
> 5 g to 100 g :	Mettler Toledo AX106 SNR 1127063924, max. 111 g, d = 1 µg
1 mg to 5 g :	Mettler UMX5, SNR 1121103055, max. 5.1 g, d = 0.1 µg

We are also using these balances in our automated procedure :

> 200 g to 1 kg :	Mettler Toledo AX1005 SNR 1127063210, max. 1109 g, d = 0.01 mg
> 5 g to 100 g :	Mettler Toledo AX106 SNR 1120143015, max. 111 g, d = 1 µg
1 mg to 5 g :	Mettler UMX5, SNR 1125140561, max. 5.1 g, d = 0.1 µg

Our balances are periodically verified, according to our PDL-11-MG-001 control procedure.

UNCERTAINTIES:

The following uncertainties exist :

1. *Uncertainty associated with the weighting process.*
2. *Uncertainty associated with air density.*
3. *Uncertainty associated with the measurement standard.*
4. *Uncertainty associated with the density of the mass being calibrated.*

The uncertainty of the weighing process includes long-term reproducibility.

Uncertainties specified in this report are expanded uncertainties representing a confidence level of approximately 95% obtained by multiplying the combined standard uncertainty by a coverage factor of $k = 2$. For more detailed information refer to the GUM (Guide to the Expression of Uncertainty in Measurement, 1995 Edition)

TRACEABILITY

The Calibration Laboratory Assessment Service (CLAS) of the National Research Council of Canada (NRC) has assessed and certified specific calibration capabilities of this laboratory and their traceability to recognized national measurement standards and to the International System of Units (SI). This certificate of calibration is issued in accordance with the conditions of certification granted by CLAS and the conditions of accreditation granted by the Standards Council of Canada (SCC). Neither the CLAS nor the SCC guarantees the accuracy of individual calibration by accredited laboratories.

CALIBRATION CERTIFICATE

9900 Chemin de la Côte-de-Liesse, Montréal, QC H8T 1A1
www.dispersion.ca 1.866.390.5066

USED REFERENCES

Item	Serial #	Manufacturer	Calibration date	Due date
300g Labo	96-0888-50-2	Denver Instrument Company	01-10-2020	31-03-2022
1kg-1mg Labo	MT-01	Mettler Toledo	01-10-2020	31-03-2022
2kg Labo	96-0888-50-3	Denver Instrument Company	01-10-2020	31-03-2022
1kg Labo	96-088850-1	Denver Instrument Company	01-10-2020	31-03-2022
5kg Labo	129099	Mettler Toledo	01-10-2020	31-03-2022
10kg Labo	DI000G991	Dispersion	23-03-2021	31-03-2022
20kg Labo	69976	Mettler Toledo	06-10-2021	31-10-2022
1 mg-10kg	4000028011	Troemner	15-10-2021	31-10-2022
2kg Labo	129098	Mettler Toledo	01-10-2020	31-03-2022

ENVIRONMENTAL CONDITIONS

Item	Serial #	Manufacturer	Calibration date	Due date
THE004	107080	Control Company	04-03-2021	31-03-2022

Mettler-Toledo Inc.
Service Division
1900 Polaris Parkway
Columbus, OH 43240
1-800-METTLER

METTLER TOLEDO



Accredited by the American Association
for Laboratory Accreditation (A2LA)
CALIBRATION CERT #1902.01

ISO 17025 Registered
ANSI/NCSL Z540-1 Accredited

Certificat de Calibration de Précision

Accuracy Calibration Certificate

Client

Compagnie: Services Polytests
Adresse: 695-B Rue Gaudette
Ville: Saint-Jean-Sur-Richelieu Contact: Danick Power
Zip/Code Postal: J3B 7S7
État/Province: Quebec

Weighing Device

Manufacturier: RICE LAKE Type d'Instrument: Weighing Instrument
Modèle: 4X4HP-10K # Outil: EM-114 EM-137
No. Série: C18395 Modèle Indicateur: IQ+355
Building: N/D Terminal Serial No.: 164851
Floor: N/D Terminal Asset No.: N/D
Room: N/D

Plage	Capacité Max	Lisibilité (d)
1	400 kg	0.05 kg

Procedure

Instruction de Calibration: ASTM E898 - 20
Instruction de travail METTLER TOLEDO: 30260953

This calibration certificate including procedures and uncertainty estimation also complies with EURAMET cg-18 v 4.0.

Ce certificat de calibration contient des mesures pour la calibration Tel que Trouvé. Aucune calibration Tel que Laissé n'a été effectuée puisque l'appareil n'a pas été modifié suite à la calibration Tel que Trouvé. Par conséquent, les résultats Tel que Laissé correspondent aux résultats Tel que Trouvé.

The calibration was agreed with the user below the maximum capacity of the balance.

Tel que Trouvé	Temperature		Environmental conditions have been verified to ensure the accuracy of the calibration.
	Start: 20.0 °C	End: 21.0 °C	

This certificate is issued in accordance with the conditions of accreditation granted by A2LA, which is based on ISO/IEC 17025. A2LA has assessed the measurement capability of the laboratory and its traceability to recognized national standards.

Date calibration Tel que Trouvé: 10-10-2023
Date calibration Tel que Laissé: N/D
Date d'Émission: 10-10-2023
Requested Next Calibration Date: 31-10-2024

Authorized A2LA Signatory:

Stephane Poisson

2023-10-23

Résultats de Mesure

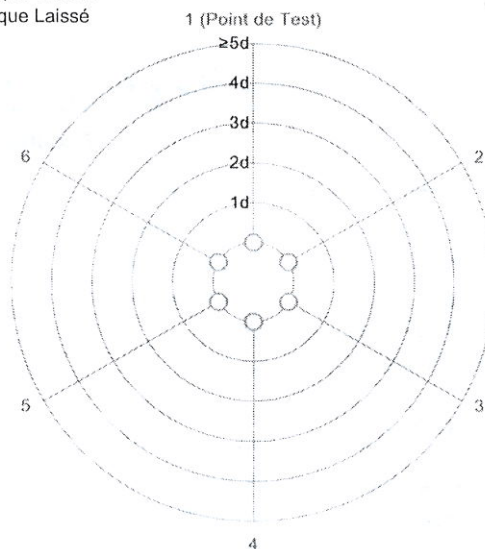
Répétabilité

Charge de Test: 70 kg

	Tel que Trouvé	Tel que Laisse
1	70.00 kg	N/D
2	70.00 kg	N/D
3	70.00 kg	N/D
4	70.00 kg	N/D
5	70.00 kg	N/D
6	70.00 kg	N/D

Écart Type	0.000 kg	N/D
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- Tel que Trouvé
◆ Tel que Laisse



The "d" in the graph represents the readability of the range/interval in which the test was performed.

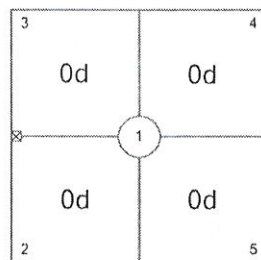
The results of this graph are based upon the absolute values of the differences from the mean value.

Excentricité

Charge de Test: 50 kg

Position	Tel que Trouvé	Tel que Laisse
1	50.00 kg	N/D
2	50.00 kg	N/D
3	50.00 kg	N/D
4	50.00 kg	N/D
5	50.00 kg	N/D

Déviati on Maximale	0.00 kg	N/A
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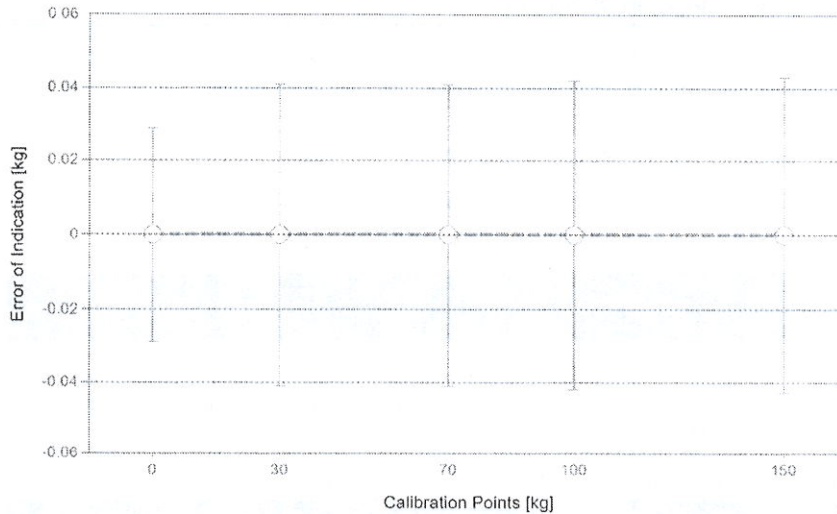
Tel que Trouvé

The "d" in the graph represents the readability of the range/interval in which the test was performed.

Erreur d'indication

Tel que Trouvé

	Reference Value	Indication	Erreur d'Indication	Incertitude Élargie	k
1	0 kg	0.00 kg	0.00 kg	0.029 kg	2
2	30 kg	30.00 kg	0.00 kg	0.041 kg	2
3	70 kg	70.00 kg	0.00 kg	0.041 kg	2
4	100 kg	100.00 kg	0.00 kg	0.042 kg	2
5	150 kg	150.00 kg	0.00 kg	0.043 kg	2
6	0 kg	0.00 kg	0.00 kg	0.029 kg	2



○ Tel que Trouvé

◆ Tel que Laissez

For improved legibility of the graphics only increasing measurement points are shown and measurement points close to zero are not displayed.

The uncertainty stated is the expanded uncertainty at calibration obtained by multiplying the standard combined uncertainty by the coverage factor k - which can be larger than 2 according to ASTM E898 and EURAMET cg-18. The value of the measurand lies within the assigned range of values with a probability of approximately 95%.

The user is responsible for maintaining environmental conditions and the settings of the weighing instrument when it was calibrated.
Les résultats présents dans ce certificat sont applicables uniquement aux équipements étalonnés.

Test Equipment

Tous les poids utilisés pour le contrôle métrologique sont retraçables aux étalons Nationaux et Internationaux. Les poids ont été calibrés et certifiés par un laboratoire de calibration accrédité.

Jeu de Poids 1: OIML M1

Weight Set Number:	M	Date d'Émission:	15-05-2023
# Certificat:	1400958	Date de Calibration Due:	15-05-2024

Jeu de Poids 2: OIML M1

Weight Set Number:	BE10	Date d'Émission:	11-08-2023
# Certificat:	M23-0320	Date de Calibration Due:	11-08-2024

Remarques

N/D

End of Accredited Section

The information below and any attachments to this calibration certificate are not part of the accredited calibration.

Incertitude de Mesure du dispositif de pesage en opération

Stated is the expanded uncertainty with $k=2$ in use. The formula shall be used for the estimation of the uncertainty under consideration of the errors of indication. The value R represents the net load indication in the unit of measure of the device.

Coefficient de température pour l'évaluation de l'incertitude de mesure en opération: $10.0 \cdot 10^{-6} / K$

Plage d'opération sur le site pour l'évaluation de l'incertitude de mesure en opération: 21 K

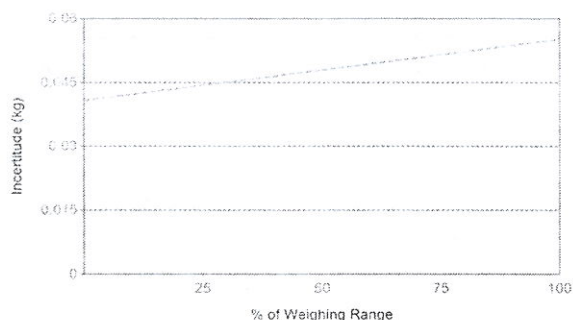
Linéarisation de l'Équation d'Incertitude

Plage			Tel que Trouvé	Tel que Laissé
	d	Max		
1	0.05 kg	150 kg	$U_1 = 41 \text{ g} + 0.0958 \text{ g/kg} \cdot R$	N/A

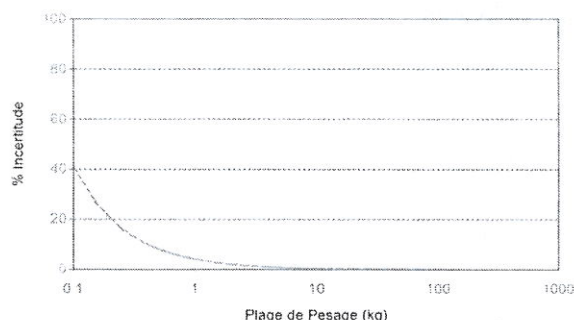
To optimize the stability of the linearization, besides of the zero load only increasing measurement points with a test load of 5% of the measurement range or larger are taken for the calculation of the linear equation.

Absolute and Relative Measurement Uncertainty in Use for Various Net Indications (Examples)

Indication Net	Tel que Trouvé		Tel que Laissé	
1.50 kg	0.041 kg	2.7%	N/A	N/A
15.00 kg	0.042 kg	0.28%	N/A	N/A
30.00 kg	0.044 kg	0.15%	N/A	N/A
75.00 kg	0.048 kg	0.064%	N/A	N/A
150.00 kg	0.055 kg	0.037%	N/A	N/A



Tel que Trouvé



Tel que Laissé

Handbook 44 Tolerance Assessment(Entretien)

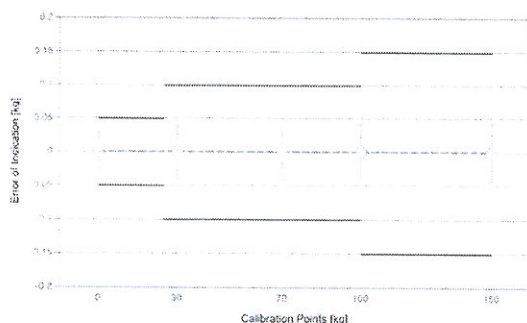
Assessment done without considering measurement uncertainty.

Les mesures du certificat de calibration joint ont été évaluées selon les tolérances définies par NIST HB44.

Tel que Trouvé  Tel que Laissé N/D  = Passed
Global  N/D  = Failed

Weighing Device

Range	Max. Capacity	Readability (d)	Verification Scale Interval (e)	Class
1	400 kg	0.05 kg	0.05 kg	III



Tolerances according to NIST Handbook 44

Test Load		Tolérance
From	To	
0.00 kg	0.00 kg	0.0125 kg
0.05 kg	25.00 kg	0.05 kg
25.05 kg	100.00 kg	0.1 kg
100.05 kg	150.00 kg	0.15 kg

☐ Tel que Trouvé

☒ Tel que Laissé

— Tolérance

Eccentricity and Repeatability

Test	Test Load	Tolérance	As Found		As Left	
			Max. Error / Range	Result	Max. Error / Range	Result
Excentricité (Maximum Error)	50 kg	0.10 kg	0.00 kg	✓	N/D	N/D
Excentricité (Plage)	50 kg	0.1 kg	0.00 kg	✓	N/D	N/D
Répétabilité (Maximum Error)	70 kg	0.1 kg	0.00 kg	✓	N/D	N/D
Répétabilité (Plage)	70 kg	0.10 kg	0.00 kg	✓	N/D	N/D

Max. Error: Maximum of the absolute values of the individual errors.

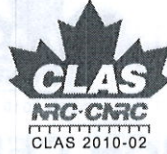
Range: Difference between largest and smallest measurement value.

Error of Indication

	Reference Value	Tolérance	As Found		As Left	
			Error of Indication	Result	Error of Indication	Result
1	0 kg	0.05 kg	0.00 kg	✓	N/D	N/D
2	30 kg	0.10 kg	0.00 kg	✓	N/D	N/D
3	70 kg	0.10 kg	0.00 kg	✓	N/D	N/D
4	100 kg	0.10 kg	0.00 kg	✓	N/D	N/D
5	150 kg	0.15 kg	0.00 kg	✓	N/D	N/D
6	0 kg	0.05 kg	0.00 kg	✓	N/D	N/D



Instrumentation
Saint-Laurent inc.
Certified ISO 17025



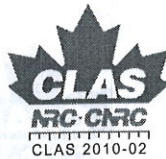
80 rue de la montagne
St-Joseph du lac
(Québec), J0N 1M0
Phone: (450) 473-6169
Fax: (450) 473-5207
info@instrumentationsaintlaurent.com

CALIBRATION CERTIFICATE

CERTIFICATE #		CE-EM-126 2024-05-23	
CLIENT		CALIBRATION SPECIFICATION	
Company:	Services Polytests Inc	Service Procedure:	4IN9106
Address:	695 B rue Gaudette	Required Accuracy:	+/- 1"Hg
	St-Jean-sur-Richelieu, Québec, J3B 7S7	Calibration Frequency:(days)	365
INSTRUMENT SPECIFICATION			
Instrument Type:	Pressure Gauge	Input Type:	Pression
Manufacturer:	Dwyer	Output Type:	Digitale
Model #:	DPG200	Measurement Type:	Pressure
Serial #:	N.A.	Range:	0-28"Hg
Location:	N.A.	Version:	Machine: N.A.
CALIBRATORS SPECIFICATION			
Calibrator:	Crystal XP2i 300	Certification #:	2023007594
Serial #:	866756	Certification Date:	2023-09-22
Certified by:	Alpha Controls	Next Certification:	2024-09-22
Comments:			
Calibrator:	Fluke 744	Certification #:	AC24041903
Serial #:	8180008	Certification Date:	2024-05-09
Certified by:	alpha Controls	Next Certification:	2025-05-09
Comments:			



Instrumentation
Saint-Laurent inc.
Certified ISO 17025



80 rue de la montagne
St-Joseph du lac
(Québec), J0N 1M0
Phone: (450) 473-6169
Fax: (450) 473-5207
info@instrumentationsaintlaurent.com

CALIBRATION CERTIFICATE

CERTIFICATE #		CE-EM-126 2024-05-23					
CALIBRATION RESULTS							
Entry Source	Given Value	Initial Value	Ini. Deviation Error	Final Value	Fin. Deviation Error	Accuracy	Uncertainty
Conformity	Comment						
0.00 "Hg	0.00 "Hg	0.19 "Hg	+0.19 "Hg	0.19 "Hg	+0.19 "Hg	+/- 1.0 "Hg	± 0.5 "Hg
Compliant	Verification of the indicator						
-7.50 "Hg	-7.50 "Hg	-7.42 "Hg	+0.08 "Hg	-7.42 "Hg	+0.08 "Hg	+/- 1.0 "Hg	± 0.5 "Hg
Compliant	Verification of the indicator						
-15.00 "Hg	-15.00 "Hg	-15.04 "Hg	-0.04 "Hg	-15.04 "Hg	-0.04 "Hg	+/- 1.0 "Hg	± 0.5 "Hg
Compliant	Verification of the indicator						
-22.50 "Hg	-22.50 "Hg	-22.65 "Hg	-0.15 "Hg	-22.65 "Hg	-0.15 "Hg	+/- 1.0 "Hg	± 0.5 "Hg
Compliant	Verification of the indicator						
-28.00 "Hg	-28.00 "Hg	-28.50 "Hg	-0.50 "Hg	-28.50 "Hg	-0.50 "Hg	+/- 1.0 "Hg	± 0.5 "Hg
Compliant	Verification of the indicator						
-22.50 "Hg	-22.50 "Hg	-22.87 "Hg	-0.37 "Hg	-22.87 "Hg	-0.37 "Hg	+/- 1.0 "Hg	± 0.5 "Hg
Compliant	Verification of the indicator						
-15.00 "Hg	-15.00 "Hg	-15.04 "Hg	-0.04 "Hg	-15.04 "Hg	-0.04 "Hg	+/- 1.0 "Hg	± 0.5 "Hg
Compliant	Verification of the indicator						
-7.50 "Hg	-7.50 "Hg	-7.42 "Hg	+0.08 "Hg	-7.42 "Hg	+0.08 "Hg	+/- 1.0 "Hg	± 0.5 "Hg
Compliant	Verification of the indicator						
-7.50 "Hg	-7.50 "Hg	-7.42 "Hg	+0.08 "Hg	-7.42 "Hg	+0.08 "Hg	+/- 1.0 "Hg	± 0.5 "Hg
Compliant	Verification of the indicator						
0.00 "Hg	10.0000 V.DC.	10.0963	+0.0963 V.DC.	10.0963	+0.0963 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.
Compliant	Verification of the analogic output						
-7.50 "Hg	8.0000 V.DC.	8.0805 V.DC.	+0.0805 V.DC.	8.0805 V.DC.	+0.0805 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.
Compliant	Verification of the analogic output						
-15.00 "Hg	6.0000 V.DC.	6.0539 V.DC.	+0.0539 V.DC.	6.0539 V.DC.	+0.0539 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.
Compliant	Verification of the analogic output						
-22.50 "Hg	4.0000 V.DC.	4.0068 V.DC.	+0.0068 V.DC.	4.0068 V.DC.	+0.0068 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.
Compliant	Verification of the analogic output						
-28.00 "Hg	2.5333 V.DC.	2.5532 V.DC.	+0.0199 V.DC.	2.5532 V.DC.	+0.0199 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.
Compliant	Verification of the analogic output						
-22.50 "Hg	4.0000 V.DC.	4.0065 V.DC.	+0.0065 V.DC.	4.0065 V.DC.	+0.0065 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.
Compliant	Verification of the analogic output						
-22.50 "Hg	4.0000 V.DC.	4.0065 V.DC.	+0.0065 V.DC.	4.0065 V.DC.	+0.0065 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.
Compliant	Verification of the analogic output						
-22.50 "Hg	4.0000 V.DC.	4.0065 V.DC.	+0.0065 V.DC.	4.0065 V.DC.	+0.0065 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.
Compliant	Verification of the analogic output						
-22.50 "Hg	4.0000 V.DC.	4.0065 V.DC.	+0.0065 V.DC.	4.0065 V.DC.	+0.0065 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.
Compliant	Verification of the analogic output						
Environmental Conditions: Temperature: 22 °C Humidity: 47 %RH							
Comments:							

5F09106

Version: 2024.04.05



Instrumentation
Saint-Laurent inc.
Certified ISO 17025



80 rue de la montagne
St-Joseph du lac
(Québec), J0N 1M0
Phone: (450) 473-6169
Fax: (450) 473-5207
info@instrumentationsaintlaurent.com

CALIBRATION CERTIFICATE

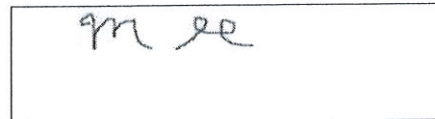
CERTIFICATE #	CE-EM-126 2024-05-23
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CALIBRATION DATE/ISSUANCE OF CERTIFICATE	
Calibration Date:	2024-05-23
Next Calibration:	2025-05-23
Certificate Date:	2024-05-23

CALIBRATION CONFORMITY		
	Before	After
Compliant:	X	X
Non Compliant:		

- Instrumentation St. Laurent Inc. Certify that the above instrument, meets or exceeds the specifications established by the manufacturer. The company's quality system complies with the requirements of ISO 17025 :2017 and the standards used to perform the calibration is traceable to NRC and / or NIST.
- Reported uncertainties represent a 95 % of confidence level assuming a normal distribution $k=2$.
- The declaration of conformity does not include Instrumentation St-Laurent Inc. uncertainty measurement. Decision rule is based on binary statement for simple acceptance rule against ILAC G8 standard and test tolerance limits are based on customer specifications, unless otherwise specified.
- The results presented in this certificate relate only to objects subject to calibration.
- It is the customer's responsibility to ensure that calibrated equipment meets its intended use.
- The date format used in this certificate is: YYYY-MM-DD.

Assessment Service Calibration Laboratory (ASCL) of the National Research Council of Canada (NRC) has assessed and certified calibration laboratory's ability and traceability to the International System of Units (SI) or to standards acceptable according to ASCL. This calibration certificate is issued in accordance with the terms of ASCL certification and accreditation requirements of the Standards Council of Canada (SCC). ASCL and SCC does not guarantee the accuracy of individual calibrations by accredited laboratories.

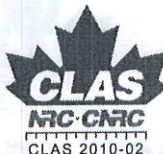


Marc Gingras - Technicien

[Signature] 28 Mai 2024



Instrumentation
Saint-Laurent Inc.
Certified ISO 17025



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(Québec), J0N 1M0
Phone: (450) 473-6169
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CALIBRATION CERTIFICATE

CERTIFICATE #	CE-EM-127 2024-05-23
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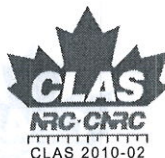
CLIENT		CALIBRATION SPECIFICATION	
Company:	Services Polytests Inc	Service Procedure:	4IN9106
Address:	695 B rue Gaudette	Required Accuracy:	+/- 1"Hg
	St-Jean-sur-Richelieu, Québec, J3B 7S7	Calibration Frequency:(days)	365

INSTRUMENT SPECIFICATION			
Instrument Type:	Pressure Gauge	Input Type:	Pression
Manufacturer:	Dwyer	Output Type:	Digitale
Model #:	DPG200	Measurement Type:	Pressure
Serial #:	N.A.	Range:	0-28"Hg
Location:	N.A.	Version:	Machine: N.A.

CALIBRATORS SPECIFICATION			
Calibrator:	Crystal XP2i 300	Certification #:	2023007594
Serial #:	866756	Certification Date:	2023-09-22
Certified by:	Alpha Controls	Next Certification:	2024-09-22
Comments:			
Calibrator:	Fluke 744	Certification #:	AC24041903
Serial #:	8180008	Certification Date:	2024-05-09
Certified by:	alpha Controls	Next Certification:	2025-05-09
Comments:			



Instrumentation
Saint-Laurent inc.
Certified ISO 17025



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(Québec), J0N 1M0
Phone: (450) 473-6169
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CALIBRATION CERTIFICATE

CERTIFICATE #		CE-EM-127 2024-05-23					
CALIBRATION RESULTS							
Entry Source	Given Value	Initial Value	Ini. Deviation Error	Final Value	Fin. Deviation Error	Accuracy	Uncertainty
Conformity	Comment						
0.00 "Hg	0.00 "Hg	0.00 "Hg	0.00 "Hg	0.00 "Hg	0.00 "Hg	+/- 1.0 "Hg	± 0.5 "Hg
Compliant	Verification of the indicator						
-7.50 "Hg	-7.50 "Hg	-7.48 "Hg	+0.02 "Hg	-7.48 "Hg	+0.02 "Hg	+/- 1.0 "Hg	± 0.5 "Hg
Compliant	Verification of the indicator						
-15.00 "Hg	-15.00 "Hg	-15.01 "Hg	-0.01 "Hg	-15.01 "Hg	-0.01 "Hg	+/- 1.0 "Hg	± 0.5 "Hg
Compliant	Verification of the indicator						
-22.50 "Hg	-22.50 "Hg	-22.48 "Hg	+0.02 "Hg	-22.48 "Hg	+0.02 "Hg	+/- 1.0 "Hg	± 0.5 "Hg
Compliant	Verification of the indicator						
-28.00 "Hg	-28.00 "Hg	-28.01 "Hg	-0.01 "Hg	-28.01 "Hg	-0.01 "Hg	+/- 1.0 "Hg	± 0.5 "Hg
Compliant	Verification of the indicator						
-22.50 "Hg	-22.50 "Hg	-22.48 "Hg	+0.02 "Hg	-22.48 "Hg	+0.02 "Hg	+/- 1.0 "Hg	± 0.5 "Hg
Compliant	Verification of the indicator						
-15.00 "Hg	-15.00 "Hg	-15.01 "Hg	-0.01 "Hg	-15.01 "Hg	-0.01 "Hg	+/- 1.0 "Hg	± 0.5 "Hg
Compliant	Verification of the indicator						
-7.50 "Hg	-7.50 "Hg	-7.48 "Hg	+0.02 "Hg	-7.48 "Hg	+0.02 "Hg	+/- 1.0 "Hg	± 0.5 "Hg
Compliant	Verification of the indicator						
0.00 "Hg	0.00 "Hg	0.00 "Hg	0.00 "Hg	0.00 "Hg	0.00 "Hg	+/- 1.0 "Hg	± 0.5 "Hg
Compliant	Verification of the indicator						
0.00 "Hg	10.0000 V.DC.	10.0048	+0.0048 V.DC.	10.0048	+0.0048 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.
Compliant	Verification of the analogic output						
-7.50 "Hg	8.0000 V.DC.	8.0248 V.DC.	+0.0248 V.DC.	8.0248 V.DC.	+0.0248 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.
Compliant	Verification of the analogic output						
-15.00 "Hg	6.0000 V.DC.	6.0114 V.DC.	+0.0114 V.DC.	6.0114 V.DC.	+0.0114 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.
Compliant	Verification of the analogic output						
-22.50 "Hg	4.0000 V.DC.	4.0157 V.DC.	+0.0157 V.DC.	4.0157 V.DC.	+0.0157 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.
Compliant	Verification of the analogic output						
-28.00 "Hg	2.5333 V.DC.	2.5300 V.DC.	-0.0033 V.DC.	2.5300 V.DC.	-0.0033 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.
Compliant	Verification of the analogic output						
-22.50 "Hg	4.0000 V.DC.	4.0136 V.DC.	+0.0136 V.DC.	4.0136 V.DC.	+0.0136 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.
Compliant	Verification of the analogic output						
-15.00 "Hg	6.0000 V.DC.	6.0144 V.DC.	+0.0144 V.DC.	6.0144 V.DC.	+0.0144 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.
Compliant	Verification of the analogic output						
-7.50 "Hg	8.0000 V.DC.	8.0208 V.DC.	+0.0208 V.DC.	8.0208 V.DC.	+0.0208 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.
Compliant	Verification of the analogic output						
0.00 "Hg	10.0000 V.DC.	10.068 V.DC.	+0.0680 V.DC.	10.068 V.DC.	+0.0680 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.
Compliant	Verification of the analogic output						
Environmental Conditions:			Temperature: 22 °C		Humidity: 47 %RH		
Comments:							

5F09106

Version: 2024.04.05



Instrumentation
Saint-Laurent inc.
Certified ISO 17025



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CALIBRATION CERTIFICATE

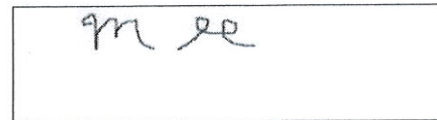
CERTIFICATE #	CE-EM-127 2024-05-23
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CALIBRATION DATE/ISSUANCE OF CERTIFICATE	
Calibration Date:	2024-05-23
Next Calibration:	2025-05-23
Certificate Date:	2024-05-23

CALIBRATION CONFORMITY		
	Before	After
Compliant:	X	X
Non Compliant:		

- Instrumentation St. Laurent Inc. Certify that the above instrument, meets or exceeds the specifications established by the manufacturer. The company's quality system complies with the requirements of ISO 17025 :2017 and the standards used to perform the calibration is traceable to NRC and / or NIST.
- Reported uncertainties represent a 95 % of confidence level assuming a normal distribution k=2.
- The declaration of conformity does not include Instrumentation St-Laurent Inc. uncertainty measurement. Decision rule is based on binary statement for simple acceptance rule against ILAC G8 standard and test tolerance limits are based on customer specifications, unless otherwise specified.
- The results presented in this certificate relate only to objects subject to calibration.
- It is the customer's responsibility to ensure that calibrated equipment meets its intended use.
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Assessment Service Calibration Laboratory (ASCL) of the National Research Council of Canada (NRC) has assessed and certified calibration laboratory's ability and traceability to the International System of Units (SI) or to standards acceptable according to ASCL. This calibration certificate is issued in accordance with the terms of ASCL certification and accreditation requirements of the Standards Council of Canada (SCC). ASCL and SCC does not guarantee the accuracy of individual calibrations by accredited laboratories.



Marc Gingras - Technicien

[Signature] 28 May 2024

CALIBRATION CERTIFICATE

9900 Chemin de la Côte-de-Liesse, Montréal, QC H8T 1A1
www.dispersion.ca 1.866.390.5066

Client :	Polytests	Certificate Number :	157-77C603-221
Address :	695 B rue Gaudette Saint-Jean-sur-Richelieu, QC J3B7S7	Calibration date :	04-03-2022

Technician:
Coutu, Daniel

David L. Loren

David Llorens, Quality Manager

SERVICE DESCRIPTION:

Masses description :	ASTM E617	Date approved :	04-03-2022
Precision class :	ASTM 1	Next Calibration :	04-03-2027
Density :	7.95g/cm³	CCN accreditation # :	668
Identification (if unique) :	1000026013	CLAS Certification # :	2010-01

Test conditions :	Temp °C:	21.05	kPa Pressure:	102.3	Humidity:	49.4
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NOTES:

For weight calibration, we use the procedure "Comparaison individuelle" PDL-09-MG-001 and the procedure "Détermination des incertitudes" PDL-09-MG-002. This certificate cannot be copied without written approval from Dispersion Laboratory. The results presented in these pages relate only to objects subjected to calibration.n

REMARKS:

March 2022

CALIBRATION CERTIFICATE

9900 Chemin de la Côte-de-Liesse, Montréal, QC H8T 1A1
www.dispersion.ca 1.866.390.5066

Client :	Polytests	Certificate Number :	157-77C603-221
Address :	695 B rue Gaudette Saint-Jean-sur-Richelieu, QC J3B7S7	CCN Accreditation # :	668
		CLAS Certification # :	2010-01
		Precision class :	ASTM 1
		Calibration date :	04-03-2022
Mass :	200 g	Follow-up date :	04-03-2027

CALIBRATION RESULTS, CONVENTIONAL MASS:

[illegible]

*Applicable only for adjusted masses **Falls outside of the specified class

9900 Chemin de la Côte-de-Liesse, Montréal, QC H8T 1A1
www.dispersion.ca 1.866.390.5066

Client :	Polytests	Certificate Number :	157-77C603-221
Address :	695 B rue Gaudette Saint-Jean-sur-Richelieu, QC J3B7S7	CCN Accreditation # :	668
		CLAS Certification # :	2010-01
		Precision class :	ASTM 1
		Calibration date :	04-03-2022
Mass :	200 g	Follow-up date :	04-03-2027

CALIBRATION RESULTS, CORRECTIONS:

[illegible]

*Applicable only for adjusted masses **Falls outside of the specified class

CALIBRATION CERTIFICATE

9900 Chemin de la Côte-de-Liesse, Montréal, QC H8T 1A1
www.dispersion.ca 1.866.390.5066

BALANCES

The following balances are used for calibration purposes :

> 5 kg to 25 kg :	Mettler Toledo XP32003L, SNR 1123271214, max. 32100 g, d = 0.005 g
> 1 kg to 5 kg :	Mettler Toledo PR5003, SNR 1115311634, max. 5100 g, d = 0.001 g
> 300 g to 2 kg :	Mettler Toledo XP2004S, SNR B131185222, max. 2100 g, d = 0.1 mg
> 100 g to 200 g :	Mettler Toledo AT201 SNR BA1115230146, max. 205 g, d = 0.01 mg
> 5 g to 100 g :	Mettler Toledo AX106 SNR 1127063924, max. 111 g, d = 1 µg
1 mg to 5 g :	Mettler UMX5, SNR 1121103055, max. 5.1 g, d = 0.1 µg

We are also using these balances in our automated procedure :

> 200 g to 1 kg :	Mettler Toledo AX1005 SNR 1127063210, max. 1109 g, d = 0.01 mg
> 5 g to 100 g :	Mettler Toledo AX106 SNR 1120143015, max. 111 g, d = 1 µg
1 mg to 5 g :	Mettler UMX5, SNR 1125140561, max. 5.1 g, d = 0.1 µg

Our balances are periodically verified, according to our PDL-11-MG-001 control procedure.

UNCERTAINTIES:

The following uncertainties exist :

1. *Uncertainty associated with the weighting process.*
2. *Uncertainty associated with air density.*
3. *Uncertainty associated with the measurement standard.*
4. *Uncertainty associated with the density of the mass being calibrated.*

The uncertainty of the weighing process includes long-term reproducibility.

Uncertainties specified in this report are expanded uncertainties representing a confidence level of approximately 95% obtained by multiplying the combined standard uncertainty by a coverage factor of $k = 2$. For more detailed information refer to the GUM (Guide to the Expression of Uncertainty in Measurement, 1995 Edition)

TRACEABILITY

The Calibration Laboratory Assessment Service (CLAS) of the National Research Council of Canada (NRC) has assessed and certified specific calibration capabilities of this laboratory and their traceability to recognized national measurement standards and to the International System of Units (SI). This certificate of calibration is issued in accordance with the conditions of certification granted by CLAS and the conditions of accreditation granted by the Standards Council of Canada (SCC). Neither the CLAS nor the SCC guarantees the accuracy of individual calibration by accredited laboratories.

CALIBRATION CERTIFICATE

9900 Chemin de la Côte-de-Liesse, Montréal, QC H8T 1A1
www.dispersion.ca 1.866.390.5066

USED REFERENCES

Item	Serial #	Manufacturer	Calibration date	Due date
300g Labo	96-0888-50-2	Denver Instrument Company	01-10-2020	31-03-2022
1kg-1mg Labo	MT-01	Mettler Toledo	01-10-2020	31-03-2022
2kg Labo	96-0888-50-3	Denver Instrument Company	01-10-2020	31-03-2022
1kg Labo	96-088850-1	Denver Instrument Company	01-10-2020	31-03-2022
5kg Labo	129099	Mettler Toledo	01-10-2020	31-03-2022
10kg Labo	DI000G991	Dispersion	23-03-2021	31-03-2022
20kg Labo	69976	Mettler Toledo	06-10-2021	31-10-2022
1 mg-10kg	4000028011	Troemner	15-10-2021	31-10-2022
2kg Labo	129098	Mettler Toledo	01-10-2020	31-03-2022

ENVIRONMENTAL CONDITIONS

Item	Serial #	Manufacturer	Calibration date	Due date
THE004	107080	Control Company	04-03-2021	31-03-2022



POLYCONTROLS



CALIBRATION CERTIFICATE # 23524

Calibration date : 2024-07-05

Certificate issued : 2024-07-09

**Services Polytests
695 B Gaudette street
St-Jean-sur-Richelieu, Québec, Canada
J3B 7S7**

Calibration of

Positive displacement flow meter American Meter Company DTM-200A S/N : 99A274209

QUALITY PROGRAM CONFORMANCE

All calibrations are performed in accordance with Polycontrols Laboratory Quality Assurance Manual and conform to ISO/IEC 17025: 2017, ISO 9001 – 2015 and/or other quality requirements defined in customers purchase descriptions. The results are strictly valid for the device under test or calibration. If applicable, the decision rule is described in the certificate.

TRACEABILITY

The traceability for flow standard to the National Institute of Standards and Technology, NIST, is maintained by Fluke Corporation of Phoenix, Arizona and conform to ISO/IEC 17025, ANSI/NCSL Z540-1-1994, ISO-10012-1 and MIL-STD 45662A.

The Calibration Laboratory Assessment Service (CLAS) of the National Research Council of Canada (NRC) has assessed and certified specific calibration capabilities of this laboratory and traceability to the International System of Units (SI) or to standards acceptable to the CLAS program. This certificate of calibration is issued in accordance with the conditions of certification granted by CLAS and the conditions of accreditation granted by the Standards Council of Canada (SCC). Neither CLAS nor SCC guarantee the accuracy of individual calibrations by accredited laboratories.

CALIBRATION OF MEASURING AND TEST EQUIPMENT

For calibration measurement capability, please refer to the Canadian Calibration Network web page at the National Research Council of Canada. This laboratory is accredited by the Standards Council of Canada as part of the Calibration Laboratory Assessment Service (CLAS) program and is listed at nrc.canada.ca.

This document forms part of the Certificate of Accreditation issued by the Standards Council of Canada (SCC). The original version is available in the Directory of Accredited Laboratories on the SCC website at www.scc.ca.

CONDITION SUMMARY OF THE DEVICE UNDER TEST

Initial conditions	In good condition
Work done	Calibration of the instrument
Results	Initial readings in tolerance
	Final readings in tolerance
Remarks	Calibration frequency every 6 months

Louis-Philippe Tremblay

Louis-Philippe Tremblay
Metrologist

B. Poulin

Laboratory Manager



Calibration certificate # 23524

Serial Number:	99A274209	Test stand:	3
Calibration Date:	2024-07-05	Procedure:	POS-CAL-005
Instrument ID:	EM-130	Decision rule:	Method #3

Standard equipment used for initial calibration

Description	Model	Serial #	Traceability	Due date
Fluke molbloc_30 slpm	3E4-VCR-V-Q	2359	1500371423	2025-02-13
Fluke molbloc_120 slpm	2E2-S	237	1500373170	2025-03-07
Fluke molbox I	Molbox I	881	1500363193	2024-10-08
RTD Mist	Mist	L00295	2024000482	2025-01-22
Module 44.5 PSI avec Baro 163671	Module 30	160659	2024004347	2025-05-22

Initial specifications of the device under test

Calibration conditions

Gas	Air	Gas	Air
Operation temperature	20 °C	Ambient temperature	23 °C
Inlet pressure		Ambient pressure	1009.11 mbar
Outlet pressure		Orientation	Vertical
Reference temperature		Seals	
Reference pressure		Valve	
Range	0-200 ACFH		
Input/Output Signals	-		
Supply			
Accuracy	±2 %O.R.		

Initial readings

Test Flow ACFH	Device under test ft³	Measured values			Calculated Reference ft³	Calculated Error ft³	Acceptable Error ft³	Uncertainty k = 2 ft³	TUR
		Pressure PSIA	Temperature °C	Reference ft³					
10.6805	1.790	14.6266	22.40	1.761	1.778	0.012	0.036	0.008	>4
120.3965	20.370	14.7060	22.27	20.020	20.085	0.285	0.402	0.050	>4
199.3501	33.630	14.8498	22.39	33.397	33.195	0.435	0.664	0.082	>4



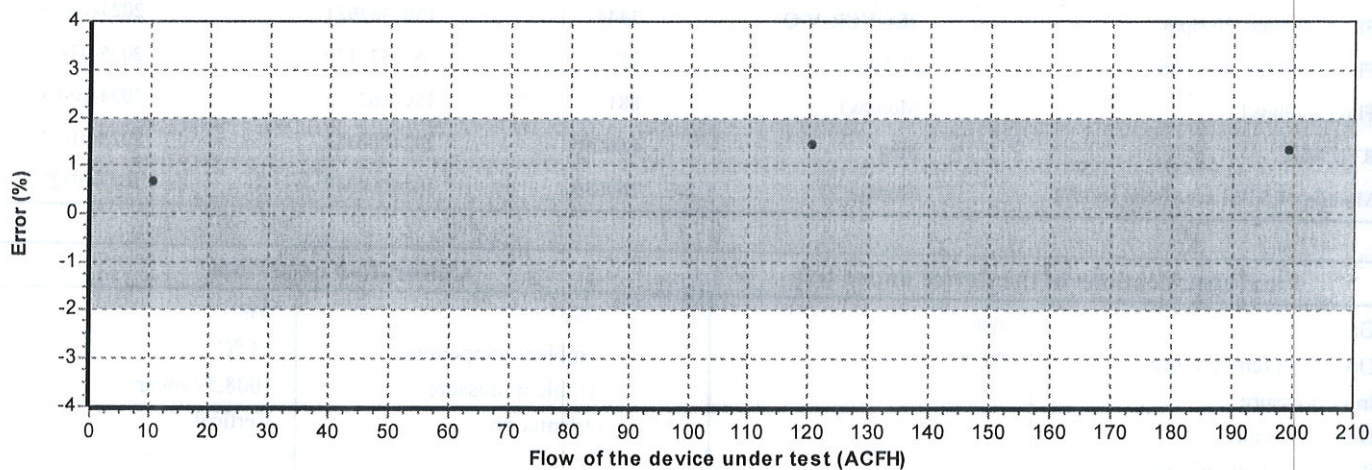
POLYCONTROLS



Calibration certificate # 23524

Serial Number:	99A274209	Test stand:	3
Calibration Date:	2024-07-05	Procedure:	POS-CAL-005
Instrument ID:	EM-130	Decision rule:	Method #3

Initial results



See the appendix for the guideline of decision rule



Calibration certificate # 23524

Serial Number:	99A274209	Test stand:	3
Calibration Date:	2024-07-05	Procedure:	POS-CAL-005
Instrument ID:	EM-130	Decision rule:	Method #3

Standard equipment used for final calibration

Description	Model	Serial #	Traceability	Due date
Fluke molbloc_30 slpm	3E4-VCR-V-Q	3444	1500363921	2024-10-25
Fluke molbloc_120 slpm	2E2-S	237	1500373170	2025-03-07
Fluke molbox1	Molbox1	881	1500363193	2024-10-08
RTD Mist	Mist	L00295	2024000482	2025-01-22
Module 44.5 PSI avec Baro 163671	Module 30	160659	2024004347	2025-05-22

Final specifications of the device under test

Calibration conditions

Gas	Air	Gas	Air
Operation temperature	20 °C	Ambient temperature	23 °C
Inlet pressure		Ambient pressure	1008.52 mbar
Outlet pressure		Orientation	Vertical
Reference temperature		Seals	
Reference pressure		Valve	
Range	0-200 ACFH		
Input/Output Signals	-		
Supply			
Accuracy	±2 %O.R.		

Final readings

Test Flow ACFH	Device under test ft³	Measured values			Calculated Reference ft³	Calculated Error ft³	Acceptable Error ft³	Uncertainty k = 2 ft³	TUR
		Pressure PSIA	Temperature °C	Reference ft³					
10.6418	2.485	14.6231	22.61	2.451	2.476	0.009	0.050	0.010	>4
120.5027	20.240	14.7015	22.70	19.963	20.064	0.176	0.401	0.050	>4
199.3664	33.410	14.8357	22.85	33.316	33.197	0.213	0.664	0.082	>4



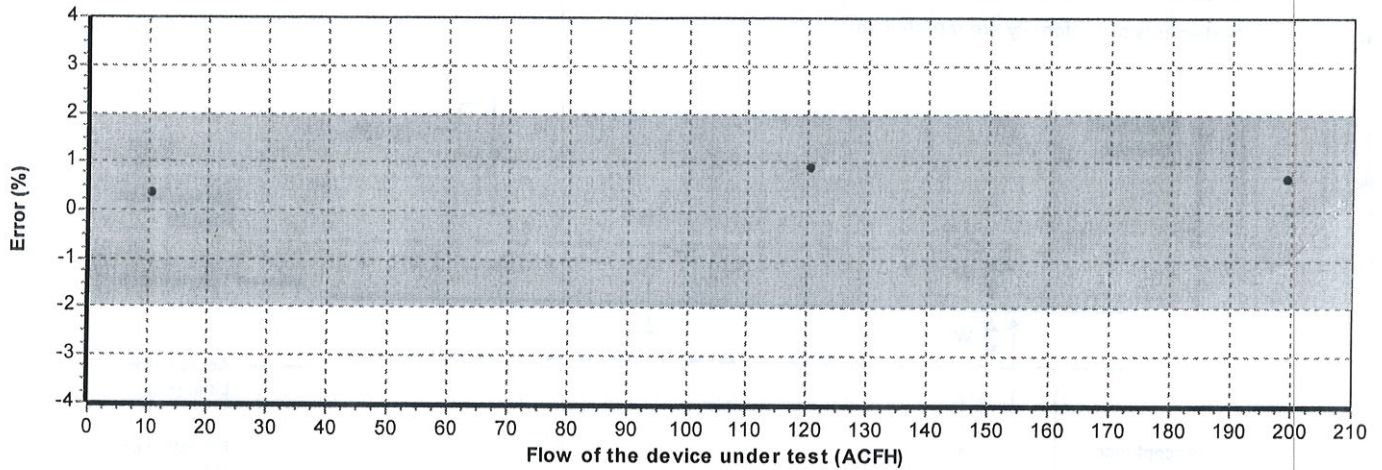
POLYCONTROLS



Calibration certificate # 23524

Serial Number:	99A274209	Test stand:	3
Calibration Date:	2024-07-05	Procedure:	POS-CAL-005
Instrument ID:	EM-130	Decision rule:	Method #3

Final results



See the appendix for the guideline of decision rule

F. 0.98632
0.9963

[Signature]
AUGUST 7th 2024

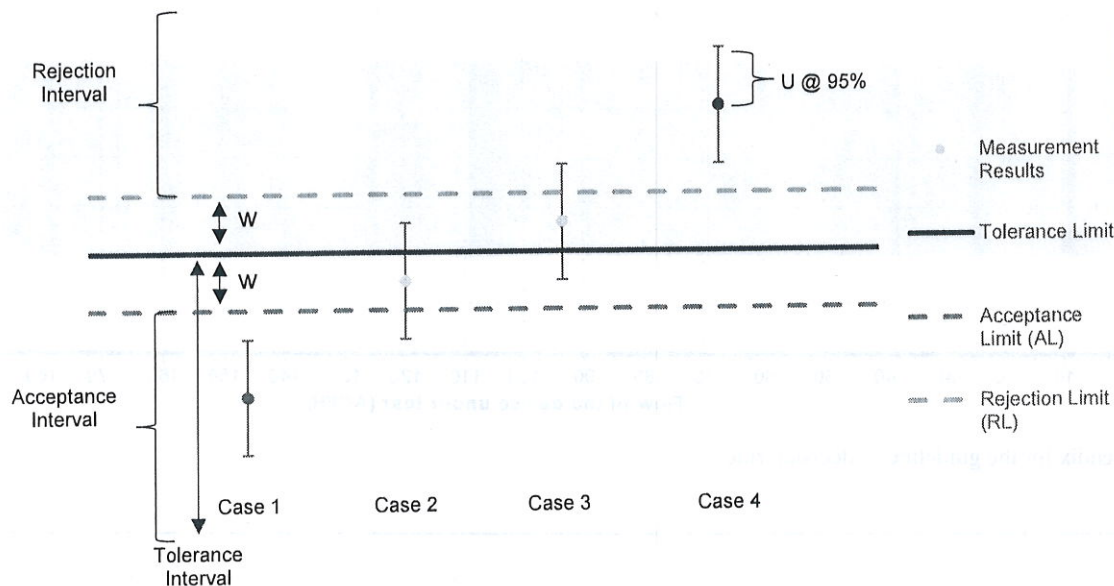


Appendix for the decision rule

Method #3 Non-binary Statement with Guard Band, uncertainty directly taken into account

This decision rule uses a guard band to define the acceptance and rejection interval. The acceptance limit is defined by the following mathematical formula $AL = TL - w$ and the rejection limit $RL = TL + w$, where $w = rU$. The multiple r that is multiplied by the expanded measurement uncertainty U can be defined following ILAC G8: 2019 table 1 section 5.2. The expanded measurement uncertainty U has a 95% coverage probability ($k = 2$). Non-binary statement with guard band exists when the result is limited to four choices: pass, conditional pass, conditional fail, and fail.

Statements of conformity are reported as:



Graphical representation of a Non-Binary Statement with a Guard Band

Case 1 – Below acceptance limit AL

Status: In tolerance

- The result is inside the acceptance interval. However, assuming a normal distribution, the risk that the result is outside the tolerance limit could be up to 2.5%. Uncertainty is directly taken into account. *Green*.

Case 2 – Below tolerance limit TL, greater than acceptance limit AL

Status: In tolerance-Conditional

- The result is outside the acceptance interval but below tolerance limit. However, the observed value is inside the guard band $w = TL - AL$ and the status is conditional on the customer's risk assessment. Uncertainty is directly taken into account. *Yellow*.

Case 3 – Greater than tolerance limit, below rejection limit RL

Status: Out of tolerance-Conditional

- The result is greater than tolerance limit but outside the rejection interval. However, the observed value is inside the guard band $w = TL - RL$ and the status is conditional on the customer's risk assessment. Uncertainty is directly taken into account. *Yellow*.

Case 4 – Greater than rejection limit RL

Status: Out of tolerance

- The result is inside the rejection interval. Uncertainty is directly taken into account. *Red*.

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CERTIFICATE OF CALIBRATION



Certificate No. ACT-1272

CERTIFICATION NUMBER C0003-33124-690 FOR Polytests Services Inc. 695 B rue Gaudette St-Jean-sur-Richelieu, QC, Canada J3B 7S7 TEST INSTRUMENT Thermohygrometer MAKE Fluke MODEL 971 RANGE -4 to 100°F/ 5 to 95%RH CUSTOMER LOCATION CONDITION RECEIVED In Tolerance CONDITION RETURNED In Tolerance CALIBRATED BY Rodney Kalata FORM REVIEWED BY M.T. CALIBRATION LOCATION FVM ENVIRONMENT 70.7°F, 38.6%RH, 29.19inHg CALIBRATION DATE 01/03/2024 RECALIBRATION DUE 01/03/2025		IDENTIFICATION EM-136 SERIAL NUMBER 10610860 PURCHASE ORDER # 100595 PROCEDURES FOLLOWED EL-033A rev. 0 STANDARDS USED <table border="1"> <thead> <tr> <th>INSTRUMENT</th> <th>SERIAL NUMBER</th> <th>TRACE NUMBER</th> <th>NEXT CAL.</th> </tr> </thead> <tbody> <tr> <td>FVS-275E</td> <td>16783134</td> <td>CN121-17281-690</td> <td>05/31/2024</td> </tr> <tr> <td>FVS-471</td> <td>1012820</td> <td>CN269-63374-744</td> <td>10/31/2024</td> </tr> </tbody> </table>	INSTRUMENT	SERIAL NUMBER	TRACE NUMBER	NEXT CAL.	FVS-275E	16783134	CN121-17281-690	05/31/2024	FVS-471	1012820	CN269-63374-744	10/31/2024
INSTRUMENT	SERIAL NUMBER	TRACE NUMBER	NEXT CAL.											
FVS-275E	16783134	CN121-17281-690	05/31/2024											
FVS-471	1012820	CN269-63374-744	10/31/2024											

CALIBRATION RESULTS

* DENOTES "OUT OF TOLERANCE"

FEATURE	NOMINAL	LOWER LIMIT	UPPER LIMIT	AS FOUND	AS LEFT	UNCERTAINTY
Temperature	(°F)	(°F)	(°F)	(°F)	(°F)	
	60.0	59.0	61.0	59.8	59.8	3.6E-1
	70.0	69.0	71.0	69.4	69.4	3.6E-1
Humidity	(RH)	(RH)	(RH)	(RH)	(RH)	
	25.0	22.5	27.5	27.4	27.4	9.0E-1
	50.0	47.5	52.5	50.2	50.2	9.0E-1
	75.0	72.5	77.5	72.7	72.7	9.0E-1

[Signature]
 JAN 25, 2024

■ This certificate shall not be altered in any form or reproduced, except in full, without prior written approval from originating lab. These results relate only to the item(s) calibrated. Form Revision 8: 08/19/2021
 ■ Total expanded measurement uncertainties expressed are based on a confidence level of 95%; coverage factor of (k=2). The statement of compliance in this certificate was issued without taking the uncertainty of measurement into consideration. The customer shall assess the results and uncertainty when determining if the results meet their needs. (This is considered "shared responsibility.") Uncertainties expressed in nominal units.
 ■ The calibrations within the certificate/report are traceable through NIST or another National Metrology Institute to the International System of Units (SI). Calibration was completed in accordance with ISO/IEC 17025:2017, ANSI/NCSL Z540-1-1994 and ANSI/NCSL Z540.3-2006. Other standards listed upon request.



Instrumentation
Saint-Laurent inc.
Certified ISO 17025



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(Québec), J0N 1M0
Phone: (450) 473-6169
Fax: (450) 473-5207
info@instrumentationsaintlaurent.com

CALIBRATION CERTIFICATE

CERTIFICATE #	CE-EM-147 2024-05-23
---------------	----------------------

CLIENT		CALIBRATION SPECIFICATION	
Company:	Services Polytests Inc	Service Procedure:	4IN9101
Address:	695 B rue Gaudette	Required Accuracy:	+/- 2.0C
	St-Jean-sur-Richelieu, Québec, J3B 7S7	Calibration Frequency:(days)	365

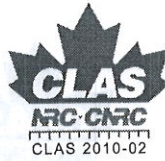
INSTRUMENT SPECIFICATION			
Instrument Type:	Recorder	Input Type:	Divers
Manufacturer:	Keithley	Output Type:	Digital
Model #:	2700	Measurement Type:	Temperature
Serial #:	1349443	Range:	Divers
Location:	N.A.	Version:	Machine: N.A.

CALIBRATORS SPECIFICATION	
---------------------------	--

 28/04/2024



Instrumentation
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CALIBRATION CERTIFICATE

CERTIFICATE #	CE-EM-147 2024-05-23
---------------	----------------------

CALIBRATION RESULTS							
Entry Source	Given Value	Initial Value	Ini. Deviation Error	Final Value	Fin. Deviation Error	Accuracy	Uncertainty
Conformity	Comment						
EntrySource	GivenValue	ActualValue	Initial Deviation	Post Calib	Final Deviation	Tolerance	Incertitude
Conformity	Voir Commentaire						

Environmental Conditions:	Temperature: 22 °C	Humidity: 47 %RH
Comments:	Data Acquisition system Conforme	
	Les 2 slot de l'enregistreur ont été vérifiés.	

CALIBRATION DATE/ISSUANCE OF CERTIFICATE	
Calibration Date:	2024-05-23
Next Calibration:	2025-05-23
Certificate Date:	2024-05-23

CALIBRATION CONFORMITY		
	Before	After
Compliant:	X	X
Non Compliant:		

- Instrumentation St. Laurent Inc. Certify that the above instrument, meets or exceeds the specifications established by the manufacturer. The company's quality system complies with the requirements of ISO 17025 :2017 and the standards used to perform the calibration is traceable to NRC and / or NIST.
- Reported uncertainties represent a 95 % of confidence level assuming a normal distribution k=2.
 - The declaration of conformity does not include Instrumentation St-Laurent Inc. uncertainty measurement. Decision rule is based on binary statement for simple acceptance rule against ILAC G8 standard and test tolerance limits are based on customer specifications, unless otherwise specified.
 - The results presented in this certificate relate only to objects subject to calibration.
 - It is the customer's responsibility to ensure that calibrated equipment meets its intended use.
 - The date format used in this certificate is: YYYY-MM-DD.

Assessment Service Calibration Laboratory (ASCL) of the National Research Council of Canada (NRC) has assessed and certified calibration laboratory's ability and traceability to the International System of Units (SI) or to standards acceptable according to ASCL. This calibration certificate is issued in accordance with the terms of ASCL certification and accreditation requirements of the Standards Council of Canada (SCC). ASCL and SCC does not guarantee the accuracy of individual calibrations by accredited laboratories.

M. Gingras

Marc Gingras - Technicien



CERTIFICATE OF NIST TRACEABLE CALIBRATION

Calibration Certificate No: 113178

Customer Information

Customer: Services Polytests

Address: 695-B Gaudette St-Jean-sur-richelieu J3B 7S7

Customer PO #: 100597



Calibration Procedure Information

Procedure ID: Calibration of Air Velocity Meters

Revision #: 7

Calibration Standards Information

Graftel ID	Model #	Description	CAL Due
10187	PTB210	Vaisala Ambient Pressure	11/6/2024
10100		Graftel Temperature	10/17/2025
10171	FC0332-2W	Furness DeltaP Meter, 0 to 0.4"H2O	11/6/2024
10086	FC0332	Furness Controls DeltaP Meter, 0 to 4"H2O	11/6/2024
T1830459	VAISALA / H MW95D	Vaisala Temp/RH Logger, Velocity Lab	6/13/2024
1A01JMGKP36		Graftel Barometric Pressure, Tank Farm	1/12/2025
10129	1502A/5628	Hart Scientific PRT, Temperature	6/28/2024

Calibrated Device Information

Manufacturer: Omega

Description: Anemometer

Method Used: Pitot Tube

Model #: HHF143

Rated Accuracy: See Attachments

Accuracy Specified By: Omega

Instrument ID: EM153

Range: 40 - 7800 fpm

Condition: Functional

Serial #: 1015949

Calibration Date: 02/09/2024

Calibration Due: 02/09/2025

Comments: *Limited Calibration Range: 40 - 5000

The calibrations within the certificate/report are traceable through NIST or another National Metrology Institute to the International System of Units (SI). The reported calibration uncertainty has a confidence level of 95% (k=2). A calibration uncertainty ratio of 4:1 was maintained unless required uncertainty is supported by analysis. Graftel Quality Assurance System complies with applicable requirements of ISO/IEC-17025-2017, ANSI/NCSL Z540-I-1994 and ISO 9001. All results contained within this certificate relate only to item(s) calibrated. This certificate shall not be reproduced except in full and with the written consent of Graftel. Acceptance Criteria per Simple Acceptance Rule: Measurement Uncertainty is not applied to the measured value when in/out of tolerance statement is made.

Luis Marquez

Performed By
Luis Marquez
Calibration Technician
02/09/2024

Joselito Zosa

Approved/Issued By
Joselito Zosa
Lab Manager
02/12/2024

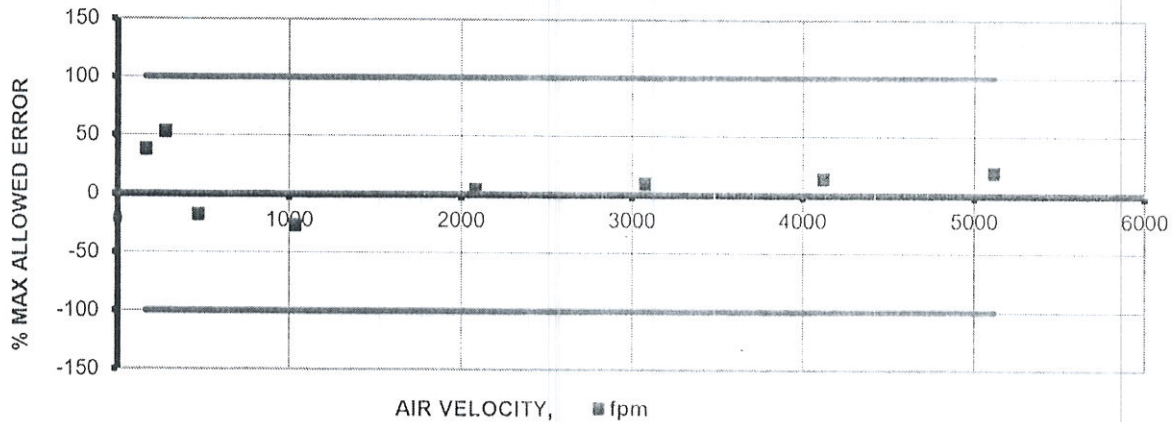
ATTACHMENT TO CALIBRATION CERTIFICATE 113178

AS FOUND / AS LEFT DATA

Page 2 of 2

Reading From Standard,	Lower Limit of Meter Reading,	Measured Reading From Meter,	Upper Limit of Meter Reading,	Error,	Measurement Uncertainty (k=2)	CMC (k=2)	STATUS
Actual Air Velocity							
fpm	fpm	fpm	fpm	fpm	fpm	fpm	STATUS
165	162	166	168	1	4	4	Pass
279	275	281	283	2	6	6	Pass
471	465	470	477	-1	8	8	Pass
1035	1024	1032	1046	-3	15	15	Pass
2083	2061	2084	2105	1	29	29	Pass
3076	3044	3079	3108	3	42	42	Pass
4120	4078	4126	4162	6	56	56	Pass
5115	5063	5125	5167	10	68	68	Pass

ERROR CHART



Instrument Specifications

Test Fluid:	Air
Lower Velocity Range:	40 fpm
Upper Velocity Range:	7800 fpm
Velocity Resolution:	1
Velocity Accuracy:	1 % Reading + 1 digit

Laboratory Ambient Conditions

Pressure:	14.23 psia
Humidity:	38.85 %RH
Temperature:	69.44 °F

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GRAFTEL
An  Company

WWW.GRAFTEL.COM

NIST Traceable Calibration Data Sheet

95 CHANCELLOR DRIVE, ROSELLE, ILLINOIS 60172

PHONE: (847) 364-2600

[Signature]
2024-02-19



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Saint-Laurent inc.
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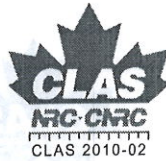
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Fax: (450) 473-5207
info@instrumentationsaintlaurent.com

CALIBRATION CERTIFICATE

CERTIFICATE #	CE-EM-154 2024-05-23		
CLIENT		CALIBRATION SPECIFICATION	
Company:	Services Polytests Inc	Service Procedure:	4IN9101
Address:	695 B rue Gaudette	Required Accuracy:	+/- 2°C
	St-Jean-sur-Richelieu, Québec, J3B 7S7	Calibration Frequency:(days)	365
INSTRUMENT SPECIFICATION			
Instrument Type:	Recorder	Input Type:	Temp
Manufacturer:	Keithley	Output Type:	Digitale
Model #:	7700	Measurement Type:	Temperature
Serial #:	1306774	Range:	Divers
Location:	N/A	Version:	Machine: N.A.
CALIBRATORS SPECIFICATION			
Calibrator:	Fluke 744	Certification #:	AC24041903
Serial #:	8180008	Certification Date:	2024-05-09
Certified by:	alpha Controls	Next Certification:	2025-05-09
Comments:			



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info@instrumentationsaintlaurent.com

CALIBRATION CERTIFICATE

CERTIFICATE #		CE-EM-154 2024-05-23						
CALIBRATION RESULTS								
Entry Source	Given Value	Initial Value	Ini. Deviation Error	Final Value	Fin. Deviation Error	Accuracy	Uncertainty	
Conformity	Comment							
-17.000 mV	-17.000 mV	-17.019 mV	-0.019 mV	-17.019 mV	-0.019 mV	+/- 0.500 mV	0.1 mV	
Compliant	Input#1							
0.000 mV	0.000 mV	0.000 mV	0.00 mV	0.000 mV	0.000 mV	+/- 0.500 mV	0.1 mV	
Compliant	Input#1							
20.000 mV	20.000 mV	19.975 mV	-0.025 mV	19.975 mV	-0.025 mV	+/- 0.500 mV	0.1 mV	
Compliant	Input#1							
30.000 mV	30.000 mV	30.000 mV	0.000 mV	30.000 mV	0.000 mV	+/- 0.500 mV	0.1 mV	
Compliant	Input#2							
30.000 mV	30.000 mV	30.000 mV	0.000 mV	30.000 mV	0.000 mV	+/- 0.500 mV	0.1 mV	
Compliant	Input#3 Non-utilisé							
5.000 V.DC.	5.000 V.DC.	4.999 V.DC.	-0.001 V.DC.	4.999 V.DC.	-0.001 V.DC.	+/- 0.050	0.1 V.DC.	
Compliant	Input#4							
30.000 mV	30.000 mV	29.777 mV	-0.223 mV	29.777 mV	-0.223 mV	+/- 0.500 mV	0.1 mV	
Compliant	Input#5							
30.000 mV	30.000 mV	29.517 mV	-0.483 mV	29.517 mV	-0.483 mV	+/- 0.500 mV	0.1 mV	
Compliant	Input#6							
100.00 °C	212.0 °F	212.4 °F	+0.4 °F	212.4 °F	+0.4 °F	+/- 1.0 °F	± 0.4 °F	
Compliant	Input#7 + Input#17 Dual(PT100)							
100.00 °C	212.0 °F	212.4 °F	+0.4 °F	212.4 °F	+0.4 °F	+/- 1.0 °F	± 0.4 °F	
Compliant	Input#8+ Input#18 Dual(PT100)							
100.00 °C	212.0 °F	212.4 °F	+0.4 °F	212.4 °F	+0.4 °F	+/- 1.0 °F	± 0.4 °F	
Compliant	Input#9 + Input#19 Dual(PT100)							
100.00 °C	212.0 °F	212.3 °F	+0.3 °F	212.3 °F	+0.3 °F	+/- 1.0 °F	± 0.4 °F	
Compliant	Input#10 + Input#20 Dual(PT100)							
100.0 °C	212.0 °F	211.4 °F	-0.6 °F	211.4 °F	-0.6 °F	+/- 2.0 °F	+/- 0.3 °F	
Compliant	Input#11TypeT							
100.0 °C	212.0 °F	211.5 °F	-0.5 °F	211.5 °F	-0.5 °F	+/- 2.0 °F	+/- 0.3 °F	
Compliant	Input#12TypeT							
100.0 °C	212.0 °F	211.6 °F	-0.4 °F	211.6 °F	-0.4 °F	+/- 2.0 °F	+/- 0.2 °F	
Compliant	Input#13 TypeJ							
100.0 °C	212.0 °F	211.5 °F	-0.5 °F	211.5 °F	-0.5 °F	+/- 2.0 °F	+/- 0.2 °F	
Compliant	Input#14TypeJ							
100.0 °C	212.0 °F	211.5 °F	-0.5 °F	211.5 °F	-0.5 °F	+/- 2.0 °F	+/- 0.2 °F	
Compliant	Input#15 TypeJ							
100.0 °C	212.0 °F	211.4 °F	-0.6 °F	211.4 °F	-0.6 °F	+/- 2.0 °F	+/- 0.2 °F	
Compliant	Input#16TypeJ							
12.000 mA	12.000 mA	12.000 mA	0.000 mA	12.000 mA	0.000 mA	+/- 0.100 mA	1.00 mA	
Compliant	Input#21							
12.000 mA	12.000 mA	----- mA	----- mA	----- mA	----- mA	+/- 0.100 mA	1.00 mA	
Non-	Input#22 Fonctionne pas							

5F09101

Version: 2024.04.05

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Fax: (450) 473-5207
info@instrumentationsaintlaurent.com

CALIBRATION CERTIFICATE

CERTIFICATE #	CE-EM-154 2024-05-23
---------------	----------------------

CALIBRATION RESULTS						
Entry Source	Given Value	Initial Value	Ini. Deviation Error	Final Value	Fin. Deviation Error	Accuracy
Conformity	Comment					

Environmental Conditions:	Temperature: 22 °C	Humidity: 47 %RH
Comments:	Test avec EM-147	

CALIBRATION DATE/ISSUANCE OF CERTIFICATE	
Calibration Date:	2024-05-23
Next Calibration:	2025-05-23
Certificate Date:	2024-05-23

CALIBRATION CONFORMITY		
	Before	After
Compliant:	X	X
Non Compliant:		

- Instrumentation St. Laurent Inc. Certify that the above instrument, meets or exceeds the specifications established by the manufacturer. The company's quality system complies with the requirements of ISO 17025 :2017 and the standards used to perform the calibration is traceable to NRC and / or NIST.
- Reported uncertainties represent a 95 % of confidence level assuming a normal distribution k=2.
- The declaration of conformity does not include Instrumentation St-Laurent Inc. uncertainty measurement. Decision rule is based on binary statement for simple acceptance rule against ILAC G8 standard and test tolerance limits are based on customer specifications, unless otherwise specified.
- The results presented in this certificate relate only to objects subject to calibration.
- It is the customer's responsibility to ensure that calibrated equipment meets its intended use.
- The date format used in this certificate is: YYYY-MM-DD.

Assessment Service Calibration Laboratory (ASCL) of the National Research Council of Canada (NRC) has assessed and certified calibration laboratory's ability and traceability to the International System of Units (SI) or to standards acceptable according to ASCL. This calibration certificate is issued in accordance with the terms of ASCL certification and accreditation requirements of the Standards Council of Canada (SCC). ASCL and SCC does not guarantee the accuracy of individual calibrations by accredited laboratories.

M. Gingras

Marc Gingras - Technicien

[Signature]
28 Mai 2024

Fox Valley Metrology

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Oshkosh, WI 54902
(920) 426-5894 • Fax (920) 426-8120
<https://www.FoxValleyMetrology.com>

CERTIFICATE OF CALIBRATION



Certificate No. ACT-1272

CERTIFICATION NUMBER C0009-68479-540 FOR Polytests Services Inc. 695 B rue Gaudette St-Jean-sur-Richelieu, QC, Canada J3B 7S7 TEST INSTRUMENT Stopwatch MAKE Extech Instruments MODEL 365510 CUSTOMER LOCATION CONDITION RECEIVED In Tolerance CONDITION RETURNED In Tolerance CALIBRATED BY Brock Pecore FORM REVIEWED BY M.T. CALIBRATION LOCATION FVM ENVIRONMENT 71.6°F, 40.3%RH, 28.34inHg CALIBRATION DATE 01/09/2024 RECALIBRATION DUE 01/09/2025		IDENTIFICATION EM-175 SERIAL NUMBER PURCHASE ORDER # 100595 PROCEDURES FOLLOWED EL-019B rev. 0 STANDARDS USED <table border="1"> <thead> <tr> <th>INSTRUMENT</th> <th>SERIAL NUMBER</th> <th>TRACE NUMBER</th> <th>NEXT CAL</th> </tr> </thead> <tbody> <tr> <td>FVS-275E</td> <td>16783134</td> <td>CN121-17281-690</td> <td>05/31/2024</td> </tr> <tr> <td>FVS-896F</td> <td>N/A</td> <td>CN159-71319-540</td> <td>06/30/2024</td> </tr> </tbody> </table>		INSTRUMENT	SERIAL NUMBER	TRACE NUMBER	NEXT CAL	FVS-275E	16783134	CN121-17281-690	05/31/2024	FVS-896F	N/A	CN159-71319-540	06/30/2024
INSTRUMENT	SERIAL NUMBER	TRACE NUMBER	NEXT CAL												
FVS-275E	16783134	CN121-17281-690	05/31/2024												
FVS-896F	N/A	CN159-71319-540	06/30/2024												

CALIBRATION RESULTS

* DENOTES "OUT OF TOLERANCE"

FEATURE	NOMINAL	LOWER LIMIT	UPPER LIMIT	AS FOUND	AS LEFT	UNCERTAINTY
Time Interval	(sec)	(sec)	(sec)	(sec)	(sec)	(sec)
1 minute	60.00	59.50	60.50	59.94	59.94	6.0E-3
	60.00	59.50	60.50	59.96	59.96	6.0E-3
5 minute	300.00	299.50	300.50	299.98	299.98	6.0E-3
	300.00	299.50	300.50	299.96	299.96	6.0E-3

[Signature]
JAN 25, 2024

- This certificate shall not be altered in any form or reproduced, except in full, without prior written approval from originating lab. These results relate only to the item(s) calibrated. Form Revision 8: 08/19/2021
- Total expanded measurement uncertainties expressed are based on a confidence level of 95%; coverage factor of (k=2). The statement of compliance in this certificate was issued without taking the uncertainty of measurement into consideration. The customer shall assess the results and uncertainty when determining if the results meet their needs. (This is considered "shared responsibility.") Uncertainties expressed in nominal units.
- The calibrations within the certificate/report are traceable through NIST or another National Metrology Institute to the International System of Units (SI). Calibration was completed in accordance with ISO/IEC 17025:2017, ANSI/NCSL Z540-1-1994 and ANSI/NCSL Z540.3-2006. Other standards listed upon request.

CALIBRATION CERTIFICATE # 23525

Calibration date : 2024-08-06

Certificate issued : 2024-08-06

Services Polytests
695 B Gaudette street
St-Jean-sur-Richelieu, Québec, Canada
J3B 7S7

Calibration of
Positive displacement flow meter Shinigawa DCDA-2c S/N : 23544

QUALITY PROGRAM CONFORMANCE

All calibrations are performed in accordance with Polycontrols Laboratory Quality Assurance Manual and conform to ISO/IEC 17025: 2017, ISO 9001 – 2015 and/or other quality requirements defined in customers purchase descriptions. The results are strictly valid for the device under test or calibration. If applicable, the decision rule is described in the certificate.

TRACEABILITY

The traceability for flow standard to the National Institute of Standards and Technology, NIST, is maintained by Fluke Corporation of Phoenix, Arizona and conform to ISO/IEC 17025, ANSI/NC SL Z540-1-1994, ISO-10012-1 and MIL-STD 45662A.

The Calibration Laboratory Assessment Service (CLAS) of the National Research Council of Canada (NRC) has assessed and certified specific calibration capabilities of this laboratory and traceability to the International System of Units (SI) or to standards acceptable to the CLAS program. This certificate of calibration is issued in accordance with the conditions of certification granted by CLAS and the conditions of accreditation granted by the Standards Council of Canada (SCC). Neither CLAS nor SCC guarantee the accuracy of individual calibrations by accredited laboratories.

CALIBRATION OF MEASURING AND TEST EQUIPMENT

For calibration measurement capability, please refer to the Canadian Calibration Network web page at the National Research Council of Canada. This laboratory is accredited by the Standards Council of Canada as part of the Calibration Laboratory Assessment Service (CLAS) program and is listed at nrc.canada.ca.

This document forms part of the Certificate of Accreditation issued by the Standards Council of Canada (SCC). The original version is available in the Directory of Accredited Laboratories on the SCC website at www.scc.ca.

CONDITION SUMMARY OF THE DEVICE UNDER TEST

Initial conditions	In good condition
Work done	Calibration of the instrument
Results	Final readings in tolerance
Remarks	Calibration frequency every 6 months Tolerance modified per end user request Corrected Instrument Readings = Display of the instrument * K factor (0.986)


Olivier Duchesne Bamber
Metrologist


Laboratory Manager

Calibration certificate # 23525

Serial Number:	23544	Test stand:	3
Calibration Date:	2024-08-06	Procedure:	POS-CAL-005
Instrument ID:	EM-178	Decision rule:	Method #3

Standard equipment used for final calibration

Description	Model	Serial #	Traceability	Due date
Fluke molbloc_10 slpm	1E4-VCR-V-Q	8050	1500371501	2025-02-13
Fluke molbloc_5 slpm	5E3-VCR-V-Q	8049	1500371520	2025-02-13
Fluke molbloc_120 slpm	2E2-S	237	1500373170	2025-03-07
Fluke molbox1	Molbox1	881	1500363193	2024-10-08
RTD Mist	Mist	L00295	2024000482	2025-01-22
Module 44.5 PSI avec Baro 163671	Module 30	160659	2024004347	2025-05-22

Final specifications of the device under test
Calibration conditions

Gas	Air	Gas	Air
Operation temperature		Ambient temperature	23 °C
Inlet pressure		Ambient pressure	1015.33 mbar
Outlet pressure		Orientation	Horizontal
Reference temperature		Seals	
Reference pressure		Valve	
Range	10-2000 ALH		
Input/Output Signals	-		
Supply			
Accuracy	±2 %O.R.		

Final readings

Test Flow ALH	Device under test L	Measured values			Calculated Reference L	Calculated Error L	Acceptable Error L	Uncertainty k = 2 L	TUR
		Pressure PSIA	Temperature °C	Reference L					
295.7271	34.599	14.7082	22.41	34.441	34.564	0.035	0.691	0.085	>4
207.9101	48.684	14.7050	22.59	48.255	48.469	0.215	0.969	0.119	>4
503.2499	118.226	14.7136	22.57	117.318	117.760	0.466	2.355	0.290	>4



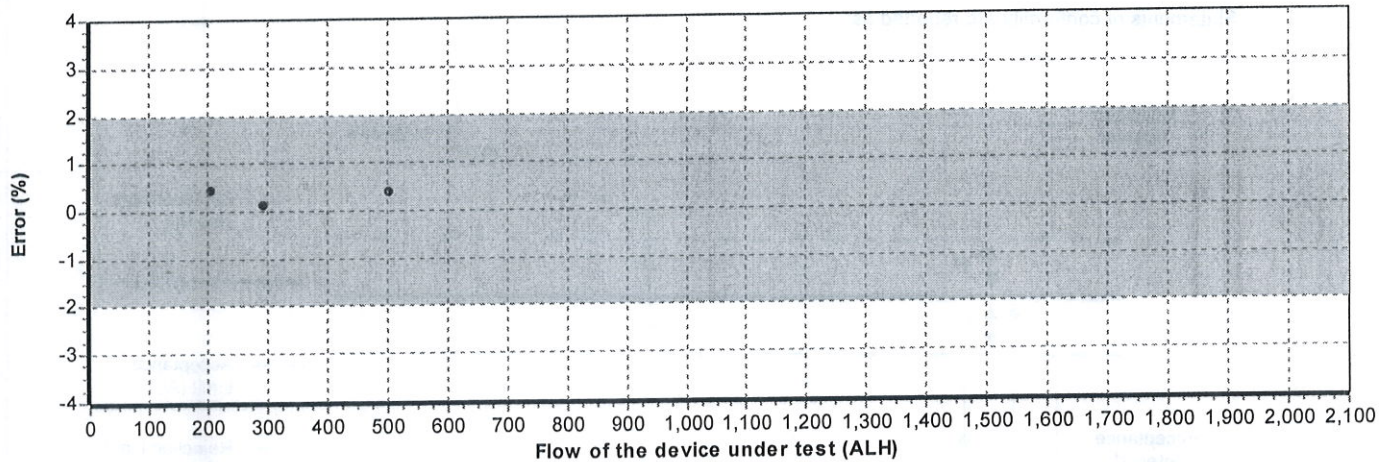
POLYCONTROLS



Calibration certificate # 23525

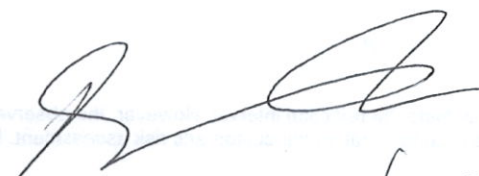
Serial Number:	23544	Test stand:	3
Calibration Date:	2024-08-06	Procedure:	POS-CAL-005
Instrument ID:	EM-178	Decision rule:	Method #3

Final results



See the appendix for the guideline of decision rule

F. 0.986

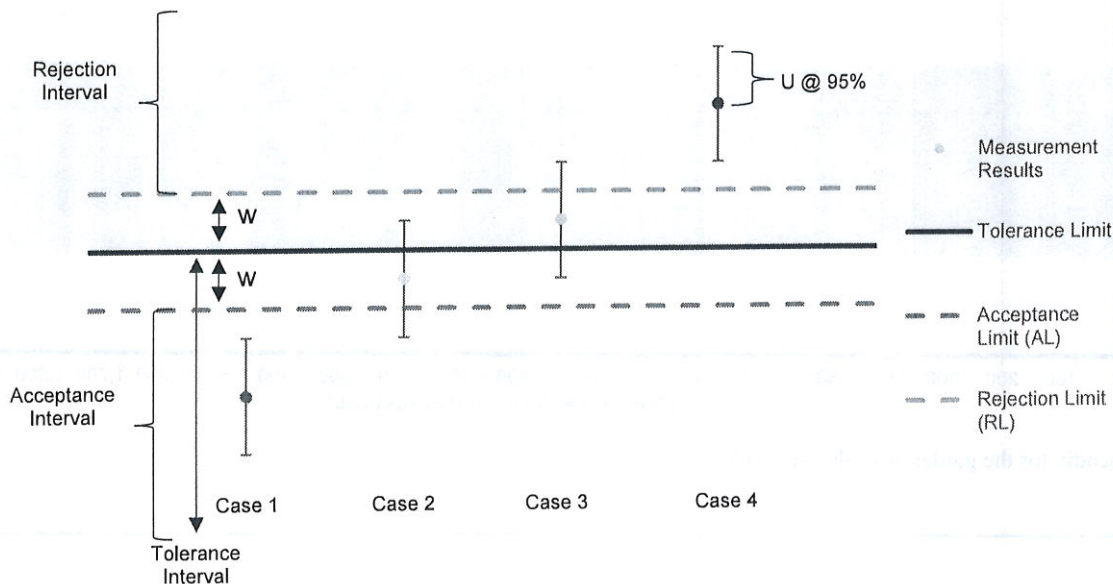

August 7th 2024

Appendix for the decision rule

Method #3 Non-binary Statement with Guard Band, uncertainty directly taken into account

This decision rule uses a guard band to define the acceptance and rejection interval. The acceptance limit is defined by the following mathematical formula $AL = TL - w$ and the rejection limit $RL = TL + w$, where $w = rU$. The multiple r that is multiplied by the expanded measurement uncertainty U can be defined following ILAC G8: 2019 table 1 section 5.2. The expanded measurement uncertainty U has a 95% coverage probability ($k = 2$). Non-binary statement with guard band exists when the result is limited to four choices: pass, conditional pass, conditional fail, and fail.

Statements of conformity are reported as:



Graphical representation of a Non-Binary Statement with a Guard Band

Case 1 – Below acceptance limit AL

Status: In tolerance

- The result is inside the acceptance interval. However, assuming a normal distribution, the risk that the result is outside the tolerance limit could be up to 2.5%. Uncertainty is directly taken into account. *Green*.

Case 2 – Below tolerance limit TL, greater than acceptance limit AL

Status: In tolerance-Conditional

- The result is outside the acceptance interval but below tolerance limit. However, the observed value is inside the guard band $w = TL - AL$ and the status is conditional on the customer's risk assessment. Uncertainty is directly taken into account. *Yellow*.

Case 3 – Greater than tolerance limit, below rejection limit RL

Status: Out of tolerance-Conditional

- The result is greater than tolerance limit but outside the rejection interval. However, the observed value is inside the guard band $w = RL - TL$ and the status is conditional on the customer's risk assessment. Uncertainty is directly taken into account. *Yellow*.

Case 4 – Greater than rejection limit RL

Status: Out of tolerance

- The result is inside the rejection interval. Uncertainty is directly taken into account. *Red*.



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CALIBRATION CERTIFICATE # 23529

Calibration date : 2024-08-06

Certificate issued : 2024-08-06

**Services Polytests
695 B Gaudette street
St-Jean-sur-Richelieu, Québec, Canada
J3B 7S7**

**Calibration of
Positive displacement flow meter Shinigawa DCDA-2c S/N : 23543**

QUALITY PROGRAM CONFORMANCE

All calibrations are performed in accordance with Polycontrols Laboratory Quality Assurance Manual and conform to ISO/IEC 17025: 2017, ISO 9001 – 2015 and/or other quality requirements defined in customers purchase descriptions. The results are strictly valid for the device under test or calibration. If applicable, the decision rule is described in the certificate.

TRACEABILITY

The traceability for flow standard to the National Institute of Standards and Technology, NIST, is maintained by Fluke Corporation of Phoenix, Arizona and conform to ISO/IEC 17025, ANSI/NC SL Z540-1-1994, ISO-10012-1 and MIL-STD 45662A.

The Calibration Laboratory Assessment Service (CLAS) of the National Research Council of Canada (NRC) has assessed and certified specific calibration capabilities of this laboratory and traceability to the International System of Units (SI) or to standards acceptable to the CLAS program. This certificate of calibration is issued in accordance with the conditions of certification granted by CLAS and the conditions of accreditation granted by the Standards Council of Canada (SCC). Neither CLAS nor SCC guarantee the accuracy of individual calibrations by accredited laboratories.

CALIBRATION OF MEASURING AND TEST EQUIPMENT

For calibration measurement capability, please refer to the Canadian Calibration Network web page at the National Research Council of Canada. This laboratory is accredited by the Standards Council of Canada as part of the Calibration Laboratory Assessment Service (CLAS) program and is listed at nrc.canada.ca.

This document forms part of the Certificate of Accreditation issued by the Standards Council of Canada (SCC). The original version is available in the Directory of Accredited Laboratories on the SCC website at www.scc.ca.

CONDITION SUMMARY OF THE DEVICE UNDER TEST

Initial conditions	In good condition
Work done	Calibration of the instrument
Results	Final readings in tolerance
Remarks	Calibration frequency every 6 months Tolerance modified per end user request Corrected Instrument Readings = Display of the instrument * K factor (0.988)


Cédrick Tshiswaka
Metrologist


Laboratory Manager

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3650, Matte blvd. (Unit A-1), Brossard (Quebec), Canada, J4Y 2Z2
Tel: (450) 444-3600 Fax: (450) 444-1088 www.polycontrols.com

Calibration certificate # 23529

Serial Number:	23543	Test stand:	3
Calibration Date:	2024-08-06	Procedure:	POS-CAL-005
Instrument ID:	EM-179	Decision rule:	Method #3

Standard equipment used for final calibration

Description	Model	Serial #	Traceability	Due date
Fluke molbloc_10 slpm	1E4-VCR-V-Q	8050	1500371501	2025-02-13
Fluke molbloc_5 slpm	5E3-VCR-V-Q	8049	1500371520	2025-02-13
Fluke molbox1	Molbox1	881	1500363193	2024-10-08
RTD Mist	Mist	L00295	2024000482	2025-01-22
Module 44.5 PSI avec Baro 163671	Module 30	160659	2024004347	2025-05-22

Final specifications of the device under test
Calibration conditions

Gas	Air	Gas	Air
Operation temperature		Ambient temperature	
Inlet pressure		Ambient pressure	
Outlet pressure		Orientation	Horizontal
Reference temperature		Seals	
Reference pressure		Valve	
Range	10-2000 ALH		
Input/Output Signals	-		
Supply			
Accuracy	±2 %O.R.		

Final readings

Test Flow ALH	Device under test L	Measured values			Calculated Reference L	Calculated Error L	Acceptable Error L	Uncertainty k = 2 L	TUR
		Pressure PSIA	Temperature °C	Reference L					
205.997	48.135	14.730	22.51	47.884	48.001	0.134	0.960	0.118	>4
304.213	71.225	14.733	22.56	70.728	70.902	0.323	1.418	0.174	>4
502.094	117.414	14.732	22.66	116.714	117.045	0.369	2.341	0.288	>4



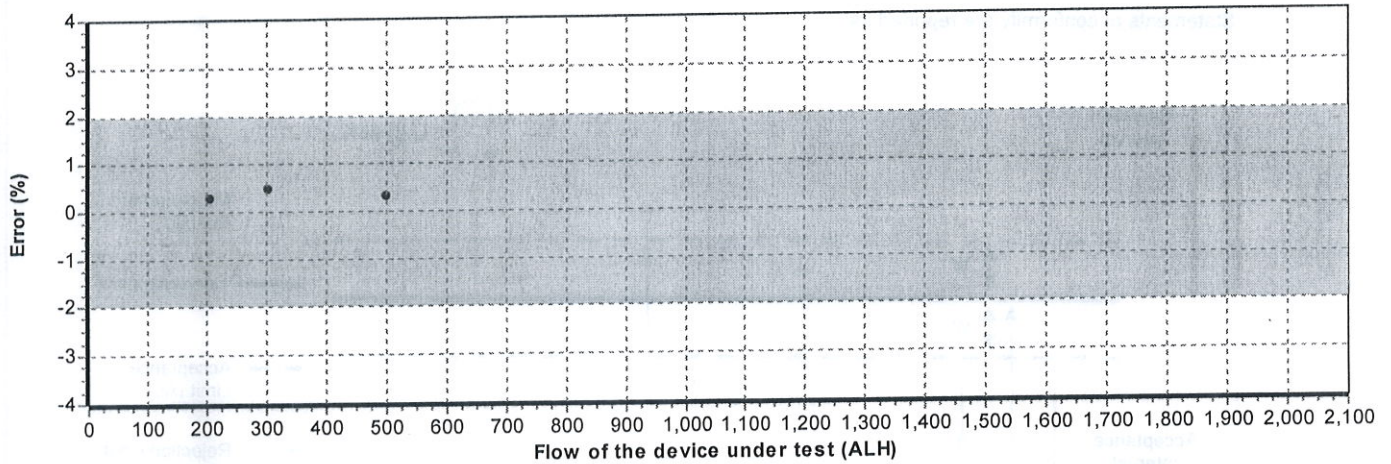
POLYCONTROLS



Calibration certificate # 23529

Serial Number:	23543	Test stand:	3
Calibration Date:	2024-08-06	Procedure:	POS-CAL-005
Instrument ID:	EM-179	Decision rule:	Method #3

Final results



See the appendix for the guideline of decision rule

$T_c : 0.988$

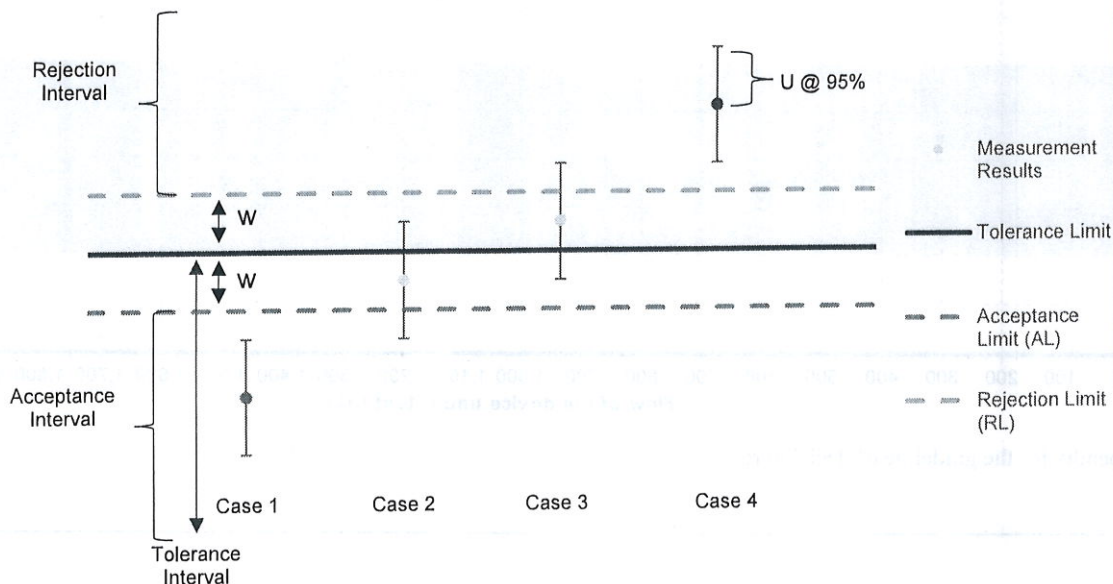
[Signature]
August 7th 2024

Appendix for the decision rule

Method #3 Non-binary Statement with Guard Band, uncertainty directly taken into account

This decision rule uses a guard band to define the acceptance and rejection interval. The acceptance limit is defined by the following mathematical formula $AL = TL - w$ and the rejection limit $RL = TL + w$, where $w = rU$. The multiple r that is multiplied by the expanded measurement uncertainty U can be defined following ILAC G8: 2019 table 1 section 5.2. The expanded measurement uncertainty U has a 95% coverage probability ($k = 2$). Non-binary statement with guard band exists when the result is limited to four choices: pass, conditional pass, conditional fail, and fail.

Statements of conformity are reported as:



Graphical representation of a Non-Binary Statement with a Guard Band

Case 1 – Below acceptance limit AL

Status: In tolerance

- The result is inside the acceptance interval. However, assuming a normal distribution, the risk that the result is outside the tolerance limit could be up to 2.5%. Uncertainty is directly taken into account. *Green*.

Case 2 – Below tolerance limit TL, greater than acceptance limit AL

Status: In tolerance-Conditional

- The result is outside the acceptance interval but below tolerance limit. However, the observed value is inside the guard band $w = TL - AL$ and the status is conditional on the customer's risk assessment. Uncertainty is directly taken into account. *Yellow*.

Case 3 – Greater than tolerance limit, below rejection limit RL

Status: Out of tolerance-Conditional

- The result is greater than tolerance limit but outside the rejection interval. However, the observed value is inside the guard band $w = RL - TL$ and the status is conditional on the customer's risk assessment. Uncertainty is directly taken into account. *Yellow*.

Case 4 – Greater than rejection limit RL

Status: Out of tolerance

- The result is inside the rejection interval. Uncertainty is directly taken into account. *Red*.

9900 Chemin de la Côte-de-Liesse, Montréal, QC H8T 1A1
www.dispersion.ca 1.866.390.5066


March 2022 page 1 of 5

CALIBRATION CERTIFICATE

9900 Chemin de la Côte-de-Liesse, Montréal, QC H8T 1A1
www.dispersion.ca 1.866.390.5066

Client :	Polytests	Certificate Number :	157-77C603-222
Address :	695 B rue Gaudette Saint-Jean-sur-Richelieu, QC J3B7S7	CCN Accreditation # :	668
		CLAS Certification # :	2010-01
		Precision class :	NIST F
		Calibration date :	04-03-2022
Mass :	10 kg	Follow-up date :	04-03-2026

CALIBRATION RESULTS, CONVENTIONAL MASS:

[illegible]

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CALIBRATION CERTIFICATE

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www.dispersion.ca 1.866.390.5066

BALANCES

The following balances are used for calibration purposes :

> 5 kg to 25 kg :	Mettler Toledo XP32003L, SNR 1123271214, max. 32100 g, d = 0.005 g
> 1 kg to 5 kg	Mettler Toledo PR5003, SNR 1115311634, max. 5100 g, d = 0.001 g
> 300 g to 2 kg :	Mettler Toledo XP2004S, SNR B131185222, max. 2100 g, d = 0.1 mg
> 100 g to 200 g :	Mettler Toledo AT201 SNR BA1115230146, max. 205 g, d = 0.01 mg
> 5 g to 100 g :	Mettler Toledo AX106 SNR 1127063924, max. 111 g, d = 1 µg
1 mg to 5 g :	Mettler UMX5, SNR 1121103055, max. 5.1 g, d = 0.1 µg

We are also using these balances in our automated procedure :

> 200 g to 1 kg :	Mettler Toledo AX1005 SNR 1127063210, max. 1109 g, d = 0.01 mg
> 5 g to 100 g :	Mettler Toledo AX106 SNR 1120143015, max. 111 g, d = 1 µg
1 mg to 5 g :	Mettler UMX5, SNR 1125140561, max. 5.1 g, d = 0.1 µg

Our balances are periodically verified, according to our PDL-11-MG-001 control procedure.

UNCERTAINTIES:

The following uncertainties exist :

1. *Uncertainty associated with the weighting process.*
2. *Uncertainty associated with air density.*
3. *Uncertainty associated with the measurement standard.*
4. *Uncertainty associated with the density of the mass being calibrated.*

The uncertainty of the weighing process includes long-term reproducibility.

Uncertainties specified in this report are expanded uncertainties representing a confidence level of approximately 95% obtained by multiplying the combined standard uncertainty by a coverage factor of $k = 2$. For more detailed information refer to the GUM (Guide to the Expression of Uncertainty in Measurement, 1995 Edition)

TRACEABILITY

The Calibration Laboratory Assessment Service (CLAS) of the National Research Council of Canada (NRC) has assessed and certified specific calibration capabilities of this laboratory and their traceability to recognized national measurement standards and to the International System of Units (SI). This certificate of calibration is issued in accordance with the conditions of certification granted by CLAS and the conditions of accreditation granted by the Standards Council of Canada (SCC). Neither the CLAS nor the SCC guarantees the accuracy of individual calibration by accredited laboratories.

CALIBRATION CERTIFICATE

9900 Chemin de la Côte-de-Liesse, Montréal, QC H8T 1A1
www.dispersion.ca 1.866.390.5066

USED REFERENCES

Item	Serial #	Manufacturer	Calibration date	Due date
300g Labo	96-0888-50-2	Denver Instrument Company	01-10-2020	31-03-2022
1kg-1mg Labo	MT-01	Mettler Toledo	01-10-2020	31-03-2022
2kg Labo	96-0888-50-3	Denver Instrument Company	01-10-2020	31-03-2022
1kg Labo	96-088850-1	Denver Instrument Company	01-10-2020	31-03-2022
5kg Labo	129099	Mettler Toledo	01-10-2020	31-03-2022
10kg Labo	DI000G991	Dispersion	23-03-2021	31-03-2022
20kg Labo	69976	Mettler Toledo	06-10-2021	31-10-2022
1 mg-10kg	4000028011	Troemner	15-10-2021	31-10-2022
2kg Labo	129098	Mettler Toledo	01-10-2020	31-03-2022

ENVIRONMENTAL CONDITIONS

Item	Serial #	Manufacturer	Calibration date	Due date
THE004	107080	Control Company	04-03-2021	31-03-2022



CALIBRATION CERTIFICATE

CERTIFICATE #	CE-EM-224 2024-05-30		
CLIENT		CALIBRATION SPECIFICATION	
Company:	Services Polytests Inc	Service Procedure:	ISL-022
Address:	695 B rue Gaudette	Required Accuracy:	+/- 1/32"
	St-Jean-sur-Richelieu, Québec, J3B 7S7	Calibration Frequency:(days)	365
INSTRUMENT SPECIFICATION			
Instrument Type:	Ruban à mesurer	Input Type:	Mesure
Manufacturer:	Stanley	Output Type:	N/A
Model #:	Leverlock 12'	Measurement Type:	Inch
Serial #:	N/A	Range:	0 à 12'
Location:	Portable	Version:	Machine: N/A
CALIBRATORS SPECIFICATION			
Calibrator:	tape a mesurer	Certification #:	TB-57338710
Serial #:	23036922	Certification Date:	2023-09-06
Certified by:	Starrett	Next Certification:	2024-09-06
Comments:			



CALIBRATION CERTIFICATE

CERTIFICATE #	CE-EM-224 2024-05-30						
CALIBRATION RESULTS							
Entry Source	Given Value	Initial Value	Ini. Deviation Error	Final Value	Fin. Deviation Error	Accuracy	
Comment							
1.00 "	1.00 "	1.00 "	0.00 "	1.00 "	0.00 "	+/- 1/32 "	
36.00 "	36.00 "	36.00 "	0.00 "	36.00 "	0.00 "	+/- 1/32 "	
72.00 "	72.00 "	72.00 "	0.00 "	72.00 "	0.00 "	+/- 1/32 "	
108.00 "	108.00 "	108.00 "	0.00 "	108.00 "	0.00 "	+/- 1/32 "	
132.00 "	132.00 "	132.00 "	0.00 "	132.00 "	0.00 "	+/- 1/32 "	
Environmental Conditions: Temperature: 22 °C Humidity: 35 %RH							
Comments:							

CALIBRATION DATE/ISSUANCE OF CERTIFICATE		CALIBRATION CONFORMITY	
Calibration Date:	2024-05-30		
Next Calibration:	2025-05-30		
Certificate Date:	2024-05-30		
		Before	After
		X	X
		Compliant:	
		Non Compliant:	

- Instrumentation St. Laurent Inc. Certify that the above instrument, meets or exceeds the specifications established by the manufacturer. The company's quality system complies with the requirements of ISO 17025 :2017 and the standards used to perform the calibration is traceable to NRC and / or NIST.
- Reported uncertainties represent a 95 % of confidence level assuming a normal distribution k=2.
 - The declaration of conformity does not include Instrumentation St-Laurent Inc. uncertainty measurement. Decision rule is based on binary statement for simple acceptance rule against ILAC G8 standard and test tolerance limits are based on customer specifications, unless otherwise specified.
 - The results presented in this certificate relate only to objects subject to calibration.
 - It is the customer's responsibility to ensure that calibrated equipment meets its intended use.
 - The date format used in this certificate is: YYYY-MM-DD.

M L L

Martin Langlais - Technicien

[Signature]

JUN 3 2024



Instrumentation
Saint-Laurent inc.
Certified ISO 17025



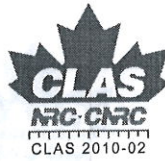
80 rue de la montagne
St-Joseph du lac
(Québec), J0N 1M0
Phone: (450) 473-6169
Fax: (450) 473-6207
info@instrumentationsaintlaurent.com

CALIBRATION CERTIFICATE

CERTIFICATE #	CE-EM-249 2024-05-23			
CLIENT		CALIBRATION SPECIFICATION		
Company:	Services Polytests Inc		Service Procedure:	4IN9106
Address:	695 B rue Gaudette		Required Accuracy:	+/- 0.25 "H2O
	St-Jean-sur-Richelieu, Québec, J3B 7S7		Calibration Frequency:(days)	365
INSTRUMENT SPECIFICATION				
Instrument Type:	Indicator	Input Type:	Pression	
Manufacturer:	Dwyer	Output Type:	Voltage	
Model #:	MS-321-LCD	Measurement Type:	Pressure	
Serial #:	N/A	Range:	0 à 0.10 "H2O	
Location:	Banc de test	Version:	Machine: N/A	
CALIBRATORS SPECIFICATION				
Calibrator:	Fluke Pression	Certification #:	2023009508	
Serial #:	3330050	Certification Date:	2023-11-23	
Certified by:	Alpha Controls	Next Certification:	2024-11-23	
Comments:				
Calibrator:	Fluke 744	Certification #:	AC24041903	
Serial #:	8180008	Certification Date:	2024-05-09	
Certified by:	alpha Controls	Next Certification:	2025-05-09	
Comments:				



**Instrumentation
Saint-Laurent** inc.
Certified ISO 17025



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CALIBRATION CERTIFICATE

CERTIFICATE #	CE-EM-249 2024-05-23						
CALIBRATION RESULTS							
Entry Source	Given Value	Initial Value	Ini. Deviation Error	Final Value	Fin. Deviation Error	Accuracy	Uncertainty
Conformity	Comment						
0.0000 "H2O	0.0000 "H2O	-0.0023 "H2O	-0.0023 "H2O	0.0002 "H2O	+0.0002 "H2O	+/- 0.25	± 0.10 "H2O
Compliant	Verification of the indicator						
0.1250 "H2O	0.1250 "H2O	0.1216 "H2O	-0.0034 "H2O	0.1294 "H2O	+0.0044 "H2O	+/- 0.25	± 0.10 "H2O
Compliant	Verification of the indicator						
0.2500 "H2O	0.2500 "H2O	0.2437 "H2O	-0.0063 "H2O	0.2585 "H2O	+0.0085 "H2O	+/- 0.25	± 0.10 "H2O
Compliant	Verification of the indicator						
0.3750 "H2O	0.3750 "H2O	0.3684 "H2O	-0.0066 "H2O	0.3616 "H2O	-0.0134 "H2O	+/- 0.25	± 0.10 "H2O
Compliant	Verification of the indicator						
0.5000 "H2O	0.5000 "H2O	0.4695 "H2O	-0.0305 "H2O	0.4998 "H2O	-0.0002 "H2O	+/- 0.25	± 0.10 "H2O
Compliant	Verification of the indicator						
0.3750 "H2O	0.3750 "H2O	0.3684 "H2O	-0.0066 "H2O	0.3684 "H2O	-0.0066 "H2O	+/- 0.25	± 0.10 "H2O
Compliant	Verification of the indicator						
0.2500 "H2O	0.2500 "H2O	0.0560 "H2O	-0.1940 "H2O	0.2598 "H2O	+0.0098 "H2O	+/- 0.25	± 0.10 "H2O
Compliant	Verification of the indicator						
0.1250 "H2O	0.1250 "H2O	0.1216 "H2O	-0.0034 "H2O	0.1274 "H2O	+0.0024 "H2O	+/- 0.25	± 0.10 "H2O
Compliant	Verification of the indicator						
0.0000 "H2O	0.0000 "H2O	-0.0023 "H2O	-0.0023 "H2O	0.0002 "H2O	+0.0002 "H2O	+/- 0.25	± 0.10 "H2O
Compliant	Verification of the indicator						
0.0000 "H2O	0.0000 V.DC.	0.0051 V.DC.	+0.0051 V.DC.	0.0007 V.DC.	+0.0007 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.
Compliant	Verification of the analogic output						
0.1250 "H2O	2.5000 V.DC.	2.4066 V.DC.	-0.0934 V.DC.	2.5706 V.DC.	+0.0706 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.
Compliant	Verification of the analogic output						
0.2500 "H2O	5.0000 V.DC.	4.8750 V.DC.	-0.1250 V.DC.	5.1851 V.DC.	+0.1851 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.
Compliant	Verification of the analogic output						
0.3750 "H2O	7.5000 V.DC.	7.3406 V.DC.	-0.1594 V.DC.	7.7234 V.DC.	+0.2234 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.
Non-	Verification of the analogic output						
0.5000 "H2O	10.0000 V.DC.	9.5053 V.DC.	-0.4947 V.DC.	9.6432 V.DC.	-0.3568 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.
Non-	Verification of the analogic output						
0.3750 "H2O	7.5000 V.DC.	7.3406 V.DC.	-0.1594 V.DC.	7.7235 V.DC.	+0.2235 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.
Non-	Verification of the analogic output						
0.2500 "H2O	5.0000 V.DC.	4.8750 V.DC.	-0.1250 V.DC.	5.1855 V.DC.	+0.1855 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.
Compliant	Verification of the analogic output						
0.1250 "H2O	2.5000 V.DC.	2.4066 V.DC.	-0.0934 V.DC.	2.5705 V.DC.	+0.0705 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.
Compliant	Verification of the analogic output						
0.0000 "H2O	0.00 V.DC.	0.0050 V.DC.	+0.0050 V.DC.	0.0050 V.DC.	+0.0050 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.
Compliant	Verification of the analogic output						
Environmental Conditions: Temperature: 22 °C Humidity: 47 %RH							
Comments:							

5F09106

Version: 2024.04.05



Instrumentation
Saint-Laurent inc.
Certified ISO 17025



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(Québec), J0N 1M0
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Fax: (450) 473-5207
info@instrumentationsaintlaurent.com

CALIBRATION CERTIFICATE

CERTIFICATE #	CE-EM-249 2024-05-23
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CALIBRATION DATE/ISSUANCE OF CERTIFICATE	
Calibration Date:	2024-05-23
Next Calibration:	2025-05-23
Certificate Date:	2024-05-23

CALIBRATION CONFORMITY		
	Before	After
Compliant:	X	X
Non Compliant:		

- Instrumentation St. Laurent Inc. Certify that the above instrument, meets or exceeds the specifications established by the manufacturer. The company's quality system complies with the requirements of ISO 17025 :2017 and the standards used to perform the calibration is traceable to NRC and / or NIST.
- Reported uncertainties represent a 95 % of confidence level assuming a normal distribution k=2.
- The declaration of conformity does not include Instrumentation St-Laurent Inc. uncertainty measurement. Decision rule is based on binary statement for simple acceptance rule against ILAC G8 standard and test tolerance limits are based on customer specifications, unless otherwise specified.
- The results presented in this certificate relate only to objects subject to calibration.
- It is the customer's responsibility to ensure that calibrated equipment meets its intended use.
- The date format used in this certificate is: YYYY-MM-DD.

Assessment Service Calibration Laboratory (ASCL) of the National Research Council of Canada (NRC) has assessed and certified calibration laboratory's ability and traceability to the International System of Units (SI) or to standards acceptable according to ASCL. This calibration certificate is issued in accordance with the terms of ASCL certification and accreditation requirements of the Standards Council of Canada (SCC). ASCL and SCC does not guarantee the accuracy of individual calibrations by accredited laboratories.

M. Gingras

Marc Gingras - Technicien

[Signature] 26 MAI 2024



CERTIFICATE OF CALIBRATION



Certificate Number: 2024005814

Page 1 of 2

Manufacturer: Control Company
Model: 4199
Description: Barometer
Serial: 192343395
ID: EM 304
Customer: SERVICES POLYTESTS
695-B GUADETTE
ST-JEAN-SUR-RICHELIEU QC
J3B 7S7

RMA: AC24061900
PO: 100604
Barcode: AL00040350
Received Conditions: Pass
Calibration Date: 15-Jul-2024
Calibration Due: 15-Jan-2025
Temperature: 23.12°C
Humidity: 61.2%RH

STATEMENT OF UNCERTAINTY: The reported expanded uncertainty of measurement is stated as the standard measurement uncertainty multiplied by the coverage factor $K = 2$, which for a normal distribution corresponds to a coverage probability of approximately 95 percent. Alpha Controls & Instrumentation Inc. certifies this instrument was calibrated on the date shown using standards traceable to NIST/NRC or accepted intrinsic standards and in compliance with ISO/IEC-17025:2005 and ANSI/NCSL Z540-1.

Statement of compliance is made applying guardbanding strategy and taking measurement uncertainty directly into account as defined in ILAC G8. Guardbanding is limited and compliance to specification is indeterminate when $TUR < 1$.

Tolerance is based on manufacturer specification if not stated otherwise. Calibration results relate to items calibrated only. Functional tests are not covered by our scope of accreditation.

This certificate shall not be reproduced except in full without written approval of Alpha Controls and Instrumentation Inc.

STANDARDS USED

Description	Model	ID	Cal Date	Due Date
Pressure Controller/Calibrator	DH Instruments PPC3	PRE-CAL-04	27-Jun-2024	30-Jun-2025
Reference Pressure Monitor	Fluke RPM4	PRE-MTR-04	26-Jun-2024	30-Jun-2025

Notes: Pressure gauge was calibrated in vertical position.

[Handwritten Signature]
July 17th 2024

Performed by:

Mahboob Hassan

Technician

(digitally signed on 15-Jul-2024 11:10 am)

QA Reviewed by:

Slava Peciurov

Lab Manager

(digitally signed on 15-Jul-2024 11:24 am)

Quality Management System is assessed and registered by Intertek as conforming to the requirements of ISO9001

Alpha Controls & Instrumentation Inc., Suite 6, 361 Steelcase Road West, Markham, Ontario L3R 3V8 www.alphacontrols.com (800) 567-8686

Procedure:
Pressure/Vacuum: CAL VER /DHI PPC3 (2.3.A)

FOUND-LEFT
Pass

Test Description	True Value	Test Results	Specification	Lower Limit	Upper Limit	Status	Uncertainty
PRESSURE TEST							
MEASUREMENT UNITS: mbar a							
900.070	900.070	900.00	±5.000	895.07	905.07	P	9.0e-002

END OF CERTIFICATE

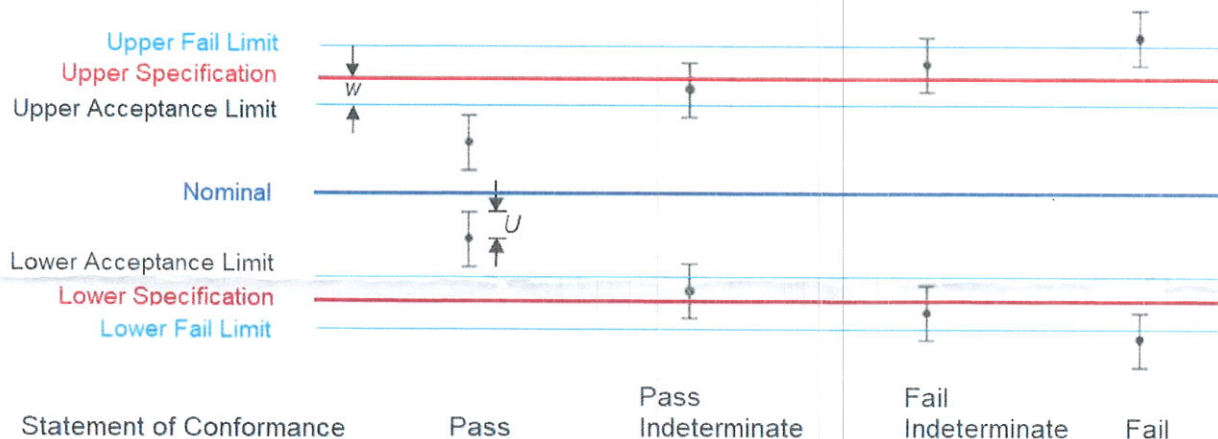
DECISION RULE EXPLANATION

When conformance to specification is made - measurement uncertainty is taken directly into account, as per ILAC-G8:09/2019. The decision rule is based on Guard Banding approach, where the acceptance limits are reduced by guard band length of w proportional to expanded uncertainty value U with 95% confidence level ($k=2$). When $w=1U$, then probability of false accept risk is less than 2.5%.

Statements of conformity are reported as:

Symbol	Definition	Description
P	Pass	The measured result is within the Acceptance limit.
<P>	Pass Indeterminate	The measured result is inside Specification, but outside the Acceptance Limit.
<F>	Fail Indeterminate	The measured result is outside Specification, but within the Fail Limit.
F	Fail	The measured result is outside the Fail Limit.

Graphical Representation of Guard Banding:





Instrumentation
Saint-Laurent inc.
Certified ISO 17025



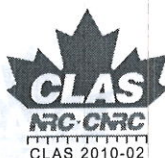
80 rue de la montagne
St-Joseph du lac
(Québec), J0N 1M0
Phone: (450) 473-6169
Fax: (450) 473-5207
info@instrumentationsaintlaurent.com

CALIBRATION CERTIFICATE

CERTIFICATE #	CE-EM-313 2024-05-23		
CLIENT		CALIBRATION SPECIFICATION	
Company:	Services Polytests Inc	Service Procedure:	4IN9106
Address:	695 B rue Gaudette	Required Accuracy:	+/- 0.25"H2O
	St-Jean-sur-Richelieu, Québec, J3B 7S7	Calibration Frequency:(days)	365
INSTRUMENT SPECIFICATION			
Instrument Type:	Indicator	Input Type:	Pression
Manufacturer:	Dwyer	Output Type:	Voltage
Model #:	MS-321-LCD	Measurement Type:	Pressure
Serial #:	N.A.	Range:	0 a 0.1 inchh20
Location:	N.A.	Version:	Machine: N.A.
CALIBRATORS SPECIFICATION			
Calibrator:	Fluke Pression	Certification #:	2023009508
Serial #:	3330050	Certification Date:	2023-11-23
Certified by:	Alpha Controls	Next Certification:	2024-11-23
Comments:			
Calibrator:	Fluke 744	Certification #:	AC24041903
Serial #:	8180008	Certification Date:	2024-05-09
Certified by:	alpha Controls	Next Certification:	2025-05-09
Comments:			



Instrumentation
Saint-Laurent inc.
Certified ISO 17025



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Fax: (450) 473-5207
info@instrumentationsaintlaurent.com

CALIBRATION CERTIFICATE

CERTIFICATE #		CE-EM-313 2024-05-23												
CALIBRATION RESULTS														
Entry Source	Given Value	Initial Value	Ini. Deviation Error	Final Value	Fin. Deviation Error	Accuracy	Uncertainty							
Conformity	Comment													
0.0000 "H2O	0.0000 "H2O	0.0017 "H2O	+0.0017 "H2O	0.0000 "H2O	0.0000 "H2O	+/- 0.25	± 0.10 "H2O							
Compliant	Verification of the indicator													
0.0250 "H2O	0.0250 "H2O	0.0334 "H2O	+0.0084 "H2O	0.0247 "H2O	-0.0003 "H2O	+/- 0.25	± 0.10 "H2O							
Compliant	Verification of the indicator													
0.0500 "H2O	0.0500 "H2O	0.0588 "H2O	+0.0088 "H2O	0.0500 "H2O	0.0000 "H2O	+/- 0.25	± 0.10 "H2O							
Compliant	Verification of the indicator													
0.0750 "H2O	0.0750 "H2O	0.0842 "H2O	+0.0092 "H2O	0.0752 "H2O	+0.0002 "H2O	+/- 0.25	± 0.10 "H2O							
Compliant	Verification of the indicator													
0.1000 "H2O	0.1000 "H2O	0.1095 "H2O	+0.0095 "H2O	0.1003 "H2O	+0.0003 "H2O	+/- 0.25	± 0.10 "H2O							
Compliant	Verification of the indicator													
0.0750 "H2O	0.0750 "H2O	0.0844 "H2O	+0.0094 "H2O	0.0750 "H2O	0.0000 "H2O	+/- 0.25	± 0.10 "H2O							
Compliant	Verification of the indicator													
0.0500 "H2O	0.0500 "H2O	0.0585 "H2O	+0.0085 "H2O	0.0501 "H2O	+0.0001 "H2O	+/- 0.25	± 0.10 "H2O							
Compliant	Verification of the indicator													
0.0250 "H2O	0.0250 "H2O	0.0331 "H2O	+0.0081 "H2O	0.0248 "H2O	-0.0002 "H2O	+/- 0.25	± 0.10 "H2O							
Compliant	Verification of the indicator													
0.0000 "H2O	0.0000 "H2O	0.0018 "H2O	+0.0018 "H2O	0.0000 "H2O	0.0000 "H2O	+/- 0.25	± 0.10 "H2O							
Compliant	Verification of the indicator													
0.0000 "H2O	0.0000 V.DC.	0.1873 V.DC.	+0.1873 V.DC.	0.0041 V.DC.	+0.0041 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.							
Compliant	Verification of the analogic output													
0.0250 "H2O	2.5000 V.DC.	3.3528 V.DC.	+0.8528 V.DC.	2.4985 V.DC.	-0.0015 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.							
Compliant	Verification of the analogic output													
0.0500 "H2O	5.0000 V.DC.	5.8866 V.DC.	+0.8866 V.DC.	5.0312 V.DC.	+0.0312 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.							
Compliant	Verification of the analogic output													
0.0750 "H2O	7.5000 V.DC.	8.5487 V.DC.	+1.0487 V.DC.	7.5149 V.DC.	+0.0149 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.							
Compliant	Verification of the analogic output													
0.1000 "H2O	10.0000 V.DC.	10.6707	+0.6707 V.DC.	10.0119	+0.0119 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.							
Compliant	Verification of the analogic output													
0.0750 "H2O	0.00 V.DC.	8.5489 V.DC.	+8.5489 V.DC.	7.5146 V.DC.	+7.5146 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.							
Compliant	Verification of the analogic output													
0.0500 "H2O	0.00 V.DC.	5.8863 V.DC.	+5.8863 V.DC.	5.0314 V.DC.	+5.0314 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.							
Compliant	Verification of the analogic output													
0.0250 "H2O	0.00 V.DC.	3.3529 V.DC.	+3.3529 V.DC.	2.4986 V.DC.	+2.4986 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.							
Compliant	Verification of the analogic output													
0.0000 "H2O	0.00 V.DC.	0.1870 V.DC.	+0.1870 V.DC.	0.0038 V.DC.	+0.0038 V.DC.	+/- 0.5 V.DC.	0.5 V.DC.							
Compliant	Verification of the analogic output													
Environmental Conditions: Temperature: 22 °C Humidity: 47 %RH														
Comments:														

5F09106

Version: 2024.04.05



Instrumentation
Saint-Laurent inc.
Certified ISO 17025



80 rue de la montagne
St-Joseph du lac
(Québec), J0N 1M0
Phone: (450) 473-6169
Fax: (450) 473-5207
info@instrumentationsaintlaurent.com

CALIBRATION CERTIFICATE

CERTIFICATE #	CE-EM-313 2024-05-23									
CALIBRATION DATE/ISSUANCE OF CERTIFICATE										
Calibration Date:	2024-05-23									
Next Calibration:	2025-05-23									
Certificate Date:	2024-05-23									
CALIBRATION CONFORMITY										
	<table border="1"><thead><tr><th></th><th>Before</th><th>After</th></tr></thead><tbody><tr><td>Compliant:</td><td></td><td>X</td></tr><tr><td>Non Compliant:</td><td>X</td><td></td></tr></tbody></table>		Before	After	Compliant:		X	Non Compliant:	X	
	Before	After								
Compliant:		X								
Non Compliant:	X									

- Instrumentation St. Laurent Inc. Certify that the above instrument, meets or exceeds the specifications established by the manufacturer. The company's quality system complies with the requirements of ISO 17025 :2017 and the standards used to perform the calibration is traceable to NRC and / or NIST.
- Reported uncertainties represent a 95 % of confidence level assuming a normal distribution k=2.
- The declaration of conformity does not include Instrumentation St-Laurent Inc. uncertainty measurement. Decision rule is based on binary statement for simple acceptance rule against ILAC G8 standard and test tolerance limits are based on customer specifications, unless otherwise specified.
- The results presented in this certificate relate only to objects subject to calibration.
- It is the customer's responsibility to ensure that calibrated equipment meets its intended use.
- The date format used in this certificate is: YYYY-MM-DD.

Assessment Service Calibration Laboratory (ASCL) of the National Research Council of Canada (NRC) has assessed and certified calibration laboratory's ability and traceability to the International System of Units (SI) or to standards acceptable according to ASCL. This calibration certificate is issued in accordance with the terms of ASCL certification and accreditation requirements of the Standards Council of Canada (SCC). ASCL and SCC does not guarantee the accuracy of individual calibrations by accredited laboratories.

gm ee

Marc Gingras - Technicien

[Signature] 28 MA' 2024



POLYCONTROLS



CALIBRATION CERTIFICATE # 23534

Calibration date : 2024-07-08

Certificate issued : 2024-07-09

Services Polytests
695 B Gaudette street
St-Jean-sur-Richelieu, Québec, Canada
J3B 7S7

Calibration of
Positive displacement flow meter Shinigawa DCSDa-2C S/N : S8020

QUALITY PROGRAM CONFORMANCE

All calibrations are performed in accordance with Polycontrols Laboratory Quality Assurance Manual and conform to ISO/IEC 17025: 2017, ISO 9001 – 2015 and/or other quality requirements defined in customers purchase descriptions. The results are strictly valid for the device under test or calibration. If applicable, the decision rule is described in the certificate.

TRACEABILITY

The traceability for flow standard to the National Institute of Standards and Technology, NIST, is maintained by Fluke Corporation of Phoenix, Arizona and conform to ISO/IEC 17025, ANSI/NCSL Z540-1-1994, ISO-10012-1 and MIL-STD 45662A.

The Calibration Laboratory Assessment Service (CLAS) of the National Research Council of Canada (NRC) has assessed and certified specific calibration capabilities of this laboratory and traceability to the International System of Units (SI) or to standards acceptable to the CLAS program. This certificate of calibration is issued in accordance with the conditions of certification granted by CLAS and the conditions of accreditation granted by the Standards Council of Canada (SCC). Neither CLAS nor SCC guarantee the accuracy of individual calibrations by accredited laboratories.

CALIBRATION OF MEASURING AND TEST EQUIPMENT

For calibration measurement capability, please refer to the Canadian Calibration Network web page at the National Research Council of Canada. This laboratory is accredited by the Standards Council of Canada as part of the Calibration Laboratory Assessment Service (CLAS) program and is listed at nrc.canada.ca.

This document forms part of the Certificate of Accreditation issued by the Standards Council of Canada (SCC). The original version is available in the Directory of Accredited Laboratories on the SCC website at www.scc.ca.

CONDITION SUMMARY OF THE DEVICE UNDER TEST

Initial conditions	In good condition
Work done	Initial readings = Final readings, no adjustment Calibration of the instrument
Results	Final readings in tolerance
Remarks	Calibration frequency every 6 months Tolerance modified per end user request

Louis-Philippe Tremblay

Louis-Philippe Tremblay
Metrologist

B. Poirier

Laboratory Manager

Calibration certificate # 23534

Serial Number:	S8020	Test stand:	3
Calibration Date:	2024-07-08	Procedure:	POS-CAL-005
Instrument ID:	EM 318	Decision rule:	Method #3

Standard equipment used for final calibration

Description	Model	Serial #	Traceability	Due date
Fluke molbloc_30 slpm	3E4-VCR-V-Q	3444	1500363921	2024-10-25
Fluke molbloc_120 slpm	2E2-S	237	1500373170	2025-03-07
Fluke molbox1	Molbox1	881	1500363193	2024-10-08
RTD Mist	Mist	L00295	2024000482	2025-01-22
Module 44.5 PSI avec Baro 163671	Module 30	160659	2024004347	2025-05-22

Final specifications of the device under test
Calibration conditions

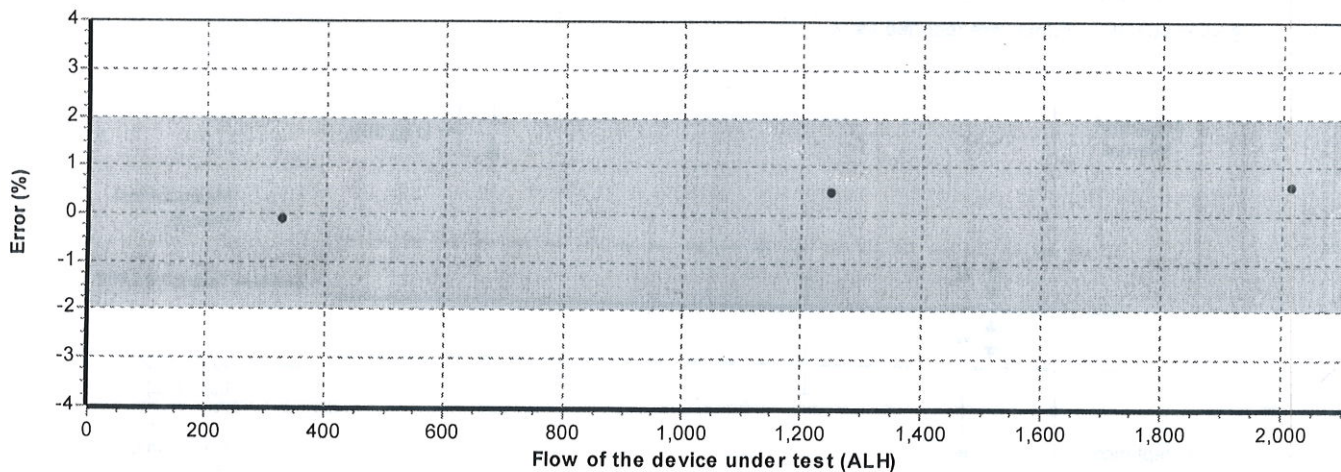
Gas	Air	Gas	Air
Operation temperature		Ambient temperature	23 °C
Inlet pressure		Ambient pressure	1014.98 mbar
Outlet pressure		Orientation	
Reference temperature		Seals	
Reference pressure		Valve	
Range	10-2000 ALH		
Input/Output Signals	-		
Supply			
Accuracy	±2 %O.R.		

Final readings

Test Flow ALH	Device under test L	Measured values			Calculated Reference L	Calculated Error L	Acceptable Error L	Uncertainty k = 2 L	TUR
		Pressure PSIA	Temperature °C	Reference L					
327.9360	27.150	14.7054	21.96	27.118	27.180	-0.030	0.544	0.090	>4
1250.4507	104.575	14.7114	22.01	103.892	104.103	0.472	2.082	0.346	>4
2016.4368	168.130	14.7184	22.24	166.770	167.156	0.974	3.343	0.411	>4

Calibration certificate # 23534

Serial Number:	S8020	Test stand:	3
Calibration Date:	2024-07-08	Procedure:	POS-CAL-005
Instrument ID:	EM 318	Decision rule:	Method #3

Final results


See the appendix for the guideline of decision rule

Fe: 1.00"



AUG 07th 2024

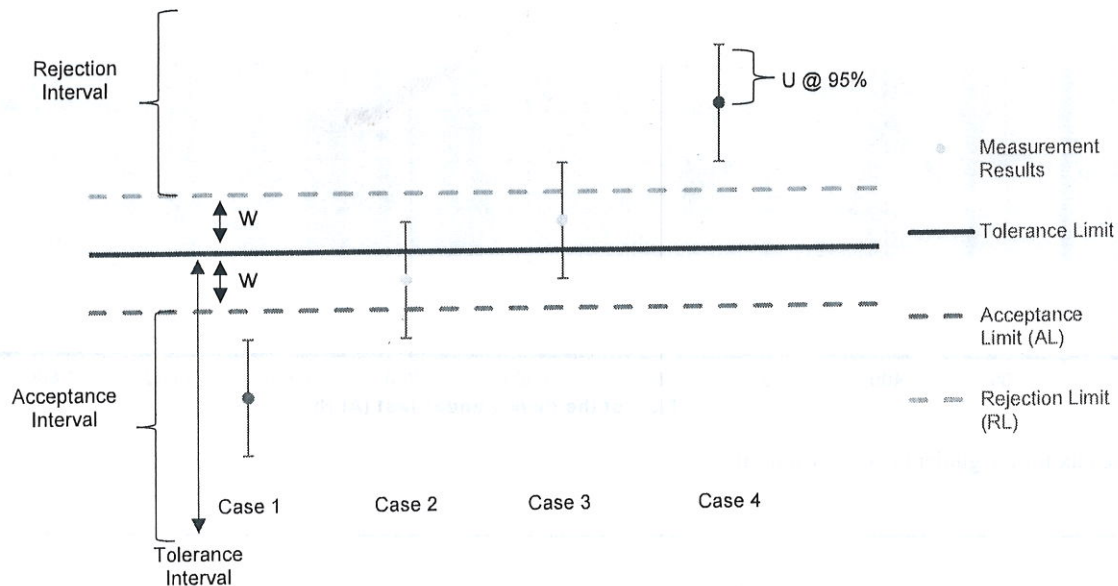


Appendix for the decision rule

Method #3 Non-binary Statement with Guard Band, uncertainty directly taken into account

This decision rule uses a guard band to define the acceptance and rejection interval. The acceptance limit is defined by the following mathematical formula $AL = TL - w$ and the rejection limit $RL = TL + w$, where $w = rU$. The multiple r that is multiplied by the expanded measurement uncertainty U can be defined following ILAC G8: 2019 table 1 section 5.2. The expanded measurement uncertainty U has a 95% coverage probability ($k = 2$). Non-binary statement with guard band exists when the result is limited to four choices: pass, conditional pass, conditional fail, and fail.

Statements of conformity are reported as:



Graphical representation of a Non-Binary Statement with a Guard Band

Case 1 – Below acceptance limit AL

Status: In tolerance

- The result is inside the acceptance interval. However, assuming a normal distribution, the risk that the result is outside the tolerance limit could be up to 2.5%. Uncertainty is directly taken into account. *Green*.

Case 2 – Below tolerance limit TL, greater than acceptance limit AL

Status: In tolerance-Conditional

- The result is outside the acceptance interval but below tolerance limit. However, the observed value is inside the guard band $w = TL - AL$ and the status is conditional on the customer's risk assessment. Uncertainty is directly taken into account. *Yellow*.

Case 3 – Greater than tolerance limit, below rejection limit RL

Status: Out of tolerance-Conditional

- The result is greater than tolerance limit but outside the rejection interval. However, the observed value is inside the guard band $w = RL - TL$ and the status is conditional on the customer's risk assessment. Uncertainty is directly taken into account. *Yellow*.

Case 4 – Greater than rejection limit RL

Status: Out of tolerance

- The result is inside the rejection interval. Uncertainty is directly taken into account. *Red*.

Fox Valley Metrology
3114 Medalist Drive
Oshkosh, WI 54902
(920) 426-5894 • Fax (920) 426-8120
<https://www.FoxValleyMetrology.com>

CERTIFICATE OF
CALIBRATION



Certificate No. ACT-1272

CERTIFICATION NUMBER C0009-67871-540	IDENTIFICATION EM-334												
FOR Polytests Services Inc. 695 B rue Gaudette St-Jean-sur-Richelieu, QC, Canada J3B 7S7	SERIAL NUMBER 												
TEST INSTRUMENT Resistance Fixture	PURCHASE ORDER # 100595												
MAKE Delmhorst Instrument Co.	PROCEDURES FOLLOWED												
MODEL MCS-1	EL-010A rev. 0												
RANGE (1.1M to 120M) ohms													
CUSTOMER LOCATION	STANDARDS USED												
	<table><tr><th>INSTRUMENT</th><th>SERIAL NUMBER</th><th>TRACE NUMBER</th><th>NEXT CAL.</th></tr><tr><td>FVS-275E</td><td>16783134</td><td>CN121-17281-690</td><td>05/31/2024</td></tr><tr><td>FVS-982</td><td>618182363</td><td>CN219-47031-524</td><td>07/14/2024</td></tr></table>	INSTRUMENT	SERIAL NUMBER	TRACE NUMBER	NEXT CAL.	FVS-275E	16783134	CN121-17281-690	05/31/2024	FVS-982	618182363	CN219-47031-524	07/14/2024
INSTRUMENT	SERIAL NUMBER	TRACE NUMBER	NEXT CAL.										
FVS-275E	16783134	CN121-17281-690	05/31/2024										
FVS-982	618182363	CN219-47031-524	07/14/2024										
CONDITION RECEIVED In Tolerance													
CONDITION RETURNED In Tolerance													
CALIBRATED BY Brock Pecore													
FORM REVIEWED BY M.T.													
CALIBRATION LOCATION FVM													
ENVIRONMENT 71.4°F, 40.7%RH, 28.34inHg													
CALIBRATION DATE 01/09/2024													
RECALIBRATION DUE 01/09/2025													

CALIBRATION RESULTS

* DENOTES "OUT OF TOLERANCE"

FEATURE	NOMINAL	LOWER LIMIT	UPPER LIMIT	AS FOUND	AS LEFT	UNCERTAINTY
Resistance	(Mohm)	(Mohm)	(Mohm)	(Mohm)	(Mohm)	(Mohm)
12% 'Pad'	120.00	119.76	120.24	119.91	119.91	6.0E-3
22% 'Pad'	1.100	1.078	1.122	1.097	1.097	6.0E-4


JAN 25, 2024

■ This certificate shall not be altered in any form or reproduced, except in full, without prior written approval from originating lab. These results relate only to the item(s) calibrated. Form Revision 8: 08/19/2021

■ Total expanded measurement uncertainties expressed are based on a confidence level of 95%; coverage factor of (k=2). The statement of compliance in this certificate was issued without taking the uncertainty of measurement into consideration. The customer shall assess the results and uncertainty when determining if the results meet their needs. (This is considered "shared responsibility.") Uncertainties expressed in nominal units.

■ The calibrations within the certificate/report are traceable through NIST or another National Metrology Institute to the International System of Units (SI). Calibration was completed in accordance with ISO/IEC 17025:2017, ANSI/NCSL Z540-1-1994 and ANSI/NCSL Z540.3-2006. Other standards listed upon request.

CALIBRATION CERTIFICATE

9900 Chemin de la Côte-de-Liesse, Montréal, QC H8T 1A1
www.dispersion.ca 1.866.390.5066

Client :	Polytests	Certificate Number :	157-77C603-225
Address :	695 B rue Gaudette Saint-Jean-sur-Richelieu, QC J3B7S7	Calibration date :	14-03-2022

Technician:
Coutu, Daniel

David L. Corcoran

David Llorens, Quality Manager

SERVICE DESCRIPTION:

Masses description :	ASTM E617	Date approved :	14-03-2022
Precision class :	ASTM 1	Next Calibration :	14-03-2027
Density :	7.96g/cm³	CCN accreditation # :	668
Identification (if unique) :	DI000J378	CLAS Certification # :	2010-01

Test conditions :	Temp °C:	21.16	kPa Pressure:	100.64	Humidity:	47.97
--------------------------	----------	-------	---------------	--------	-----------	-------

NOTES:

For weight calibration, we use the procedure "Comparaison individuelle" PDL-09-MG-001 and the procedure "Détermination des incertitudes" PDL-09-MG-002. This certificate cannot be copied without written approval from Dispersion Laboratory. The results presented in these pages relate only to objects subjected to calibration.n

REMARKS:

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March 2022 page 1 of 5

9900 Chemin de la Côte-de-Liesse, Montréal, QC H8T 1A1
www.dispersion.ca 1.866.390.5066

Client :	Polytests	Certificate Number :	157-77C603-225
Address :	695 B rue Gaudette Saint-Jean-sur-Richelieu, QC J3B7S7	CCN Accreditation # :	668
		CLAS Certification # :	2010-01
		Precision class :	ASTM 1
		Calibration date :	14-03-2022
Mass :	100 mg	Follow-up date :	14-03-2027

CALIBRATION RESULTS, CONVENTIONAL MASS:

[illegible]

9900 Chemin de la Côte-de-Liesse, Montréal, QC H8T 1A1
www.dispersion.ca 1.866.390.5066

CALIBRATION CERTIFICATE

9900 Chemin de la Côte-de-Liesse, Montréal, QC H8T 1A1
www.dispersion.ca 1.866.390.5066

BALANCES

The following balances are used for calibration purposes :

> 5 kg to 25 kg :	Mettler Toledo XP32003L, SNR 1123271214, max. 32100 g, d = 0.005 g
> 1 kg to 5 kg	Mettler Toledo PR5003, SNR 1115311634, max. 5100 g, d = 0.001 g
> 300 g to 2 kg :	Mettler Toledo XP2004S, SNR B131185222, max. 2100 g, d = 0.1 mg
> 100 g to 200 g :	Mettler Toledo AT201 SNR BA1115230146, max. 205 g, d = 0.01 mg
> 5 g to 100 g :	Mettler Toledo AX106 SNR 1127063924, max. 111 g, d = 1 µg
1 mg to 5 g :	Mettler UMX5, SNR 1121103055, max. 5.1 g, d = 0.1 µg

We are also using these balances in our automated procedure :

> 200 g to 1 kg :	Mettler Toledo AX1005 SNR 1127063210, max. 1109 g, d = 0.01 mg
> 5 g to 100 g :	Mettler Toledo AX106 SNR 1120143015, max. 111 g, d = 1 µg
1 mg to 5 g :	Mettler UMX5, SNR 1125140561, max. 5.1 g, d = 0.1 µg

Our balances are periodically verified, according to our PDL-11-MG-001 control procedure.

UNCERTAINTIES:

The following uncertainties exist :

1. *Uncertainty associated with the weighting process.*
2. *Uncertainty associated with air density.*
3. *Uncertainty associated with the measurement standard.*
4. *Uncertainty associated with the density of the mass being calibrated.*

The uncertainty of the weighing process includes long-term reproducibility.

Uncertainties specified in this report are expanded uncertainties representing a confidence level of approximately 95% obtained by multiplying the combined standard uncertainty by a coverage factor of $k = 2$. For more detailed information refer to the GUM (Guide to the Expression of Uncertainty in Measurement, 1995 Edition)

TRACEABILITY

The Calibration Laboratory Assessment Service (CLAS) of the National Research Council of Canada (NRC) has assessed and certified specific calibration capabilities of this laboratory and their traceability to recognized national measurement standards and to the International System of Units (SI). This certificate of calibration is issued in accordance with the conditions of certification granted by CLAS and the conditions of accreditation granted by the Standards Council of Canada (SCC). Neither the CLAS nor the SCC guarantees the accuracy of individual calibration by accredited laboratories.

CALIBRATION CERTIFICATE

9900 Chemin de la Côte-de-Liesse, Montréal, QC H8T 1A1
www.dispersion.ca 1.866.390.5066

USED REFERENCES

Item	Serial #	Manufacturer	Calibration date	Due date
300g Labo	96-0888-50-2	Denver Instrument Company	01-10-2020	31-03-2022
1kg-1mg Labo	MT-01	Mettler Toledo	01-10-2020	31-03-2022
2kg Labo	96-0888-50-3	Denver Instrument Company	01-10-2020	31-03-2022
1kg Labo	96-088850-1	Denver Instrument Company	01-10-2020	31-03-2022
5kg Labo	129099	Mettler Toledo	01-10-2020	31-03-2022
10kg Labo	DI000G991	Dispersion	23-03-2021	31-03-2022
20kg Labo	69976	Mettler Toledo	06-10-2021	31-10-2022
1 mg-10kg	4000028011	Troemner	15-10-2021	31-10-2022
2kg Labo	129098	Mettler Toledo	01-10-2020	31-03-2022

ENVIRONMENTAL CONDITIONS

Item	Serial #	Manufacturer	Calibration date	Due date
THE004	107080	Control Company	04-03-2021	31-03-2022

CERTIFICATE OF ANALYSIS

Grade of Product: PRIMARY STANDARD

Customer:	AIR LIQUIDE CANADA	Reference Number:	160-402375016-1
Part Number:	X04NI77P15A0003	Cylinder Volume:	153.0 CF
Cylinder Number:	EB0118140	Cylinder Pressure:	2016 PSIG
Laboratory:	124 - Plumsteadville - PA	Valve Outlet:	350
Analysis Date:	Mar 07, 2022		
Lot Number:	160-402375016-1		

Expiration Date: Mar 07, 2030

Primary Standard Gas Mixtures are traceable to N.I.S.T. weights and/or N.I.S.T. Gas Mixture reference materials.

ANALYTICAL RESULTS

Component	Req Conc	Actual Concentration (Mole %)	Analytical Uncertainty
OXYGEN	2.000 %	2.005 %	+/- 0.02%
CARBON MONOXIDE	3.000 %	3.000 %	+/- 0.02%
CARBON DIOXIDE	18.00 %	18.00 %	+/- 0.02%
NITROGEN	Balance		

Notes: GROSS WEIGHT: 29.581 KG

NET WEIGHT: 5.442 KG

P/N A1336386

PO#89404761



EM-336

[Signature]
JUN 2022

[Signature]
Approved for Release



CERTIFICATE OF ANALYSIS

Customer: SERVICES POLYTESTS INC., (S2232)
695B, GAUDETTE
ST-JEAN SUR RICHELIEU QC
J3B 7S7

Analysis Date: 3/4/2022 9:44:18AM
Product code: A1334811
Grade: PRIMARY
Size: 44
CGA #: 590

Servitrex barcode No: T2H6H8N
Work order number: 1607008
Pressure: 1450 psig
Volume: 4.7M3
Expiry date: 03/04/2025

COMPONENTS	NOMINAL CONCENTRATION	ANALYSIS RESULTS
CARBON DIOXIDE	10.0000 % Molar	10.00 % Molar
CARBON MONOXIDE	1.0000 % Molar	1.002 % Molar
OXYGEN	10.0000 % Molar	10.00 % Molar
NITROGEN	BALANCE	BALANCE

Analysis performed by:

Tobi Erinle
TOBI ERINLE - LAB TECHNICIAN

Verified by:

AD

This Air Liquide Canada mixture is traceable to NIST

METHOD OF ANALYSIS:

Method of analysis is based on principles of gas chromatography and as documented in Air Liquide Canada operating procedure, where applicable, FID, TCD, PDHID, FT-IR, FPD, NO/NOx and SO2 chemiluminescence, hygrometer, and electrochemical cells and paramagnetic cell. Detectors were used in conjunction with packed or capillary columns calibrated flow meters and dilution calibrated system.

ANALYTICAL ACCURACY:

Quality	Concentration	Blend Tolerance	AA
PRIMARY	5%-50%	+/-1%	+/-1%
	0.5%-5%	+/-2%	
	1ppm-0.5%	+/-5%	
CERTIFIED	5%-50%	+/-5%	+/-2%
	0.5%-5%	+/-10%	+/-2%
	1ppm-0.5%	+/-20%	+/-5%
UNANALYZE	5%-50%	+/-10%	
	<5%	+/-20%	

EM-338

[Signature]
June 2022

This mixture was certified by a combination of weight and analysis (depending on component) using scales certified against weights traceable to the Institute for National Measurement Standards (INMS) of the National Research Council of Canada (NRCC), Report # W-021221-13857 (MTL) and CA3033-022-050621-ACC (Calgary) or calibration standards prepared in that manner.

How to contact us & order



E-mail within your region:

specgas.atlantic@airliquide.com
specgas.qc@airliquide.com

specgas.on@airliquide.com
specgas.ab@airliquide.com

specgas.midwest@airliquide.com
specgas.pacific@airliquide.com



Customer Solution Center 1 800 217-2688



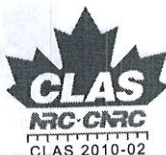
Online 24/7 through My.Airliquide.ca



Air Liquide Mobile App



Instrumentation
Saint-Laurent inc.
Certified ISO 17025



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(Québec), J0N 1M0
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Fax: (450) 473-5207
info@instrumentationsaintlaurent.com

CALIBRATION CERTIFICATE

CERTIFICATE # CE-EM-340 2024-05-23	
CLIENT	
Company:	Services Polytests Inc
Address:	695 B rue Gaudette
	St-Jean-sur-Richelieu, Québec, J3B 7S7
CALIBRATION SPECIFICATION	
Service Procedure:	4IN9106
Required Accuracy:	+/- 1.0 inHg
Calibration Frequency:(days)	365
INSTRUMENT SPECIFICATION	
Instrument Type:	Pressure Gauge
Manufacturer:	Dwyer
Model #:	DPG200
Serial #:	S799031-0001
Location:	N.A.
Input Type:	Pression
Output Type:	Digitale
Measurement Type:	Pressure
Range:	-29.93 to 0 inHg
Version:	Machine: N.A.
CALIBRATORS SPECIFICATION	
Calibrator:	Crystal XP2i 300
Serial #:	866756
Certified by:	Alpha Controls
Comments:	
Certification #:	2023007594
Certification Date:	2023-09-22
Next Certification:	2024-09-22
Calibrator:	Fluke 744
Serial #:	8180008
Certified by:	alpha Controls
Comments:	
Certification #:	AC24041903
Certification Date:	2024-05-09
Next Certification:	2025-05-09



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Certified ISO 17025



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CALIBRATION CERTIFICATE

CERTIFICATE #		CE-EM-340 2024-05-23					
CALIBRATION RESULTS							
Entry Source	Given Value	Initial Value	Ini. Deviation Error	Final Value	Fin. Deviation Error	Accuracy	Uncertainty
Conformity	Comment						
0.00 "Hg	0.00 "Hg	0.00 "Hg	0.00 "Hg	0.00 "Hg	0.00 "Hg	+/- 1.0 "Hg	+/- 0.5 "Hg
Compliant	Verification of the indicator						
-7.50 "Hg	-7.50 "Hg	-7.51 "Hg	-0.01 "Hg	-7.51 "Hg	-0.01 "Hg	+/- 1.0 "Hg	+/- 0.5 "Hg
Compliant	Verification of the indicator						
-15.00 "Hg	-15.00 "Hg	-15.03 "Hg	-0.03 "Hg	-15.03 "Hg	-0.03 "Hg	+/- 1.0 "Hg	+/- 0.5 "Hg
Compliant	Verification of the indicator						
-22.50 "Hg	-22.50 "Hg	-22.55 "Hg	-0.05 "Hg	-22.55 "Hg	-0.05 "Hg	+/- 1.0 "Hg	+/- 0.5 "Hg
Compliant	Verification of the indicator						
-28.00 "Hg	-28.00 "Hg	-28.06 "Hg	-0.06 "Hg	-28.06 "Hg	-0.06 "Hg	+/- 1.0 "Hg	+/- 0.5 "Hg
Compliant	Verification of the indicator						
-22.50 "Hg	-22.50 "Hg	-22.55 "Hg	-0.05 "Hg	-22.55 "Hg	-0.05 "Hg	+/- 1.0 "Hg	+/- 0.5 "Hg
Compliant	Verification of the indicator						
-15.00 "Hg	-15.00 "Hg	-15.03 "Hg	-0.03 "Hg	-15.03 "Hg	-0.03 "Hg	+/- 1.0 "Hg	+/- 0.5 "Hg
Compliant	Verification of the indicator						
-7.50 "Hg	-7.50 "Hg	-7.51 "Hg	-0.01 "Hg	-7.51 "Hg	-0.01 "Hg	+/- 1.0 "Hg	+/- 0.5 "Hg
Compliant	Verification of the indicator						
0.00 "Hg	0.00 "Hg	0.00 "Hg	0.00 "Hg	0.00 "Hg	0.00 "Hg	+/- 1.0 "Hg	+/- 0.5 "Hg
Compliant	Verification of the indicator						
0.00 "Hg	20.00 mA	19.99 mA	-0.01 mA	19.99 mA	-0.01 mA	+/- 0.5 mA	+/- 0.0045
Compliant	Verification of the analogic output						
-7.50 "Hg	16.00 mA	15.99 mA	-0.01 mA	15.99 mA	-0.01 mA	+/- 0.5 mA	+/- 0.0045
Compliant	Verification of the analogic output						
-15.00 "Hg	12.00 mA	11.97 mA	-0.03 mA	11.97 mA	-0.03 mA	+/- 0.5 mA	+/- 0.0045
Compliant	Verification of the analogic output						
-22.50 "Hg	8.00 mA	7.94 mA	-0.06 mA	7.94 mA	-0.06 mA	+/- 0.5 mA	+/- 0.0045
Compliant	Verification of the analogic output						
-28.00 "Hg	5.00 mA	5.08 mA	+0.08 mA	5.08 mA	+0.08 mA	+/- 0.5 mA	+/- 0.0045
Compliant	Verification of the analogic output						
-22.50 "Hg	8.00 mA	7.94 mA	-0.06 mA	7.94 mA	-0.06 mA	+/- 0.5 mA	+/- 0.0045
Compliant	Verification of the analogic output						
-15.00 "Hg	12.00 mA	11.97 mA	-0.03 mA	11.97 mA	-0.03 mA	+/- 0.5 mA	+/- 0.0045
Compliant	Verification of the analogic output						
-7.50 "Hg	16.00 mA	15.99 mA	-0.01 mA	15.99 mA	-0.01 mA	+/- 0.5 mA	+/- 0.0045
Compliant	Verification of the analogic output						
0.00 "Hg	20.00 mA	19.99 mA	-0.01 mA	19.99 mA	-0.01 mA	+/- 0.5 mA	+/- 0.0045
Compliant	Verification of the analogic output						
Environmental Conditions:		Temperature: 22 °C		Humidity: 47 %RH			
Comments:							



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CALIBRATION CERTIFICATE

CERTIFICATE # CE-EM-340 2024-05-23

CALIBRATION DATE/ISSUANCE OF CERTIFICATE		
Calibration Date:		2024-05-23
Next Calibration:		2025-05-23
Certificate Date:		2024-05-23

CALIBRATION CONFORMITY		
	Before	After
Compliant:	X	X
Non Compliant:		

- Instrumentation St. Laurent Inc. Certify that the above instrument, meets or exceeds the specifications established by the manufacturer. The company's quality system complies with the requirements of ISO 17025 :2017 and the standards used to perform the calibration is traceable to NRC and / or NIST.
- Reported uncertainties represent a 95 % of confidence level assuming a normal distribution $k=2$.
- The declaration of conformity does not include Instrumentation St-Laurent Inc. uncertainty measurement. Decision rule is based on binary statement for simple acceptance rule against ILAC G8 standard and test tolerance limits are based on customer specifications, unless otherwise specified.
- The results presented in this certificate relate only to objects subject to calibration.
- It is the customer's responsibility to ensure that calibrated equipment meets its intended use.
- The date format used in this certificate is: YYYY-MM-DD.

Assessment Service Calibration Laboratory (ASCL) of the National Research Council of Canada (NRC) has assessed and certified calibration laboratory's ability and traceability to the International System of Units (SI) or to standards acceptable according to ASCL. This calibration certificate is issued in accordance with the terms of ASCL certification and accreditation requirements of the Standards Council of Canada (SCC). ASCL and SCC does not guarantee the accuracy of individual calibrations by accredited laboratories.

M. Gingras

Marc Gingras - Technicien

[Signature] 28 Mai 2024

APPENDIX 4: Unit pre burn

Temps acquisition minutes	Flue	scale	Right	Back	bottom	Top	Left
	temp						
	°F	lbs	°F	°F	°F	°F	°F
1	488,0	9,6	242,8	121,9	161,2	527,4	223,7
2	386,2	9,5	250,1	127,2	165,5	520,7	235,3
3	340,9	9,5	257,9	132,5	170,2	504,4	244,9
4	293,6	9,5	266,2	138,4	176,1	484,4	252,8
5	264,3	9,4	273,5	144,7	181,9	465,2	258,8
6	278,6	9,3	278,1	146,0	186,6	444,3	262,6
7	277,5	9,9	280,6	145,7	191,1	422,7	264,9
8	243,2	9,3	278,6	151,5	192,5	402,6	266,6
9	222,9	9,3	279,5	156,5	196,2	386,5	266,4
10	223,3	9,2	278,8	160,6	198,7	371,1	265,0
11	235,9	9,1	276,8	164,2	201,2	356,6	263,0
12	289,9	9,0	275,1	158,0	204,5	342,6	259,6
13	288,5	9,0	272,9	155,1	206,8	331,0	256,8
14	287,2	8,9	270,6	154,0	209,7	320,9	253,7
15	284,7	8,9	268,9	152,9	211,8	312,1	250,5
16	293,4	8,8	267,0	152,3	213,8	304,4	247,1
17	309,5	8,7	266,0	151,0	214,8	298,1	243,9
18	305,3	8,7	264,9	150,9	216,9	293,4	240,5
19	304,9	8,6	264,3	150,6	218,3	289,5	237,3
20	306,4	8,6	264,0	150,0	219,2	286,2	234,6
21	302,7	8,5	263,3	150,0	220,5	283,7	231,8
22	357,7	8,4	262,7	149,1	221,3	281,9	229,0
23	396,2	8,3	262,7	148,3	222,3	283,2	226,3
24	447,2	8,2	263,2	147,8	223,4	288,8	223,7
25	498,5	8,1	264,8	147,2	223,5	300,9	221,5
26	534,7	7,9	267,1	146,4	224,6	319,0	219,7
27	552,1	7,8	269,2	146,6	225,6	342,3	218,3
28	534,5	7,6	272,3	147,0	226,4	363,8	217,6
29	517,7	7,5	276,2	146,9	226,6	381,8	217,4
30	502,4	7,4	280,4	147,4	228,3	394,6	217,7
31	499,6	7,3	284,7	148,0	229,5	403,5	218,2
32	494,1	7,2	289,2	148,5	230,5	409,4	218,9
33	489,3	7,1	293,5	149,1	231,6	413,0	219,5
34	486,4	7,0	298,0	149,6	232,7	415,5	220,1
35	488,3	6,9	302,2	150,0	233,8	417,2	220,7
36	497,7	6,8	306,2	150,6	234,8	419,4	221,2
37	511,7	6,7	309,8	151,9	236,3	423,0	221,9
38	532,9	6,6	314,2	151,7	236,6	428,7	222,4
39	547,8	6,5	318,2	152,2	237,9	437,0	223,4
40	569,4	6,3	322,7	153,2	239,2	446,7	225,0
41	571,7	6,2	327,9	153,2	240,2	458,7	228,5
42	573,4	6,0	333,7	154,1	241,4	472,2	233,9
43	566,7	5,9	340,1	155,3	242,4	485,6	240,1
44	563,7	5,7	346,5	156,4	243,6	497,3	246,7
45	563,8	5,6	353,1	157,7	245,0	508,1	253,7
46	565,1	5,4	359,7	159,4	246,2	518,0	261,0
47	567,1	5,3	366,1	160,6	247,4	527,0	268,7
48	572,8	5,2	372,4	161,9	248,4	536,1	276,3
49	579,6	5,0	378,7	163,2	249,2	545,5	284,2
50	576,0	4,9	384,9	165,3	250,8	554,5	292,1
51	575,8	4,7	391,0	166,9	251,7	562,5	299,8
52	576,5	4,6	397,2	169,2	252,5	570,5	307,4
53	576,8	4,5	403,8	171,2	253,4	577,8	315,0
54	577,3	4,3	410,4	172,7	254,3	584,7	322,9
55	628,4	4,2	417,0	174,0	255,0	594,9	331,0
56	663,4	4,0	422,6	175,6	255,8	618,4	338,4
57	681,6	3,9	426,9	177,7	256,8	647,7	344,9
58	692,9	3,7	430,9	179,9	257,7	675,9	351,3
59	695,5	3,6	434,5	181,5	258,7	701,6	357,2
60	695,6	3,4	437,6	184,1	259,9	723,8	362,8
61	692,1	3,3	440,6	186,0	261,0	742,7	368,4
62	687,2	3,2	443,4	188,4	262,4	758,8	373,6
63	678,3	3,0	445,9	190,7	263,6	770,3	378,8
64	664,4	2,9	448,4	192,9	265,3	777,7	383,7
65	653,0	2,8	450,7	194,8	267,0	780,1	388,3
66	640,5	2,7	452,8	196,7	268,5	778,5	393,3
67	625,8	2,6	454,9	199,5	270,5	774,3	397,7
68	611,3	2,6	457,0	200,8	272,9	766,3	402,8
69	329,5	6,5	469,2	262,9	355,5	508,3	429,4
70	343,8	6,4	468,9	275,1	359,6	497,1	428,4
71	431,0	6,3	466,4	283,1	362,5	483,6	426,7
72	500,3	6,0	462,9	279,8	364,0	470,7	422,7
73	529,5	5,9	459,9	267,9	366,2	463,7	417,6
74	574,4	5,7	456,6	261,8	368,5	468,0	413,5
75	581,1	5,5	453,7	258,4	370,4	481,7	410,4
76	593,2	5,3	451,2	256,6	371,6	500,1	408,8
77	599,4	5,2	449,5	256,0	372,6	521,3	407,6
78	615,0	5,0	448,6	255,2	373,2	542,8	407,3
79	626,4	4,8	448,9	253,8	373,9	565,9	408,0
80	633,2	4,6	449,0	254,6	374,1	589,6	408,8
81	635,6	4,4	450,3	253,5	374,2	611,4	411,3
82	642,6	4,3	451,8	253,4	374,0	630,9	413,2
83	652,5	4,1	453,9	252,7	373,8	649,6	416,1
84	656,9	3,9	455,7	253,7	373,6	667,7	418,2
85	662,2	3,7	457,4	253,7	372,9	684,2	421,4
86	660,4	3,6	459,9	253,6	372,6	699,0	424,7
87	665,7	3,4	462,2	253,8	372,4	712,1	428,2
88	667,8	3,2	465,1	253,6	371,6	724,7	431,6
89	670,5	3,0	468,0	253,7	370,7	736,7	434,8
90	671,6	2,9	471,1	253,7	370,4	748,0	438,0
91	674,9	2,7	473,9	254,3	369,4	758,9	440,9
92	676,2	2,6	477,3	254,2	368,8	769,6	444,9
93	676,6	2,4	480,3	253,9	367,8	780,3	448,1
94	677,8	2,2	483,4	254,3	367,6	791,2	451,6

Piece Size (in):				Weight lbs	Meter Moisture Content Dry Uncorrected %
Thick	x	Wide	Length		
1,5	3,5	6,5			20
1,5	3,5	6,5			20
1,5	3,5	6,5			20
1,5	3,5	6,5			20
1,5	3,5	6,5			20
1,5	3,5	6,5			20
1,5	3,5	6,5			20
1,5	3,5	6,5			20
1,5	3,5	6,5			20
1,5	3,5	14,375			20
1,5	3,5	14,375		8,45	20

Piece Size (in):				Weight lbs	Meter Moisture Content Dry Uncorrected %
Thick	x	Wide	Length		
1,5	3,5	14,325		1,74	19,00
1,5	3,5	14,325		1,54	19,00
1,5	3,5	14,325		1,78	19,00

95	679,3	2,1	486,6	253,8	367,3	801,7	454,8
96	682,2	1,9	489,5	254,3	366,4	811,7	457,9
97	686,2	1,8	492,3	254,7	365,9	820,7	461,3
98	690,1	1,6	495,4	254,7	365,2	829,9	465,1
99	694,2	1,5	498,1	255,4	364,5	838,8	468,0
100	697,7	1,4	500,5	256,2	363,9	847,3	471,6
101	693,6	1,3	503,2	255,8	363,5	855,2	475,0
102	669,3	1,2	505,8	256,3	363,2	856,9	478,4
103	637,5	1,1	508,1	257,2	362,6	847,2	481,3
104	618,0	1,0	509,9	258,6	362,7	828,0	483,0
105	598,4	1,0	511,6	259,6	362,9	806,2	485,7
106	575,1	0,9	513,0	261,0	362,3	783,8	486,9
107	551,5	0,9	514,6	261,4	362,0	760,1	488,9
108	529,4	0,9	515,4	262,8	362,0	736,1	488,9
109	509,6	0,8	516,2	262,8	362,4	712,5	490,2
110	494,0	0,8	516,6	263,9	362,1	690,1	489,5
111	480,4	0,8	516,7	263,8	362,2	669,7	489,2
112	470,2	0,8	516,3	264,0	362,9	650,4	488,5
113	460,5	0,8	515,2	265,1	362,4	632,8	486,3
114	451,9	0,7	514,0	265,8	362,8	616,2	484,9
115	445,2	0,7	512,1	265,7	362,7	600,9	483,2
116	438,6	0,7	509,9	266,2	363,3	586,8	480,7
117	433,6	0,7	507,7	266,5	363,0	573,7	478,4
118	428,9	0,6	505,2	267,7	363,1	561,7	475,2
119	424,4	0,6	502,4	266,9	363,5	550,5	473,0
120	420,7	0,6	499,8	266,5	363,8	540,1	470,2
121	417,3	0,6	496,7	268,2	363,7	530,7	466,7
122	414,1	0,6	493,9	267,4	364,2	521,9	463,8
123	410,9	0,5	490,8	268,0	364,4	513,7	461,1
124	407,5	0,5	488,4	267,2	364,0	506,1	458,1
125	404,5	0,5	485,2	268,2	364,4	499,2	455,4
126	401,3	0,5	482,1	267,6	364,9	492,6	452,4
127	398,8	0,5	479,9	266,7	364,9	486,3	450,2
128	396,1	0,4	477,2	266,9	364,8	480,5	447,5
129	393,8	0,4	474,7	267,4	365,1	475,0	444,7
130	391,2	0,4	471,8	266,8	365,3	469,7	442,2
131	389,9	0,4	469,3	266,8	365,4	464,7	439,6
132	387,6	0,3	466,6	266,4	365,1	459,9	437,2
133	386,9	0,3	464,3	265,8	365,3	455,4	435,0
134	385,0	0,3	461,7	266,4	365,1	451,3	432,8
135	383,1	0,3	459,7	265,3	365,2	447,3	430,7
136	382,2	0,3	457,2	265,1	365,6	443,5	428,4
137	380,8	0,2	454,8	264,6	365,8	439,8	426,6
138	379,0	0,2	452,8	265,4	364,7	436,5	424,4
139	377,6	0,2	450,7	263,8	364,6	433,4	422,5
140	375,4	0,2	448,7	264,3	364,4	430,3	420,5
141	373,4	0,2	446,6	263,5	365,1	427,3	418,5
142	368,2	0,1	444,4	263,2	364,1	424,1	417,1
143	364,9	0,1	442,6	262,6	363,5	420,7	415,7
144	363,0	0,1	440,9	262,7	363,6	417,2	414,0
145	361,1	0,1	438,9	262,3	363,6	413,9	412,6
146	359,5	0,1	437,1	261,9	363,8	410,8	410,7
147	358,7	0,0	435,0	260,5	364,0	407,8	409,2
148	86,5	8,4	312,6	168,7	206,4	361,6	290,8
149	116,1	8,4	310,8	164,6	206,8	352,5	287,2
150	324,8	8,2	308,5	164,4	207,5	347,5	284,2
151	374,5	8,1	306,4	163,7	208,2	343,6	281,7
152	373,6	8,0	304,6	163,7	209,0	340,9	278,8
153	372,4	8,0	302,4	164,0	209,9	338,5	276,4
154	436,6	7,8	300,7	163,2	210,5	337,5	273,5
155	502,9	7,7	299,0	162,7	211,5	341,0	271,1
156	520,8	7,5	297,4	162,7	212,2	349,0	270,4
157	534,6	7,4	296,2	162,1	212,5	362,4	271,2
158	531,8	7,2	295,3	162,4	213,3	377,9	272,0
159	545,7	7,1	295,2	162,9	214,0	392,8	273,2
160	549,9	7,0	295,5	163,3	215,1	408,2	275,3
161	566,6	6,8	296,8	163,4	215,4	422,5	278,3
162	580,4	6,6	298,6	164,5	216,7	438,0	282,1
163	594,2	6,4	301,7	165,3	217,1	455,1	286,8
164	601,5	6,3	305,6	166,2	217,9	473,2	292,1
165	611,5	6,1	310,6	167,0	218,5	491,7	298,1
166	619,1	5,9	316,0	168,4	219,6	510,3	304,6
167	625,6	5,7	322,1	169,7	220,1	528,4	311,5
168	635,3	5,6	328,3	171,3	221,0	546,0	318,8
169	645,2	5,4	335,1	172,2	221,8	563,4	326,1
170	655,6	5,2	341,5	173,8	222,3	580,4	333,6
171	666,3	5,1	347,7	175,6	223,0	597,6	341,3
172	672,3	4,9	354,1	177,5	223,8	614,3	348,9
173	677,7	4,7	360,4	179,0	224,8	630,6	356,4
174	685,0	4,5	366,7	181,2	225,6	646,4	363,9
175	702,7	4,4	372,9	184,0	226,4	663,0	371,3
176	715,5	4,2	379,7	185,1	227,1	680,7	379,3
177	724,5	4,0	386,1	187,2	228,1	698,1	386,4
178	731,6	3,8	392,2	189,7	229,2	716,2	393,9
179	727,8	3,7	398,3	191,6	230,3	733,6	401,2
180	719,5	3,5	404,5	193,9	231,1	749,4	408,0
181	715,2	3,4	410,7	196,0	231,9	763,2	414,7
182	720,0	3,2	416,7	198,0	233,2	779,9	419,3
183	723,9	3,1	422,3	200,3	234,5	797,2	423,4
184	721,2	2,9	427,2	202,4	236,5	812,5	426,8
185	715,3	2,8	432,1	204,3	237,7	822,7	429,8
186	702,6	2,7	436,9	206,1	239,0	830,5	432,7
187	687,4	2,6	441,4	208,2	241,3	835,5	434,9
188	671,3	2,5	446,3	209,9	243,6	835,2	437,2
189	655,1	2,4	451,3	211,5	245,8	829,6	439,6
190	636,2	2,3	456,5	213,0	248,6	821,5	441,7
191	615,0	2,2	461,3	215,5	251,4	810,3	443,4
192	596,9	2,2	465,7	217,2	254,8	795,3	445,3

Piece Size (in):			Weight lbs	Meter Moisture Content Dry Uncorrected %
Thick	x Wide	x Length		
1,5	3,5	6,5		20
1,5	3,5	6,5		20
1,5	3,5	6,5		20
1,5	3,5	6,5		20
1,5	3,5	6,5		20
1,5	3,5	6,5		20
1,5	3,5	6,5		20
1,5	3,5	6,5		20
1,5	3,5	6,5		20
1,5	3,5	6,5		20
1,5	3,5	6,5		20
1,5	3,5	6,5		20
1,5	3,5	6,5		20
1,5	3,5	14,375		20
1,5	3,5	14,375	8,21	20

193	579,8	2,1	470,1	217,9	257,0	777,7	447,4
194	563,9	2,0	473,5	220,5	261,5	758,0	447,9
195	549,2	2,0	476,9	221,2	264,1	737,7	449,2
196	534,9	2,0	479,6	222,5	267,5	717,5	449,9
197	523,2	1,9	481,9	223,9	270,3	697,8	450,5
198	513,5	1,9	483,5	225,6	273,8	679,4	450,3
199	504,4	1,8	484,7	226,6	276,9	662,1	450,8
200	495,9	1,8	485,1	228,1	280,7	646,0	450,3
201	489,3	1,8	485,1	229,9	284,1	631,0	449,5
202	479,5	1,7	485,0	231,0	287,5	616,9	448,9
203	470,9	1,7	484,1	232,7	291,1	603,4	448,0
204	464,0	1,7	483,5	232,9	293,6	590,4	447,5
205	457,1	1,6	482,2	234,8	297,1	578,1	445,9
206	451,8	1,6	481,0	235,4	299,9	566,7	444,8
207	447,5	1,6	479,8	236,3	303,3	555,9	443,4
208	443,4	1,6	478,1	237,4	306,5	546,1	441,6
209	439,2	1,5	476,8	238,3	309,8	536,8	439,9
210	426,6	1,5	475,2	239,7	313,6	527,2	438,0
211	420,5	1,5	473,4	240,5	317,0	517,2	436,4
212	415,2	1,5	472,0	241,1	320,0	507,5	434,5
213	412,5	1,4	470,7	241,6	322,8	498,4	433,4
214	325,1	1,4	469,2	261,8	327,3	492,2	432,5
215	316,2	6,4	467,5	273,3	330,6	481,9	431,6
216	394,9	6,2	462,4	280,6	329,8	469,3	429,3
217	454,5	6,0	460,0	271,0	333,5	455,6	425,5
218	528,1	5,9	456,3	261,8	336,6	448,2	421,9
219	560,8	5,7	452,6	256,1	338,8	454,2	418,8
220	564,0	5,5	449,1	253,4	340,6	467,2	415,4
221	578,2	5,3	446,4	251,8	341,7	483,4	413,1
222	587,1	5,2	445,0	250,2	342,2	501,6	412,2
223	599,2	5,0	444,4	249,4	343,0	521,0	411,1
224	607,3	4,8	444,7	248,9	342,6	540,8	411,2
225	614,2	4,7	445,9	248,1	342,7	560,5	412,0
226	622,0	4,5	446,7	248,0	342,8	579,9	413,0
227	628,3	4,3	448,6	247,0	342,4	598,5	414,9
228	635,2	4,2	450,4	246,9	342,5	616,6	416,9
229	640,4	4,0	452,8	246,3	341,8	634,1	420,2
230	648,1	3,8	455,1	246,1	341,2	651,1	422,3
231	653,9	3,7	457,6	245,3	341,1	668,1	425,8
232	660,2	3,5	460,3	245,5	340,6	684,7	428,2
233	663,3	3,3	463,1	245,0	340,1	700,9	431,5
234	664,7	3,2	466,2	245,0	339,4	715,7	434,8
235	665,6	3,0	469,1	245,1	339,1	728,8	438,1
236	665,9	2,8	472,3	244,9	338,7	741,2	441,6
237	667,3	2,7	475,2	245,3	338,6	752,2	444,9
238	669,1	2,5	478,4	245,7	338,0	762,5	447,8
239	671,4	2,4	481,4	245,7	338,0	772,6	451,1
240	674,6	2,2	484,6	245,8	337,5	782,4	454,1
241	677,4	2,1	487,7	245,9	337,5	791,4	457,7
242	682,0	1,9	490,7	246,3	337,0	800,8	460,5
243	689,0	1,8	493,8	246,6	336,7	811,1	463,8
244	694,5	1,6	497,3	246,7	336,4	823,1	467,5
245	695,4	1,5	499,8	247,2	336,5	835,1	471,4
246	686,7	1,4	501,7	248,5	336,7	845,3	474,2
247	668,1	1,2	505,0	248,6	336,5	849,7	478,4
248	649,8	1,2	507,2	249,5	336,4	845,6	480,9
249	633,1	1,1	509,9	250,0	336,5	835,4	484,2
250	611,8	1,0	511,8	250,7	336,7	820,9	486,3
251	590,7	1,0	513,3	250,9	336,5	802,1	488,7
252	565,9	0,9	514,6	251,8	337,2	779,9	490,0
253	544,5	0,9	515,8	252,7	336,9	756,3	490,7
254	524,7	0,9	516,7	253,1	337,2	732,4	491,3
255	508,2	0,8	516,8	253,9	337,7	709,3	491,2
256	492,8	0,8	516,7	254,2	338,1	687,3	490,6
257	480,4	0,8	516,3	254,9	338,5	666,2	489,6
258	469,7	0,8	515,7	255,4	338,5	646,7	488,3
259	460,9	0,7	514,6	255,5	338,9	628,5	486,7
260	452,7	0,7	513,8	256,2	338,9	611,6	484,7
261	445,6	0,7	511,7	256,9	339,3	596,1	482,0
262	439,2	0,7	510,5	257,3	339,6	581,9	479,4
263	433,1	0,7	508,7	257,7	339,4	568,7	476,8
264	428,6	0,6	506,3	258,2	339,7	556,7	473,6
265	424,2	0,6	504,3	258,6	339,8	545,5	470,3
266	420,4	0,6	501,7	258,9	340,2	535,2	467,1
267	416,4	0,6	499,1	259,1	340,5	525,7	463,9
268	413,5	0,6	496,6	259,7	340,7	517,0	460,8
269	410,1	0,5	493,8	259,9	340,7	508,9	457,7
270	406,9	0,5	491,2	260,0	340,9	501,2	454,7
271	404,1	0,5	488,4	260,0	341,4	494,3	451,4
272	401,4	0,5	485,9	260,1	340,9	487,8	448,4
273	398,2	0,5	483,4	259,8	341,5	481,5	445,6
274	397,8	0,4	480,5	260,3	341,3	475,8	442,6
275	398,8	0,4	478,1	260,3	341,3	470,5	439,8
276	399,4	0,4	475,6	260,4	341,7	465,8	437,1
277	399,1	0,3	473,3	259,6	341,8	461,7	434,8
278	399,2	0,3	471,2	260,4	342,0	458,3	432,2
279	399,4	0,3	469,5	259,9	342,1	455,4	430,3
280	399,9	0,3	467,7	259,7	342,1	453,0	428,2
281	399,4	0,3	466,4	259,5	342,7	450,9	426,1
282	397,8	0,2	465,2	259,1	342,7	448,9	424,5
283	397,0	0,2	464,1	258,7	343,3	447,0	422,7
284	396,4	0,2	463,1	259,3	343,6	445,0	420,6
285	394,9	0,2	462,0	259,7	344,1	443,3	419,0
286	394,7	0,1	461,3	258,8	344,5	441,6	417,9
287	391,1	0,1	460,6	258,8	344,9	440,2	416,4
288	386,7	0,1	460,0	258,6	344,9	438,4	415,3
289	384,3	0,1	459,0	259,0	345,9	436,6	413,5
290	383,0	0,0	458,5	258,4	346,5	434,5	412,5

Piece Size (in):			Weight lbs	Meter Moisture Content Dry Uncorrected %
Thick	x Wide	x Length		
1,5	3,5	14,325	1,72	19,00
1,5	3,5	14,325	1,74	20,00
1,5	3,5	14,325	1,53	20,00

291	76,1	4,1	75,5	75,5	75,1	75,4	75,3	Kindling
292	110,9	4,1	75,6	75,4	75,1	75,7	75,4	
293	175,7	3,9	76,2	75,2	75,1	76,7	76,2	
294	261,9	3,7	77,9	75,2	75,3	80,6	78,5	
295	350,1	3,5	81,0	75,4	75,6	89,6	82,3	
296	455,9	3,3	86,1	76,0	76,2	106,9	87,4	
297	506,1	3,1	92,7	76,8	77,1	134,6	94,6	
298	526,5	2,9	101,0	77,9	78,2	171,4	103,9	
299	545,9	2,7	111,2	79,6	79,6	213,5	115,9	
300	565,1	2,5	123,0	81,7	81,3	258,8	128,8	
301	578,9	2,3	136,0	83,8	83,0	305,4	141,8	
302	589,0	2,2	149,7	86,0	84,8	351,7	153,4	
303	589,6	2,0	164,1	88,7	86,9	396,8	164,5	
304	590,2	1,9	179,0	91,3	89,3	438,5	175,9	
305	592,6	1,7	194,2	93,9	91,8	475,8	187,2	
306	587,1	1,6	209,6	96,6	94,5	507,3	198,7	
307	572,6	1,5	225,1	99,4	97,5	530,1	209,9	
308	564,6	1,4	240,5	102,2	100,6	545,6	220,5	
309	569,0	1,3	254,6	107,5	104,0	558,3	231,5	
310	454,7	9,4	267,2	111,4	107,2	557,2	241,5	
311	424,9	9,3	278,3	113,7	111,2	540,5	250,6	
312	402,5	9,3	286,5	115,4	115,4	520,0	258,4	
313	380,5	9,2	292,6	117,3	119,6	498,1	264,5	
314	363,9	9,2	297,1	118,8	123,5	476,8	269,4	
315	352,8	9,1	299,9	120,4	127,3	455,8	272,6	
316	411,8	9,0	301,2	121,4	130,7	438,2	274,2	
317	485,8	8,8	301,8	122,3	133,8	431,6	273,9	
318	519,1	8,7	302,3	123,0	136,6	433,0	274,1	
319	546,8	8,5	302,3	124,2	138,8	439,1	274,4	
320	569,3	8,3	302,9	125,2	141,0	449,5	276,0	
321	580,7	8,1	303,9	126,7	143,0	461,8	278,4	
322	586,7	7,9	305,8	128,2	144,7	475,9	281,9	
323	591,7	7,7	308,4	129,9	146,3	491,9	286,5	
324	594,7	7,5	311,6	132,0	147,4	507,2	291,5	
325	612,7	7,3	315,9	133,8	148,6	523,1	296,7	
326	626,3	7,1	320,6	136,3	150,1	540,8	302,7	
327	630,4	6,9	326,1	138,2	151,6	557,9	309,9	
328	636,0	6,7	331,8	140,4	152,9	576,1	316,8	
329	642,5	6,5	338,0	142,7	154,2	593,1	324,4	
330	646,4	6,3	344,4	145,1	155,4	609,7	332,6	
331	652,1	6,1	350,8	147,6	156,9	624,8	339,9	
332	653,8	5,9	357,4	149,9	158,3	640,1	347,4	
333	657,3	5,7	364,0	152,3	159,2	653,9	355,7	
334	664,4	5,5	370,3	154,7	160,8	667,3	363,0	
335	667,8	5,3	376,6	157,5	162,7	680,2	370,1	
336	670,6	5,1	382,9	159,9	164,3	692,6	377,8	
337	674,9	4,9	389,2	162,7	166,0	704,5	384,5	
338	677,7	4,8	395,4	165,5	167,9	716,0	392,0	
339	685,9	4,6	401,3	168,1	169,9	727,1	399,0	
340	695,5	4,4	407,2	170,7	171,9	739,4	405,7	
341	700,0	4,2	413,1	173,2	173,4	753,2	412,1	
342	713,9	4,0	418,8	175,7	175,6	769,6	419,3	
343	724,3	3,8	424,3	178,2	177,3	790,0	425,5	
344	739,8	3,6	429,4	180,6	179,3	814,8	431,2	
345	745,1	3,4	434,3	183,3	181,2	841,7	435,8	
346	734,0	3,3	438,8	185,7	183,7	863,5	440,6	
347	717,2	3,1	443,1	188,1	186,5	877,2	445,4	
348	699,8	3,0	447,2	190,6	188,4	882,7	449,8	
349	681,6	2,8	451,6	193,2	191,3	881,3	453,3	
350	668,1	2,7	455,6	195,2	193,9	875,0	455,8	
351	656,0	2,6	459,4	197,2	196,3	866,1	458,4	
352	644,5	2,5	462,7	199,2	199,2	856,1	459,9	
353	630,3	2,4	466,2	200,8	201,7	844,4	461,2	
354	614,9	2,4	469,1	202,8	204,9	829,9	462,1	
355	601,5	2,3	472,1	204,6	208,2	813,2	462,8	
356	589,5	2,2	474,7	206,1	210,5	795,9	463,8	
357	579,6	2,1	476,8	207,6	213,0	778,4	463,6	
358	570,6	2,1	478,7	209,4	216,5	761,5	462,5	
359	560,5	2,0	480,6	211,0	219,8	745,1	462,5	
360	551,1	1,9	482,2	212,5	222,9	728,9	461,4	
361	542,2	1,9	483,4	214,6	225,8	713,2	460,1	
362	533,6	1,8	484,3	216,0	228,3	698,0	459,0	
363	524,7	1,8	484,9	217,2	230,9	682,8	457,9	
364	517,1	1,7	485,3	219,0	234,3	668,0	456,8	
365	509,4	1,7	484,7	220,3	237,6	653,5	455,5	
366	500,7	1,7	483,9	222,2	240,8	639,0	453,5	
367	492,2	1,6	483,4	223,1	242,6	624,4	452,6	
368	482,5	1,6	482,5	225,0	245,8	610,1	450,7	
369	473,3	1,6	481,5	225,8	248,6	595,7	449,6	
370	465,1	1,5	480,6	227,1	251,7	581,9	448,0	
371	457,1	1,5	479,1	228,8	255,3	569,0	446,5	
372	446,6	1,5	477,3	230,0	258,9	556,6	445,2	
373	433,0	1,4	475,9	231,4	261,3	543,7	443,5	
374	421,7	1,4	474,5	232,5	264,8	530,7	442,0	
375	412,8	1,4	473,5	233,2	265,9	517,8	440,7	
376	405,7	1,4	471,7	234,4	269,4	505,5	438,9	
377	393,5	6,5	469,6	243,5	272,5	494,2	437,0	
378	325,2	6,4	466,1	260,5	275,2	484,6	435,8	
379	311,0	6,3	458,5	269,7	276,0	470,5	434,4	
380	328,8	6,2	456,5	269,3	279,2	455,1	431,4	
381	347,7	6,1	454,0	258,8	281,8	438,2	427,0	
382	387,5	5,9	448,7	252,6	284,8	424,7	422,8	
383	473,1	5,8	442,7	248,2	287,5	419,8	418,1	
384	507,8	5,6	437,1	244,6	288,6	426,3	414,8	
385	531,1	5,4	432,5	241,7	289,6	440,0	412,4	
386	543,5	5,2	428,5	241,7	291,9	458,6	411,0	
387	556,2	5,1	425,6	240,2	291,9	479,6	410,7	
388	568,0	4,9	423,9	239,7	292,4	501,9	410,7	

Piece Size (in):				Weight lbs	Meter Moisture Content Dry Uncorrected %
Thick	x Wide	x	Length		
1,5	3,5		6,5		19
1,5	3,5		6,5		19
1,5	3,5		6,5		19
1,5	3,5		6,5		19
1,5	3,5		6,5		19
1,5	3,5		6,5		19
1,5	3,5		6,5		19
1,5	3,5		14,375	8,21	19
1,5	3,5		14,375	8,21	19

Piece Size (in):				Weight lbs	Meter Moisture Content Dry Uncorrected %
Thick	x Wide	x	Length		
1,5	3,5		14,325	1,65	19,00
1,5	3,5		14,325	1,66	19,00
1,5	3,5		14,325	1,67	19,00

389	576,7	4,7	422,8	239,8	294,0	524,4	411,3
390	584,2	4,6	422,7	239,0	294,5	545,6	412,4
391	589,4	4,4	423,8	238,0	295,0	565,6	414,7
392	591,8	4,2	424,8	237,7	295,6	583,6	416,5
393	596,4	4,1	426,5	237,4	295,7	599,9	418,1
394	601,8	3,9	429,1	235,0	295,6	614,7	422,1
395	606,7	3,7	431,3	235,6	295,5	629,3	424,5
396	609,5	3,6	433,7	235,3	294,7	642,8	427,3
397	610,5	3,4	436,9	235,0	294,5	655,1	429,9
398	613,6	3,3	439,6	235,2	294,4	666,5	433,2
399	617,3	3,1	442,2	235,1	295,3	677,2	436,2
400	619,2	3,0	444,8	235,1	295,4	687,4	438,9
401	620,7	2,8	447,8	234,7	294,8	697,1	442,6
402	622,8	2,7	450,7	234,6	295,2	706,0	445,2
403	623,7	2,5	453,8	234,5	295,5	714,6	448,4
404	623,9	2,4	456,8	234,9	296,0	722,4	451,6
405	624,4	2,2	459,8	234,7	295,9	729,9	455,0
406	627,1	2,1	463,0	235,0	296,5	738,4	457,4
407	629,7	2,0	466,3	235,8	297,0	747,4	460,1
408	630,5	1,8	469,7	235,6	297,2	756,6	464,2
409	633,2	1,7	472,8	236,4	297,8	763,5	466,7
410	636,1	1,5	476,2	237,0	298,5	770,7	471,2
411	633,8	1,4	479,7	238,1	298,8	779,0	476,1
412	626,5	1,3	482,9	239,0	299,4	786,6	481,1
413	611,9	1,2	486,2	239,5	299,7	788,7	485,7
414	596,7	1,1	489,2	240,2	300,6	783,6	488,2
415	582,4	1,0	492,0	241,9	300,8	772,9	491,2
416	569,1	1,0	494,6	242,1	301,6	759,8	494,0
417	550,0	0,9	496,8	242,8	302,2	744,3	495,8
418	529,9	0,9	498,3	243,8	302,9	725,9	496,2
419	510,8	0,9	499,4	245,3	303,6	705,7	496,9
420	493,5	0,8	500,0	245,7	304,3	684,9	496,5
421	477,4	0,8	500,3	246,4	305,0	664,4	496,1
422	464,4	0,8	499,8	247,2	305,8	644,7	494,6
423	453,4	0,8	498,9	247,9	307,2	626,1	492,9
424	443,7	0,8	497,5	248,1	307,3	608,9	490,7
425	434,8	0,7	496,0	248,3	308,2	592,7	488,5
426	426,8	0,7	493,8	249,6	308,7	577,6	485,6
427	419,6	0,7	491,7	250,3	309,4	563,8	482,6
428	413,7	0,7	489,2	249,8	309,0	550,9	479,8
429	408,6	0,6	486,8	251,2	309,3	538,9	476,2
430	403,7	0,6	484,3	250,4	310,3	527,7	473,0
431	398,8	0,6	481,5	251,1	310,6	517,4	470,3
432	394,9	0,6	478,3	251,0	312,7	507,7	467,1
433	391,1	0,6	476,0	251,5	313,0	498,6	463,3
434	387,5	0,5	472,9	252,7	313,4	490,3	460,7
435	383,9	0,5	469,8	252,8	314,2	482,2	457,6
436	380,1	0,5	466,8	253,6	315,2	474,7	454,4
437	376,9	0,5	463,9	253,9	316,4	467,8	451,0
438	373,9	0,5	460,8	254,3	317,2	461,2	447,6
439	371,5	0,4	457,6	254,6	318,0	455,1	444,1
440	369,3	0,4	454,5	255,0	318,7	449,3	441,8
441	367,1	0,4	451,6	255,3	319,6	444,0	439,2
442	365,0	0,4	448,9	255,4	319,8	438,8	436,8
443	362,7	0,4	446,2	256,2	320,0	434,1	434,2
444	361,0	0,4	443,5	255,7	320,4	429,5	431,7
445	359,2	0,3	440,9	255,5	320,6	425,1	429,3
446	358,5	0,3	438,4	255,4	321,1	421,0	427,0
447	359,8	0,3	435,6	255,9	322,1	417,2	423,8
448	361,5	0,3	433,0	256,1	322,6	414,0	421,9
449	362,6	0,2	430,5	256,1	323,0	411,3	419,5
450	363,3	0,2	428,3	256,0	323,0	409,2	417,8
451	363,5	0,2	426,4	255,4	322,9	407,5	416,1
452	363,2	0,2	424,4	255,8	323,6	406,2	413,9
453	362,7	0,2	422,8	255,2	323,9	405,1	412,6
454	362,2	0,1	421,6	253,9	324,1	404,1	411,3
455	361,5	0,1	420,3	254,9	325,1	403,2	409,8
456	360,7	0,1	418,7	254,4	325,9	402,3	408,3
457	360,1	0,1	417,4	254,1	326,5	401,5	406,5
458	359,3	0,0	416,4	254,0	327,0	400,6	405,8
459	83,1	4,8	85,9	92,5	91,6	83,6	88,3
460	93,4	4,1	86,0	92,3	91,5	83,8	88,3
461	109,0	4,1	86,2	92,1	91,4	84,1	88,4
462	170,9	4,0	86,2	91,1	91,3	85,1	89,2
463	245,3	3,8	86,6	90,4	91,4	88,9	90,9
464	392,7	3,6	87,6	90,0	91,6	98,1	93,5
465	489,1	3,4	90,3	90,0	92,0	117,9	97,3
466	551,8	3,1	94,6	90,6	92,6	149,8	102,7
467	579,8	2,9	100,0	91,9	93,6	193,9	110,1
468	587,1	2,7	107,1	93,6	95,1	242,6	119,0
469	603,4	2,5	116,7	96,1	96,9	292,2	128,5
470	613,0	2,3	128,2	99,0	99,0	342,5	138,7
471	611,9	2,1	141,5	102,1	101,4	390,5	149,8
472	614,8	1,9	156,0	105,8	103,9	436,5	161,4
473	622,8	1,8	171,1	109,3	106,4	479,1	173,4
474	626,4	1,6	187,0	112,9	109,0	519,0	185,7
475	624,7	1,4	203,2	117,0	111,6	557,1	197,9
476	619,7	1,3	219,5	120,5	114,3	589,5	210,1
477	602,2	9,2	235,9	127,6	117,2	613,4	222,5
478	491,5	9,2	251,1	133,3	120,4	616,2	234,2
479	450,7	9,1	264,8	136,3	123,7	599,8	244,7
480	380,5	9,1	273,6	144,9	127,2	575,6	254,1
481	315,8	9,1	281,8	153,1	130,7	550,2	262,3
482	298,4	9,1	285,6	158,2	134,7	524,7	267,7
483	301,8	9,0	289,1	159,0	138,2	497,8	270,9
484	313,4	9,0	291,4	157,8	141,8	473,8	272,7
485	348,1	8,9	291,9	156,6	145,1	452,3	273,2
486	416,4	8,8	291,1	155,6	148,1	438,1	272,7

kindling

Piece Size (in):				Weight lbs	Meter Moisture Content Dry Uncorrected %
Thick	x Wide	x	Length		
1,5	3,5		6,5		20
1,5	3,5		6,5		20
1,5	3,5		6,5		20
1,5	3,5		6,5		20
1,5	3,5		6,5		20
1,5	3,5		6,5		20
1,5	3,5		6,5		20
1,5	3,5		6,5		20
1,5	3,5		6,5		20
1,5	3,5		14,375		20

487	455,8	8,6	289,6	155,2	150,8	433,3	272,1
488	430,0	8,6	287,8	155,4	153,5	431,9	271,6
489	422,8	8,5	286,0	156,0	155,9	428,9	270,4
490	436,4	8,4	283,7	156,4	158,2	426,5	269,4
491	458,5	8,3	281,2	156,8	160,3	425,4	268,2
492	496,7	8,1	278,9	156,6	162,4	426,5	267,9
493	547,0	8,0	276,3	156,7	164,2	434,7	268,3
494	545,6	7,8	274,8	157,2	166,0	446,6	269,4
495	525,8	7,7	274,5	157,1	167,9	457,4	271,7
496	527,3	7,5	275,0	157,9	169,8	467,2	274,0
497	549,7	7,4	275,6	158,5	171,3	480,2	276,7
498	581,1	7,2	276,4	158,8	173,2	496,0	279,9
499	602,1	7,0	277,7	159,4	174,8	513,3	283,7
500	604,7	6,8	280,2	160,7	176,4	529,6	288,6
501	603,0	6,6	283,7	161,7	178,0	544,6	294,5
502	614,3	6,4	288,2	163,1	179,6	560,3	301,7
503	612,0	6,2	293,4	164,4	181,2	575,8	309,2
504	621,7	6,1	299,2	166,0	182,8	592,1	317,0
505	628,7	5,9	304,9	167,6	184,4	609,0	324,8
506	628,2	5,7	311,3	168,9	186,2	623,9	333,3
507	631,2	5,5	317,7	170,8	187,8	640,0	341,1
508	637,4	5,4	324,4	172,8	189,5	652,6	349,4
509	658,1	5,2	331,3	174,9	191,3	670,0	356,9
510	694,2	5,0	337,8	176,6	193,2	693,5	364,9
511	719,7	4,7	344,2	179,3	195,0	726,1	371,6
512	739,3	4,5	350,8	180,7	196,6	762,5	379,4
513	744,6	4,3	357,1	183,2	198,5	795,6	387,0
514	750,0	4,1	363,7	185,9	200,5	825,0	393,8
515	751,2	3,9	370,0	188,8	202,7	849,5	400,6
516	748,7	3,7	376,9	192,1	204,8	868,3	407,6
517	740,9	3,6	383,8	195,2	207,0	883,0	414,2
518	727,4	3,4	391,0	198,1	209,3	893,2	420,8
519	716,9	3,2	398,1	200,9	211,6	902,8	427,1
520	699,4	3,1	405,5	203,4	214,2	910,4	433,1
521	677,8	2,9	412,7	206,6	216,8	911,5	438,2
522	658,8	2,8	419,8	209,4	219,3	905,8	443,1
523	641,3	2,7	426,7	211,5	222,0	896,0	447,5
524	626,8	2,6	433,4	214,4	224,9	883,6	451,5
525	612,7	2,5	439,7	216,5	227,8	869,2	455,3
526	600,6	2,4	445,8	218,8	230,9	853,0	458,3
527	590,1	2,4	451,2	221,3	234,0	836,1	461,4
528	578,6	2,3	456,4	223,0	237,2	819,3	464,2
529	566,7	2,2	460,6	225,8	240,2	803,0	466,1
530	556,9	2,1	465,0	228,3	243,4	786,9	468,1
531	546,8	2,1	468,6	230,6	246,6	770,4	469,7
532	537,4	2,0	471,8	232,6	249,8	754,2	470,7
533	528,4	1,9	475,0	234,1	252,8	738,0	472,4
534	518,9	1,9	476,6	236,6	256,3	722,1	472,5
535	510,6	1,9	478,9	238,6	259,3	706,8	472,8
536	502,4	1,8	479,8	240,0	262,5	691,9	473,3
537	494,5	1,8	481,1	241,9	265,3	677,8	472,8
538	487,0	1,7	482,2	244,0	268,1	664,0	472,2
539	479,0	1,7	482,5	245,8	271,3	650,6	471,4
540	470,1	1,7	483,0	246,6	274,3	637,6	470,9
541	459,7	1,6	482,9	249,1	277,2	624,6	468,9
542	448,9	1,6	482,7	249,8	280,1	611,7	467,7
543	440,5	1,6	482,0	252,1	282,9	599,2	465,5
544	433,3	1,6	481,0	252,7	285,6	587,1	463,8
545	427,1	1,5	479,9	253,6	288,3	575,5	461,8
546	421,8	1,5	478,5	255,2	291,0	564,5	459,0
547	416,5	1,5	476,7	256,3	293,8	554,0	456,2
548	412,1	1,5	474,9	256,8	296,3	544,1	453,7
549	407,7	1,4	473,0	258,1	298,7	535,0	451,3
550	404,0	1,4	471,1	258,9	301,4	526,6	448,0
551	400,7	1,4	468,7	259,4	303,5	518,8	445,7
552	355,7	4,4	467,1	276,2	305,4	511,8	443,4
553	320,4	6,5	466,1	288,9	306,4	500,5	441,3
554	344,4	6,3	458,7	295,4	307,5	485,3	438,3
555	404,6	6,2	457,2	284,7	309,9	470,8	434,3
556	460,2	6,0	453,6	275,8	311,2	464,1	430,1
557	510,7	5,8	448,5	270,6	314,0	468,6	425,1
558	532,7	5,7	444,6	268,5	314,9	482,0	421,5
559	550,8	5,5	441,7	266,2	316,3	500,7	418,0
560	567,4	5,3	439,7	263,9	317,9	522,9	415,9
561	580,6	5,1	438,5	263,5	319,0	547,2	413,8
562	595,0	5,0	438,1	262,9	320,2	572,3	412,7
563	604,6	4,8	438,4	262,5	321,0	598,1	413,3
564	612,8	4,6	439,6	262,3	321,5	623,3	413,7
565	620,5	4,4	441,2	261,3	322,0	648,3	415,4
566	628,0	4,2	443,0	260,4	322,3	672,2	417,6
567	632,6	4,1	445,2	260,1	322,4	694,5	420,2
568	636,1	3,9	447,9	259,9	322,3	714,9	423,2
569	639,9	3,7	450,3	259,5	322,7	733,3	425,9
570	643,7	3,5	453,0	260,4	322,8	750,5	428,9
571	646,6	3,4	456,0	259,4	322,9	766,0	432,6
572	649,4	3,2	459,2	259,6	322,9	780,2	436,3
573	651,3	3,1	462,4	258,9	323,2	793,3	439,7
574	653,0	2,9	466,0	258,8	323,2	805,0	443,6
575	655,2	2,7	469,6	259,0	323,2	815,6	447,5
576	657,6	2,6	472,9	258,6	323,1	825,4	451,3
577	661,4	2,4	476,2	259,1	323,2	834,8	454,6
578	664,3	2,3	479,9	259,5	323,0	843,9	458,6
579	666,0	2,1	483,2	259,4	323,4	853,0	462,8
580	667,8	2,0	486,4	260,1	323,5	861,9	466,1
581	671,7	1,8	489,7	260,3	323,4	870,9	469,7
582	673,4	1,7	493,0	259,6	323,6	879,6	473,2
583	670,1	1,5	496,5	260,6	323,8	885,9	477,1
584	665,1	1,4	499,9	261,1	324,0	891,2	479,9

1,5	3,5	14,375	8,1	20
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Piece Size (in):			Weight lbs	Meter Moisture Content Dry Uncorrected %
Thick	x Wide	x Length		
1,5	3,5	14,325	1,63	19,00
1,5	3,5	14,325	1,52	20,00
1,5	3,5	14,325	1,93	20,00

585	653,2	1,3	502,9	262,9	324,3	893,7	483,1
586	636,2	1,2	506,9	263,3	324,4	890,2	486,6
587	613,5	1,1	509,9	264,3	324,9	878,0	489,3
588	596,3	1,0	513,1	264,9	325,3	859,7	491,5
589	579,1	1,0	516,2	266,0	325,3	838,1	493,7
590	562,3	0,9	519,0	265,6	326,2	815,8	494,9
591	544,2	0,9	520,7	266,2	326,7	793,1	495,3
592	527,2	0,9	522,4	267,4	327,3	770,1	495,7
593	511,2	0,8	523,7	267,0	327,9	747,3	495,3
594	495,4	0,8	523,8	268,2	329,2	725,0	494,5
595	481,6	0,8	523,5	268,3	329,7	703,2	493,4
596	469,7	0,8	522,6	268,6	330,4	682,7	492,1
597	460,0	0,8	521,2	269,7	331,3	663,7	490,9
598	451,6	0,7	519,5	269,6	332,4	646,3	488,7
599	445,1	0,7	517,9	269,6	332,2	630,3	486,8
600	439,5	0,7	515,6	269,3	333,2	615,7	484,0
601	434,0	0,7	513,5	269,4	332,9	602,0	481,7
602	428,1	0,6	511,1	269,6	333,1	589,5	478,2
603	423,5	0,6	508,8	269,9	333,9	577,8	475,0
604	419,9	0,6	506,2	270,2	334,8	567,2	472,5
605	415,9	0,6	503,3	270,9	335,5	557,2	469,3
606	411,2	0,6	500,5	270,8	336,1	548,0	466,7
607	407,6	0,5	498,2	270,5	336,7	539,3	463,7
608	403,4	0,5	496,0	270,1	336,6	531,5	461,2
609	399,8	0,5	493,1	270,7	337,9	524,2	457,8
610	396,7	0,5	490,6	270,6	338,1	517,2	455,2
611	392,7	0,4	488,3	270,6	337,7	510,5	452,4
612	389,8	0,4	485,4	270,2	339,0	504,3	449,0
613	386,7	0,4	482,7	271,0	339,6	498,2	446,5
614	384,1	0,4	480,0	270,5	339,3	492,3	444,2
615	381,8	0,4	477,4	270,7	340,4	486,8	441,6
616	379,5	0,3	474,9	270,3	341,1	481,6	438,8
617	377,4	0,3	472,1	270,2	341,2	476,5	436,6
618	375,3	0,3	469,6	269,5	341,4	471,7	434,0
619	373,0	0,3	467,5	269,1	341,3	467,1	432,2
620	370,5	0,2	464,7	269,7	341,9	462,7	428,9
621	368,9	0,2	462,4	268,9	341,7	458,4	426,9
622	366,5	0,2	460,2	269,8	341,5	454,2	424,7
623	364,8	0,2	457,5	268,5	342,0	450,2	422,0
624	362,8	0,2	455,4	268,1	342,2	446,3	420,4
625	361,7	0,1	453,5	267,5	342,3	442,7	417,8
626	360,4	0,1	450,2	267,5	343,5	439,1	415,3
627	358,4	0,1	447,8	267,2	344,1	435,7	413,7
628	356,5	0,1	445,9	267,6	343,5	432,2	411,4
629	352,9	0,1	443,7	267,6	343,6	428,9	409,2
630	350,2	0,0	441,9	266,7	343,4	425,5	407,8
631	78,7	4,2	78,0	78,2	78,3	78,1	78,3
632	97,5	4,1	78,0	78,1	78,2	78,2	78,3
633	176,0	4,0	78,4	78,1	78,3	79,0	78,5
634	288,3	3,8	81,0	78,1	78,4	82,2	79,1
635	367,8	3,6	87,9	78,3	79,0	91,6	80,3
636	421,9	3,4	97,1	78,8	80,1	111,5	82,3
637	445,7	3,3	108,0	79,6	81,9	141,5	84,6
638	467,8	3,1	120,1	80,9	84,2	178,7	87,3
639	484,7	3,0	132,9	82,3	86,9	222,1	90,9
640	491,0	2,8	144,7	84,0	89,8	265,6	96,1
641	509,9	2,7	155,2	85,8	92,8	306,8	102,7
642	529,3	2,5	166,6	87,8	95,9	346,5	111,1
643	528,6	2,3	179,2	90,1	98,9	384,9	120,9
644	526,5	2,2	192,4	92,6	101,8	419,6	130,8
645	520,6	2,1	206,0	95,2	104,6	449,4	140,4
646	537,2	1,9	219,6	97,9	107,4	477,0	149,8
647	535,7	1,8	233,1	100,6	110,1	504,4	159,3
648	531,2	1,7	246,7	103,5	112,8	528,5	168,8
649	523,6	1,6	259,9	106,5	115,5	548,1	178,7
650	521,4	1,5	272,5	109,6	118,5	564,6	189,6
651	519,6	1,4	284,3	112,7	121,5	578,8	200,6
652	517,5	1,3	295,3	115,8	124,5	589,9	211,3
653	520,4	8,9	304,7	125,3	127,8	597,1	222,3
654	461,8	8,8	315,0	126,5	130,9	588,2	232,3
655	452,7	8,7	323,1	128,3	134,0	574,5	241,8
656	460,0	8,6	329,7	130,0	137,2	560,9	250,5
657	497,8	8,5	334,4	131,8	140,2	552,1	257,9
658	543,8	8,3	337,7	133,6	143,4	551,9	265,8
659	559,0	8,1	339,7	135,9	146,4	561,8	273,4
660	583,6	7,9	341,4	138,1	149,1	576,5	280,4
661	589,4	7,8	342,9	140,5	151,7	593,3	286,6
662	605,7	7,6	344,6	143,3	154,2	610,9	292,6
663	615,6	7,4	346,5	145,7	156,3	629,7	299,2
664	623,1	7,2	348,5	148,2	158,4	647,7	305,4
665	620,3	7,0	351,0	150,7	160,4	664,0	311,9
666	622,9	6,8	353,8	153,3	162,2	677,7	317,9
667	622,6	6,7	357,0	155,7	164,0	690,5	324,6
668	630,8	6,5	360,7	158,0	165,8	702,1	331,5
669	643,8	6,3	364,5	160,3	167,6	714,9	337,8
670	649,3	6,1	368,6	162,9	169,1	727,3	344,3
671	663,5	5,9	372,9	165,4	170,7	741,0	350,8
672	677,6	5,7	376,9	167,6	172,3	758,3	357,3
673	668,9	5,5	381,3	170,1	173,8	774,1	363,7
674	655,2	5,3	386,2	172,8	175,2	788,2	370,6
675	647,4	5,2	392,0	175,6	176,9	799,8	376,8
676	647,0	5,0	398,1	177,8	178,4	809,6	382,7
677	648,5	4,8	404,6	180,4	179,7	819,4	388,6
678	650,3	4,6	410,8	183,1	181,1	829,8	394,3
679	652,5	4,5	417,3	184,9	182,5	840,4	399,9
680	655,3	4,3	423,8	187,5	183,7	851,3	405,5
681	657,8	4,1	430,2	190,0	184,9	862,4	411,1
682	662,2	4,0	436,4	192,1	186,1	874,1	416,6

Kindling

Piece Size (in):			Weight lbs	Meter Moisture Content Dry Uncorrected %
Thick	x Wide	x Length		
1,5	3,5	6,5		20
1,5	3,5	6,5		20
1,5	3,5	6,5		20
1,5	3,5	6,5		20
1,5	3,5	6,5		20
1,5	3,5	6,5		20
1,5	3,5	6,5		20
1,5	3,5	6,5		20
1,5	3,5	14,3/5		20
1,5	3,5	14,3/5	7,74	20

683	660,3	3,8	442,6	194,2	187,5	885,7	421,7
684	659,2	3,6	448,9	196,3	188,2	897,3	426,8
685	655,0	3,5	455,0	198,5	189,4	907,3	431,7
686	646,6	3,3	460,9	200,7	190,3	913,6	436,4
687	637,8	3,2	466,4	202,6	191,5	915,7	440,3
688	631,7	3,1	471,6	205,0	192,6	915,3	443,6
689	626,7	2,9	476,6	207,2	194,0	914,7	446,6
690	619,4	2,8	481,1	208,7	194,6	913,4	449,6
691	608,9	2,7	485,7	211,0	196,0	910,5	452,4
692	595,9	2,6	490,3	212,6	197,1	904,5	454,9
693	584,8	2,5	494,5	214,7	198,3	896,3	457,4
694	575,6	2,4	498,2	216,7	199,5	886,1	459,8
695	566,1	2,3	502,1	218,3	200,9	873,7	462,4
696	554,6	2,2	505,9	220,2	202,6	858,7	464,8
697	541,3	2,2	509,6	222,2	204,4	842,3	467,4
698	529,8	2,1	513,1	223,8	205,9	825,1	469,6
699	520,3	2,0	515,9	225,6	207,8	808,4	471,5
700	510,1	2,0	518,6	227,1	209,7	792,2	473,0
701	500,5	1,9	520,8	228,5	211,8	776,3	474,2
702	491,6	1,9	522,6	230,5	214,1	761,0	475,2
703	483,2	1,8	523,8	232,1	216,8	746,1	475,4
704	475,4	1,8	524,8	233,4	219,5	731,6	476,0
705	468,3	1,8	525,8	234,2	222,4	717,7	476,1
706	462,5	1,7	526,1	236,2	225,4	704,5	475,7
707	456,5	1,7	526,1	237,1	228,5	691,8	475,4
708	450,8	1,7	525,7	238,6	231,7	679,9	475,0
709	445,2	1,6	525,3	239,4	235,1	668,5	474,7
710	438,6	1,6	524,2	240,7	238,4	657,2	474,1
711	432,5	1,6	523,1	241,9	242,2	646,2	473,4
712	427,3	1,5	521,8	242,7	245,6	635,5	472,5
713	418,6	1,5	520,3	243,8	249,1	625,2	471,5
714	407,2	1,5	518,8	244,9	252,3	614,3	470,2
715	398,3	1,5	517,2	245,8	256,2	602,9	468,9
716	390,4	1,5	515,3	246,3	259,5	591,0	467,3
717	383,2	1,4	513,0	247,0	263,0	579,1	465,4
718	377,0	1,4	510,8	248,0	266,5	567,5	463,2
719	372,1	1,4	507,7	248,8	270,2	556,4	460,8
720	367,6	1,4	504,9	249,2	273,8	545,8	458,1
721	363,1	1,3	501,4	250,2	277,5	535,8	455,4
722	328,3	6,8	495,1	271,8	279,3	525,2	452,7
723	317,9	6,6	491,4	283,8	283,3	510,7	450,2
724	428,1	6,4	487,3	292,4	285,5	495,7	446,7
725	470,0	6,2	483,8	270,6	287,9	485,5	442,0
726	513,6	6,0	477,9	262,8	290,5	487,7	437,7
727	540,4	5,8	472,2	256,9	292,7	501,9	434,7
728	548,7	5,7	467,1	254,7	295,0	524,8	433,1
729	551,5	5,5	463,9	253,1	297,4	550,3	432,6
730	558,4	5,3	461,6	251,8	298,3	575,3	432,7
731	564,6	5,2	460,5	251,4	299,8	599,5	434,0
732	570,9	5,0	460,1	251,4	301,1	622,1	435,9
733	574,5	4,8	460,4	250,9	302,0	643,5	438,3
734	578,2	4,7	461,7	250,6	302,8	663,1	441,3
735	583,1	4,5	463,2	250,5	303,5	681,0	444,4
736	587,5	4,3	465,0	250,1	303,8	698,0	447,7
737	592,5	4,2	467,3	249,6	303,9	714,1	451,9
738	594,6	4,0	469,9	250,0	304,5	729,8	455,2
739	600,3	3,8	473,0	249,8	304,6	744,8	459,4
740	607,9	3,7	476,2	249,6	305,1	759,7	463,4
741	622,7	3,5	479,8	249,6	304,8	773,7	467,5
742	633,3	3,3	483,5	249,7	304,9	789,8	471,7
743	641,3	3,1	487,4	249,3	304,3	805,2	475,6
744	641,5	3,0	491,0	250,9	305,2	819,0	478,9
745	638,7	2,8	494,7	251,2	305,3	830,6	482,1
746	636,0	2,7	498,3	251,4	305,7	841,0	485,5
747	631,2	2,5	501,9	251,9	305,3	849,7	488,5
748	630,9	2,3	506,1	252,2	305,5	858,7	491,4
749	630,9	2,2	509,6	253,0	305,7	868,2	494,6
750	635,2	2,0	513,1	254,7	305,9	878,2	496,8
751	638,5	1,9	516,3	255,3	306,3	889,3	499,7
752	627,4	1,7	520,5	256,2	306,2	901,3	502,7
753	612,8	1,6	524,9	257,6	305,9	909,1	505,0
754	601,2	1,5	528,5	259,5	306,0	911,1	507,3
755	591,7	1,4	531,6	260,3	306,4	909,1	509,8
756	585,1	1,3	534,7	261,3	306,6	903,5	511,7
757	579,0	1,2	537,4	262,5	306,5	897,2	513,2
758	569,2	1,1	540,0	262,1	306,3	890,4	514,7
759	553,6	1,1	541,4	263,8	307,2	880,3	515,7
760	534,2	1,0	543,1	264,1	307,0	863,9	516,2
761	516,0	1,0	544,1	264,6	307,6	842,2	516,3
762	499,7	1,0	544,5	265,2	308,1	819,2	516,0
763	485,3	0,9	544,9	265,5	308,7	796,4	515,3
764	472,2	0,9	544,4	266,2	309,2	774,2	514,1
765	460,6	0,9	543,7	266,5	309,9	752,9	512,7
766	449,9	0,9	542,3	266,7	310,6	732,5	510,9
767	441,1	0,8	541,2	267,0	311,4	713,3	508,9
768	433,2	0,8	539,3	268,0	312,0	695,4	506,3
769	426,8	0,8	537,4	267,5	312,8	678,8	504,2
770	419,5	0,8	535,5	267,9	313,2	663,3	501,5
771	413,7	0,8	532,6	268,6	314,0	649,1	498,7
772	408,3	0,7	530,1	268,5	314,5	635,8	496,1
773	403,7	0,7	527,8	268,8	314,6	623,4	493,2
774	399,1	0,7	525,0	269,6	315,7	611,8	490,1
775	395,4	0,7	522,2	269,3	316,2	601,2	487,2
776	392,0	0,6	519,0	269,7	316,5	591,2	484,4
777	388,8	0,6	516,5	269,0	317,1	582,0	481,6
778	385,7	0,6	513,0	269,4	318,2	573,5	478,5
779	383,2	0,6	510,3	268,6	318,1	565,6	475,8
780	380,7	0,6	507,5	269,3	318,7	558,4	472,7

Thick	Piece Size (in):			Weight lbs	Meter Moisture Content Dry Uncorrected %
	x Wide	x	Length		
1,5	3,5		14,325	1,74	19,00
1,5	3,5		14,325	1,77	20,00
1,5	3,5		14,325	1,75	20,00

781	378,3	0,5	504,2	269,4	319,6	551,4	469,9
782	376,5	0,5	501,2	269,3	320,5	545,1	467,2
783	374,8	0,5	498,5	269,2	321,2	539,4	464,6
784	373,1	0,5	495,8	270,1	321,6	534,2	462,0
785	372,0	0,4	493,0	268,8	321,8	529,3	459,5
786	370,0	0,4	490,4	268,6	322,3	524,6	456,7
787	368,3	0,4	488,4	268,5	322,7	520,3	454,5
788	366,6	0,4	485,4	268,2	323,8	516,1	452,3
789	364,7	0,4	483,3	267,5	323,8	512,1	450,1
790	363,4	0,3	480,5	269,1	324,5	508,5	447,7
791	362,2	0,3	478,5	267,8	324,9	504,8	445,8
792	361,0	0,3	476,8	267,6	325,1	501,3	444,0
793	359,7	0,3	474,5	267,5	325,4	497,8	442,0
794	358,2	0,3	472,4	267,1	325,6	494,4	439,9
795	357,1	0,2	470,5	266,5	326,3	490,9	437,9
796	356,5	0,2	468,3	266,2	326,4	487,8	436,4
797	354,7	0,2	466,7	265,7	326,5	484,7	434,8
798	350,4	0,2	464,6	266,0	326,8	481,3	433,0
799	347,7	0,1	462,5	266,0	327,1	477,6	431,3
800	345,6	0,1	460,5	265,5	327,4	473,8	429,9
801	344,1	0,1	458,8	264,8	327,7	470,2	428,0
802	342,6	0,1	456,8	264,2	327,2	466,5	426,4
803	341,9	0,1	455,0	263,5	327,7	463,1	424,7
804	340,8	0,1	453,6	263,4	328,1	459,8	422,8
805	77,7	4,6	78,1	78,3	78,3	78,2	78,4
806	129,3	4,1	78,1	78,3	78,3	78,5	78,5
807	273,0	3,9	78,5	78,1	78,3	80,1	79,3
808	354,0	3,8	79,9	78,1	78,4	87,7	82,5
809	438,5	3,6	82,2	78,5	78,6	104,8	87,9
810	477,9	3,4	85,7	79,2	79,1	133,3	95,6
811	525,3	3,2	90,7	80,4	80,0	171,4	104,0
812	553,0	3,0	97,6	81,9	81,1	216,2	113,4
813	563,6	2,8	106,9	83,8	82,5	264,7	124,5
814	568,7	2,7	118,1	86,1	84,0	313,3	135,3
815	575,5	2,5	131,0	88,7	85,7	358,9	145,9
816	581,1	2,4	145,0	91,5	87,7	402,5	156,6
817	572,6	2,2	159,3	94,6	89,8	443,0	167,5
818	572,6	2,1	173,6	97,9	92,2	478,1	178,7
819	570,3	2,0	187,6	101,2	94,7	508,9	189,9
820	579,0	1,8	201,2	104,5	97,4	535,4	201,1
821	574,8	1,7	214,1	107,9	100,3	556,7	212,9
822	578,5	1,6	226,6	111,2	103,4	575,6	224,8
823	598,1	1,4	238,5	114,4	106,4	598,0	236,8
824	614,9	1,3	250,0	117,6	109,6	624,1	248,3
825	582,0	8,6	259,7	126,6	113,4	646,9	260,8
826	486,5	9,0	270,4	129,1	116,8	639,8	272,4
827	465,9	9,0	280,2	131,4	120,5	618,4	283,0
828	477,1	8,9	288,3	133,7	124,3	595,9	292,0
829	505,5	8,7	295,1	135,3	128,2	581,5	299,6
830	536,8	8,6	300,2	137,2	131,9	576,3	306,4
831	559,2	8,4	304,3	139,2	135,5	575,8	313,0
832	611,5	8,2	307,0	140,9	138,9	583,0	319,7
833	613,5	8,0	309,6	143,1	142,0	600,8	326,7
834	594,0	7,8	312,6	145,8	144,9	612,1	334,3
835	589,1	7,6	315,8	148,4	147,6	618,4	341,9
836	592,5	7,5	319,4	150,9	150,1	623,7	349,1
837	612,5	7,3	323,1	153,5	152,4	630,3	356,1
838	629,1	7,1	327,4	156,1	154,6	640,8	363,2
839	642,7	6,9	331,9	158,9	156,4	654,2	369,6
840	645,9	6,7	336,1	161,6	158,4	668,8	377,1
841	659,8	6,5	341,0	164,5	160,3	683,7	384,5
842	667,0	6,2	346,5	167,3	162,2	699,1	391,4
843	664,5	6,1	352,1	170,3	164,0	711,8	398,2
844	681,9	5,8	357,7	173,0	166,0	724,6	405,1
845	664,6	5,7	363,4	176,0	167,8	738,6	411,9
846	698,1	5,4	369,3	178,6	169,7	751,9	418,3
847	689,8	5,2	375,4	181,3	171,4	767,9	424,5
848	716,1	5,0	381,4	183,5	173,0	787,9	430,4
849	699,6	4,8	387,7	186,2	174,8	800,9	436,3
850	744,5	4,6	394,3	188,4	176,8	819,2	441,9
851	719,9	4,4	400,6	191,2	178,5	832,5	447,9
852	732,6	4,2	407,1	194,0	180,4	844,8	453,6
853	766,4	3,9	413,5	196,5	182,4	865,8	458,9
854	743,5	3,7	420,1	199,3	184,4	880,0	464,9
855	721,0	3,6	426,9	202,0	186,6	885,2	471,2
856	703,2	3,4	433,9	204,9	188,7	886,0	476,9
857	697,6	3,2	440,8	207,5	190,7	885,4	482,6
858	692,9	3,1	447,5	210,2	192,8	886,0	487,6
859	688,4	2,9	453,7	212,9	195,0	889,1	492,4
860	684,4	2,7	459,7	215,2	197,2	891,7	496,7
861	691,3	2,6	465,3	217,4	199,6	899,0	500,1
862	697,9	2,4	469,9	219,6	201,7	914,4	503,5
863	688,8	2,3	473,7	221,6	204,2	929,9	506,3
864	674,0	2,2	477,6	223,9	206,5	940,2	509,5
865	655,5	2,1	481,3	226,2	208,9	941,8	512,0
866	634,1	2,0	484,5	228,3	211,0	934,6	514,3
867	608,9	1,9	488,2	230,4	213,4	918,3	516,3
868	583,7	1,9	491,6	232,2	216,2	894,4	517,7
869	561,0	1,9	494,5	233,8	218,8	866,9	518,7
870	540,3	1,8	497,1	235,7	221,6	837,9	519,1
871	522,4	1,8	499,1	237,0	224,4	809,0	519,1
872	507,0	1,8	500,4	238,5	227,4	781,4	518,7
873	494,3	1,7	501,2	240,1	230,6	755,1	517,8
874	482,8	1,7	501,2	241,6	233,8	730,8	516,4
875	472,9	1,7	500,5	242,5	236,6	708,2	514,8
876	464,8	1,7	499,6	243,7	239,8	687,4	512,6
877	457,4	1,6	498,0	244,8	243,0	668,2	510,4
878	451,0	1,6	496,0	246,0	246,6	650,5	507,7

Kindling

Piece Size (in):			Weight lbs	Meter Moisture Content Dry Uncorrected %
Thick	x Wide	x Length		
1,54	3,5	6,5		20
1,54	3,5	6,5		20
1,54	3,5	6,5		20
1,54	3,5	6,5		20
1,54	3,5	6,5		20
1,54	3,5	14,325		20
1,54	3,5	14,325	7,93	20

879	443,6	1,6	493,7	247,0	249,5	634,1	505,1
880	438,0	1,6	491,3	248,0	252,9	618,9	502,2
881	433,9	1,5	488,5	248,7	256,0	605,1	499,5
882	430,7	1,5	485,7	249,1	258,8	592,5	496,9
883	427,1	1,5	483,0	249,9	261,5	581,2	494,3
884	423,1	1,5	480,5	250,3	264,8	570,8	491,8
885	379,1	6,8	472,5	269,3	266,7	560,4	489,7
886	361,3	6,7	466,0	277,9	268,2	545,0	487,7
887	424,0	6,6	459,4	281,8	270,7	527,3	484,8
888	478,5	6,4	459,4	268,4	274,8	511,9	481,1
889	526,0	6,2	455,9	261,0	278,1	509,3	477,3
890	564,2	6,0	451,2	256,8	281,3	522,3	474,2
891	571,6	5,8	447,1	254,7	283,9	543,7	472,0
892	583,2	5,7	444,0	253,1	286,3	565,9	471,0
893	591,7	5,5	442,0	252,3	288,4	588,6	470,2
894	604,4	5,3	440,7	251,9	290,4	611,9	470,0
895	603,8	5,1	440,7	251,2	291,6	634,6	470,5
896	603,0	5,0	441,3	251,4	293,7	652,7	471,7
897	607,6	4,8	442,8	251,3	295,1	668,8	472,9
898	611,2	4,6	444,9	251,4	296,3	683,9	474,1
899	617,4	4,5	447,5	250,9	297,3	698,2	476,0
900	623,8	4,3	450,5	251,3	298,6	712,5	477,5
901	628,9	4,1	453,7	250,3	299,3	725,9	479,4
902	635,3	3,9	457,0	250,0	300,1	739,4	481,9
903	641,9	3,8	460,4	250,2	300,9	753,3	484,0
904	643,3	3,6	463,8	249,9	301,6	767,2	486,5
905	643,2	3,4	467,2	250,2	302,2	779,0	489,1
906	644,6	3,3	470,7	249,9	302,8	789,6	491,7
907	645,2	3,1	473,9	249,9	303,4	799,4	494,0
908	644,5	3,0	477,5	249,4	303,7	808,2	496,3
909	647,7	2,8	481,1	249,8	304,1	816,6	498,6
910	648,7	2,7	484,9	249,5	304,5	826,9	500,9
911	651,4	2,5	488,1	249,8	305,2	837,9	503,1
912	653,2	2,3	491,2	249,4	305,6	849,0	504,8
913	655,8	2,2	494,4	249,8	306,2	859,5	506,6
914	660,1	2,1	497,5	250,6	306,3	869,7	508,2
915	664,3	1,9	500,2	250,8	306,8	879,7	509,9
916	669,2	1,8	503,4	250,8	307,3	889,9	511,8
917	669,9	1,6	506,2	251,3	307,4	900,2	513,5
918	661,7	1,5	508,9	252,2	308,1	907,9	515,3
919	638,1	1,4	511,6	252,8	308,3	907,9	517,3
920	604,1	1,3	514,2	253,6	308,9	896,7	519,4
921	585,1	1,2	517,1	254,0	309,3	878,6	521,3
922	567,2	1,1	520,3	255,0	309,8	858,4	523,1
923	552,2	1,1	522,4	255,6	310,4	837,6	524,6
924	538,4	1,0	524,4	256,1	310,8	816,5	525,5
925	523,6	1,0	526,1	256,7	311,5	795,1	525,9
926	508,2	1,0	527,2	257,2	312,2	773,9	525,9
927	495,6	1,0	527,6	257,2	313,0	753,1	525,2
928	485,1	0,9	527,5	257,5	313,8	733,4	524,1
929	476,2	0,9	526,9	257,5	314,4	715,2	522,5
930	468,3	0,9	526,2	257,4	314,9	698,7	520,3
931	461,1	0,9	524,6	257,6	316,0	683,4	517,9
932	453,2	0,8	523,1	257,6	316,5	668,9	515,3
933	445,4	0,8	521,6	258,4	317,1	654,9	512,4
934	439,2	0,8	519,5	257,8	317,9	641,6	509,5
935	434,0	0,8	517,6	258,1	318,4	629,0	506,4
936	428,9	0,7	515,7	258,2	319,2	617,2	503,0
937	424,9	0,7	513,3	258,1	319,3	606,2	499,8
938	420,7	0,7	510,7	258,7	319,8	596,0	496,4
939	417,3	0,7	507,9	259,0	320,4	586,6	493,2
940	414,4	0,6	505,8	259,2	321,0	577,8	489,6
941	411,1	0,6	503,2	259,3	321,4	569,6	486,7
942	408,0	0,6	500,7	259,5	321,8	562,0	483,5
943	406,3	0,6	498,5	259,5	322,4	554,9	480,6
944	403,1	0,6	496,0	259,5	323,0	548,4	477,8
945	401,1	0,5	493,7	259,8	323,5	542,4	474,8
946	398,2	0,5	491,3	260,0	324,1	536,6	472,1
947	396,4	0,5	489,2	260,1	324,7	531,2	469,3
948	394,6	0,5	487,1	260,0	325,2	526,0	466,7
949	391,9	0,4	485,1	259,4	325,7	521,1	464,1
950	390,1	0,4	483,4	259,7	326,1	516,4	461,6
951	388,2	0,4	481,5	260,2	326,9	511,7	459,1
952	386,8	0,4	479,5	260,6	327,5	507,4	456,8
953	384,5	0,4	477,3	260,3	328,1	503,3	454,6
954	383,0	0,3	475,3	259,9	328,7	499,2	452,6
955	380,7	0,3	473,2	260,2	328,9	495,3	450,5
956	379,5	0,3	471,3	260,3	329,1	491,5	448,5
957	377,5	0,3	468,8	260,2	329,8	487,8	446,5
958	375,1	0,2	467,3	259,7	330,7	484,0	444,3
959	373,2	0,2	466,6	259,7	330,6	480,3	442,7
960	371,3	0,2	464,5	260,3	331,4	476,9	440,7
961	369,4	0,2	462,5	259,6	331,7	473,7	438,8
962	369,1	0,1	460,6	260,1	332,1	470,7	436,9
963	368,6	0,1	458,8	259,9	332,6	467,9	435,3
964	367,7	0,1	457,0	259,5	333,1	465,3	433,6
965	367,3	0,1	455,5	259,5	333,3	462,9	431,8
966	365,5	0,1	454,0	259,5	334,2	460,7	430,2
967	364,8	0,1	453,0	257,8	333,3	458,6	428,9
968	364,0	0,1	451,8	257,9	334,3	456,5	427,5
969	361,8	0,1	450,7	256,9	336,2	454,5	426,2
970	360,3	0,0	449,4	256,2	337,0	452,4	424,8
971	78,7	4,3	79,2	79,1	79,3	79,2	79,3
972	91,1	4,3	79,2	79,1	79,3	79,4	79,3
973	134,3	4,2	79,3	79,1	79,4	79,8	79,4
974	348,5	4,0	79,5	79,0	79,5	82,2	79,5
975	455,3	3,8	81,7	79,1	79,8	94,7	80,8
976	530,6	3,6	86,2	79,5	80,5	121,1	83,1

Piece Size (in):				Weight lbs	Meter Moisture Content Dry Uncorrected %
Thick	x Wide	x	Length		
1,5	3,5		14,325	1,75	20,00
1,5	3,5		14,325	1,86	20,00
1,5	3,5		14,325	1,84	20,00

Kindling

977	600,2	3,4	92,0	80,4	81,5	161,3	86,2
978	631,9	3,2	99,0	81,7	82,9	211,9	90,4
979	638,5	2,9	108,3	83,4	84,8	267,7	95,6
980	618,3	2,8	120,1	85,6	87,5	321,0	101,8
981	594,7	2,6	133,2	88,1	90,9	367,9	109,0
982	584,0	2,4	146,2	90,9	95,0	407,2	117,4
983	583,8	2,3	158,2	94,0	99,2	441,9	126,6
984	595,8	2,1	169,2	96,9	103,0	475,6	136,2
985	592,9	2,0	181,7	100,0	106,9	509,0	145,7
986	586,7	1,9	195,1	103,2	110,4	537,8	154,3
987	588,4	1,7	209,8	106,5	113,2	563,7	162,8
988	586,7	1,6	224,3	109,7	116,1	587,2	172,2
989	587,2	1,5	237,7	112,9	118,7	606,1	182,9
990	584,0	1,4	250,8	116,2	121,2	624,1	194,2
991	574,7	1,3	263,5	119,2	123,5	640,1	205,8
992	573,8	1,2	275,2	122,2	126,2	652,3	217,4
993	533,3	9,1	284,8	131,4	129,3	660,7	229,5
994	433,9	9,0	291,5	136,6	131,6	644,4	240,9
995	380,4	9,0	296,5	142,8	133,8	615,1	251,0
996	344,3	9,0	300,3	147,9	136,5	583,2	259,3
997	324,3	8,9	302,7	152,2	139,3	551,2	265,9
998	314,6	8,9	305,1	153,5	142,6	521,9	270,8
999	287,0	8,9	304,1	157,4	144,9	493,2	274,3
1000	282,8	8,8	302,6	160,4	146,9	466,4	276,1
1001	297,8	8,8	299,5	162,7	148,8	442,1	276,4
1002	333,4	8,7	295,9	164,4	150,3	419,8	275,9
1003	387,7	8,5	294,9	157,4	152,7	404,1	274,8
1004	409,7	8,4	292,5	153,3	154,4	396,8	273,9
1005	423,5	8,3	290,2	150,7	155,9	395,2	273,2
1006	451,2	8,2	288,0	149,2	157,0	398,5	272,5
1007	486,0	8,0	285,9	148,3	157,7	407,5	272,4
1008	554,4	7,8	284,2	147,4	158,8	424,9	272,0
1009	597,7	7,6	283,6	147,0	159,9	454,1	272,5
1010	630,7	7,4	284,6	147,2	160,6	491,2	273,9
1011	613,5	7,2	287,0	147,8	161,6	528,2	277,2
1012	653,5	7,0	290,2	148,9	162,6	565,3	281,4
1013	631,4	6,8	294,4	150,3	163,8	598,7	287,4
1014	620,3	6,6	299,8	152,0	165,1	621,6	294,0
1015	618,4	6,4	306,3	153,6	166,0	640,5	301,6
1016	664,9	6,2	313,3	155,2	167,4	664,3	308,7
1017	645,4	6,0	320,4	156,9	168,5	688,1	316,6
1018	639,5	5,8	328,4	159,0	170,1	706,2	325,0
1019	632,3	5,6	336,6	161,0	172,0	719,0	334,0
1020	676,5	5,4	345,2	163,0	173,2	737,1	341,9
1021	661,7	5,2	353,0	165,4	175,5	755,9	350,3
1022	646,3	5,0	361,3	168,0	177,4	765,2	359,1
1023	656,7	4,8	369,7	169,9	179,6	779,3	368,0
1024	637,4	4,6	378,3	172,3	182,2	786,9	376,0
1025	642,4	4,5	386,9	174,6	184,2	791,4	384,1
1026	681,6	4,3	394,9	176,7	186,6	806,7	391,4
1027	668,4	4,1	402,5	179,4	189,0	819,6	398,6
1028	648,7	3,9	410,3	182,0	191,4	824,8	405,7
1029	632,3	3,8	418,8	184,2	193,9	825,4	413,2
1030	624,6	3,6	427,1	186,9	195,9	824,1	419,8
1031	618,8	3,5	435,3	189,5	198,1	823,3	425,9
1032	614,4	3,4	443,4	191,7	200,4	823,0	431,1
1033	608,3	3,2	450,2	194,7	202,3	823,0	435,7
1034	605,1	3,1	456,9	196,4	204,3	822,7	440,7
1035	625,0	2,9	464,0	198,1	205,9	824,6	444,8
1036	641,9	2,8	469,2	200,1	208,2	838,8	448,4
1037	643,3	2,7	473,8	202,3	210,0	855,9	451,9
1038	633,0	2,5	478,0	203,8	212,2	868,7	455,5
1039	626,4	2,4	481,2	206,2	213,9	875,6	458,5
1040	614,6	2,4	483,8	208,1	216,3	878,5	461,4
1041	596,7	2,3	486,2	209,8	218,4	875,9	464,5
1042	576,6	2,2	488,3	211,8	220,9	866,3	466,9
1043	558,7	2,2	490,8	213,6	223,4	850,3	469,4
1044	542,6	2,1	492,3	215,9	226,1	830,5	471,3
1045	528,5	2,1	493,8	217,6	229,2	809,3	472,7
1046	514,8	2,0	494,9	220,4	232,0	788,1	473,9
1047	502,5	2,0	496,0	221,5	234,9	767,0	474,8
1048	493,1	2,0	496,6	223,5	237,9	746,5	475,1
1049	484,9	1,9	496,7	225,6	241,3	727,5	474,6
1050	473,9	1,9	496,5	227,1	244,5	709,9	474,2
1051	462,3	1,9	496,2	229,0	247,5	692,8	473,3
1052	453,1	1,9	495,8	230,6	250,5	676,0	472,1
1053	445,3	1,8	495,3	232,3	254,4	659,8	470,6
1054	437,4	1,8	494,3	234,3	257,3	644,2	468,8
1055	433,4	6,9	492,4	242,4	260,3	629,4	466,6
1056	336,8	6,9	489,9	263,8	263,1	612,8	465,6
1057	364,7	6,8	480,9	268,7	264,2	588,2	462,7
1058	355,0	6,8	480,1	261,2	267,8	562,9	459,2
1059	355,3	6,7	470,3	271,2	268,4	538,5	455,3
1060	393,0	6,6	465,2	267,5	271,0	515,2	450,2
1061	402,7	6,4	461,4	257,9	274,0	497,1	444,2
1062	442,1	6,3	455,8	252,9	276,0	484,5	437,9
1063	499,5	6,1	450,8	248,7	276,9	483,4	433,0
1064	502,3	6,0	447,2	246,5	278,6	493,5	429,2
1065	502,4	5,8	443,3	244,8	279,0	506,2	426,5
1066	503,2	5,7	440,5	243,7	280,0	519,1	423,9
1067	508,7	5,6	438,8	243,0	281,1	531,2	422,0
1068	516,6	5,4	437,5	242,1	281,7	543,4	420,7
1069	525,2	5,3	437,4	241,1	282,2	556,5	420,1
1070	529,0	5,2	437,4	240,3	282,7	568,9	420,0
1071	536,0	5,0	438,3	239,5	283,3	581,4	420,4
1072	543,3	4,9	439,0	238,8	283,6	594,4	421,3
1073	548,1	4,7	440,8	238,1	283,7	607,3	422,5
1074	552,9	4,6	442,5	237,3	283,9	619,6	424,0

Thick	Piece Size (in):			Weight	Meter Moisture Content
	x	Wide	x	lbs	Dry Uncorrected %
1,5		3,5		6,5	20
1,5		3,5		6,5	20
1,5		3,5		6,5	20
1,5		3,5		6,5	20
1,5		3,5		6,5	20
1,5		3,5		6,5	20
1,5		3,5		14,375	20
1,5		3,5		14,375	20

Thick	Piece Size (in):			Weight	Meter Moisture Content
	x	Wide	x	lbs	Dry Uncorrected %
1,5		3,5		14,325	19,00
1,5		3,5		14,325	19,00
1,5		3,5		14,325	20,00

1075	560,4	4,4	444,1	236,5	284,2	632,6	425,8
1076	564,7	4,3	446,1	235,8	284,5	645,5	427,6
1077	568,6	4,1	448,3	235,2	284,4	657,7	429,3
1078	571,9	4,0	451,0	234,3	284,7	669,2	431,5
1079	577,3	3,9	453,5	233,6	284,3	680,6	434,0
1080	581,5	3,7	456,2	233,3	284,5	691,9	436,5
1081	586,8	3,6	459,0	233,1	284,4	703,1	438,8
1082	591,5	3,4	461,1	232,8	284,3	714,4	441,6
1083	597,2	3,3	464,1	232,8	284,4	725,9	444,2
1084	603,3	3,2	467,1	232,2	284,2	737,9	447,1
1085	607,5	3,0	470,2	232,0	284,3	749,8	450,1
1086	611,7	2,9	472,9	232,1	284,5	761,8	452,9
1087	616,5	2,7	476,6	232,1	284,4	773,7	456,1
1088	621,0	2,6	480,6	231,1	284,9	785,2	459,0
1089	625,2	2,5	484,0	232,3	284,4	796,3	461,8
1090	628,7	2,3	487,4	231,8	285,1	807,2	465,2
1091	633,8	2,2	491,3	232,1	285,2	818,2	468,6
1092	631,7	2,0	494,4	233,2	285,0	828,6	471,7
1093	624,0	1,9	497,6	233,7	285,4	835,9	474,4
1094	617,6	1,8	500,7	234,0	285,6	841,3	477,9
1095	610,5	1,7	504,2	234,4	286,3	845,7	481,1
1096	597,8	1,6	507,7	236,5	286,2	848,6	484,1
1097	587,7	1,5	511,3	237,2	286,6	849,4	487,0
1098	579,4	1,4	515,5	237,5	287,1	848,8	489,6
1099	568,9	1,3	518,9	239,6	287,7	844,5	491,5
1100	556,7	1,2	521,7	240,3	288,1	837,0	493,5
1101	543,6	1,2	524,7	241,8	289,0	827,5	494,9
1102	529,3	1,1	527,3	243,0	289,6	815,1	495,9
1103	516,6	1,1	530,0	243,6	290,3	799,2	496,7
1104	503,5	1,0	531,4	245,1	290,9	781,4	496,8
1105	492,0	1,0	532,0	245,3	292,0	763,1	496,6
1106	480,1	1,0	533,0	245,9	292,6	745,1	496,2
1107	469,4	1,0	532,5	247,0	293,4	727,2	495,1
1108	460,3	0,9	531,8	247,1	294,1	709,9	493,9
1109	451,3	0,9	530,4	248,2	294,8	693,4	492,4
1110	444,2	0,9	529,3	248,0	295,9	677,8	490,7
1111	437,5	0,9	528,2	247,7	296,8	663,2	488,8
1112	431,0	0,8	525,8	248,9	297,0	649,5	486,6
1113	426,1	0,8	524,0	249,6	297,7	636,7	484,1
1114	420,2	0,8	521,7	249,4	298,5	624,7	481,8
1115	416,0	0,8	519,2	249,8	299,2	613,6	479,3
1116	411,7	0,8	517,1	249,4	300,0	603,2	476,8
1117	408,7	0,7	514,4	250,4	300,3	593,6	474,1
1118	405,5	0,7	512,4	250,4	300,9	584,5	471,6
1119	402,1	0,7	509,9	250,8	301,7	576,2	468,9
1120	399,3	0,7	506,9	251,0	302,1	568,3	466,3
1121	396,2	0,6	504,4	250,9	302,7	561,1	463,7
1122	395,0	0,6	502,4	251,6	303,6	554,2	461,1
1123	392,0	0,6	500,3	251,8	304,0	547,8	458,5
1124	389,9	0,6	497,8	252,1	304,3	541,7	455,9
1125	387,7	0,6	495,3	252,3	304,6	536,1	453,6
1126	385,7	0,5	492,8	252,5	305,4	530,8	451,2
1127	383,9	0,5	490,8	253,2	305,8	525,8	449,0
1128	381,7	0,5	488,4	253,0	306,0	521,1	446,6
1129	379,7	0,5	486,8	252,0	307,1	516,6	444,5
1130	378,7	0,4	485,0	252,6	307,1	512,4	442,4
1131	376,9	0,4	483,2	252,8	307,6	508,3	440,4
1132	375,8	0,4	481,2	253,2	307,8	504,5	438,3
1133	374,0	0,4	479,6	252,7	308,2	501,0	436,4
1134	372,9	0,4	477,4	252,7	308,8	497,5	434,5
1135	371,5	0,3	474,8	253,1	309,0	494,3	432,5
1136	370,3	0,3	473,0	253,2	309,7	491,2	430,7
1137	369,2	0,3	471,1	253,0	309,8	488,4	428,9
1138	367,8	0,3	468,9	253,5	310,1	485,7	427,1
1139	367,3	0,2	467,9	252,9	310,4	483,0	425,4
1140	365,9	0,2	465,8	253,7	310,5	480,5	423,8
1141	365,2	0,2	464,4	253,0	311,3	478,0	422,2
1142	364,1	0,2	462,8	253,4	311,2	475,5	420,7
1143	363,2	0,2	461,3	253,3	311,7	473,5	419,2
1144	362,4	0,1	459,6	253,4	311,9	471,3	417,8
1145	361,5	0,1	458,5	252,9	312,4	469,2	416,3
1146	360,7	0,1	457,3	252,8	312,2	467,0	414,9
1147	360,1	0,1	455,8	252,4	312,7	464,9	413,5
1148	359,8	0,1	454,7	252,0	313,2	462,8	412,2
1149	358,4	0,0	453,2	252,0	313,0	460,8	410,7
1150	384,5	6,5	489,1	284,9	263,9	606,6	479,3
1151	407,5	6,3	487,3	268,6	267,2	583,2	475,1
1152	431,9	6,2	482,5	261,5	270,4	568,8	470,3
1153	480,9	6,1	477,2	256,5	272,4	563,5	465,0
1154	510,1	5,9	471,5	253,1	274,9	568,0	459,7
1155	528,1	5,7	466,4	251,2	276,3	577,6	455,4
1156	540,2	5,6	461,8	249,2	277,7	591,0	451,9
1157	547,3	5,4	458,5	248,4	278,8	606,8	449,2
1158	554,1	5,2	456,3	247,8	279,9	623,2	447,2
1159	562,3	5,1	455,0	247,4	280,7	639,6	446,0
1160	568,5	4,9	454,4	246,6	281,5	656,2	445,7
1161	574,6	4,7	454,4	246,2	282,1	672,1	445,9
1162	579,9	4,6	455,2	245,7	282,4	687,6	446,5
1163	584,8	4,4	456,5	245,3	282,4	702,8	447,9
1164	591,2	4,2	458,5	244,8	282,6	718,4	449,5
1165	596,5	4,1	460,8	244,8	283,1	733,8	451,4
1166	599,3	3,9	463,6	244,2	283,3	748,1	453,6
1167	603,3	3,8	466,6	244,3	283,3	761,7	456,0
1168	604,6	3,6	469,6	243,6	283,7	774,2	458,4
1169	605,3	3,4	472,8	243,6	283,7	784,7	461,1
1170	609,0	3,3	476,2	243,7	283,7	793,8	463,8
1171	613,5	3,1	479,5	244,2	284,4	803,1	466,4
1172	617,1	3,0	483,3	244,5	284,4	813,4	469,3

Thick	Piece Size (in):			Weight lbs	Meter Moisture Content Dry Uncorrected %
	x Wide	x	Length		
1,5	3,5		14,325	1,74	20
1,5	3,5		14,325	1,78	20
1,5	3,5		14,325	1,71	20

1173	618,6	2,8	486,7	244,4	284,9	824,1	472,3
1174	619,0	2,7	490,5	244,8	284,8	834,5	475,4
1175	618,4	2,5	494,3	245,2	284,9	843,9	478,6
1176	619,1	2,4	498,2	245,4	284,9	852,3	481,8
1177	618,8	2,2	501,6	245,5	285,7	860,5	485,1
1178	619,1	2,1	505,1	246,2	286,1	868,5	488,3
1179	618,9	1,9	508,6	247,0	286,4	876,5	491,4
1180	622,2	1,8	512,2	247,1	286,8	885,1	494,6
1181	618,7	1,7	515,7	247,9	287,3	893,7	497,7
1182	601,6	1,5	519,3	249,1	288,1	898,6	500,7
1183	584,8	1,4	523,3	250,2	288,7	898,2	503,7
1184	570,3	1,3	527,0	251,0	289,3	890,9	506,5
1185	558,1	1,3	530,7	251,6	290,1	879,0	508,8
1186	548,0	1,2	533,9	252,2	290,7	864,6	510,5
1187	539,2	1,1	536,4	253,2	291,6	849,6	511,9
1188	527,6	1,1	538,8	253,3	292,6	835,1	512,9
1189	519,1	1,0	540,4	253,6	293,2	821,1	513,3
1190	509,2	1,0	541,2	254,2	294,1	807,1	513,1
1191	497,9	0,9	541,5	254,1	295,1	792,9	512,5
1192	487,6	0,9	541,5	254,3	296,3	778,0	511,4
1193	476,9	0,9	541,1	254,3	297,3	762,1	510,0
1194	465,2	0,8	540,2	254,2	298,0	745,3	508,2
1195	453,8	0,8	538,9	254,4	298,7	727,6	506,2
1196	444,7	0,8	537,0	254,9	299,4	709,8	503,7
1197	436,4	0,8	535,2	254,8	300,3	692,6	501,3
1198	429,5	0,8	533,0	255,5	301,0	676,1	498,5
1199	423,2	0,7	530,3	255,6	301,6	660,6	495,7
1200	417,5	0,7	527,9	255,8	302,3	646,1	492,6
1201	412,0	0,7	525,4	256,1	302,9	632,7	489,5
1202	408,3	0,7	522,7	256,1	303,2	620,1	486,4
1203	403,7	0,7	519,6	256,8	303,7	608,4	483,1
1204	399,1	0,6	516,4	257,1	304,7	597,6	479,9
1205	395,0	0,6	513,2	257,0	305,5	587,6	476,7
1206	391,6	0,6	510,0	257,4	305,9	578,2	473,4
1207	388,7	0,6	506,5	257,7	307,4	569,4	470,0
1208	384,9	0,6	503,6	258,1	307,6	561,2	466,6
1209	382,3	0,5	500,7	257,9	308,0	553,4	463,5
1210	379,9	0,5	497,8	257,9	308,7	546,2	460,3
1211	376,9	0,5	494,7	257,8	309,3	539,4	457,1
1212	374,4	0,5	491,6	257,9	309,9	532,8	453,9
1213	372,6	0,5	488,4	258,4	310,6	526,7	450,8
1214	370,1	0,4	485,6	258,0	310,9	521,0	447,9
1215	367,7	0,4	482,9	257,7	311,6	515,6	445,0
1216	366,1	0,4	479,8	257,9	312,2	510,6	442,1
1217	363,6	0,4	477,1	258,0	313,0	505,7	439,3
1218	362,1	0,4	474,6	258,1	313,3	501,0	436,5
1219	360,9	0,3	472,0	257,5	314,0	496,6	434,0
1220	359,1	0,3	469,7	257,1	314,4	492,4	431,4
1221	357,7	0,3	467,4	256,6	314,9	488,5	429,0
1222	355,6	0,3	465,3	256,9	315,0	484,7	426,5
1223	354,4	0,3	462,7	256,6	316,1	481,1	424,1
1224	353,2	0,2	460,5	256,1	316,1	477,8	421,9
1225	351,5	0,2	458,4	255,7	316,6	474,5	419,7
1226	350,8	0,2	456,0	255,8	316,9	471,5	417,6
1227	349,2	0,2	454,0	255,5	317,2	468,7	415,6
1228	348,0	0,2	451,8	255,4	317,3	466,0	413,7
1229	347,1	0,1	449,8	255,0	317,9	463,3	411,9
1230	345,7	0,1	447,9	254,3	318,1	460,8	410,1
1231	345,5	0,1	446,1	253,5	318,5	458,3	408,4
1232	344,9	0,1	444,3	253,0	318,8	456,0	406,7
1233	343,2	0,1	442,5	253,0	319,2	453,7	405,2
1234	339,5	0,1	440,7	252,7	319,6	450,8	403,6
1235	337,6	0,0	439,1	252,3	320,0	447,6	402,1
1236	72,6	2,7	72,9	72,9	73,0	73,3	73,2
1237	72,6	4,1	72,9	72,9	73,1	73,3	73,2
1238	82,4	4,1	72,9	72,9	73,1	73,4	73,2
1239	125,3	4,0	73,0	72,8	73,1	73,9	73,5
1240	212,6	3,8	73,6	72,8	73,2	77,2	76,0
1241	349,8	3,5	75,4	73,1	73,4	88,1	81,5
1242	431,2	3,3	79,5	73,8	74,1	111,0	88,9
1243	473,1	3,1	85,4	75,0	75,1	144,9	99,0
1244	517,6	2,9	93,2	76,7	76,4	187,4	110,4
1245	537,5	2,7	102,7	78,8	78,2	236,8	123,3
1246	545,8	2,5	113,5	81,4	80,2	289,4	136,5
1247	553,0	2,3	125,3	84,3	82,3	342,5	149,3
1248	555,0	2,2	138,0	87,2	84,6	395,4	161,0
1249	557,7	2,0	151,4	90,3	87,1	445,2	173,0
1250	548,0	1,9	165,3	93,4	89,7	491,5	185,1
1251	542,2	1,7	178,8	96,7	92,3	531,0	197,2
1252	540,5	1,6	192,2	99,9	95,0	564,6	208,7
1253	537,9	1,5	205,2	103,0	97,9	594,0	220,2
1254	533,5	1,4	218,3	106,4	100,9	619,0	231,5
1255	609,9	1,3	230,2	116,0	104,5	635,6	243,3
1256	508,6	9,2	242,4	117,3	107,6	630,3	253,0
1257	452,7	9,2	253,7	119,7	111,2	612,0	262,5
1258	416,3	9,1	262,9	121,8	114,7	589,1	269,9
1259	408,4	9,0	270,4	123,5	118,5	565,2	276,3
1260	440,2	8,9	276,1	124,6	122,2	546,7	280,8
1261	487,9	8,7	281,2	125,9	125,5	538,7	284,1
1262	547,0	8,5	286,0	127,0	128,7	545,4	286,8
1263	580,2	8,3	290,9	128,4	131,7	565,4	291,0
1264	595,1	8,0	296,0	130,5	134,6	591,0	297,2
1265	597,5	7,8	301,2	133,0	137,4	614,8	303,4
1266	580,6	7,6	306,9	136,1	139,9	632,5	309,2
1267	572,7	7,5	312,8	139,0	142,1	642,2	315,4
1268	570,6	7,3	318,9	141,4	144,9	649,2	323,2
1269	564,9	7,1	324,8	143,9	147,3	654,5	330,4
1270	566,5	6,9	330,5	146,6	149,6	659,4	337,8

kindling

Piece Size (in):			Weight lbs	Meter Moisture Content Dry Uncorrected %
Thick	x Wide	x Length		
1,5	3,5	6,5		20
1,5	3,5	6,5		20
1,5	3,5	6,5		20
1,5	3,5	6,5		20
1,5	3,5	6,5		20
1,5	3,5	14,375		20
1,5	3,5	14,375	8,11	20

1271	568,0	6,7	336,2	149,2	151,9	664,4	344,9
1272	568,9	6,6	341,7	151,9	154,1	670,1	352,3
1273	570,6	6,4	347,2	154,5	156,4	675,6	359,4
1274	577,9	6,2	352,6	156,7	158,5	682,5	366,7
1275	578,9	6,0	358,1	159,1	160,6	690,4	372,6
1276	579,7	5,9	363,7	161,7	162,8	698,0	379,8
1277	578,1	5,7	369,3	164,4	164,8	705,7	385,9
1278	581,5	5,5	374,8	166,7	167,0	712,5	392,7
1279	580,7	5,4	380,3	169,6	169,2	718,9	398,2
1280	579,4	5,2	385,9	171,6	171,2	725,0	404,8
1281	582,6	5,0	391,5	173,8	173,0	731,1	410,1
1282	586,7	4,9	397,0	176,0	175,0	738,0	415,4
1283	590,9	4,7	402,5	178,9	177,4	745,6	420,8
1284	597,2	4,5	408,2	180,9	179,2	754,2	427,2
1285	605,2	4,4	413,7	183,1	181,0	764,2	432,4
1286	616,4	4,2	419,3	185,2	183,2	775,9	437,3
1287	626,9	4,0	424,8	187,3	185,3	788,7	443,6
1288	636,9	3,8	430,6	189,4	187,3	803,5	449,2
1289	642,8	3,6	436,4	192,0	189,7	821,0	454,6
1290	643,2	3,5	442,2	194,1	191,8	839,2	459,4
1291	645,4	3,3	447,7	197,0	193,8	856,7	464,6
1292	645,3	3,1	453,2	199,2	196,1	871,6	470,1
1293	643,4	3,0	458,0	201,4	198,3	886,3	475,1
1294	634,0	2,8	462,7	204,2	200,9	898,8	480,1
1295	627,4	2,7	467,5	206,2	203,3	908,5	484,9
1296	623,2	2,6	471,7	208,2	205,7	918,1	489,9
1297	615,5	2,4	475,8	210,4	208,1	926,0	493,8
1298	605,8	2,3	479,2	212,3	210,6	931,5	497,0
1299	593,0	2,2	482,8	214,6	213,7	933,4	499,7
1300	579,8	2,1	486,3	216,8	216,0	931,4	502,1
1301	567,7	2,1	490,1	218,1	218,9	924,9	503,8
1302	555,7	2,0	493,3	219,8	221,7	914,4	504,8
1303	539,1	1,9	496,4	221,4	224,9	895,3	505,8
1304	520,7	1,9	499,7	223,2	228,1	870,0	506,1
1305	505,2	1,9	503,1	224,1	231,6	843,4	506,3
1306	491,5	1,8	506,5	225,6	235,1	817,3	505,7
1307	479,9	1,8	509,5	227,2	238,3	792,5	504,9
1308	470,4	1,8	511,7	229,0	241,7	769,4	503,8
1309	460,6	1,7	513,8	229,8	245,3	748,0	502,3
1310	450,5	1,7	515,1	231,4	248,4	727,9	500,5
1311	440,7	1,7	515,9	232,1	251,2	708,7	498,4
1312	432,0	1,7	516,2	233,1	253,9	690,4	496,0
1313	424,6	1,7	515,2	237,4	256,6	673,1	493,5
1314	378,5	7,0	515,0	265,5	259,5	654,5	490,3
1315	348,5	6,9	509,8	275,4	259,9	629,2	488,5
1316	371,6	6,8	504,5	282,7	262,9	601,7	485,0
1317	413,5	6,7	497,0	284,7	264,7	575,2	480,3
1318	492,2	6,4	489,4	287,3	266,8	552,3	474,7
1319	501,5	6,2	485,7	263,2	268,1	540,4	468,5
1320	521,8	6,0	478,8	255,2	269,9	546,4	463,3
1321	536,1	5,9	472,6	251,5	271,6	564,4	460,2
1322	547,1	5,7	467,4	247,8	273,2	587,5	458,3
1323	553,7	5,5	463,5	245,9	274,3	612,1	457,5
1324	561,4	5,3	460,9	244,6	275,4	636,4	457,8
1325	567,8	5,1	459,3	244,7	276,3	660,0	458,7
1326	574,0	4,9	458,8	244,2	277,4	682,4	460,2
1327	578,1	4,7	459,3	242,8	278,1	703,0	462,2
1328	580,7	4,5	460,1	242,7	278,7	721,1	464,7
1329	585,1	4,4	461,7	241,6	279,0	738,3	467,5
1330	587,7	4,2	463,8	242,1	279,8	753,8	470,4
1331	590,5	4,0	466,2	241,6	280,6	768,7	473,0
1332	594,5	3,8	469,1	240,7	280,8	783,2	476,2
1333	596,8	3,7	471,7	242,5	281,9	796,8	479,2
1334	598,4	3,5	474,8	241,8	282,4	810,1	482,3
1335	600,2	3,3	478,0	241,2	282,5	823,0	485,2
1336	602,0	3,2	481,6	241,3	282,8	834,9	488,6
1337	602,7	3,0	484,4	242,5	283,4	846,1	491,4
1338	603,4	2,8	487,9	241,2	283,8	856,2	494,9
1339	603,9	2,7	491,4	241,8	284,4	865,6	498,2
1340	605,1	2,5	494,5	241,6	285,1	874,9	501,1
1341	608,3	2,4	497,3	242,5	285,6	884,8	504,2
1342	610,4	2,2	500,2	243,2	286,3	895,8	507,0
1343	614,1	2,1	503,2	243,6	287,1	907,5	510,2
1344	619,3	1,9	506,2	243,8	287,2	919,4	513,1
1345	614,0	1,8	509,5	244,1	287,5	931,0	516,6
1346	602,3	1,6	512,9	245,3	288,3	939,2	519,9
1347	588,8	1,5	516,3	246,0	288,9	940,0	523,0
1348	581,1	1,4	519,6	247,6	289,7	934,3	525,4
1349	576,8	1,3	523,7	247,3	290,5	929,3	527,6
1350	572,0	1,2	527,0	248,5	291,5	925,1	529,3
1351	564,1	1,2	530,4	248,6	292,1	920,2	530,4
1352	555,9	1,1	533,0	248,2	292,9	913,5	530,7
1353	542,4	1,1	535,1	249,4	293,6	902,8	530,9
1354	527,5	1,0	537,0	249,0	294,7	884,4	530,5
1355	512,0	1,0	538,1	250,8	295,4	861,1	529,8
1356	497,6	1,0	538,4	251,5	296,2	835,6	528,3
1357	483,7	0,9	538,9	250,7	296,0	809,7	527,1
1358	470,7	0,9	538,7	251,3	296,7	784,7	525,3
1359	459,6	0,9	538,0	252,3	297,8	760,9	523,0
1360	450,0	0,9	536,8	252,5	298,5	738,7	520,3
1361	441,6	0,8	535,3	252,4	299,0	718,1	517,7
1362	433,6	0,8	533,3	252,7	299,6	699,0	514,7
1363	426,3	0,8	531,1	254,1	300,6	681,5	511,5
1364	419,7	0,8	528,9	252,9	301,0	665,2	508,2
1365	414,3	0,8	526,0	254,1	301,8	650,1	504,9
1366	409,1	0,8	522,9	254,0	302,0	636,2	501,2
1367	404,1	0,8	519,6	253,4	302,9	623,3	497,8
1368	399,9	0,8	516,4	254,9	303,5	611,3	494,1

Piece Size (in):			Weight	Meter Moisture Content
Thick	x Wide	x Length	lbs	Dry Uncorrected %
1,5	3,5	14,325	1,90	21,00
1,5	3,5	14,325	1,82	22,00
1,5	3,5	14,325	1,77	18,00

1369	395,4	0,7	513,2	255,1	304,1	600,0	490,7
1370	391,3	0,7	510,3	255,2	304,6	589,7	487,0
1371	388,4	0,7	507,2	256,5	305,2	580,0	483,5
1372	385,0	0,7	503,9	255,4	305,7	571,0	479,9
1373	381,5	0,7	500,8	255,7	306,3	562,6	476,6
1374	378,7	0,6	497,2	257,2	307,1	554,9	473,2
1375	376,5	0,6	494,5	256,2	307,8	547,5	469,9
1376	373,4	0,6	491,4	255,7	308,2	540,6	466,7
1377	371,0	0,6	488,3	255,6	308,8	534,2	463,7
1378	368,4	0,6	485,2	255,3	309,2	528,0	460,7
1379	366,4	0,5	482,4	254,5	309,9	522,3	457,6
1380	364,3	0,5	479,3	254,3	309,9	516,9	455,0
1381	362,4	0,5	476,6	254,1	311,4	511,7	452,0
1382	360,8	0,5	473,9	254,6	311,3	506,7	449,3
1383	358,5	0,5	471,1	254,6	311,1	502,2	446,8
1384	356,7	0,4	468,2	254,9	311,8	497,8	444,0
1385	353,9	0,4	465,6	254,3	312,0	493,5	441,5
1386	351,4	0,4	463,1	255,3	313,0	489,2	439,2
1387	349,4	0,4	460,5	254,5	312,8	485,0	436,7
1388	347,6	0,4	458,6	254,1	312,2	481,1	434,3
1389	346,5	0,3	456,2	254,3	312,7	477,5	432,3
1390	344,6	0,3	454,0	253,6	313,6	473,9	429,9
1391	343,1	0,3	451,8	253,8	314,0	470,7	427,8
1392	341,9	0,3	449,8	252,2	314,4	467,5	425,7
1393	341,1	0,3	447,6	252,1	314,1	464,6	424,0
1394	339,9	0,2	445,2	252,6	314,8	461,8	421,8
1395	338,9	0,2	443,4	252,1	315,5	459,0	419,8
1396	337,8	0,2	441,5	251,9	315,5	456,2	418,0
1397	336,2	0,2	439,6	251,5	315,7	453,5	416,1
1398	335,3	0,2	437,7	251,3	315,8	450,9	414,4
1399	333,9	0,1	435,9	251,0	315,8	448,3	412,6
1400	333,1	0,1	434,1	250,4	316,7	445,6	411,1
1401	331,7	0,1	432,4	249,1	316,2	443,1	409,3
1402	330,5	0,1	430,7	248,8	316,4	440,5	407,8
1403	329,1	0,1	428,8	248,6	317,5	438,0	406,1
1404	327,8	0,1	427,1	248,2	317,4	435,6	404,7
1405	326,6	0,0	425,7	248,4	317,7	433,2	403,0
1406	74,2	4,7	74,4	74,5	74,5	74,6	74,7
1407	86,4	4,1	74,4	74,5	74,6	74,9	74,7
1408	134,3	4,0	74,8	74,5	74,5	75,4	75,1
1409	179,1	3,9	76,2	74,5	74,6	77,4	76,9
1410	295,0	3,7	78,8	74,7	74,7	83,7	81,3
1411	433,7	3,9	83,1	75,5	74,9	108,4	88,9
1412	509,5	3,1	88,0	77,4	75,5	146,7	99,6
1413	482,5	2,8	97,7	79,1	76,4	186,4	113,2
1414	480,9	2,6	111,2	80,9	77,8	235,3	127,4
1415	487,1	2,4	128,0	83,1	79,6	288,1	142,5
1416	490,4	2,3	143,9	85,7	81,9	338,8	157,7
1417	492,9	2,1	159,3	88,4	84,4	389,9	172,6
1418	490,7	2,0	176,9	91,4	87,1	436,3	186,9
1419	489,1	1,8	193,6	94,5	89,9	477,8	200,6
1420	485,6	1,7	209,7	97,7	92,8	513,9	213,8
1421	480,9	1,6	225,0	100,9	95,7	544,3	226,3
1422	478,4	1,5	239,6	104,3	98,7	568,2	238,2
1423	475,2	1,4	253,5	107,8	101,9	589,5	249,7
1424	473,0	1,3	266,2	111,1	105,1	606,8	261,0
1425	484,4	9,0	277,6	116,0	108,5	620,6	272,1
1426	544,5	8,8	287,5	121,7	112,1	634,3	284,3
1427	531,5	8,7	297,2	129,0	116,1	636,2	297,2
1428	501,9	8,5	306,9	130,0	119,9	630,7	308,3
1429	513,8	8,3	314,8	131,7	124,0	636,9	317,6
1430	530,4	8,1	322,2	133,6	128,3	651,8	327,1
1431	548,5	7,9	329,7	135,8	132,2	669,4	335,9
1432	563,3	7,7	337,5	138,7	136,1	689,5	345,0
1433	572,3	7,4	345,7	141,9	139,5	711,3	354,2
1434	578,1	7,2	353,7	145,2	142,8	733,3	363,3
1435	584,1	7,0	361,6	149,0	145,7	754,7	371,9
1436	583,8	6,7	369,2	152,4	148,3	773,3	381,1
1437	569,0	6,6	376,9	156,2	150,6	786,9	389,7
1438	570,7	6,4	384,1	161,0	152,9	793,3	397,9
1439	568,3	6,2	390,8	164,0	154,9	803,2	406,2
1440	570,7	6,0	397,0	166,9	157,1	815,2	414,2
1441	570,9	5,8	402,8	170,4	159,0	826,3	421,4
1442	571,5	5,6	408,7	173,2	160,7	835,6	428,8
1443	572,1	5,4	414,4	176,4	162,4	844,2	436,0
1444	572,3	5,2	419,9	179,2	164,2	852,1	442,9
1445	573,2	5,1	424,9	182,4	166,0	859,7	449,1
1446	572,3	4,9	429,7	184,9	167,9	866,6	455,2
1447	571,9	4,7	434,5	187,8	169,6	872,7	461,3
1448	571,7	4,5	439,0	190,5	171,5	878,8	466,8
1449	571,4	4,4	443,3	193,3	173,5	884,7	471,5
1450	571,3	4,2	447,7	196,0	175,5	890,3	477,4
1451	570,7	4,0	451,9	198,5	177,5	896,0	482,8
1452	569,8	3,8	456,4	201,1	179,5	901,7	487,4
1453	569,4	3,6	460,4	203,6	181,5	906,9	492,2
1454	569,9	3,4	464,5	205,8	183,5	911,9	496,9
1455	573,2	3,3	468,7	208,0	185,7	916,6	501,5
1456	575,0	3,1	472,8	210,4	188,2	920,6	505,8
1457	570,4	2,9	477,0	212,5	190,5	923,8	509,7
1458	562,9	2,8	480,8	214,8	192,7	926,0	514,1
1459	555,7	2,7	484,4	216,7	195,2	926,3	517,9
1460	549,7	2,5	487,6	218,7	197,6	924,6	521,5
1461	544,4	2,4	490,7	220,7	200,3	922,2	525,2
1462	539,9	2,3	493,6	223,0	202,7	919,0	528,7
1463	535,7	2,2	496,2	224,4	205,3	915,6	532,0
1464	529,8	2,1	498,5	225,8	208,0	911,9	534,9
1465	522,1	2,0	500,8	227,5	211,0	906,8	537,5
1466	513,9	2,0	502,9	229,6	213,3	897,2	539,8

kindling

Thick	Piece Size (in):			Weight lbs	Meter Moisture Content Dry Uncorrected %
	x Wide	x	Length		
1,5	3,5		6,5		21
1,5	3,5		6,5		21
1,5	3,5		6,5		21
1,5	3,5		6,5		21
1,5	3,5		6,5		21
1,5	3,5		14,375		19
1,5	3,5		14,375	7,87	19

1467	503,6	1,9	504,5	231,3	215,9	882,5	541,4
1468	491,8	1,9	505,9	232,3	219,0	863,6	542,3
1469	481,6	1,8	507,0	234,1	221,8	842,0	542,8
1470	470,4	1,8	507,7	235,1	224,9	819,4	542,1
1471	462,1	1,8	508,0	236,5	227,6	797,1	541,2
1472	453,3	1,8	507,8	237,8	230,6	775,5	539,8
1473	444,4	1,7	507,6	239,6	233,7	755,1	537,7
1474	436,9	1,7	506,9	240,3	237,1	735,9	535,3
1475	429,9	1,7	505,4	241,9	240,0	717,6	532,2
1476	436,6	6,9	503,8	256,4	243,3	700,1	529,3
1477	412,0	6,7	500,7	274,6	245,1	678,6	527,7
1478	456,5	6,6	495,5	283,3	245,4	653,2	524,3
1479	451,9	6,4	495,0	267,0	249,0	633,0	519,8
1480	466,5	6,2	491,4	262,2	252,3	626,7	514,7
1481	490,8	6,1	487,9	258,7	255,3	632,2	510,9
1482	506,1	5,9	485,2	256,5	257,5	646,1	508,2
1483	512,9	5,7	483,7	256,1	259,7	663,4	506,6
1484	520,6	5,5	483,3	255,2	261,5	681,5	505,8
1485	529,7	5,4	483,4	255,5	263,3	699,8	505,4
1486	533,9	5,2	484,3	255,1	264,7	717,6	505,9
1487	538,2	5,0	485,2	254,9	266,1	734,8	506,7
1488	541,7	4,8	486,5	255,2	267,3	751,2	507,9
1489	542,3	4,7	488,4	254,5	268,4	765,1	509,5
1490	543,1	4,5	490,6	254,1	269,3	775,6	511,3
1491	544,0	4,3	492,5	254,8	270,6	784,3	513,1
1492	548,2	4,2	494,6	255,0	271,3	794,0	515,1
1493	550,9	4,0	496,9	254,6	271,8	803,6	517,1
1494	552,5	3,8	499,5	254,2	273,1	812,6	519,5
1495	556,8	3,8	501,9	253,9	273,6	822,7	521,8
1496	559,9	3,6	504,4	255,0	274,3	833,0	524,2
1497	562,4	3,4	506,9	253,5	275,2	843,5	526,7
1498	563,7	3,3	509,5	254,3	275,9	853,6	529,0
1499	565,5	3,1	512,1	253,8	276,8	863,4	531,5
1500	567,4	3,0	515,1	254,8	277,3	873,1	534,2
1501	568,0	2,8	517,8	254,7	277,9	882,5	536,8
1502	569,9	2,7	520,9	254,3	278,6	891,6	539,4
1503	571,2	2,5	523,7	254,5	279,4	900,1	541,9
1504	573,5	2,4	526,8	255,3	279,8	908,3	544,4
1505	575,7	2,2	530,0	254,9	280,2	916,9	547,1
1506	582,6	2,1	533,3	255,5	280,9	925,5	549,8
1507	591,9	1,9	536,5	256,4	281,7	934,8	552,2
1508	599,5	1,8	539,5	255,5	282,5	944,4	554,7
1509	598,6	1,6	542,0	257,8	283,0	953,7	557,3
1510	587,1	1,5	545,3	256,7	283,7	961,2	560,0
1511	571,7	1,4	548,0	257,7	284,4	963,8	562,2
1512	556,6	1,3	550,3	259,8	285,2	959,0	563,3
1513	544,2	1,3	552,8	259,1	285,7	948,9	564,5
1514	531,8	1,2	554,5	259,3	286,5	935,3	564,5
1515	520,2	1,2	556,2	259,9	287,2	919,1	564,1
1516	508,9	1,1	557,1	259,9	288,3	899,9	562,8
1517	496,5	1,1	557,8	259,4	289,0	878,1	561,2
1518	484,6	1,1	557,9	259,4	289,9	854,3	559,1
1519	471,6	1,0	557,5	260,2	290,8	829,5	556,4
1520	460,5	1,0	556,3	260,2	291,6	805,2	553,5
1521	451,7	1,0	554,8	260,1	292,3	781,9	550,3
1522	442,7	1,0	552,8	259,2	293,4	759,9	546,7
1523	435,0	1,0	550,7	259,7	294,5	739,4	542,9
1524	428,0	0,9	548,2	260,4	295,3	720,3	538,9
1525	421,3	0,9	545,1	260,6	296,1	702,7	534,8
1526	415,0	0,9	542,2	261,3	297,1	686,3	530,7
1527	410,1	0,9	539,3	260,5	297,9	671,1	526,5
1528	405,2	0,9	536,2	260,6	299,0	657,2	522,3
1529	400,1	0,8	533,0	261,1	300,1	644,3	518,3
1530	393,7	0,8	529,8	261,7	300,4	632,7	514,0
1531	389,1	0,8	526,8	261,7	301,4	621,7	510,2
1532	384,5	0,8	523,8	261,1	302,0	611,3	506,3
1533	380,6	0,8	520,4	262,3	302,6	601,5	502,4
1534	376,5	0,7	517,5	261,4	303,4	592,0	498,7
1535	373,0	0,7	514,2	262,5	304,0	583,2	495,2
1536	369,9	0,7	510,8	261,9	304,6	574,8	491,4
1537	366,5	0,7	507,8	262,9	305,5	566,9	487,8
1538	363,5	0,7	504,7	262,6	305,8	559,4	484,4
1539	360,6	0,6	501,7	262,4	306,5	552,3	481,1
1540	357,8	0,6	498,5	262,3	307,0	545,4	477,8
1541	355,1	0,6	495,4	262,3	307,1	538,9	474,5
1542	352,1	0,6	492,4	261,9	307,8	532,6	471,4
1543	350,3	0,6	489,1	261,2	307,6	526,6	468,4
1544	349,0	0,5	486,4	261,5	307,9	521,2	465,6
1545	348,5	0,5	483,6	260,9	308,4	516,5	462,7
1546	347,9	0,5	480,7	260,3	308,6	512,2	459,9
1547	346,4	0,5	478,2	260,5	308,8	508,4	457,3
1548	345,2	0,4	475,7	260,0	308,9	505,0	454,7
1549	344,3	0,4	473,6	259,5	309,2	501,9	452,4
1550	343,8	0,4	471,5	259,1	308,9	499,0	450,2
1551	342,8	0,4	469,6	259,0	309,2	496,2	447,9
1552	342,2	0,4	467,9	257,6	309,4	493,6	445,8
1553	340,1	0,3	466,3	257,5	309,4	491,3	443,8
1554	339,3	0,3	464,6	257,5	309,4	488,7	441,8
1555	338,5	0,3	462,7	256,7	309,7	486,3	440,0
1556	337,6	0,3	461,3	256,6	309,5	483,9	438,2
1557	336,2	0,3	459,5	256,1	309,8	481,6	436,4
1558	335,5	0,2	457,8	255,7	310,0	479,4	434,6
1559	334,3	0,2	456,5	255,2	310,3	477,1	433,1
1560	333,4	0,2	455,0	254,6	310,4	474,8	431,5
1561	332,3	0,2	453,6	253,9	310,3	472,8	430,0
1562	331,4	0,2	452,1	253,9	310,5	470,8	428,5
1563	330,3	0,1	450,6	253,0	310,6	468,6	427,0
1564	329,2	0,1	448,9	252,8	310,8	466,6	425,8

Thick	Piece Size (in):			Weight lbs	Meter Moisture Content Dry Uncorrected %
	x	Wide	x		
1,5		3,5	14,375	1,77	19,00
1,5		3,5	14,375	1,77	19,00
1,5		3,5	14,375	1,80	21,00

1565	328,7	0,1	447,8	251,7	310,9	464,5	424,6
1566	327,7	0,1	446,4	252,0	311,0	462,5	423,6
1567	326,6	0,1	444,8	251,4	311,5	460,8	422,5
1568	326,0	0,0	443,3	250,7	311,7	459,0	421,6
1569	75,4	4,0	75,4	75,6	75,4	75,5	75,6
1570	93,2	4,0	75,4	75,6	75,4	75,8	75,7
1571	117,6	3,9	75,5	75,4	75,4	76,5	76,8
1572	149,9	3,8	76,3	75,4	75,4	79,0	80,4
1573	212,5	3,7	77,9	75,6	75,6	84,0	86,6
1574	268,1	3,5	80,2	76,0	76,1	94,6	94,5
1575	303,1	3,3	82,9	76,7	76,8	111,2	104,5
1576	345,8	3,2	86,0	77,5	77,9	135,2	116,5
1577	385,8	3,0	89,7	78,6	79,4	167,6	128,4
1578	427,4	2,8	94,8	80,1	81,4	205,6	138,1
1579	460,8	2,6	102,0	81,9	83,7	252,7	145,8
1580	477,0	2,4	111,5	84,2	86,2	304,5	160,2
1581	491,2	2,3	122,3	86,7	89,0	356,0	175,6
1582	498,5	2,1	134,2	89,5	91,7	406,5	191,1
1583	507,7	2,0	146,7	92,5	94,4	455,5	207,2
1584	510,6	1,8	159,5	95,4	97,0	502,9	224,0
1585	520,4	1,6	172,4	98,7	99,6	548,1	240,6
1586	529,7	1,5	185,3	102,0	102,2	589,3	256,9
1587	524,0	1,4	198,8	105,4	104,8	628,3	271,7
1588	522,5	1,2	212,6	109,2	107,4	660,3	285,3
1589	572,8	1,1	225,8	115,3	110,3	687,8	298,1
1590	502,1	8,9	238,7	120,7	113,4	690,9	308,1
1591	463,7	8,8	251,4	123,2	116,5	674,6	316,6
1592	450,5	8,7	262,1	125,3	120,0	656,7	323,8
1593	445,6	8,6	271,0	127,4	123,7	640,3	330,1
1594	446,7	8,5	278,3	129,1	127,8	629,1	335,1
1595	447,9	8,4	284,2	131,0	131,4	620,2	339,4
1596	451,7	8,3	288,9	132,8	135,1	613,0	343,8
1597	459,0	8,2	292,3	134,8	138,3	605,4	347,2
1598	462,8	8,1	295,5	136,7	141,5	599,9	350,7
1599	469,0	8,0	298,7	138,6	144,2	597,8	353,9
1600	462,5	7,8	302,0	140,5	146,7	598,3	357,2
1601	443,1	7,8	305,5	142,5	149,1	595,8	360,1
1602	426,3	7,7	309,0	144,5	151,3	588,9	362,0
1603	418,4	7,6	311,8	146,4	153,0	579,3	363,3
1604	428,1	7,5	313,6	148,2	154,6	569,1	364,0
1605	443,4	7,4	314,8	149,6	156,3	562,1	364,6
1606	455,5	7,2	317,0	150,9	157,9	559,0	365,7
1607	477,6	7,1	319,8	152,3	159,2	564,7	367,1
1608	488,3	6,9	323,6	153,8	160,8	578,6	368,8
1609	496,5	6,7	328,4	155,2	162,3	596,3	370,9
1610	502,8	6,6	333,9	156,8	163,7	615,0	373,6
1611	505,6	6,4	339,4	158,4	165,1	633,2	376,4
1612	512,6	6,3	345,0	160,1	166,6	649,7	379,7
1613	518,4	6,1	350,9	162,0	167,8	665,6	383,4
1614	521,8	5,9	356,8	163,7	169,1	680,8	387,3
1615	525,9	5,8	362,9	165,6	170,7	694,8	391,4
1616	530,9	5,6	369,4	167,6	171,9	708,5	396,0
1617	541,7	5,4	375,9	169,6	173,0	723,0	400,8
1618	545,5	5,2	382,9	171,5	174,4	738,5	405,4
1619	555,4	5,1	390,3	173,4	175,9	753,8	410,2
1620	569,2	4,9	397,9	176,0	177,2	770,0	415,5
1621	569,4	4,7	405,7	177,8	178,8	789,2	421,5
1622	574,9	4,5	413,8	180,4	180,1	805,8	427,5
1623	567,8	4,3	421,5	182,6	181,4	821,3	432,9
1624	573,6	4,1	429,3	185,2	183,1	835,9	437,9
1625	570,0	3,9	436,9	187,9	184,9	850,3	443,2
1626	568,4	3,7	444,3	190,4	186,5	863,9	449,3
1627	570,2	3,5	452,1	192,7	188,6	876,1	454,6
1628	568,8	3,4	459,6	195,5	190,7	888,0	459,8
1629	567,7	3,2	466,8	197,9	192,9	899,5	465,2
1630	569,0	3,0	473,9	200,5	195,2	910,6	470,9
1631	568,0	2,8	480,4	203,6	196,9	921,3	477,0
1632	563,6	2,7	486,9	206,0	199,1	931,8	483,3
1633	558,3	2,5	493,2	208,4	201,2	942,0	489,2
1634	554,9	2,4	499,2	211,0	203,5	949,6	494,7
1635	547,7	2,3	504,2	213,3	205,6	952,1	499,2
1636	540,4	2,2	508,4	215,4	208,0	950,2	502,2
1637	532,5	2,2	511,9	217,6	210,4	945,7	504,4
1638	527,1	2,1	514,7	219,5	212,9	939,6	505,9
1639	517,8	2,0	517,0	221,3	215,5	931,7	506,8
1640	510,6	2,0	518,7	223,4	217,8	920,6	507,0
1641	503,1	1,9	520,3	225,1	219,8	905,0	507,0
1642	494,0	1,9	521,2	226,7	222,3	884,7	506,4
1643	484,7	1,8	521,7	228,3	225,0	862,6	505,3
1644	475,9	1,8	522,2	230,0	227,6	840,4	504,0
1645	467,1	1,8	521,8	231,4	230,4	818,0	502,2
1646	458,4	1,7	521,2	233,1	232,9	795,6	500,2
1647	449,5	1,7	520,2	234,2	235,9	773,9	497,7
1648	442,9	1,7	518,9	235,4	238,1	753,0	495,4
1649	434,4	1,6	517,2	237,2	241,5	732,9	492,7
1650	426,3	1,6	515,5	238,3	244,6	713,4	490,1
1651	407,5	7,0	513,2	260,4	248,2	694,1	488,4
1652	411,1	6,3	506,2	272,8	247,5	669,1	487,3
1653	433,6	6,5	500,8	280,1	251,4	640,5	483,9
1654	514,4	6,4	494,1	286,6	253,0	614,0	479,6
1655	591,6	6,1	489,7	285,2	255,4	594,9	475,1
1656	519,8	6,0	487,5	269,5	259,4	590,0	471,7
1657	510,7	5,8	484,9	262,8	262,6	599,5	470,8
1658	517,1	5,6	482,5	259,2	264,5	616,8	471,3
1659	525,2	5,4	480,0	257,3	267,0	638,5	472,1
1660	529,0	5,3	478,3	255,4	269,1	661,3	473,6
1661	529,7	5,1	477,5	255,8	270,8	682,3	474,6
1662	531,1	4,9	477,8	255,4	272,6	701,6	475,8

kindling

Piece Size (in):			Weight lbs	Meter Moisture Content Dry Uncorrected %
Thick	x Wide	x Length		
1,5	3,5	6,5		20
1,5	3,5	6,5		20
1,5	3,5	6,5		20
1,5	3,5	6,5		20
1,5	3,5	6,5		20
1,5	3,5	14,375		20
1,5	3,5	14,375	7,88	20

Piece Size (in):			Weight lbs	Meter Moisture Content Dry Uncorrected %
Thick	x Wide	x Length		
1,5	3,5	14,325	1,75	19,00
1,5	3,5	14,325	1,79	18,00
1,5	3,5	14,325	1,77	19,00

1663	533,4	4,8	478,9	255,1	274,3	718,9	477,1
1664	535,6	4,6	480,8	254,9	275,5	735,0	478,6
1665	537,3	4,5	482,6	254,2	276,4	749,8	481,0
1666	537,2	4,3	484,8	253,5	277,8	763,1	483,3
1667	538,4	4,1	487,0	252,7	278,8	774,6	486,1
1668	539,3	4,0	489,6	252,1	279,4	785,1	488,8
1669	541,3	3,8	492,3	252,2	280,0	795,0	491,7
1670	544,7	3,7	494,7	253,1	280,3	804,7	494,3
1671	546,3	3,5	496,8	251,0	281,5	814,3	497,3
1672	546,0	3,4	499,2	252,8	281,2	823,6	500,2
1673	545,8	3,2	502,0	251,9	281,6	832,2	503,3
1674	547,1	3,1	504,9	250,8	281,3	839,8	506,4
1675	546,9	3,0	507,4	251,8	281,9	847,0	509,1
1676	545,7	2,8	510,2	252,3	282,0	853,9	512,3
1677	547,3	2,7	513,0	252,6	281,9	860,1	515,7
1678	548,0	2,5	515,4	251,1	282,2	866,2	518,7
1679	549,0	2,4	517,8	251,6	282,4	872,9	521,7
1680	548,5	2,3	520,3	252,2	282,9	879,1	524,2
1681	550,2	2,1	522,8	251,7	283,7	885,0	527,1
1682	549,6	2,0	525,4	251,6	284,0	891,2	529,9
1683	543,2	1,9	528,3	252,8	284,3	895,8	532,7
1684	540,2	1,7	531,2	253,0	284,8	901,0	535,8
1685	537,8	1,6	534,8	254,9	284,4	906,5	539,4
1686	536,0	1,5	538,6	255,8	284,2	911,4	543,0
1687	531,9	1,4	542,0	254,6	284,9	914,7	546,6
1688	528,4	1,3	545,9	254,8	284,1	914,7	550,0
1689	523,9	1,2	549,0	254,9	285,2	911,9	552,4
1690	518,1	1,1	551,5	255,8	285,9	908,2	554,3
1691	511,5	1,1	553,5	256,2	287,0	902,6	555,2
1692	503,7	1,0	554,9	257,5	286,4	895,3	556,0
1693	491,5	1,0	556,1	258,9	286,8	881,4	555,8
1694	478,8	0,9	555,9	258,9	287,6	860,6	555,2
1695	466,6	0,9	555,7	259,7	287,8	837,5	554,0
1696	456,6	0,9	554,9	260,0	288,4	813,8	552,1
1697	446,6	0,9	553,7	258,8	289,8	790,8	549,8
1698	437,0	0,8	552,5	259,8	289,9	768,8	547,2
1699	429,3	0,8	550,5	260,3	290,5	748,2	543,9
1700	421,9	0,8	547,9	260,5	291,4	728,8	540,4
1701	416,3	0,8	545,0	260,2	292,4	710,8	536,8
1702	410,7	0,8	541,9	261,5	292,5	694,1	533,0
1703	405,0	0,7	538,5	261,8	293,8	678,8	529,1
1704	400,8	0,7	534,7	262,7	294,9	664,5	524,8
1705	396,0	0,7	531,5	264,0	295,0	651,4	521,1
1706	391,8	0,7	527,7	262,8	295,7	639,3	517,2
1707	388,1	0,7	524,5	263,0	296,6	627,9	513,4
1708	384,0	0,6	520,9	263,2	297,1	617,6	509,3
1709	379,7	0,6	517,7	264,0	297,7	607,8	505,4
1710	376,8	0,6	514,3	263,1	298,1	598,6	501,9
1711	372,7	0,6	511,0	263,2	298,7	590,1	498,1
1712	370,7	0,6	507,4	263,7	299,7	582,2	494,7
1713	367,4	0,5	504,0	263,8	300,4	574,8	491,2
1714	365,2	0,5	500,6	263,4	301,1	568,0	488,1
1715	362,9	0,5	497,2	263,3	301,5	561,7	484,9
1716	361,1	0,5	494,0	263,1	302,1	555,9	481,8
1717	359,8	0,4	490,9	262,9	302,2	550,5	478,8
1718	358,0	0,4	488,2	263,8	302,6	545,4	476,1
1719	356,0	0,4	485,6	263,1	303,1	540,7	473,3
1720	354,7	0,4	483,1	262,5	303,6	536,4	470,9
1721	353,4	0,4	479,9	262,5	304,5	532,2	468,4
1722	352,2	0,3	477,6	261,7	304,8	528,4	466,1
1723	350,8	0,3	475,2	261,9	305,4	524,7	463,8
1724	349,4	0,3	472,9	261,4	305,7	521,0	461,8
1725	348,5	0,3	470,4	261,0	306,4	517,6	459,8
1726	346,4	0,2	468,3	260,1	306,6	514,3	457,9
1727	345,2	0,2	466,1	260,1	307,3	511,0	456,1
1728	344,0	0,2	464,1	260,3	307,5	507,8	454,4
1729	343,2	0,2	462,0	259,3	308,2	504,7	452,5
1730	342,0	0,2	460,0	258,6	308,7	501,8	450,8
1731	340,4	0,2	458,1	257,9	309,7	498,7	449,2
1732	339,3	0,1	456,9	257,6	309,8	495,7	447,5
1733	338,9	0,1	455,8	256,3	310,5	493,0	446,0
1734	338,2	0,1	454,6	255,2	309,2	490,1	444,5
1735	337,4	0,1	452,7	254,3	309,4	487,3	443,1
1736	337,0	0,0	451,6	253,6	309,0	484,8	441,6
1737	67,8	4,2	66,2	65,9	65,9	66,6	66,0
1738	75,1	4,1	66,2	66,0	65,9	66,7	66,0
1739	125,8	4,0	66,4	66,0	65,9	67,0	66,1
1740	224,2	3,8	67,4	66,1	65,9	69,1	67,5
1741	416,7	3,4	70,1	66,2	66,0	78,4	69,5
1742	551,5	3,1	74,9	66,8	66,4	99,8	72,2
1743	621,5	2,8	81,7	67,7	67,1	138,0	77,0
1744	667,3	2,6	90,6	69,3	68,2	191,1	83,6
1745	649,2	2,3	100,9	71,5	69,8	255,7	92,2
1746	627,4	2,1	112,4	74,4	71,8	317,7	103,2
1747	621,0	1,9	124,9	77,5	74,2	375,0	116,0
1748	615,3	1,7	138,2	80,8	76,9	428,5	130,4
1749	614,8	1,6	151,9	84,2	79,8	476,4	145,7
1750	620,1	1,4	165,7	87,7	82,9	522,4	161,3
1751	615,9	1,3	179,0	91,2	86,1	564,4	177,2
1752	611,4	1,1	191,9	94,8	89,3	600,3	193,2
1753	603,3	8,7	203,6	103,0	92,4	628,6	209,1
1754	506,2	8,5	216,7	105,7	95,9	628,0	224,0
1755	519,2	8,3	228,5	108,1	99,6	618,4	236,2
1756	549,7	8,2	239,6	110,5	103,8	614,0	246,8
1757	552,1	8,0	249,7	112,6	107,8	612,3	255,8
1758	539,7	7,9	258,9	114,9	111,8	608,6	264,4
1759	545,5	7,8	267,3	117,4	115,7	605,3	271,3
1760	522,1	7,6	275,0	120,3	119,6	599,6	277,7

kindling

Thick	Piece Size (in):			Weight lbs	Meter Moisture Content Dry Uncorrected %
	x Wide	x Length			
1,5	3,5	14,3745			21
1,5	3,5	14,3745			21
1,5	3,5	14,3745			21
1,5	3,5	6,5			21
1,5	3,5	6,5			21
1,5	3,5	6,5			21

1761	521,9	7,5	282,0	122,3	123,1	592,8	283,1
1762	542,3	7,4	288,1	124,7	126,4	588,2	287,4
1763	575,0	7,2	293,3	126,5	129,1	589,1	291,8
1764	584,4	7,0	298,4	128,8	132,3	595,5	296,0
1765	579,3	6,9	303,8	131,0	134,9	604,1	300,7
1766	591,3	6,6	309,2	133,5	137,8	612,8	305,4
1767	591,1	6,5	314,4	135,9	139,8	621,4	310,5
1768	595,9	6,3	320,0	138,3	142,8	629,9	315,5
1769	597,7	6,1	325,3	140,6	145,4	638,7	320,7
1770	608,8	6,0	330,6	142,8	147,8	648,2	326,2
1771	622,5	5,7	336,2	145,3	150,3	658,2	331,8
1772	630,0	5,6	341,4	147,4	152,5	669,1	337,7
1773	636,5	5,4	346,6	150,0	155,1	681,4	343,8
1774	646,9	5,2	351,7	152,2	157,4	695,4	349,6
1775	668,2	5,0	357,1	154,4	159,9	709,4	355,9
1776	662,2	4,8	362,4	157,0	162,4	723,6	361,7
1777	688,6	4,6	368,1	159,2	164,7	736,4	367,9
1778	682,1	4,4	373,6	161,6	167,4	752,1	374,3
1779	707,1	4,2	379,2	163,8	169,8	767,8	380,4
1780	701,1	4,0	384,7	166,4	172,3	781,8	386,8
1781	729,3	3,9	390,2	168,8	174,7	798,4	392,7
1782	737,0	3,7	395,7	171,0	177,2	814,6	399,3
1783	741,0	3,4	401,3	173,7	179,9	831,2	405,8
1784	752,3	3,3	406,7	175,8	182,6	845,6	412,4
1785	779,8	3,1	411,9	178,7	185,2	860,8	418,6
1786	779,2	2,9	417,0	181,4	188,0	876,2	424,8
1787	781,3	2,7	421,9	183,8	190,9	889,5	431,0
1788	787,8	2,5	426,5	186,1	193,6	901,1	436,8
1789	788,7	2,4	430,8	189,0	196,7	911,2	442,2
1790	779,7	2,2	434,8	191,4	199,7	920,0	447,1
1791	763,8	2,1	438,9	194,0	202,9	926,8	452,0
1792	741,8	2,0	443,1	197,1	206,2	930,6	456,2
1793	708,6	1,9	447,2	198,8	208,9	928,7	460,2
1794	674,6	1,8	450,7	201,4	212,8	919,0	463,3
1795	643,3	1,8	453,7	204,3	216,8	902,9	466,1
1796	617,1	1,7	456,9	206,3	220,3	882,0	468,6
1797	596,3	1,7	459,8	209,0	224,5	858,9	470,5
1798	574,6	1,6	462,1	210,7	228,7	835,1	472,1
1799	555,1	1,6	464,5	213,1	232,9	810,4	473,4
1800	538,8	1,6	466,4	214,9	236,8	786,1	474,0
1801	524,9	1,6	468,2	217,5	241,6	762,9	474,2
1802	512,9	1,5	469,4	219,9	246,0	740,9	473,9
1803	502,8	1,5	470,4	221,4	250,4	720,2	473,1
1804	493,5	1,4	471,0	223,0	255,3	701,3	472,3
1805	485,2	1,4	471,2	224,9	260,1	683,9	471,0
1806	477,8	1,4	471,4	226,6	264,3	667,9	469,5
1807	448,5	1,3	471,8	232,4	284,7	607,7	460,6
1808	362,0	6,4	472,2	261,1	288,8	594,7	459,5
1809	329,7	6,7	464,7	270,8	289,4	573,3	459,0
1810	370,0	6,2	466,1	260,4	294,3	549,6	457,1
1811	468,4	6,0	465,7	253,3	298,3	536,8	453,4
1812	529,3	5,8	463,6	247,3	301,8	539,6	449,8
1813	562,0	5,6	460,0	245,2	304,8	553,7	446,6
1814	576,2	5,4	456,5	243,4	307,4	572,7	444,5
1815	590,2	5,3	453,3	242,4	309,1	595,0	443,1
1816	599,6	5,0	451,2	242,9	311,0	619,6	443,0
1817	602,1	4,9	449,8	241,6	311,8	643,0	443,7
1818	604,9	4,7	449,0	243,0	313,3	665,3	445,3
1819	607,8	4,5	448,9	243,3	313,7	685,3	447,0
1820	612,2	4,3	449,2	242,8	314,8	703,3	449,4
1821	616,6	4,1	450,1	243,0	314,7	719,9	452,0
1822	616,9	4,0	451,1	242,5	314,5	734,9	454,8
1823	618,3	3,8	452,8	242,6	314,8	748,1	457,7
1824	620,6	3,7	454,2	243,0	314,9	760,0	461,0
1825	623,0	3,5	456,0	242,6	314,6	770,6	464,0
1826	625,2	3,3	458,0	242,5	314,5	780,4	467,0
1827	624,5	3,2	460,4	241,9	314,0	789,4	470,3
1828	623,1	3,1	462,7	241,4	312,9	797,2	473,5
1829	625,8	2,9	465,2	242,3	313,7	804,4	476,1
1830	625,9	2,7	467,4	241,4	313,9	811,5	478,7
1831	624,4	2,6	469,8	241,8	313,2	817,2	481,6
1832	622,5	2,5	472,0	241,6	313,2	821,4	483,5
1833	621,8	2,3	474,8	241,5	313,1	824,8	486,2
1834	622,0	2,2	477,5	242,3	312,8	827,1	488,0
1835	624,8	2,0	480,1	240,6	312,9	830,1	490,5
1836	629,3	1,9	482,8	242,0	312,8	834,6	492,2
1837	630,9	1,8	485,6	241,6	312,6	840,7	494,3
1838	628,3	1,7	488,4	242,8	313,0	847,5	496,2
1839	621,7	1,5	491,5	242,7	312,5	853,9	498,5
1840	617,5	1,4	494,5	244,2	312,6	859,5	500,5
1841	608,9	1,3	498,1	244,1	312,7	863,6	502,7
1842	596,2	1,2	501,8	244,2	312,4	862,3	504,9
1843	583,4	1,2	505,4	244,1	313,0	855,8	506,4
1844	570,4	1,0	508,6	246,0	313,4	846,2	507,9
1845	555,3	1,0	511,7	245,3	313,4	833,3	509,3
1846	536,6	1,0	514,1	247,4	313,9	815,4	509,8
1847	520,3	0,9	516,3	247,9	313,9	794,7	510,4
1848	505,3	0,9	518,0	247,9	314,0	773,2	510,1
1849	492,6	0,9	519,3	247,9	314,2	751,8	509,4
1850	479,8	0,9	519,8	248,5	314,1	731,1	508,2
1851	468,3	0,8	520,1	249,0	314,9	711,2	506,8
1852	458,1	0,8	519,8	248,9	314,6	692,1	505,0
1853	449,8	0,8	519,0	249,5	315,3	674,3	502,3
1854	442,0	0,8	517,8	249,2	315,3	657,7	499,9
1855	435,8	0,8	516,2	249,1	315,2	642,5	497,2
1856	429,9	0,7	514,4	249,8	315,6	628,6	494,1
1857	424,3	0,7	512,1	249,5	315,8	615,5	490,9
1858	419,6	0,7	509,7	250,1	316,1	603,6	487,7

1,5	3,5	6,5		21
1,5	3,5	6,5	7,59	21

Thick	Piece Size (in):			Weight lbs	Meter Moisture Content Dry Uncorrected %
	x Wide	x	Length		
1,5	3,5		14,375	1,74	21,00
1,5	3,5		14,375	1,87	21,00
1,5	3,5		14,375	1,44	18,00

1859	415,4	0,7	507,2	250,3	317,1	592,6	484,1
1860	410,6	0,6	504,6	250,6	317,1	582,3	481,3
1861	407,6	0,6	502,0	251,3	316,6	572,8	478,1
1862	403,7	0,6	499,3	249,9	317,1	563,9	474,9
1863	400,2	0,6	496,8	250,0	317,0	555,6	471,6
1864	397,6	0,5	493,9	249,4	317,6	547,9	468,3
1865	394,1	0,5	491,0	249,9	318,2	540,5	465,0
1866	391,2	0,5	488,4	249,8	318,5	533,7	462,0
1867	388,8	0,5	485,6	248,9	318,2	527,3	459,0
1868	386,2	0,4	483,1	248,4	318,3	521,3	456,0
1869	383,7	0,4	480,5	248,6	318,4	515,5	453,2
1870	381,3	0,4	478,0	248,7	318,6	510,1	450,4
1871	379,2	0,4	475,6	247,9	319,1	504,8	447,6
1872	376,9	0,3	473,1	247,9	319,4	499,8	444,8
1873	374,6	0,3	470,9	247,5	319,2	495,0	442,3
1874	372,9	0,3	468,4	247,4	319,6	490,5	439,6
1875	370,8	0,3	466,1	247,2	319,8	486,0	437,1
1876	368,9	0,3	464,1	247,1	320,7	481,7	434,3
1877	366,8	0,3	461,8	247,7	321,1	477,7	432,1
1878	365,3	0,2	459,6	246,9	321,1	473,8	429,7
1879	363,8	0,2	457,4	247,0	321,5	470,2	427,5
1880	362,4	0,2	455,3	246,0	321,8	466,6	425,3
1881	361,8	0,2	453,2	245,6	321,5	463,3	423,1
1882	360,7	0,1	451,1	245,0	321,5	460,2	421,0
1883	359,7	0,1	449,2	244,2	321,9	457,3	418,9
1884	358,0	0,1	447,0	245,7	322,6	454,4	416,8
1885	357,0	0,1	445,1	244,4	322,6	451,5	414,8
1886	355,9	0,1	443,0	245,2	323,1	448,8	412,7
1887	354,4	0,1	441,4	244,1	322,7	446,2	410,9
1888	353,2	0,0	439,6	244,3	323,3	443,5	409,2
1889	75,1	4,1	72,6	72,2	72,1	73,3	72,7
1890	92,0	4,0	72,6	72,1	72,2	73,4	73,2
1891	175,6	3,8	72,6	72,1	72,2	74,1	74,4
1892	274,9	3,6	73,1	72,1	72,4	76,9	77,0
1893	326,0	3,5	74,9	72,3	72,7	87,5	81,1
1894	405,9	3,2	78,1	72,7	73,2	110,7	87,1
1895	457,6	3,1	82,4	73,5	74,2	148,7	95,7
1896	487,9	2,9	87,9	75,0	75,6	197,1	106,2
1897	494,4	2,7	95,4	76,8	77,2	248,0	118,8
1898	497,8	2,5	105,0	79,1	79,1	294,3	133,1
1899	507,7	2,4	116,0	81,7	81,4	336,0	148,8
1900	516,8	2,2	126,4	84,3	83,9	376,1	165,3
1901	526,2	2,0	136,4	87,2	86,5	417,8	181,3
1902	522,7	1,9	145,9	90,1	89,2	458,1	194,7
1903	522,6	1,8	158,1	93,2	91,9	493,1	204,8
1904	527,4	1,6	170,4	96,1	94,5	523,1	214,0
1905	526,4	1,5	182,7	99,0	97,3	552,0	225,5
1906	520,8	1,4	195,0	102,1	100,4	574,1	237,2
1907	516,9	1,3	207,5	105,3	103,7	591,3	248,2
1908	519,3	1,2	219,9	108,3	107,1	606,5	259,0
1909	544,8	8,8	231,6	115,4	111,0	622,2	270,3
1910	505,0	8,6	243,5	119,1	115,1	623,1	280,4
1911	516,4	8,4	255,6	120,9	119,4	619,2	289,3
1912	549,1	8,2	266,2	122,3	123,8	626,1	297,0
1913	582,0	8,0	275,4	124,3	128,2	642,1	304,9
1914	601,9	7,7	284,8	126,3	132,7	664,1	313,7
1915	602,7	7,5	293,2	128,9	136,7	686,6	322,4
1916	583,8	7,3	302,0	131,8	140,2	702,8	331,2
1917	572,4	7,2	310,2	135,3	143,8	712,4	339,3
1918	564,9	7,0	317,9	138,1	146,7	716,2	346,5
1919	560,7	6,8	325,6	140,9	149,4	717,2	354,2
1920	564,6	6,6	332,2	143,9	152,1	719,0	360,8
1921	572,3	6,4	339,0	146,5	154,1	722,5	367,8
1922	580,1	6,3	345,1	148,9	156,4	728,0	374,2
1923	584,7	6,1	350,7	151,4	158,4	736,2	380,8
1924	593,6	5,9	356,3	154,1	160,2	745,8	386,5
1925	604,2	5,7	361,5	156,7	162,4	756,3	392,6
1926	618,4	5,5	367,0	158,9	164,4	768,1	398,5
1927	634,7	5,3	372,0	161,6	166,6	780,9	403,9
1928	647,1	5,0	377,1	164,5	168,7	794,3	409,3
1929	674,2	4,9	382,2	166,9	170,9	807,2	414,8
1930	674,6	4,6	387,9	169,8	173,1	821,0	419,7
1931	694,9	4,4	393,4	172,3	175,4	833,4	425,3
1932	704,5	4,2	399,0	175,1	177,5	846,0	430,2
1933	709,9	3,9	404,8	178,4	179,9	859,4	434,9
1934	709,9	3,7	410,8	180,8	182,3	872,5	440,2
1935	715,2	3,6	416,8	183,6	184,8	885,0	445,4
1936	720,9	3,3	423,3	186,4	187,3	896,0	449,6
1937	726,0	3,1	429,4	189,3	189,8	906,2	454,2
1938	727,3	2,9	435,9	191,6	192,5	915,5	458,4
1939	730,0	2,7	442,7	194,5	195,4	924,2	462,5
1940	730,5	2,5	449,4	197,4	198,4	932,2	466,0
1941	728,2	2,4	456,4	199,8	201,3	938,9	469,6
1942	721,5	2,2	463,2	202,6	204,3	944,5	472,8
1943	715,6	2,0	470,3	205,1	207,4	949,5	475,4
1944	697,5	1,9	476,8	207,7	210,4	953,9	478,8
1945	666,9	1,8	483,6	210,7	213,9	956,9	481,5
1946	641,6	1,7	490,4	212,9	216,9	956,1	483,7
1947	618,4	1,6	497,2	215,8	220,3	949,8	485,0
1948	598,4	1,6	503,0	217,5	223,9	937,7	486,3
1949	577,1	1,6	507,8	220,0	227,0	919,2	486,2
1950	512,5	6,7	511,4	236,2	231,1	891,1	487,5
1951	505,6	6,6	515,5	231,4	234,5	848,0	486,5
1952	533,1	6,5	517,9	230,8	238,6	812,3	485,6
1953	552,0	6,3	519,2	231,1	242,6	790,8	483,2
1954	556,6	6,2	519,0	231,5	246,3	777,8	482,1
1955	564,1	6,0	518,7	231,9	249,9	770,3	481,4
1956	568,7	5,9	518,3	232,4	252,5	767,7	480,7

kindling

Thick	Piece Size (in):			Weight lbs	Meter Moisture Content Dry Uncorrected %
	x Wide	x	Length		
1,5	3,5		14,375		20
1,5	3,5		14,375		20
1,5	3,5		14,375		20
1,5	3,5		6,5		20
1,5	3,5		6,5		20
1,5	3,5		6,5		20
1,5	3,5		6,5	7,69	20

Thick	Piece Size (in):			Weight lbs	Meter Moisture Content Dry Uncorrected %
	x Wide	x	Length		
1,5	3,5		14,375	1,81	20,00
1,5	3,5		14,375	1,78	20,00
1,5	3,5		14,375	1,73	20,00

1957	572,2	5,7	517,4	233,1	255,3	768,5	479,9
1958	577,0	5,5	516,9	233,8	257,4	770,9	479,7
1959	583,3	5,4	515,4	234,9	259,6	776,1	479,2
1960	583,1	5,2	513,9	236,8	261,4	782,6	479,3
1961	585,1	5,0	513,4	236,7	263,1	789,5	479,0
1962	587,6	4,9	512,2	237,7	264,3	796,5	479,6
1963	589,1	4,7	511,6	237,5	265,7	803,1	481,1
1964	589,8	4,5	511,2	238,1	266,4	809,0	481,8
1965	589,8	4,4	511,0	238,2	267,1	814,7	482,8
1966	589,2	4,2	510,7	239,0	267,7	819,9	483,7
1967	589,9	4,1	511,0	239,0	268,3	824,9	484,6
1968	589,8	3,9	510,8	239,0	268,7	829,7	486,0
1969	588,1	3,8	511,1	238,5	269,0	833,3	487,5
1970	585,8	3,6	511,3	238,9	269,3	836,3	488,5
1971	585,1	3,5	511,7	238,5	269,5	838,3	489,5
1972	584,9	3,3	512,3	238,5	269,7	839,9	490,7
1973	585,1	3,2	512,9	239,2	269,7	841,8	491,8
1974	585,7	3,1	513,6	239,5	269,6	844,0	492,2
1975	586,3	2,9	514,1	239,7	269,5	847,4	493,2
1976	589,2	2,8	515,0	239,2	269,3	851,2	495,2
1977	593,2	2,7	516,0	240,0	269,3	856,4	496,5
1978	595,9	2,5	516,5	239,7	269,3	863,3	497,9
1979	600,4	2,4	517,7	240,1	269,2	872,1	498,9
1980	603,4	2,3	518,8	241,4	269,1	881,7	500,3
1981	601,9	2,1	520,1	240,8	268,8	890,2	502,3
1982	596,5	2,0	521,4	241,3	269,2	896,1	504,1
1983	588,5	1,9	522,9	241,5	268,9	896,9	505,9
1984	579,2	1,8	524,2	242,3	269,0	892,9	507,4
1985	572,3	1,7	525,2	242,7	268,9	885,1	509,1
1986	564,0	1,6	526,3	242,3	269,0	875,6	510,2
1987	555,1	1,5	527,1	244,1	269,0	865,0	510,8
1988	545,1	1,4	527,9	243,3	269,0	852,8	511,6
1989	536,2	1,4	528,5	243,3	269,2	838,3	511,5
1990	527,1	1,3	528,6	242,9	269,3	822,1	511,5
1991	518,1	1,3	528,9	243,7	269,7	805,1	510,5
1992	510,4	1,2	528,7	243,8	269,9	788,8	509,5
1993	503,8	1,1	528,5	243,3	270,4	773,3	508,5
1994	498,7	1,1	528,5	243,1	270,7	759,3	506,5
1995	494,0	1,1	527,5	243,5	270,8	747,5	504,7
1996	489,3	1,0	526,8	243,5	271,3	737,4	502,2
1997	480,8	1,0	526,0	244,0	271,8	727,0	500,6
1998	470,5	1,0	524,8	244,2	272,2	714,7	498,8
1999	459,8	0,9	523,3	244,6	272,5	700,4	496,7
2000	450,2	0,9	521,6	244,4	273,0	685,3	494,7
2001	441,5	0,9	520,1	244,5	273,4	670,1	491,7
2002	433,6	0,8	517,8	244,5	274,0	655,5	489,8
2003	426,7	0,8	515,6	245,6	274,3	641,4	487,3
2004	420,2	0,8	513,2	244,7	274,8	628,0	484,3
2005	414,4	0,8	510,5	244,9	275,4	615,5	481,8
2006	409,5	0,8	507,8	245,4	275,8	603,9	479,0
2007	405,2	0,7	505,1	245,0	276,3	593,1	476,0
2008	400,9	0,7	502,1	245,0	276,6	583,2	472,9
2009	395,7	0,7	498,8	244,7	277,5	574,4	470,3
2010	391,4	0,7	495,9	244,7	277,8	566,2	467,3
2011	387,8	0,7	492,9	245,0	278,2	558,4	464,4
2012	384,3	0,6	490,0	243,6	278,8	550,7	461,6
2013	381,3	0,6	487,2	244,0	279,1	543,6	458,6
2014	377,9	0,6	484,3	242,7	279,6	536,6	455,7
2015	375,3	0,6	481,6	242,6	280,0	530,0	452,7
2016	372,6	0,6	478,9	241,9	280,4	523,9	449,7
2017	370,6	0,5	475,6	242,0	280,5	518,2	446,8
2018	368,5	0,5	472,4	242,7	280,5	512,7	443,9
2019	365,7	0,5	469,7	241,3	280,7	507,4	441,1
2020	364,4	0,4	466,7	240,4	281,0	502,5	438,4
2021	362,4	0,4	463,8	241,0	281,1	497,9	435,7
2022	360,6	0,5	461,2	239,4	281,4	493,6	433,1
2023	359,4	0,4	458,8	239,5	281,7	489,6	430,4
2024	358,4	0,4	456,3	238,7	281,6	485,7	427,8
2025	356,7	0,4	453,8	238,1	281,9	482,2	425,4
2026	355,6	0,3	451,3	237,2	282,0	478,8	422,9
2027	355,1	0,3	448,9	236,7	282,3	475,4	420,6
2028	353,7	0,3	446,6	236,5	282,6	472,5	418,4
2029	352,5	0,3	444,5	236,8	282,9	469,6	416,3
2030	351,0	0,2	442,0	236,2	283,5	466,8	414,1
2031	349,9	0,2	440,2	235,5	283,5	464,1	412,2
2032	348,8	0,2	438,3	235,1	283,7	461,5	410,1
2033	347,5	0,2	436,5	234,5	284,0	458,9	408,1
2034	346,7	0,2	434,7	234,4	284,4	456,4	406,3
2035	345,3	0,2	432,9	234,4	284,6	454,0	404,4
2036	344,3	0,1	430,9	233,9	284,7	451,8	402,6
2037	343,2	0,1	429,3	233,5	285,0	449,4	401,3
2038	341,4	0,1	427,2	232,9	285,3	447,2	399,6
2039	340,3	0,1	425,8	233,2	285,4	444,8	397,8
2040	338,3	0,1	424,3	233,2	286,1	442,4	396,3
2041	336,8	0,1	422,8	234,0	285,8	439,9	394,7
2042	335,2	0,0	421,4	232,4	285,6	437,2	393,3
2043	79,8	4,1	85,9	109,0	101,7	83,4	90,9
2044	104,8	4,0	86,3	106,9	102,5	83,6	90,9
2045	126,4	3,9	86,9	103,7	103,2	84,6	91,2
2046	180,2	3,8	87,9	100,4	103,6	87,6	91,9
2047	291,2	3,6	89,8	97,8	104,1	96,5	92,8
2048	384,6	3,3	93,6	96,1	104,9	114,5	94,1
2049	407,8	3,1	98,5	95,4	106,0	140,9	96,2
2050	432,0	2,9	104,7	95,2	107,3	171,4	99,7
2051	460,5	2,7	112,5	95,7	108,8	205,3	105,1
2052	479,4	2,5	121,7	96,6	110,5	242,1	112,7
2053	486,1	2,4	132,3	98,2	112,4	280,3	122,5
2054	491,7	2,2	143,9	100,2	114,5	317,4	133,5

kindling

2055	493,2	2,0	155,9	102,4	116,7	353,4	145,3
2056	502,3	1,9	168,3	104,9	119,1	387,9	157,5
2057	507,2	1,7	181,1	107,6	121,6	421,8	170,3
2058	503,9	1,6	194,4	110,2	124,2	453,3	183,9
2059	498,3	1,4	207,6	113,1	127,0	481,0	197,8
2060	499,4	1,3	220,3	115,9	129,8	505,2	211,9
2061	499,5	1,2	232,2	118,7	133,0	525,9	225,5
2062	498,0	1,1	243,6	121,5	136,0	543,8	239,2
2063	506,6	8,5	253,4	129,6	139,5	557,9	252,8
2064	452,8	8,4	264,1	130,2	143,0	560,2	266,1
2065	455,7	8,3	273,6	132,1	146,3	557,4	276,7
2066	484,6	8,1	281,4	133,8	149,8	560,4	285,2
2067	513,0	8,0	287,8	135,4	153,6	570,8	293,0
2068	517,8	7,8	293,2	137,6	157,3	584,5	299,7
2069	535,1	7,7	297,7	139,7	161,0	598,5	305,8
2070	538,8	7,5	301,6	141,8	164,8	613,3	312,3
2071	538,6	7,3	305,1	144,2	168,4	627,2	318,1
2072	537,7	7,2	309,0	146,3	171,6	638,8	324,4
2073	538,8	7,0	312,8	148,4	175,2	648,7	330,2
2074	537,8	6,9	316,3	150,7	178,3	656,9	335,8
2075	543,2	6,7	319,8	152,9	181,6	663,8	341,2
2076	548,3	6,5	323,8	154,7	184,7	671,6	347,2
2077	546,6	6,4	328,3	156,4	187,4	678,9	352,8
2078	529,8	6,3	332,6	158,3	190,2	681,4	358,6
2079	515,3	6,1	337,2	160,3	193,1	677,3	364,6
2080	504,1	6,0	342,2	161,9	195,6	669,7	371,3
2081	495,9	5,8	347,6	163,6	198,1	660,7	376,7
2082	491,6	5,7	352,4	165,4	200,7	651,4	381,5
2083	491,9	5,5	357,3	167,0	203,3	642,8	385,4
2084	492,6	5,4	362,0	168,3	205,9	636,2	389,4
2085	495,5	5,2	366,8	169,5	208,0	631,1	393,1
2086	497,0	5,1	371,0	171,2	210,2	628,6	396,4
2087	500,0	5,0	375,0	172,3	212,7	627,8	400,3
2088	504,7	4,8	379,1	174,0	214,5	628,8	403,7
2089	509,7	4,7	382,9	175,4	216,5	631,9	407,4
2090	513,8	4,5	386,7	176,7	218,5	636,0	411,2
2091	517,9	4,4	390,8	178,1	220,5	640,8	415,0
2092	521,4	4,3	395,0	179,4	222,3	646,2	418,8
2093	527,0	4,1	398,6	181,2	224,3	653,0	422,6
2094	528,8	4,0	402,8	182,7	225,8	661,0	426,3
2095	529,5	3,8	407,1	184,5	228,0	667,9	430,0
2096	530,7	3,7	411,4	185,9	229,6	676,0	433,8
2097	532,4	3,5	415,9	187,3	231,2	684,5	437,5
2098	529,9	3,4	420,5	188,8	233,0	690,3	441,2
2099	532,7	3,3	424,7	190,5	234,6	696,1	444,6
2100	535,0	3,2	428,4	191,9	236,4	702,6	448,3
2101	535,9	3,0	432,5	193,9	238,0	708,3	451,3
2102	531,9	2,9	436,5	195,6	239,6	713,1	455,0
2103	530,9	2,8	440,4	197,2	241,0	718,9	458,5
2104	530,8	2,6	444,5	198,6	242,5	724,0	461,5
2105	526,8	2,6	448,3	200,4	244,2	728,0	464,1
2106	524,6	2,4	451,7	202,0	245,8	730,2	466,6
2107	530,8	2,3	455,4	202,8	247,4	733,1	468,1
2108	558,0	2,2	458,5	203,6	249,0	742,0	469,5
2109	577,4	2,1	461,3	204,3	250,7	755,5	470,1
2110	584,0	2,0	463,3	205,3	252,5	770,4	471,0
2111	577,5	1,9	465,3	206,5	254,4	784,5	471,7
2112	567,4	1,8	467,4	208,3	256,3	796,4	471,6
2113	553,0	1,8	469,2	209,8	258,7	804,0	472,1
2114	539,8	1,7	471,0	210,1	261,1	807,1	472,6
2115	526,5	1,7	473,2	211,6	263,7	804,6	473,0
2116	511,7	1,6	475,0	212,5	266,2	795,9	472,9
2117	495,5	1,6	476,4	214,3	269,3	780,0	472,9
2118	481,9	1,6	478,0	215,6	272,5	760,0	472,5
2119	469,4	1,5	479,2	217,0	276,0	738,2	472,2
2120	458,7	1,5	480,6	219,0	279,3	716,3	471,6
2121	449,2	1,5	481,7	220,4	282,9	695,2	471,3
2122	440,7	1,5	482,4	221,9	286,7	675,5	470,6
2123	433,1	1,4	483,0	223,3	290,5	657,0	469,8
2124	414,1	7,0	483,6	240,8	294,8	639,6	469,8
2125	377,4	6,8	483,9	247,4	297,3	615,4	471,4
2126	404,9	6,6	480,1	260,4	301,5	589,3	470,8
2127	400,4	6,4	477,6	264,8	302,6	563,6	469,2
2128	460,3	6,2	477,7	257,1	306,1	542,1	466,8
2129	455,5	6,1	475,9	249,6	309,1	532,4	463,3
2130	460,6	5,9	472,6	246,7	311,4	532,7	459,3
2131	460,2	5,8	468,9	244,6	313,3	538,4	456,2
2132	463,9	5,7	465,7	243,7	314,8	545,2	452,2
2133	473,6	5,6	462,7	242,6	316,1	554,0	450,3
2134	475,9	5,4	460,3	241,7	316,9	563,9	448,0
2135	477,4	5,3	458,6	240,9	317,6	573,3	445,9
2136	481,9	5,2	457,1	240,3	318,2	582,1	444,1
2137	484,4	5,1	456,0	240,3	318,8	590,9	443,0
2138	487,2	5,0	455,2	240,2	318,8	599,5	442,4
2139	489,0	4,8	454,7	239,7	318,6	608,1	442,2
2140	491,4	4,7	454,4	237,6	318,8	615,8	442,6
2141	495,6	4,6	454,3	236,6	318,5	623,6	442,9
2142	498,4	4,4	454,1	237,2	318,6	631,3	443,3
2143	500,9	4,3	454,2	237,1	318,1	638,9	444,2
2144	505,0	4,2	454,6	235,5	317,7	646,2	445,5
2145	511,0	4,0	455,8	233,8	317,3	654,5	446,8
2146	516,5	3,9	456,6	233,4	316,9	663,7	447,8
2147	520,0	3,8	457,4	232,6	316,5	673,2	449,9
2148	524,1	3,6	458,7	231,9	316,1	683,3	451,9
2149	526,8	3,5	460,2	231,3	315,4	694,6	453,9
2150	530,0	3,4	461,9	230,9	314,8	705,6	455,7
2151	533,8	3,3	464,1	230,4	314,2	716,5	457,6
2152	536,5	3,1	465,7	230,3	313,6	727,1	459,3

Piece Size (in):			Weight lbs	Meter Moisture Content Dry Uncorrected %
Thick	x Wide	x Length		
1,5	3,5	14,375		20
1,5	3,5	14,375		20
1,5	3,5	14,375		20
1,5	3,5	6,5		20
1,5	3,5	6,5		20
1,5	3,5	6,5		20
1,5	3,5	6,5	7,42	20

Piece Size (in):			Weight lbs	Meter Moisture Content Dry Uncorrected %
Thick	x Wide	x Length		
1,5	3,5	14,375	1,79	19,00
1,5	3,5	14,375	1,66	19,00
1,5	3,5	14,375	1,76	20,00

2153	541,2	3,0	467,5	229,5	313,1	738,0	462,2
2154	543,9	2,9	469,6	229,7	312,4	748,2	464,9
2155	548,3	2,7	472,2	229,1	312,0	758,8	467,9
2156	553,4	2,6	474,3	229,0	311,4	769,9	470,0
2157	558,5	2,5	476,6	228,5	310,7	781,6	473,0
2158	560,9	2,4	478,8	228,5	310,5	793,3	475,3
2159	565,5	2,3	481,4	229,2	309,8	805,4	478,6
2160	571,4	2,1	483,9	229,2	309,1	817,5	481,2
2161	574,4	2,0	486,4	228,8	308,9	829,7	484,6
2162	578,3	1,9	489,1	229,8	308,4	841,6	487,5
2163	582,3	1,7	491,8	231,4	307,9	852,7	491,2
2164	586,3	1,6	494,7	229,6	307,7	862,9	494,4
2165	584,3	1,5	497,7	229,9	307,4	871,9	497,1
2166	577,8	1,4	500,8	231,1	306,9	878,4	498,8
2167	572,2	1,3	503,0	231,7	307,1	881,5	501,5
2168	566,0	1,2	505,6	231,3	307,0	881,8	503,6
2169	559,3	1,2	507,9	232,5	306,7	879,5	505,6
2170	549,5	1,1	510,1	233,6	306,6	874,0	507,1
2171	534,8	1,0	511,8	233,8	306,8	863,8	507,8
2172	519,7	1,0	513,5	233,5	307,2	847,7	508,7
2173	505,8	0,9	514,7	233,9	306,8	825,7	508,9
2174	492,5	0,9	515,8	234,4	306,9	800,8	508,4
2175	479,7	0,9	516,2	234,8	307,2	775,4	508,0
2176	468,3	0,8	516,3	235,3	307,4	750,4	507,2
2177	457,7	0,9	516,0	234,9	307,8	726,5	506,1
2178	448,7	0,8	515,9	235,3	308,0	704,0	504,5
2179	439,5	0,8	515,0	236,2	308,5	682,9	502,7
2180	432,0	0,8	513,7	236,2	309,0	663,3	500,8
2181	425,2	0,8	512,5	236,6	309,7	645,2	498,7
2182	418,7	0,8	510,9	236,9	310,0	628,4	496,8
2183	413,0	0,7	509,5	237,5	310,5	612,9	494,4
2184	407,4	0,7	507,4	239,0	310,5	598,8	492,3
2185	402,9	0,7	505,9	238,3	311,2	585,6	489,6
2186	398,7	0,6	503,8	238,9	311,6	573,4	486,8
2187	393,2	0,6	502,0	239,2	312,0	562,3	484,4
2188	388,1	0,6	499,8	239,4	312,3	551,9	481,8
2189	383,7	0,6	498,0	240,1	312,6	542,1	479,2
2190	379,4	0,6	495,9	240,6	312,9	533,1	476,4
2191	375,4	0,5	493,5	240,4	313,3	524,2	473,9
2192	372,6	0,5	491,5	240,9	313,6	516,0	471,7
2193	368,8	0,5	489,0	241,1	314,0	508,5	469,1
2194	365,7	0,5	486,8	241,7	314,1	501,2	466,3
2195	362,6	0,5	484,6	242,3	314,1	493,9	463,5
2196	359,5	0,5	482,4	243,0	314,2	486,6	460,8
2197	356,4	0,5	480,2	243,6	314,3	479,3	458,0
2198	353,3	0,5	478,0	244,2	314,3	472,0	455,2
2199	350,2	0,5	475,8	244,8	314,4	464,7	452,5
2200	347,1	0,5	473,6	245,4	314,5	457,4	449,7
2201	343,9	0,5	471,4	246,1	314,5	450,1	446,9
2202	340,8	0,5	469,2	246,7	314,6	442,9	444,2
2203	337,7	0,5	467,0	247,3	314,6	435,6	441,4
2204	334,6	0,5	464,8	247,9	314,7	428,3	438,6
2205	331,5	0,5	462,6	248,5	314,8	421,0	435,8
2206	328,4	0,5	460,3	249,2	314,8	413,7	433,1
2207	325,3	0,5	458,1	249,8	314,9	406,4	430,3
2208	322,2	0,5	455,9	250,4	315,0	399,1	427,5
2209	319,0	0,5	453,7	251,0	315,0	391,8	424,8
2210	315,9	0,5	451,5	251,6	315,1	384,6	422,0
2211	312,8	0,5	449,3	252,3	315,2	377,3	419,2
2212	309,7	0,5	447,1	252,9	315,2	370,0	416,5
2213	306,6	0,5	444,9	253,5	315,3	362,7	413,7
2214	303,5	0,5	442,7	254,1	315,4	355,4	410,9
2215	300,4	0,5	440,5	254,7	315,4	348,1	408,2
2216	326,2	0,1	437,3	238,1	313,5	408,9	414,0
2217	324,8	0,1	435,3	237,5	313,5	406,3	412,2
2218	324,1	0,1	433,3	238,0	313,3	404,0	410,3
2219	322,7	0,0	431,3	237,8	313,1	401,7	408,5
2220	498,1	3,1	78,4	71,2	73,4	127,2	88,3
2221	532,8	2,8	85,9	72,7	75,9	174,3	96,9
2222	544,6	2,6	95,4	74,9	79,1	231,2	107,2
2223	537,0	2,4	106,9	77,5	82,5	290,0	118,9
2224	538,9	2,3	119,5	80,4	86,4	345,2	130,5
2225	528,5	2,1	132,8	83,5	90,5	395,2	142,5
2226	534,1	2,0	145,6	86,6	94,7	438,4	154,1
2227	550,5	1,8	156,9	89,7	98,9	481,0	166,0
2228	556,0	1,7	167,0	92,9	103,3	522,3	179,0
2229	555,8	1,6	177,2	96,1	107,5	560,1	192,2
2230	548,2	1,4	187,7	99,4	111,6	590,5	205,7
2231	543,8	1,3	199,3	102,8	115,8	613,1	219,5
2232	539,0	1,2	211,0	106,2	120,8	630,9	232,8
2233	566,3	9,0	221,7	113,8	125,7	641,2	246,6
2234	476,2	9,0	233,0	116,1	130,7	636,9	259,6
2235	468,7	9,0	243,2	118,6	135,9	626,3	271,4
2236	435,6	8,9	251,9	121,1	141,4	613,0	281,6
2237	395,6	8,9	255,7	129,2	145,2	591,5	290,4
2238	577,0	8,7	259,4	136,2	149,5	569,3	296,9
2239	528,8	8,5	266,7	132,8	155,1	560,7	301,8
2240	523,6	8,3	271,9	133,3	159,7	564,8	306,4
2241	509,4	8,1	276,6	134,7	163,9	574,2	310,1
2242	513,9	8,0	280,9	136,3	167,9	582,6	314,1
2243	529,5	7,9	284,8	138,1	171,5	592,3	318,4
2244	529,1	7,7	289,0	139,7	174,8	604,1	322,5
2245	525,2	7,5	293,4	141,9	177,9	615,1	326,5
2246	526,2	7,4	298,1	144,3	181,0	625,7	330,7
2247	535,1	7,2	302,7	146,4	184,0	635,8	335,2
2248	547,6	7,1	307,3	148,4	186,7	647,5	339,8
2249	552,9	6,9	312,3	150,2	189,3	659,9	344,2
2250	546,5	6,7	317,6	152,3	191,9	670,3	349,0

kindling

Thick	Piece Size (in):			Weight lbs	Meter Moisture Content Dry Uncorrected %
	x Wide	x	Length		
1,5	3,5		14,375		20
1,5	3,5		14,375		20
1,5	3,5		14,375		20
1,5	3,5		6,5		20
1,5	3,5		6,5		20
1,5	3,5		6,5		20
1,5	3,5		6,5	8,09	20

2251	550,2	6,5	323,0	154,7	194,6	678,1	353,9
2252	561,2	6,4	328,7	156,0	196,7	687,1	359,2
2253	559,5	6,2	334,4	158,3	199,2	697,4	363,5
2254	566,1	6,0	340,3	159,8	201,3	707,0	368,6
2255	567,9	5,8	346,0	162,0	203,5	716,7	373,5
2256	578,1	5,6	352,0	164,3	205,7	726,5	378,5
2257	580,4	5,4	357,6	166,4	207,9	736,2	383,3
2258	582,2	5,2	363,5	168,1	210,0	745,7	388,4
2259	590,7	5,0	369,7	170,0	212,0	755,0	393,9
2260	595,8	4,9	375,4	172,2	214,1	764,1	398,8
2261	600,3	4,7	381,2	174,1	216,2	773,2	404,2
2262	617,4	4,5	386,9	176,7	218,6	782,1	409,2
2263	610,3	4,4	392,5	179,0	221,1	789,6	414,9
2264	641,2	4,1	398,4	180,4	223,1	795,5	421,0
2265	640,6	4,0	404,2	182,7	225,6	804,2	426,7
2266	632,3	3,8	410,0	185,9	227,7	813,3	432,2
2267	692,1	3,6	416,0	187,4	230,3	823,4	437,3
2268	690,8	3,4	421,6	190,2	232,6	836,1	442,0
2269	676,3	3,2	427,2	192,0	235,0	849,9	446,7
2270	690,4	3,0	432,7	193,9	237,2	860,3	450,7
2271	710,2	2,8	438,4	196,3	239,6	867,3	455,4
2272	702,9	2,7	443,8	199,1	242,0	878,0	459,5
2273	701,3	2,5	449,4	201,2	244,5	887,8	463,5
2274	702,4	2,3	455,1	203,6	247,0	895,7	467,3
2275	668,7	2,2	461,4	205,9	249,4	902,9	470,9
2276	636,8	2,1	467,7	208,9	252,0	909,1	473,9
2277	605,3	2,0	474,1	211,2	255,1	913,9	476,5
2278	579,2	1,9	480,4	213,1	258,0	911,3	479,0
2279	557,7	1,9	486,0	214,6	261,1	897,6	480,8
2280	535,1	1,8	490,9	217,8	264,0	876,3	481,6
2281	511,7	1,9	495,3	219,4	267,6	849,4	482,6
2282	493,5	1,8	499,5	221,2	270,6	820,8	482,7
2283	477,1	1,8	503,0	222,9	273,7	792,9	482,5
2284	463,0	1,8	505,7	224,5	276,8	766,2	481,5
2285	450,9	1,8	507,8	226,2	279,6	741,5	480,3
2286	439,3	1,7	509,1	227,2	282,7	718,4	478,7
2287	428,3	1,7	509,7	228,9	285,9	696,8	476,5
2288	418,9	1,7	509,9	230,5	288,6	676,7	474,0
2289	412,1	1,7	509,2	231,4	291,4	658,1	471,3
2290	405,2	1,7	508,4	231,7	293,8	641,3	468,5
2291	398,6	1,6	507,3	232,5	296,3	625,7	465,5
2292	394,2	1,6	506,0	233,2	298,2	611,4	462,3
2293	388,5	1,6	504,2	233,5	301,1	598,3	459,1
2294	384,2	1,5	502,4	234,8	303,6	586,2	455,6
2295	380,6	1,6	500,1	234,6	306,1	575,1	452,3
2296	376,8	1,5	497,9	235,1	308,4	565,1	449,0
2297	374,0	1,5	495,7	234,8	310,5	555,8	445,8
2298	371,9	1,5	493,8	234,5	312,2	547,4	442,7
2299	370,1	1,4	491,2	237,1	315,2	539,8	439,2
2300	368,2	1,4	489,1	236,1	317,6	532,9	436,2
2301	328,4	6,8	483,3	259,4	317,5	524,0	436,5
2302	351,9	6,7	477,2	265,9	318,5	509,7	435,5
2303	344,5	6,6	476,9	257,1	321,5	494,0	433,2
2304	346,9	6,5	474,0	250,8	324,2	480,7	430,1
2305	379,1	6,4	470,2	246,3	326,0	473,5	426,0
2306	429,9	6,3	465,5	242,5	327,2	475,7	421,4
2307	468,9	6,1	460,9	240,3	328,3	487,6	417,3
2308	485,9	6,0	456,6	239,1	329,1	504,6	414,0
2309	511,2	5,8	453,4	237,3	329,5	526,8	411,7
2310	527,5	5,6	451,1	236,9	330,2	554,4	410,7
2311	534,8	5,4	449,5	236,5	330,5	584,5	410,6
2312	537,9	5,3	448,9	236,8	330,6	612,2	411,1
2313	542,7	5,1	449,4	235,7	330,4	636,0	412,6
2314	547,3	5,0	450,9	235,4	330,3	658,2	414,6
2315	551,7	4,8	453,3	233,9	328,8	678,9	417,1
2316	555,8	4,6	455,7	233,9	329,5	697,6	420,0
2317	560,0	4,5	458,2	234,6	329,2	715,3	423,2
2318	564,2	4,3	460,8	235,6	328,9	731,9	426,6
2319	567,0	4,2	463,8	234,4	328,1	747,4	430,3
2320	569,2	4,0	467,5	233,8	327,8	761,5	434,5
2321	570,9	3,8	470,7	235,7	327,7	774,6	438,2
2322	572,1	3,7	474,5	235,7	327,5	786,1	442,5
2323	573,8	3,6	478,0	236,1	327,0	797,0	446,4
2324	572,8	3,4	481,5	237,1	326,2	807,6	450,6
2325	574,0	3,2	485,2	235,2	325,8	817,6	454,6
2326	574,9	3,1	488,7	237,2	325,8	827,2	458,5
2327	575,8	3,0	492,4	238,3	325,4	836,0	462,6
2328	576,9	2,8	495,8	237,7	325,1	844,1	466,1
2329	578,1	2,7	499,5	238,1	324,7	851,8	469,9
2330	580,1	2,6	503,3	239,5	324,3	859,4	473,5
2331	582,1	2,4	506,8	239,1	323,9	866,4	476,8
2332	590,4	2,3	510,5	238,9	323,4	874,3	479,8
2333	598,5	2,1	514,4	240,3	323,4	883,0	482,7
2334	610,3	2,0	517,8	240,4	323,2	891,9	485,9
2335	604,9	1,9	520,7	241,9	323,1	900,3	488,8
2336	593,5	1,8	524,1	242,3	322,9	907,4	491,6
2337	585,3	1,7	527,3	243,4	322,6	911,8	494,5
2338	577,8	1,6	530,4	244,0	322,6	913,2	496,9
2339	569,2	1,5	533,3	245,9	322,3	911,3	499,9
2340	558,7	1,4	536,0	246,8	321,8	904,8	502,2
2341	543,8	1,3	538,2	246,1	321,6	891,9	504,3
2342	533,0	1,3	540,1	247,2	321,6	875,0	505,8
2343	522,6	1,2	541,5	248,1	321,7	856,8	507,0
2344	512,9	1,2	542,6	247,9	321,7	839,0	507,6
2345	503,9	1,1	543,0	248,9	321,9	822,2	507,5
2346	495,3	1,1	542,9	248,9	321,9	805,7	507,1
2347	486,6	1,0	543,0	249,7	322,1	789,4	506,8
2348	479,4	1,0	542,5	249,9	322,0	773,7	505,8

Thick	Piece Size (in):			Weight lbs	Meter Moisture Content Dry Uncorrected %
	x	Wide	x Length		
1,5		3,5	14,375	1,80	19,00
1,5		3,5	14,375	1,59	19,00
1,5		3,5	14,375	1,81	19,00

2349	472,5	0,9	542,0	251,5	322,3	758,6	505,2
2350	464,2	0,9	541,0	252,6	322,8	743,7	503,8
2351	455,9	0,8	539,8	251,6	323,1	728,5	502,7
2352	445,9	0,8	538,7	252,2	323,4	712,4	501,1
2353	436,1	0,8	536,9	252,6	323,6	695,4	499,4
2354	427,6	0,8	535,0	254,5	323,6	678,3	497,3
2355	419,4	0,8	533,0	253,4	323,9	661,7	495,4
2356	412,3	0,7	530,5	254,1	324,0	645,8	492,9
2357	404,8	0,7	527,9	254,7	324,3	630,6	490,5
2358	398,3	0,7	525,1	255,9	324,2	616,2	487,7
2359	392,7	0,7	522,0	255,8	324,5	602,7	484,8
2360	386,7	0,7	518,7	255,6	324,7	589,9	481,8
2361	381,3	0,7	515,3	255,6	324,4	577,9	478,5
2362	377,3	0,6	511,8	257,1	324,8	566,7	475,1
2363	372,6	0,6	508,3	256,0	324,7	556,0	471,7
2364	369,4	0,6	504,8	255,4	324,8	546,0	468,2
2365	365,7	0,6	501,3	256,0	324,9	536,8	464,7
2366	361,6	0,6	497,8	256,2	324,8	527,9	461,0
2367	358,3	0,5	494,1	255,8	324,9	519,6	457,4
2368	354,8	0,5	490,5	255,4	324,8	511,7	453,9
2369	350,7	0,5	487,2	255,2	324,7	504,1	450,3
2370	347,1	0,5	483,7	253,9	324,7	496,7	446,8
2371	343,8	0,5	480,4	253,5	324,7	489,6	443,5
2372	341,3	0,5	477,0	252,5	324,5	482,8	440,0
2373	339,1	0,4	473,3	252,3	324,3	476,5	436,5
2374	337,4	0,4	470,0	251,9	324,0	470,6	433,3
2375	335,7	0,4	466,9	250,0	324,0	465,2	430,2
2376	334,6	0,4	463,8	250,6	324,0	460,2	427,0
2377	333,2	0,4	460,6	249,4	323,7	455,7	424,0
2378	332,0	0,4	457,6	248,7	323,6	451,5	421,1
2379	331,3	0,3	454,4	247,9	323,1	447,7	418,4
2380	329,7	0,3	451,4	248,8	323,6	444,2	415,6
2381	328,7	0,3	448,7	248,4	323,0	440,9	412,9
2382	327,1	0,3	446,3	247,3	323,2	437,8	410,5
2383	326,9	0,2	443,6	246,6	322,4	435,0	408,0
2384	325,5	0,2	441,2	244,5	322,5	432,3	406,0
2385	324,5	0,2	439,0	244,4	322,6	429,7	403,9
2386	323,6	0,2	437,0	243,2	322,1	427,3	401,8
2387	322,8	0,2	435,0	244,3	322,0	425,1	399,9
2388	322,0	0,2	432,6	242,7	321,9	423,0	398,1
2389	320,9	0,1	430,4	243,3	321,9	421,0	396,0
2390	319,5	0,1	428,2	241,5	321,9	419,0	394,4
2391	319,0	0,1	426,2	241,5	321,8	417,1	392,6
2392	318,2	0,1	424,6	240,3	321,4	415,3	391,1
2393	318,1	0,1	422,9	241,0	321,3	413,7	389,7
2394	317,5	0,1	420,9	240,0	320,6	411,9	388,2
2395	316,6	0,1	419,1	240,4	320,8	410,4	386,8
2396	316,3	0,0	417,3	238,8	320,6	408,9	385,4
2397	80,3	4,1	69,7	69,8	69,9	70,0	69,9
2398	98,0	4,0	69,8	69,7	69,9	70,2	70,1
2399	149,8	3,9	70,0	69,8	70,0	70,9	71,2
2400	197,9	3,8	71,2	69,9	70,3	73,2	73,1
2401	285,2	3,6	73,1	70,0	71,1	78,7	76,8
2402	341,6	3,4	75,4	70,5	72,5	89,5	82,5
2403	405,2	3,2	78,1	71,2	74,4	107,2	88,8
2404	466,6	3,0	81,4	72,2	76,8	134,7	96,0
2405	511,9	2,8	85,5	73,5	79,7	173,1	105,5
2406	548,4	2,6	91,0	75,3	82,9	221,4	116,4
2407	574,7	2,4	98,2	77,6	86,3	276,9	127,6
2408	591,9	2,2	107,7	80,4	89,9	338,4	139,1
2409	600,6	2,0	119,1	83,4	93,5	402,0	150,7
2410	590,0	1,9	131,9	86,6	97,3	463,5	162,5
2411	591,9	1,7	145,0	90,3	101,4	520,4	174,6
2412	589,6	1,6	158,0	94,3	105,7	569,5	187,1
2413	577,7	1,5	171,2	97,5	109,8	608,6	200,2
2414	574,0	1,3	184,0	101,1	114,3	638,2	213,4
2415	564,7	1,2	196,3	104,3	118,5	658,9	227,0
2416	572,0	1,1	208,5	108,1	123,8	673,4	239,2
2417	597,8	8,4	219,8	116,8	128,1	684,7	252,4
2418	496,8	8,3	231,9	120,1	132,9	673,1	265,2
2419	517,3	8,2	242,9	121,4	137,6	653,2	275,7
2420	566,6	8,0	252,6	122,8	141,4	647,4	284,4
2421	587,4	7,8	261,1	124,8	146,7	655,1	292,2
2422	604,8	7,7	269,2	127,2	151,5	669,7	299,5
2423	612,4	7,5	276,9	130,1	155,7	684,9	306,9
2424	595,8	7,3	284,4	133,2	159,4	693,4	314,6
2425	592,3	7,1	292,0	136,2	162,8	698,0	322,0
2426	590,4	7,0	299,4	139,2	165,6	701,0	328,7
2427	588,4	6,8	306,5	142,2	168,3	702,2	335,3
2428	590,5	6,6	313,1	144,3	170,3	703,0	342,2
2429	587,4	6,4	319,6	147,4	172,4	703,6	348,6
2430	586,6	6,3	326,2	150,0	174,5	704,0	354,9
2431	598,5	6,1	332,2	152,7	176,5	706,3	361,3
2432	604,9	5,9	338,4	155,6	178,0	709,6	367,8
2433	615,8	5,8	344,0	158,0	179,9	714,8	374,1
2434	615,9	5,5	350,0	161,0	181,5	721,1	380,1
2435	620,1	5,4	356,0	163,6	183,2	727,9	386,4
2436	642,0	5,2	362,2	166,0	185,0	735,4	393,1
2437	664,8	4,9	367,8	168,1	186,5	744,4	399,4
2438	678,8	4,8	374,0	170,7	188,2	755,1	406,0
2439	657,7	4,6	379,6	173,1	189,7	764,9	412,5
2440	693,2	4,4	385,5	174,5	191,3	774,7	419,1
2441	678,3	4,2	391,4	177,6	193,0	783,9	425,4
2442	714,9	4,0	397,2	179,9	194,8	795,1	431,7
2443	761,8	3,8	402,7	181,9	196,5	807,4	437,6
2444	825,5	3,6	408,0	183,5	198,2	821,4	443,0
2445	826,8	3,3	413,4	186,7	200,3	837,7	447,7
2446	842,9	3,1	418,6	189,9	202,2	854,7	452,2

kindling

Thick	Piece Size (in):			Weight lbs	Meter Moisture Content Dry Uncorrected %
	x	Wide	x Length		
1,5	3,5		14,3/5		21
1,5	3,5		14,3/5		21
1,5	3,5		14,3/5		21
1,5	3,5		6,5		21
1,5	3,5		6,5		21
1,5	3,5		6,5		21
1,5	3,5		6,5	7,47	21

2447	828,0	2,9	424,3	191,9	203,9	871,1	456,8
2448	807,6	2,7	430,3	195,0	206,0	887,4	461,9
2449	793,3	2,4	436,4	197,3	208,3	902,3	466,6
2450	771,5	2,3	442,5	198,2	210,0	915,3	472,5
2451	746,4	2,2	448,5	202,0	212,1	926,3	476,9
2452	721,1	2,0	454,5	203,6	214,6	934,2	481,7
2453	690,7	1,9	459,8	206,4	217,1	939,4	485,8
2454	665,5	1,8	465,7	208,8	219,6	941,5	490,2
2455	641,1	1,7	471,3	211,5	222,5	940,0	493,5
2456	618,5	1,7	476,4	213,3	224,7	930,5	497,2
2457	596,6	1,7	480,6	217,0	228,0	911,4	498,9
2458	575,3	1,6	484,4	218,4	230,8	885,8	500,7
2459	557,6	1,6	487,1	222,6	234,3	857,5	500,7
2460	541,4	1,6	489,9	222,5	237,2	828,9	501,8
2461	528,1	1,5	491,9	224,3	240,3	801,4	501,9
2462	516,1	1,5	492,9	227,3	243,6	775,7	501,1
2463	505,5	1,5	493,7	229,4	247,0	751,9	500,2
2464	496,4	1,5	494,3	228,7	250,0	730,0	499,5
2465	422,4	7,0	493,1	251,7	252,3	708,2	499,7
2466	438,9	6,8	490,9	250,0	255,8	678,5	499,5
2467	460,6	6,7	491,1	243,8	259,4	656,2	498,1
2468	500,3	6,5	489,6	241,1	262,6	643,1	495,4
2469	559,5	6,4	487,0	239,4	265,2	641,5	491,7
2470	577,6	6,2	483,4	239,2	268,5	649,3	489,6
2471	589,1	6,0	480,5	240,3	271,2	661,7	487,7
2472	602,7	5,8	478,1	240,3	272,9	676,8	486,5
2473	608,8	5,6	476,4	240,4	274,7	693,8	485,5
2474	612,0	5,5	474,9	241,8	276,7	710,5	485,8
2475	618,5	5,3	473,7	242,9	278,1	726,6	486,2
2476	623,4	5,1	473,0	243,4	279,5	741,8	486,7
2477	624,9	4,9	473,1	243,6	280,6	755,6	488,4
2478	627,0	4,8	473,4	243,9	281,8	768,5	490,3
2479	631,7	4,6	474,8	243,1	282,0	780,5	492,8
2480	631,3	4,4	475,6	243,7	282,7	792,0	494,7
2481	634,4	4,3	477,1	242,8	283,3	801,2	497,2
2482	634,3	4,1	478,1	243,9	284,1	809,6	499,2
2483	635,6	3,9	479,4	244,2	284,9	817,1	501,8
2484	636,8	3,8	481,0	244,0	284,7	824,0	504,3
2485	634,2	3,6	482,6	244,6	285,2	829,7	506,6
2486	633,3	3,4	485,2	244,4	284,8	834,2	509,3
2487	634,7	3,3	487,3	244,6	285,3	838,2	511,0
2488	633,9	3,2	489,7	243,4	284,6	842,0	513,9
2489	634,5	3,0	491,9	244,0	285,5	845,8	516,3
2490	636,3	2,9	493,8	243,2	285,9	850,6	518,8
2491	637,3	2,7	495,1	245,5	286,3	856,1	520,3
2492	638,3	2,6	497,1	244,2	286,1	861,7	522,9
2493	640,9	2,4	499,1	244,9	286,1	867,9	524,6
2494	644,1	2,3	501,6	244,6	286,4	874,3	526,8
2495	646,0	2,1	503,6	246,0	286,6	881,2	528,3
2496	649,8	2,0	506,0	245,5	286,5	888,6	530,4
2497	651,6	1,8	508,9	246,0	286,8	896,1	531,8
2498	657,0	1,7	511,9	245,5	286,4	904,6	533,7
2499	660,9	1,6	514,7	246,3	286,8	913,7	534,9
2500	655,6	1,4	516,9	247,2	287,6	922,8	536,0
2501	640,2	1,3	519,5	248,1	288,1	930,1	537,4
2502	628,2	1,2	522,0	248,4	288,8	933,9	539,1
2503	613,2	1,2	524,6	248,3	287,6	932,4	540,9
2504	597,0	1,1	527,4	249,3	288,6	923,3	541,8
2505	580,9	1,0	528,9	249,9	289,6	906,7	542,5
2506	566,3	1,0	530,0	250,2	289,5	885,1	542,4
2507	550,9	1,0	531,2	249,0	290,4	861,4	541,8
2508	535,7	0,9	531,4	249,1	291,1	837,0	540,5
2509	522,3	0,9	531,1	249,4	291,7	812,4	538,9
2510	509,2	0,9	530,4	250,1	292,5	788,3	536,6
2511	498,0	0,8	529,5	249,5	292,7	765,2	534,1
2512	485,7	0,8	528,1	249,8	293,3	743,2	531,1
2513	474,6	0,8	526,3	249,7	293,4	722,2	527,6
2514	465,3	0,8	524,2	249,4	293,6	702,3	524,3
2515	456,8	0,8	521,9	249,4	294,1	683,8	520,6
2516	449,4	0,7	519,4	249,4	294,4	666,6	516,8
2517	442,6	0,8	516,5	249,4	295,0	650,6	512,4
2518	436,3	0,7	513,4	249,9	295,4	635,9	508,6
2519	431,1	0,7	510,2	249,7	295,8	622,2	504,4
2520	425,7	0,7	507,0	250,1	295,8	609,7	500,2
2521	420,9	0,7	503,5	249,9	296,3	597,9	496,0
2522	416,9	0,6	500,2	250,1	296,5	587,0	491,9
2523	412,7	0,6	496,9	250,2	296,6	576,9	487,7
2524	408,9	0,6	493,3	249,9	296,7	567,5	483,7
2525	405,1	0,6	490,2	249,6	297,1	558,7	479,9
2526	401,9	0,6	486,9	249,5	297,4	550,6	476,1
2527	398,5	0,5	483,7	249,6	297,6	542,8	472,3
2528	395,8	0,5	480,5	249,3	298,1	535,7	468,7
2529	393,4	0,5	477,8	249,2	297,7	528,9	464,9
2530	390,2	0,5	474,5	249,8	298,3	522,5	461,3
2531	387,6	0,5	471,4	249,0	298,7	516,6	458,0
2532	385,7	0,5	468,5	248,7	298,9	511,0	454,8
2533	383,6	0,4	465,8	248,7	298,8	505,8	451,7
2534	381,7	0,4	463,0	248,0	299,2	500,8	448,7
2535	380,0	0,4	460,2	247,9	299,6	496,2	445,8
2536	378,2	0,3	457,5	247,6	299,8	491,9	443,0
2537	376,7	0,3	454,9	247,3	300,1	487,7	440,3
2538	374,6	0,3	452,6	246,6	300,5	483,7	437,5
2539	372,4	0,2	450,0	246,8	300,8	479,8	435,1
2540	371,0	0,3	447,9	245,6	300,7	476,1	432,5
2541	370,0	0,2	445,7	245,5	300,7	472,5	430,1
2542	367,8	0,2	443,4	245,7	301,6	469,0	427,7
2543	365,9	0,2	441,2	245,4	301,7	465,6	425,5
2544	364,2	0,2	439,1	244,5	302,2	462,3	423,2

Thick	Piece Size (in):			Weight lbs	Meter Moisture Content Dry Uncorrected %
	x Wide	x	Length		
1,5	3,5		14,375	1,91	20,60
1,5	3,5		14,375	1,84	20,30
1,5	3,5		14,375	1,72	21,50

2545	362,7	0,2	437,1	244,3	302,8	459,0	421,0
2546	360,4	0,2	435,2	244,1	303,1	455,8	418,9
2547	358,6	0,1	433,0	244,0	303,4	452,6	416,9
2548	356,8	0,1	430,9	243,4	303,7	449,4	414,8
2549	355,0	0,1	428,6	243,3	304,2	446,4	412,7
2550	353,6	0,1	426,8	242,1	303,9	443,2	410,8
2551	351,7	0,1	425,1	242,4	304,6	440,3	408,7
2552	349,7	0,0	423,8	241,3	303,8	437,2	406,9
2553	72,7	4,1	71,6	71,4	71,2	72,6	72,0
2554	90,8	4,1	71,6	71,4	71,3	72,8	72,0
2555	129,0	4,1	71,8	71,5	71,2	73,2	72,2
2556	246,0	3,8	72,9	71,6	71,3	75,1	72,8
2557	385,5	3,5	76,1	71,8	71,5	84,2	74,2
2558	490,9	3,3	81,6	72,5	72,0	102,8	76,8
2559	497,9	3,0	89,1	73,5	72,9	130,6	80,4
2560	516,2	2,8	99,0	75,1	74,1	164,6	84,6
2561	551,6	2,6	110,5	76,8	75,8	205,6	89,5
2562	580,7	2,4	122,8	78,9	77,9	259,1	96,1
2563	587,6	2,2	135,4	81,3	80,4	318,3	104,9
2564	592,5	2,0	148,5	84,2	83,2	377,2	115,3
2565	594,9	1,8	162,2	87,4	86,3	432,0	126,7
2566	591,2	1,6	176,3	90,7	89,8	481,0	139,1
2567	585,2	1,5	189,9	94,2	93,7	521,0	152,4
2568	589,2	1,4	203,4	97,3	97,4	554,2	166,8
2569	597,3	1,2	216,7	100,8	101,9	584,1	182,2
2570	611,2	8,2	229,2	107,0	106,6	612,4	198,9
2571	511,2	8,0	242,1	111,6	111,8	621,9	215,6
2572	554,6	7,8	253,4	114,2	117,0	617,5	229,2
2573	613,6	7,6	262,6	116,7	122,8	623,7	241,0
2574	641,3	7,3	271,2	119,1	128,1	640,4	252,3
2575	633,0	7,2	279,4	121,8	133,6	658,5	263,3
2576	672,4	6,9	287,0	124,6	138,5	679,4	273,4
2577	655,0	6,7	294,6	127,7	142,6	700,4	283,2
2578	680,4	6,5	302,0	130,9	147,0	717,8	292,6
2579	681,9	6,3	309,4	134,3	150,6	734,6	301,7
2580	717,0	6,1	316,6	137,1	153,5	747,0	310,9
2581	736,3	5,8	323,7	140,4	156,3	762,4	319,1
2582	750,0	5,6	330,7	143,2	158,7	778,9	327,4
2583	761,9	5,4	337,5	146,2	161,1	794,9	335,6
2584	775,6	5,1	344,6	149,4	163,5	810,4	343,6
2585	772,4	4,9	351,4	152,4	165,7	824,7	350,9
2586	769,8	4,7	358,4	155,2	167,9	837,8	358,1
2587	767,1	4,5	365,1	158,0	170,1	849,7	365,6
2588	759,1	4,3	371,8	160,7	172,2	860,8	372,9
2589	760,6	4,1	378,3	163,9	174,5	870,0	380,0
2590	751,6	3,9	384,5	166,6	176,8	878,5	387,0
2591	747,4	3,7	390,7	170,0	179,2	885,9	393,1
2592	744,0	3,5	396,6	172,1	181,5	892,0	399,5
2593	736,4	3,4	402,7	174,6	183,6	898,5	405,5
2594	712,7	3,2	409,0	177,6	185,6	906,7	411,7
2595	689,4	3,1	414,4	180,5	188,3	910,4	417,7
2596	679,5	2,9	419,7	182,7	190,6	910,1	423,6
2597	675,8	2,8	425,1	185,0	193,0	908,7	429,9
2598	671,6	2,6	429,8	187,6	195,4	908,3	435,7
2599	659,5	2,5	434,4	189,8	197,4	907,6	441,3
2600	647,2	2,4	438,9	192,2	200,2	905,7	447,1
2601	639,6	2,3	443,0	194,4	202,6	902,8	452,1
2602	635,1	2,2	447,0	196,4	205,0	899,1	456,8
2603	627,4	2,1	450,9	198,1	207,0	894,0	460,8
2604	618,9	2,0	454,1	200,1	209,8	888,0	463,8
2605	610,3	1,9	457,1	202,2	212,2	881,4	466,4
2606	602,1	1,9	459,9	202,8	214,0	874,2	469,0
2607	590,4	1,8	462,1	204,5	217,0	865,5	470,3
2608	574,2	1,8	463,6	206,6	219,5	852,3	470,8
2609	557,2	1,7	465,4	207,3	221,7	833,7	470,9
2610	542,4	1,7	466,4	209,4	224,3	811,8	470,6
2611	532,4	1,6	467,7	209,9	226,3	790,5	469,9
2612	522,7	1,6	468,4	210,5	228,5	770,9	468,7
2613	510,6	1,6	468,4	211,6	230,4	751,4	467,5
2614	499,3	1,6	468,4	213,2	233,6	731,2	465,6
2615	488,4	1,5	468,0	214,2	236,1	710,9	463,8
2616	479,5	1,5	467,1	215,2	238,6	691,0	461,6
2617	470,2	1,5	466,3	216,5	241,2	672,0	459,5
2618	461,9	1,4	465,2	217,7	244,3	653,9	457,1
2619	374,2	6,9	460,5	241,9	244,6	633,8	457,7
2620	396,1	6,8	454,3	253,2	244,8	606,0	456,4
2621	414,5	6,7	456,1	238,9	250,5	582,8	453,7
2622	428,1	6,6	454,0	234,1	252,8	565,5	450,7
2623	448,2	6,5	450,6	231,7	255,1	552,4	446,9
2624	498,5	6,3	446,6	229,8	256,7	546,4	443,1
2625	506,6	6,2	442,4	228,7	258,2	546,3	439,7
2626	544,2	6,0	438,5	228,1	259,3	552,8	436,1
2627	560,3	5,9	435,1	227,7	260,6	567,9	433,3
2628	563,1	5,7	432,3	227,6	261,6	585,4	431,3
2629	573,1	5,6	430,1	227,6	262,4	603,3	430,0
2630	593,5	5,4	428,5	227,7	263,3	622,6	429,6
2631	603,0	5,2	427,2	228,6	263,9	644,0	429,5
2632	609,1	5,0	426,9	227,7	264,1	665,9	430,9
2633	610,5	4,9	427,4	227,8	264,3	686,1	432,6
2634	614,5	4,7	428,5	228,0	264,6	704,1	434,6
2635	617,4	4,5	430,1	227,7	265,2	719,9	436,7
2636	619,3	4,4	431,7	228,3	265,5	734,3	439,2
2637	622,8	4,2	434,1	227,6	265,1	747,1	442,5
2638	626,9	4,1	437,2	227,5	264,8	759,0	445,6
2639	629,5	3,9	439,9	228,0	264,9	770,3	448,6
2640	633,1	3,7	442,4	228,2	265,7	781,2	451,9
2641	636,3	3,6	445,4	227,3	265,2	792,1	455,5
2642	636,5	3,4	448,0	228,4	266,3	801,7	458,9

kindling

Piece Size (in):				Weight lbs	Meter Moisture Content Dry Uncorrected %
Thick	x Wide	x	Length		
1,5	3,5		14,325	4,288	19,7
1,5	3,5		6,5	2,704	19,3

Piece Size (in):				Weight lbs	Meter Moisture Content Dry Uncorrected %
Thick	x Wide	x	Length		
1,5	3,5		14,325	1,69	19,80
1,5	3,5		14,325	1,67	20,60
1,5	3,5		14,325	1,95	20,40

2643	638,0	3,3	451,2	228,0	266,1	810,2	462,5
2644	640,0	3,1	454,6	228,1	266,2	818,5	466,1
2645	642,8	3,0	457,8	228,6	266,1	827,2	469,7
2646	644,4	2,9	461,3	228,2	265,2	835,6	473,4
2647	649,0	2,7	464,6	228,9	266,2	844,4	476,5
2648	652,5	2,5	467,9	228,8	266,3	853,5	479,9
2649	654,8	2,4	471,3	229,0	266,0	862,9	483,1
2650	656,1	2,3	474,4	229,7	266,9	871,4	486,0
2651	654,1	2,2	477,6	230,2	267,1	878,7	489,1
2652	648,9	2,0	481,2	230,8	267,3	885,1	492,1
2653	647,9	1,9	484,1	231,7	267,8	891,3	494,7
2654	644,8	1,7	487,4	231,6	267,6	897,4	498,7
2655	633,6	1,6	490,8	232,6	268,4	901,4	502,0
2656	617,5	1,5	494,2	233,4	268,8	900,6	505,4
2657	607,4	1,4	497,4	234,5	269,4	894,3	508,3
2658	599,7	1,3	500,5	234,6	269,7	886,0	510,9
2659	590,6	1,3	503,3	234,9	270,3	877,8	512,5
2660	579,4	1,2	505,5	235,9	270,8	868,5	513,5
2661	569,4	1,1	507,8	236,6	270,8	856,7	514,0
2662	559,1	1,1	509,4	237,0	271,8	842,2	514,2
2663	548,6	1,1	510,6	237,6	272,4	825,8	514,0
2664	536,7	1,0	511,2	237,8	272,7	807,7	513,3
2665	523,1	1,0	512,0	238,2	272,2	787,6	511,9
2666	509,8	1,0	512,6	239,5	273,4	765,8	509,7
2667	498,4	1,0	512,4	239,6	274,0	744,3	508,0
2668	489,1	0,9	511,8	239,9	273,4	723,9	506,0
2669	480,3	0,9	511,0	240,0	274,9	704,8	503,2
2670	473,5	0,9	509,7	240,8	275,7	687,1	500,6
2671	467,9	0,9	508,1	240,8	275,7	671,0	497,8
2672	462,2	0,8	506,3	241,2	276,3	656,2	495,0
2673	456,8	0,8	504,3	242,7	276,8	642,9	491,4
2674	452,3	0,8	502,2	241,9	276,9	630,6	489,0
2675	447,8	0,7	500,1	242,3	277,7	619,5	485,8
2676	444,9	0,7	497,9	242,8	278,2	609,2	482,6
2677	441,1	0,7	495,5	242,6	278,5	599,8	479,7
2678	438,1	0,7	493,4	243,0	278,9	591,1	476,8
2679	435,1	0,6	491,3	242,1	278,9	583,2	473,8
2680	432,2	0,6	488,7	243,3	280,1	575,7	470,8
2681	429,0	0,6	486,4	243,5	280,6	568,8	467,9
2682	424,9	0,6	483,9	243,2	281,0	562,2	465,2
2683	421,9	0,6	481,4	242,8	281,3	555,8	462,8
2684	418,9	0,5	479,2	244,2	282,1	549,3	459,7
2685	416,1	0,5	477,2	243,4	282,1	543,0	457,4
2686	413,2	0,5	475,0	242,8	282,3	537,0	454,9
2687	410,4	0,4	472,7	243,0	283,1	531,1	452,3
2688	408,1	0,5	470,3	243,1	283,9	525,6	449,8
2689	405,2	0,4	467,9	242,8	284,0	520,3	447,4
2690	403,3	0,4	465,5	242,7	284,6	515,2	445,0
2691	401,4	0,4	463,3	242,2	284,7	510,6	442,7
2692	399,7	0,4	461,1	242,1	284,4	506,0	440,4
2693	397,4	0,4	459,5	241,6	285,0	501,7	438,1
2694	396,0	0,3	457,2	241,6	286,4	497,5	435,6
2695	394,2	0,3	455,0	241,8	286,4	493,5	433,4
2696	392,0	0,2	453,0	240,9	286,4	489,8	431,2
2697	390,3	0,2	450,6	241,2	287,9	486,1	429,1
2698	389,5	0,2	448,6	240,4	288,1	482,6	427,0
2699	387,6	0,2	446,4	240,4	288,1	479,4	424,9
2700	386,4	0,1	444,4	239,6	288,7	476,2	422,7
2701	385,8	0,1	442,1	239,4	289,6	473,2	420,6
2702	384,9	0,1	440,0	238,6	289,6	470,4	418,9
2703	383,6	0,1	438,0	238,5	289,3	467,8	416,9
2704	381,6	0,1	436,5	237,4	288,8	465,2	415,3
2705	380,4	0,1	434,4	237,6	289,9	462,5	413,2
2706	379,0	0,0	432,6	237,5	290,8	460,0	411,5
2707	78,9	4,1	67,3	67,3	67,4	67,9	67,6
2708	95,3	4,0	67,4	67,3	67,4	68,0	67,8
2709	166,2	3,9	67,6	67,4	67,5	68,6	68,2
2710	263,8	3,8	68,3	67,5	67,7	70,5	69,9
2711	333,3	3,6	69,7	67,7	68,4	77,1	73,0
2712	432,6	3,4	71,9	68,1	69,3	91,2	76,5
2713	497,3	3,3	74,9	68,7	70,7	114,7	81,0
2714	525,8	3,1	79,0	69,6	72,3	148,7	86,8
2715	500,6	2,9	84,0	70,8	74,1	187,0	93,6
2716	511,0	2,8	90,2	72,3	76,0	224,1	101,5
2717	531,3	2,6	97,3	73,8	78,1	260,2	110,1
2718	550,2	2,4	105,4	75,4	80,3	296,8	119,5
2719	550,0	2,3	114,4	77,2	82,5	333,7	129,7
2720	548,1	2,2	124,2	79,1	84,8	368,0	140,2
2721	550,7	2,0	134,3	81,3	87,3	399,4	150,8
2722	561,3	1,8	144,5	83,5	90,1	428,7	161,8
2723	570,1	1,8	155,0	85,9	93,0	457,7	172,9
2724	583,8	1,6	166,2	88,2	96,0	486,3	183,8
2725	587,3	1,5	177,4	90,8	99,5	513,9	194,9
2726	607,0	1,3	189,0	93,5	103,2	540,0	205,8
2727	600,9	1,2	200,7	96,3	106,9	566,3	216,8
2728	601,5	1,1	212,8	99,3	111,0	589,7	226,9
2729	598,0	1,0	224,7	102,1	115,1	609,8	236,8
2730	544,4	8,3	236,0	109,4	119,0	625,5	247,2
2731	402,2	8,3	244,1	117,1	123,9	613,8	257,9
2732	407,6	8,2	256,5	117,6	127,4	588,3	266,5
2733	475,2	8,1	266,2	118,0	131,5	565,6	274,0
2734	512,4	8,1	273,7	119,0	136,2	551,1	280,0
2735	519,1	7,9	280,0	120,4	140,2	544,3	284,7
2736	507,4	7,9	285,8	121,9	143,8	537,9	287,1
2737	505,1	7,8	290,8	123,7	147,0	531,8	289,4
2738	528,1	7,6	295,2	125,6	150,4	528,0	289,6
2739	575,6	7,5	299,5	127,1	152,6	533,0	289,9
2740	598,9	7,3	303,8	128,8	154,8	544,3	289,1

kindling

Piece Size (in):			Weight lbs	Meter Moisture Content Dry Uncorrected %
Thick	x Wide	x Length		
1,5	3,5	14,375		20
1,5	3,5	14,375		20
1,5	3,5	14,375		20
1,5	3,5	6,5		20
1,5	3,5	6,5		20
1,5	3,5	6,5		20
1,5	3,5	6,5	7,5	20

2741	573,3	7,2	308,5	130,7	156,8	553,9	288,7
2742	594,2	7,1	313,5	132,2	158,4	560,2	289,2
2743	678,4	6,8	318,5	133,7	159,9	574,7	289,4
2744	698,2	6,5	323,3	135,8	161,8	597,0	290,3
2745	681,2	6,4	328,5	137,7	162,8	620,8	293,7
2746	692,0	6,1	334,2	139,6	164,2	642,8	297,1
2747	706,6	5,9	339,8	141,7	165,9	665,2	301,8
2748	720,6	5,7	346,1	144,0	167,2	686,7	306,7
2749	738,1	5,4	352,2	146,0	168,5	708,0	312,6
2750	770,2	5,2	358,4	148,2	170,0	729,1	318,1
2751	752,8	5,0	364,0	150,7	171,9	748,8	324,8
2752	796,9	4,7	370,1	152,8	172,9	767,1	331,4
2753	746,0	4,5	376,1	156,1	175,2	786,3	337,8
2754	724,5	4,3	382,1	158,9	176,9	800,1	345,5
2755	718,3	4,1	388,4	161,0	178,6	809,8	354,7
2756	715,3	4,0	394,6	163,6	180,7	818,0	363,3
2757	720,7	3,8	400,7	166,2	182,4	825,5	371,5
2758	724,6	3,6	406,7	168,9	184,8	833,4	378,9
2759	730,5	3,4	412,3	171,6	186,7	841,6	385,9
2760	736,3	3,3	417,9	174,0	188,7	850,5	392,7
2761	732,8	3,1	423,5	176,2	190,3	858,5	399,6
2762	728,6	2,9	428,7	178,4	191,7	865,6	405,7
2763	722,2	2,8	433,8	181,5	193,9	870,3	411,3
2764	724,6	2,6	438,5	183,8	195,7	873,3	417,0
2765	722,1	2,5	443,0	185,7	197,5	875,4	423,2
2766	711,0	2,4	447,2	188,2	199,4	878,0	428,4
2767	696,6	2,2	450,9	190,7	201,4	880,4	433,8
2768	691,2	2,1	454,6	192,5	203,3	881,7	439,1
2769	680,3	2,0	457,6	194,6	205,4	883,1	444,2
2770	660,3	1,9	460,3	197,1	207,3	881,1	449,4
2771	640,7	1,8	462,9	199,2	209,6	873,1	453,7
2772	618,8	1,7	464,9	201,0	211,7	859,2	458,3
2773	603,4	1,7	466,6	202,7	213,9	839,7	462,8
2774	587,3	1,7	467,9	204,3	216,4	818,8	467,7
2775	573,4	1,6	469,0	206,1	219,3	798,2	471,7
2776	559,5	1,6	469,3	206,7	221,3	778,0	475,7
2777	544,6	1,5	469,6	208,2	224,8	758,1	478,8
2778	530,3	1,5	470,0	209,6	228,2	738,1	481,0
2779	517,7	1,5	470,0	210,8	230,8	718,8	482,6
2780	508,1	1,4	469,9	212,4	234,8	700,3	483,3
2781	438,6	7,0	469,0	228,3	239,3	682,3	483,5
2782	395,2	6,9	460,9	242,7	239,1	655,5	482,9
2783	440,8	6,8	464,3	232,2	244,5	628,6	482,1
2784	441,8	6,8	464,4	229,1	248,3	606,1	479,9
2785	506,3	6,6	462,8	225,4	251,0	588,4	477,1
2786	608,7	6,3	459,3	222,8	253,7	584,4	473,4
2787	636,0	6,2	455,9	221,7	255,9	595,2	469,9
2788	675,8	5,9	452,0	221,1	259,7	616,5	466,8
2789	697,2	5,7	448,8	221,4	262,4	645,6	464,1
2790	711,0	5,5	445,7	222,7	265,1	676,9	461,8
2791	692,9	5,2	443,7	224,7	267,2	705,1	460,0
2792	715,2	5,0	443,0	225,1	269,0	730,4	459,9
2793	713,0	4,8	442,9	225,9	270,0	753,2	460,0
2794	712,0	4,6	443,2	226,4	271,0	772,1	460,4
2795	719,1	4,4	444,7	225,4	269,8	788,9	462,1
2796	720,7	4,3	445,7	227,0	271,7	804,4	462,4
2797	721,6	4,0	446,9	227,5	272,5	819,1	463,6
2798	724,9	3,9	448,5	228,2	273,0	832,3	465,2
2799	725,2	3,6	450,9	227,9	273,0	844,7	467,0
2800	729,8	3,5	454,1	227,9	272,5	855,3	470,0
2801	728,6	3,3	456,6	227,7	273,3	865,0	472,6
2802	728,7	3,1	459,1	227,6	274,3	874,7	474,8
2803	730,7	2,9	461,9	228,4	273,8	884,7	477,7
2804	737,1	2,7	465,1	228,4	273,3	895,6	480,8
2805	742,1	2,5	468,6	228,6	273,9	907,7	483,6
2806	745,5	2,3	470,9	230,8	275,0	920,8	486,6
2807	736,8	2,2	474,6	231,6	275,1	933,7	489,9
2808	728,0	2,0	478,0	232,5	275,3	944,5	493,4
2809	715,0	1,9	482,1	232,8	275,4	951,8	497,2
2810	701,8	1,7	486,0	233,5	274,5	956,3	501,1
2811	690,5	1,6	489,9	234,6	276,3	958,8	504,3
2812	679,6	1,4	493,6	236,6	277,0	959,2	507,8
2813	666,8	1,3	497,3	237,8	277,5	957,8	511,3
2814	653,4	1,2	501,4	237,9	277,6	950,5	514,6
2815	639,4	1,2	504,5	240,3	278,6	935,6	517,6
2816	621,8	1,1	508,2	240,1	279,4	913,6	520,7
2817	601,5	1,1	511,5	241,4	280,1	887,4	522,7
2818	581,8	1,0	515,1	241,2	279,8	859,7	524,1
2819	563,9	1,0	517,6	240,7	280,6	831,7	525,1
2820	549,1	1,0	519,3	241,5	281,6	804,9	525,1
2821	537,2	1,0	520,2	242,5	282,6	779,5	524,4
2822	525,9	0,9	520,8	242,6	283,8	756,0	523,0
2823	516,4	0,9	520,4	243,9	284,8	734,4	520,7
2824	508,3	0,9	520,1	242,7	286,0	714,4	519,2
2825	500,2	0,9	519,0	244,0	287,6	696,0	516,6
2826	493,8	0,8	517,6	244,6	289,0	679,1	513,6
2827	486,6	0,9	516,1	244,6	290,2	663,5	510,6
2828	479,9	0,8	514,4	244,3	290,6	649,2	507,3
2829	474,9	0,8	512,6	244,2	291,7	636,0	504,1
2830	470,4	0,8	510,4	244,1	293,2	623,8	501,1
2831	465,5	0,7	509,5	242,7	292,0	612,6	498,4
2832	460,1	0,7	507,7	243,0	294,5	602,1	494,6
2833	456,0	0,7	504,7	245,6	296,3	592,3	491,0
2834	452,4	0,6	503,2	242,6	297,1	583,3	488,4
2835	448,6	0,6	501,2	242,4	298,7	574,8	485,1
2836	444,5	0,6	499,0	242,8	299,9	567,3	481,6
2837	442,0	0,6	496,6	243,4	301,7	560,3	478,2
2838	438,8	0,5	493,7	243,4	303,7	553,9	475,2

Thick	Piece Size (in):			Weight lbs	Meter Moisture Content Dry Uncorrected %
	x Wide	x	Length		
1,5	3,5		14,375	1,63	20,00
1,5	3,5		14,375	1,85	20,00
1,5	3,5		14,375	1,94	19,00

2839	435,9	0,5	491,6	242,3	303,9	547,8	472,5
2840	430,9	0,5	490,0	241,7	304,2	542,1	469,9
2841	425,2	0,5	488,2	240,7	304,3	536,4	467,2
2842	421,6	0,5	485,6	241,8	307,6	530,6	464,0
2843	419,1	0,4	482,9	242,4	309,1	524,9	460,9
2844	416,3	0,4	480,5	242,0	310,1	519,4	458,3
2845	414,2	0,4	477,8	241,5	311,1	514,0	455,6
2846	411,1	0,4	475,0	242,2	312,9	508,9	452,5
2847	407,9	0,3	472,5	242,1	313,8	503,7	449,8
2848	406,6	0,3	469,4	242,8	315,1	498,9	446,9
2849	403,6	0,3	466,8	242,0	316,0	494,3	444,4
2850	400,6	0,2	464,3	242,6	316,8	489,7	441,5
2851	398,7	0,2	462,9	239,9	315,7	485,2	439,5
2852	395,9	0,2	460,6	241,0	317,5	480,9	436,5
2853	394,4	0,2	458,1	240,6	318,4	476,7	434,3
2854	393,5	0,2	455,9	239,6	318,6	472,7	432,0
2855	391,4	0,1	453,8	239,3	319,3	468,9	429,7
2856	389,8	0,1	451,5	239,0	319,7	465,3	427,3
2857	388,0	0,1	449,3	239,0	320,6	461,8	425,2
2858	387,2	0,1	446,9	238,4	321,0	458,5	423,1
2859	384,7	0,1	444,8	237,6	321,2	455,3	421,3
2860	383,4	0,0	442,7	238,1	320,9	452,3	419,3
2861	381,2	0,0	441,5	236,7	321,4	449,2	417,3
2862	379,5	0,0	440,1	236,5	322,0	446,4	415,4
2863	377,4	0,0	438,2	235,8	323,0	443,5	413,6
2864	83,7	4,3	65,9	65,9	65,9	66,7	66,0
2865	95,5	4,1	66,0	65,9	65,9	68,1	66,1
2866	167,5	3,9	66,0	65,8	66,0	69,1	66,6
2867	287,2	3,7	66,2	65,8	66,0	74,5	69,1
2868	355,9	3,6	66,9	65,9	66,3	88,0	73,1
2869	407,2	3,4	68,1	66,4	66,6	108,2	78,7
2870	449,7	3,2	70,0	67,2	67,3	136,3	85,2
2871	457,3	3,1	72,4	68,2	68,1	170,7	92,2
2872	432,1	3,0	75,4	69,4	69,2	202,2	99,5
2873	423,4	2,9	79,2	70,6	70,5	227,7	106,5
2874	447,3	2,7	83,9	71,9	72,2	251,8	113,4
2875	466,6	2,6	89,1	73,2	74,2	276,5	120,5
2876	512,6	2,4	95,3	74,4	76,3	305,2	127,9
2877	528,5	2,3	102,6	76,1	78,7	339,3	136,0
2878	534,9	2,1	110,8	77,8	81,2	373,5	144,7
2879	536,6	2,0	119,9	79,5	83,6	405,8	153,8
2880	546,0	1,8	129,6	81,4	86,4	436,5	162,7
2881	551,7	1,7	139,7	83,4	89,4	465,1	172,4
2882	560,7	1,6	150,1	85,6	92,5	492,5	181,5
2883	559,8	1,5	160,9	88,1	96,1	518,8	191,0
2884	551,3	1,4	172,1	90,7	99,7	540,8	199,8
2885	531,9	1,3	183,6	93,5	103,9	553,1	208,4
2886	521,7	1,6	195,3	98,0	108,1	556,3	216,4
2887	463,5	8,7	207,4	106,2	112,2	553,2	224,9
2888	421,3	8,6	220,4	107,0	117,0	536,4	232,6
2889	434,1	8,5	231,0	108,5	121,7	519,4	238,9
2890	461,2	8,3	239,9	109,9	126,7	506,9	244,0
2891	525,2	8,1	247,0	111,1	131,3	502,9	248,7
2892	613,8	7,9	253,4	112,5	135,6	509,5	252,5
2893	689,0	7,6	258,8	114,5	139,8	530,1	256,1
2894	658,0	7,4	264,7	116,8	143,3	555,5	260,2
2895	672,1	7,2	270,9	119,7	146,7	581,9	265,0
2896	685,0	6,9	277,1	122,6	149,8	607,8	270,4
2897	682,1	6,7	283,9	125,8	152,5	633,4	277,3
2898	690,9	6,5	290,6	129,0	155,1	654,3	284,3
2899	733,0	6,3	297,6	132,1	157,6	674,9	291,3
2900	795,9	6,0	304,0	135,0	159,8	698,5	298,8
2901	756,0	5,7	310,4	138,6	162,0	722,3	306,7
2902	797,7	5,5	317,0	142,0	164,4	743,0	315,0
2903	825,9	5,2	323,4	145,6	166,8	765,7	322,9
2904	828,9	5,0	329,8	148,7	169,1	787,9	330,5
2905	823,7	4,7	335,9	152,2	171,3	808,2	338,2
2906	809,5	4,5	342,2	155,8	173,7	826,7	345,8
2907	804,0	4,3	348,5	159,3	176,3	843,4	353,7
2908	803,7	4,0	354,8	163,4	178,9	858,2	361,2
2909	796,6	3,8	361,0	166,8	181,6	870,7	368,1
2910	790,2	3,6	367,3	170,5	184,2	881,2	375,8
2911	785,0	3,4	373,7	174,5	186,9	890,7	382,7
2912	782,5	3,2	379,9	177,8	189,9	899,1	389,6
2913	781,4	3,0	386,5	181,2	192,8	906,7	396,4
2914	779,1	2,8	392,9	184,9	195,7	913,9	403,0
2915	771,2	2,6	399,3	188,9	198,7	920,8	410,1
2916	760,9	2,4	405,7	192,4	201,6	927,0	416,7
2917	745,6	2,3	412,0	195,8	204,7	931,5	423,4
2918	719,7	2,1	418,3	198,9	207,9	934,7	429,5
2919	697,8	2,0	424,8	202,9	211,1	935,7	435,4
2920	677,5	1,9	431,1	206,8	214,5	934,1	441,0
2921	658,1	1,8	437,3	210,6	218,3	928,7	445,7
2922	643,4	1,7	443,3	213,2	221,9	918,3	450,0
2923	631,6	1,7	448,6	216,3	225,3	904,7	453,6
2924	618,1	1,6	453,8	218,3	228,9	888,0	456,8
2925	601,4	1,6	458,1	221,5	232,9	868,7	458,7
2926	579,7	1,5	462,1	223,7	236,5	845,0	460,6
2927	555,5	1,5	465,5	226,5	240,2	818,9	461,5
2928	535,1	1,5	468,5	229,1	244,5	792,2	462,2
2929	518,8	1,4	470,7	231,4	248,2	765,7	462,7
2930	505,4	1,4	472,3	232,4	252,0	741,1	463,0
2931	494,4	1,4	473,6	235,0	256,2	718,3	462,6
2932	484,6	1,4	474,2	236,4	260,1	697,2	462,1
2933	475,9	1,4	474,5	236,6	264,0	678,0	461,6
2934	381,2	6,7	474,3	262,8	267,8	657,6	461,8
2935	363,5	6,5	470,6	271,4	270,1	629,7	461,8
2936	401,1	6,4	474,4	256,5	273,1	601,7	460,0

kindling

Piece Size (in):			Weight lbs	Meter Moisture Content Dry Uncorrected %
Thick	x Wide	x Length		
1,5	3,5	14,375		20
1,5	3,5	14,375		20
1,5	3,5	14,375		20
1,5	3,5	6,5		20
1,5	3,5	6,5		20
1,5	3,5	6,5		20
1,5	3,5	6,5	7,61	20

Piece Size (in):			Weight lbs	Meter Moisture Content Dry Uncorrected %
Thick	x Wide	x Length		
1,5	3,5	14,375	1,58	19,00

2937	470,8	6,3	472,5	252,8	277,2	580,3	457,4
2938	554,4	6,1	468,7	249,0	280,8	574,9	453,8
2939	587,1	5,9	464,9	246,9	284,1	583,6	450,7
2940	603,9	5,7	461,6	245,7	287,1	600,9	448,2
2941	614,7	5,5	458,8	245,6	289,5	621,9	446,1
2942	622,3	5,3	457,3	245,5	291,4	643,9	444,9
2943	627,6	5,1	456,0	245,7	293,4	665,1	444,3
2944	633,4	4,9	455,6	245,8	295,1	684,8	444,0
2945	638,9	4,8	455,4	246,4	296,7	703,2	444,3
2946	643,9	4,6	455,9	246,8	297,7	720,7	445,2
2947	651,0	4,4	457,2	247,2	298,7	737,2	446,7
2948	657,7	4,2	458,6	246,8	299,3	753,0	448,7
2949	661,4	4,0	460,6	247,1	300,2	768,4	450,9
2950	666,0	3,8	463,0	246,4	300,6	782,3	453,6
2951	666,6	3,7	465,3	246,7	300,9	795,2	456,4
2952	668,2	3,5	467,9	247,1	301,1	807,4	459,1
2953	668,3	3,3	470,8	246,4	301,3	818,2	462,2
2954	669,3	3,1	473,8	247,8	301,6	827,9	464,9
2955	668,2	3,0	476,6	246,9	301,6	835,9	468,1
2956	667,1	2,8	479,2	247,0	301,9	843,0	470,8
2957	665,9	2,7	482,3	247,4	302,0	849,3	473,7
2958	663,4	2,5	485,3	247,3	302,0	854,9	476,4
2959	662,7	2,4	488,2	247,1	302,2	859,6	478,8
2960	661,6	2,2	491,3	247,6	302,2	863,9	480,9
2961	661,3	2,1	494,2	248,5	302,2	868,7	483,2
2962	663,9	1,9	497,0	248,2	302,3	874,5	485,4
2963	668,0	1,8	499,9	248,6	302,1	881,0	487,5
2964	667,9	1,6	502,6	248,7	302,2	887,9	489,3
2965	663,0	1,5	505,4	250,2	302,0	895,0	491,7
2966	650,4	1,4	508,1	250,3	302,2	900,6	493,6
2967	632,2	1,3	510,8	250,0	302,5	900,3	495,5
2968	613,8	1,2	513,8	250,8	302,5	890,6	497,2
2969	600,2	1,2	515,9	251,7	303,1	875,5	498,3
2970	587,6	1,1	517,7	251,4	303,0	858,8	499,1
2971	571,3	1,1	519,7	251,5	303,4	840,8	500,1
2972	553,5	1,0	520,8	251,7	303,9	819,7	500,3
2973	534,5	1,0	521,3	251,6	304,2	795,6	500,2
2974	517,5	1,0	522,2	252,4	304,6	770,7	499,1
2975	503,1	0,9	521,9	252,5	305,2	746,7	498,2
2976	490,2	0,9	521,1	253,0	305,3	724,2	496,6
2977	478,8	0,9	520,2	252,4	305,7	703,2	495,0
2978	468,3	0,9	519,1	252,3	306,1	683,6	493,1
2979	459,8	0,8	517,6	253,0	306,7	665,3	490,7
2980	452,0	0,8	515,6	253,3	306,9	648,4	488,3
2981	445,1	0,8	513,3	253,4	307,3	632,7	485,6
2982	439,1	0,8	511,4	253,6	307,9	618,2	482,8
2983	434,1	0,7	509,0	253,0	308,1	605,1	480,0
2984	428,7	0,7	506,2	254,1	308,6	593,0	476,8
2985	424,5	0,7	503,3	253,4	309,2	581,7	473,5
2986	420,4	0,7	500,8	253,6	309,7	571,2	470,7
2987	416,8	0,7	497,7	253,5	310,4	561,8	467,4
2988	413,2	0,7	494,9	253,0	310,4	553,0	464,5
2989	409,3	0,6	492,0	253,1	310,8	544,9	461,5
2990	405,9	0,6	489,3	252,5	311,7	537,2	458,5
2991	402,1	0,6	486,2	252,7	312,1	530,0	455,4
2992	399,0	0,6	483,4	253,0	312,8	523,4	452,5
2993	396,2	0,5	480,8	252,1	313,4	516,9	449,6
2994	394,1	0,5	477,9	251,7	313,6	511,1	446,9
2995	392,4	0,5	475,2	251,6	314,5	505,5	443,6
2996	390,2	0,5	472,3	251,5	314,8	500,5	441,0
2997	388,3	0,5	470,1	250,6	315,0	495,7	438,5
2998	386,2	0,4	467,7	250,2	315,4	491,1	435,6
2999	384,2	0,4	465,3	249,8	316,1	486,8	433,0
3000	382,3	0,4	462,9	249,6	316,4	482,7	430,3
3001	380,7	0,4	460,4	249,5	316,6	478,7	427,8
3002	378,6	0,3	458,0	249,4	316,5	475,0	425,5
3003	376,9	0,3	455,5	249,3	317,3	471,3	422,8
3004	375,4	0,3	453,5	248,8	317,3	467,9	420,5
3005	373,9	0,3	451,5	247,8	317,6	464,5	418,4
3006	373,0	0,3	449,8	247,7	318,0	461,3	416,0
3007	370,4	0,2	447,8	247,5	318,4	458,3	413,9
3008	368,4	0,2	445,8	246,9	318,5	455,0	411,5
3009	366,7	0,2	443,7	247,3	318,0	451,9	409,1
3010	364,7	0,2	441,6	247,6	318,6	448,7	406,9
3011	362,9	0,1	439,8	246,3	318,4	445,5	405,1
3012	361,2	0,2	438,3	246,1	318,1	442,5	403,3
3013	359,7	0,1	436,5	245,6	318,6	439,5	401,1
3014	357,8	0,1	434,7	245,7	318,3	436,5	399,2
3015	356,5	0,1	432,6	246,2	318,1	433,7	397,0
3016	355,1	0,1	430,8	245,7	318,2	430,8	394,8
3017	353,4	0,0	428,5	245,3	318,2	427,9	392,9
3018	69,8	3,9	69,8	69,5	69,5	70,1	69,6
3019	146,1	3,9	69,8	69,5	69,5	70,4	69,6
3020	261,1	3,7	70,6	69,3	69,5	72,2	69,9
3021	381,3	3,5	73,2	69,3	69,6	79,2	71,0
3022	529,9	3,3	78,1	69,7	69,8	97,3	73,1
3023	589,0	3,1	85,1	70,3	70,3	129,5	76,0
3024	596,1	2,9	93,0	71,5	71,1	172,1	79,8
3025	585,0	2,7	101,9	72,9	72,5	219,0	85,3
3026	592,0	2,6	111,6	74,7	74,4	269,0	92,5
3027	573,4	2,4	122,2	76,6	76,8	316,9	101,4
3028	566,8	2,3	133,2	78,7	79,6	358,9	111,0
3029	571,1	2,2	144,3	80,7	82,6	396,0	121,0
3030	569,2	2,0	155,8	82,8	85,8	428,9	131,7
3031	573,8	4,6	167,1	85,2	89,0	459,3	143,2
3032	570,3	1,8	178,5	87,4	92,2	484,1	155,3
3033	575,8	2,4	189,9	89,7	95,3	507,4	168,0
3034	592,1	2,2	200,5	92,3	98,6	532,5	180,0

1,5	3,5	14,375	1,80	20,00
1,5	3,5	14,375	1,59	20,00

kindling

3035	613,9	1,4	211,1	94,8	101,9	558,0	192,4
3036	630,0	1,2	221,6	97,6	105,4	585,7	204,4
3037	641,7	1,1	231,4	100,4	109,1	612,8	217,1
3038	571,8	8,6	240,3	109,2	112,8	631,1	230,5
3039	506,6	8,4	250,6	110,1	116,6	622,4	243,9
3040	587,9	8,2	259,1	112,4	121,4	612,2	253,8
3041	655,1	8,0	266,4	113,8	125,3	618,1	263,3
3042	733,6	7,8	273,2	116,0	130,3	633,8	270,5
3043	681,4	7,5	280,1	118,6	134,7	650,0	278,7
3044	653,0	7,3	287,2	121,2	138,5	661,8	286,7
3045	675,7	7,1	294,3	124,3	141,9	670,8	294,3
3046	688,0	6,9	301,1	127,5	145,2	682,3	301,2
3047	689,6	6,7	308,0	130,4	148,1	693,5	308,7
3048	700,1	6,5	314,8	133,3	150,6	705,7	315,8
3049	709,0	6,3	321,9	136,5	153,0	719,2	323,1
3050	728,6	6,0	329,1	139,8	155,3	733,0	329,9
3051	738,4	5,8	336,1	143,1	157,5	746,9	336,8
3052	755,8	5,6	343,2	146,0	159,6	761,4	344,7
3053	762,5	5,4	350,0	149,4	161,7	776,1	352,2
3054	767,5	5,1	357,0	152,5	164,1	790,9	359,5
3055	848,1	4,9	363,6	155,4	165,6	805,8	367,2
3056	827,1	4,7	369,9	159,1	168,3	822,5	374,3
3057	876,3	4,4	376,2	162,0	170,4	837,7	380,9
3058	870,0	4,1	382,4	164,8	172,7	852,2	386,9
3059	861,7	3,9	388,1	168,3	175,1	866,9	392,7
3060	856,6	3,7	393,7	171,5	177,7	880,0	398,8
3061	856,4	3,5	399,5	174,4	180,1	891,4	404,4
3062	841,7	3,2	404,9	177,6	182,8	901,6	410,0
3063	831,6	3,0	410,5	180,6	185,5	911,0	415,6
3064	826,3	2,8	415,8	183,5	188,2	920,1	421,7
3065	822,5	2,6	421,2	187,2	191,1	927,9	427,3
3066	795,2	2,5	426,4	190,3	194,1	935,0	433,1
3067	764,2	2,3	432,1	193,2	197,2	940,8	438,7
3068	736,0	2,2	437,3	196,3	200,3	944,1	444,0
3069	712,7	2,1	442,6	199,4	203,2	943,7	449,0
3070	691,9	2,0	447,6	202,5	206,4	939,7	453,7
3071	671,7	1,9	452,4	205,8	209,6	932,2	457,7
3072	649,1	1,8	456,8	208,4	213,0	920,0	461,2
3073	621,9	1,8	461,2	211,0	216,3	901,4	464,1
3074	598,0	1,7	465,0	213,8	219,6	875,6	466,4
3075	576,4	1,7	468,5	216,0	223,2	846,9	468,2
3076	559,2	1,7	471,3	219,1	226,8	818,0	469,1
3077	544,7	1,6	473,4	221,7	230,2	790,4	469,6
3078	531,6	1,6	475,4	223,2	233,8	765,0	469,7
3079	520,2	1,6	476,5	225,1	237,2	741,2	469,3
3080	511,1	1,5	477,4	226,9	240,7	719,6	468,6
3081	396,4	6,5	473,6	251,1	243,0	694,8	468,1
3082	448,2	6,4	478,0	243,0	246,6	665,5	467,6
3083	541,7	6,2	477,9	240,2	250,4	650,4	465,6
3084	595,6	6,0	476,2	239,1	254,2	655,4	463,6
3085	617,4	5,9	475,1	239,2	257,2	673,1	462,3
3086	630,5	5,7	474,1	238,7	259,8	697,3	461,9
3087	640,3	5,5	473,2	241,0	263,0	722,2	461,9
3088	649,3	5,3	472,9	242,3	265,5	745,6	461,9
3089	659,9	5,2	472,5	243,2	267,2	768,1	463,0
3090	663,7	5,0	472,7	244,1	268,9	789,9	464,4
3091	674,0	4,9	473,2	245,2	270,2	809,8	466,0
3092	678,7	4,7	474,0	245,2	271,4	827,6	468,3
3093	686,1	4,5	475,2	247,0	272,6	843,7	470,6
3094	689,7	4,3	476,7	247,5	273,5	857,7	472,9
3095	690,5	4,2	478,7	248,5	274,2	870,4	475,6
3096	693,5	4,0	480,7	247,7	274,6	881,1	477,9
3097	696,7	3,8	482,8	247,9	274,9	890,0	480,5
3098	695,3	3,7	485,1	247,5	275,0	897,7	483,0
3099	694,8	3,5	487,3	248,5	275,1	904,3	485,5
3100	689,5	3,3	489,7	248,6	275,1	909,4	487,9
3101	692,0	3,2	492,0	247,8	275,1	913,4	490,2
3102	695,9	3,0	494,2	248,4	274,9	918,9	492,6
3103	701,8	2,9	496,4	248,1	274,6	924,7	495,1
3104	707,7	2,7	498,5	248,1	274,4	930,5	497,8
3105	713,5	2,6	500,6	247,6	274,5	935,8	500,1
3106	720,8	2,4	502,6	247,0	274,1	941,5	502,7
3107	721,9	2,2	504,5	248,3	273,9	946,8	504,7
3108	725,8	2,1	506,5	248,5	273,6	952,3	507,1
3109	728,6	1,9	508,7	248,2	273,3	958,1	509,4
3110	727,0	1,8	510,5	248,4	273,0	963,6	511,4
3111	720,3	1,7	512,6	248,9	272,7	967,4	513,4
3112	704,3	1,5	514,6	249,2	272,5	968,2	515,1
3113	685,7	1,4	516,6	249,9	272,6	965,9	516,9
3114	661,1	1,3	518,4	251,4	272,3	959,3	518,5
3115	640,2	1,2	520,4	252,1	272,3	945,8	519,9
3116	624,5	1,1	522,0	253,4	272,1	929,2	521,2
3117	609,4	1,0	523,7	253,1	272,3	911,7	522,0
3118	596,7	1,0	524,9	253,2	272,5	894,9	522,5
3119	585,9	0,9	526,2	254,1	272,4	878,7	522,8
3120	575,0	0,9	527,0	254,8	272,5	863,5	522,5
3121	561,6	0,8	527,7	253,7	272,7	847,0	522,2
3122	547,5	0,8	528,2	254,7	272,9	826,7	521,6
3123	533,6	0,8	528,5	254,9	273,2	803,8	520,4
3124	519,3	0,7	528,4	254,4	273,5	780,7	519,1
3125	505,6	0,7	528,1	255,4	273,8	757,5	517,6
3126	493,3	0,7	527,2	255,7	274,2	735,4	515,4
3127	482,8	0,6	526,1	256,0	274,7	714,2	513,0
3128	473,0	0,6	524,6	256,2	275,1	694,6	510,4
3129	464,3	0,6	522,6	255,6	275,3	676,1	507,4
3130	456,6	0,6	520,7	256,3	276,0	659,0	504,1
3131	449,4	0,6	518,3	256,9	276,4	643,2	500,7
3132	443,2	0,6	515,8	256,6	276,9	628,3	497,0

Piece Size (in):			Weight lbs	Meter Moisture Content Dry Uncorrected %
Thick	x Wide	x Length		
1,5	3,5	14,375		21
1,5	3,5	14,375		21
1,5	3,5	14,375		21
1,5	3,5	6,5		21
1,5	3,5	6,5		21
1,5	3,5	6,5		21
1,5	3,5	6,5	7,6	21

Piece Size (in):			Weight lbs	Meter Moisture Content Dry Uncorrected %
Thick	x Wide	x Length		
1,5	3,5	14,375	1,83	20,00
1,5	3,5	14,375	1,59	20,00
1,5	3,5	14,375	1,59	20,00

3133	437,7	0,5	513,0	257,2	277,6	614,7	493,3
3134	431,8	0,5	510,2	257,4	277,9	602,1	489,3
3135	426,3	0,4	507,0	257,4	278,7	590,2	485,4
3136	421,3	0,4	504,1	257,3	279,2	579,1	481,5
3137	417,0	0,4	500,9	257,1	279,8	568,9	477,5
3138	413,2	0,4	497,8	256,2	280,4	559,2	473,6
3139	409,1	0,4	494,5	255,7	280,6	550,2	469,8
3140	405,3	0,4	491,2	254,7	280,8	541,7	465,9
3141	401,8	0,3	488,0	255,0	281,4	533,8	462,1
3142	398,1	0,3	484,9	253,9	281,9	526,4	458,5
3143	394,5	0,3	481,8	253,7	282,4	519,3	454,9
3144	391,4	0,3	478,8	254,2	283,1	512,8	451,4
3145	388,6	0,2	475,5	253,5	283,5	506,4	448,0
3146	385,7	0,3	472,4	251,9	283,7	500,4	444,7
3147	385,4	0,2	469,3	252,1	284,0	494,8	441,4
3148	384,1	0,2	466,1	251,1	284,1	489,7	438,2
3149	381,8	0,2	462,8	250,3	284,6	485,3	435,5
3150	379,5	0,1	459,7	249,5	285,5	480,9	432,6
3151	376,3	0,2	456,5	248,5	285,6	476,7	429,9
3152	374,1	0,1	453,4	248,2	285,9	472,5	427,2
3153	371,6	0,1	450,5	247,5	286,7	468,4	424,4
3154	369,6	0,1	447,6	246,7	287,1	464,4	422,0
3155	367,5	0,1	444,7	245,9	287,5	460,2	419,6
3156	365,5	0,1	441,3	246,5	288,2	456,3	416,9
3157	363,6	0,0	438,5	245,6	288,3	452,6	414,6
3158	68,2	4,1	67,8	67,7	67,6	68,1	67,7
3159	223,6	4,0	67,8	67,7	67,6	69,2	67,7
3160	514,2	3,6	68,2	67,7	67,6	74,0	67,8
3161	728,5	3,4	69,4	68,1	67,6	93,3	68,0
3162	781,0	3,0	71,3	69,0	67,7	131,4	68,1
3163	752,5	2,8	74,8	70,5	67,9	184,6	68,3
3164	728,7	2,6	80,4	72,5	68,3	246,9	68,5
3165	685,5	2,4	87,8	75,0	69,0	310,7	68,6
3166	661,7	2,2	96,7	77,8	70,1	370,4	68,9
3167	643,8	2,1	106,4	80,8	71,4	424,3	69,0
3168	639,8	1,9	117,0	83,8	72,9	469,1	69,1
3169	627,7	1,8	128,3	86,9	74,7	506,4	69,3
3170	632,9	1,6	140,2	90,0	76,6	537,2	69,4
3171	639,4	1,3	152,6	93,1	78,8	564,8	69,5
3172	623,2	1,4	165,0	96,4	81,2	589,1	69,6
3173	603,8	1,3	177,4	99,5	83,9	608,6	69,7
3174	585,4	1,2	190,2	102,6	86,8	621,8	73,4
3175	573,4	1,1	202,5	105,6	90,1	629,6	72,7
3176	484,6	8,3	214,1	114,6	93,7	630,3	72,1
3177	452,1	8,1	225,9	115,8	97,7	615,1	72,0
3178	559,4	7,9	236,4	117,2	102,0	599,9	#####
3179	611,0	7,7	245,7	118,6	106,6	603,3	#####
3180	629,1	7,5	253,6	120,5	111,5	620,8	299,0
3181	677,8	7,4	261,0	122,5	116,0	642,2	305,4
3182	690,1	7,1	267,6	124,9	120,5	664,0	311,0
3183	626,5	6,9	274,2	127,9	124,7	674,9	317,4
3184	611,0	6,8	281,1	130,9	128,2	676,4	322,5
3185	629,9	6,6	287,9	133,7	131,5	676,3	328,7
3186	637,9	6,4	294,6	136,3	134,5	679,4	334,5
3187	634,9	6,3	301,4	138,9	137,1	684,6	340,1
3188	683,4	6,0	308,3	141,2	139,7	692,6	345,9
3189	685,3	5,9	315,0	143,6	142,3	703,8	351,2
3190	688,5	5,6	321,8	146,3	144,7	716,1	356,9
3191	686,1	5,4	328,3	148,7	147,1	727,2	363,3
3192	733,3	5,2	335,1	151,3	149,3	739,7	368,9
3193	759,7	5,0	341,6	153,9	151,5	754,2	374,6
3194	734,8	4,8	348,2	156,4	153,7	768,7	380,6
3195	802,1	4,6	354,9	158,9	155,9	783,5	386,5
3196	771,0	4,4	361,2	161,2	158,2	799,2	392,1
3197	790,2	4,2	367,8	164,0	160,2	813,5	397,8
3198	802,0	4,0	374,2	166,3	162,3	828,0	403,6
3199	841,0	3,8	380,4	168,7	164,9	839,9	408,8
3200	850,2	3,6	386,7	171,0	167,0	850,3	414,0
3201	851,7	3,4	392,3	174,1	169,6	860,7	419,0
3202	845,9	3,2	397,9	176,7	172,7	870,7	424,1
3203	842,7	3,0	403,2	179,3	175,0	880,4	429,3
3204	838,6	2,8	408,5	181,6	178,1	890,0	434,3
3205	835,3	2,6	413,8	184,2	181,1	898,4	439,2
3206	827,3	2,5	418,7	186,4	183,3	905,9	444,2
3207	809,7	2,3	423,8	189,5	186,5	912,2	449,0
3208	783,6	2,2	428,8	192,2	189,8	916,0	453,1
3209	758,2	2,1	433,5	194,3	192,7	918,3	456,9
3210	724,7	2,0	438,0	196,1	195,1	920,1	460,6
3211	694,9	1,9	442,6	199,1	198,5	917,9	463,4
3212	662,1	1,9	446,9	201,2	201,3	907,6	466,2
3213	634,2	1,8	450,9	203,8	204,8	890,0	468,7
3214	608,7	1,7	454,0	206,0	208,1	867,6	470,8
3215	589,7	1,7	457,0	208,1	212,2	842,9	472,4
3216	573,1	1,7	459,4	209,8	215,8	817,6	473,5
3217	558,3	1,6	461,6	211,9	219,0	793,0	474,2
3218	545,3	1,6	463,2	214,0	222,6	769,7	474,6
3219	535,5	1,6	464,8	216,1	227,4	748,5	474,1
3220	525,4	1,6	466,4	217,4	230,7	729,4	474,2
3221	515,8	1,6	467,2	218,8	234,8	711,8	473,8
3222	505,7	1,5	467,9	220,5	239,3	695,7	473,3
3223	494,7	1,5	468,2	222,7	244,1	680,3	472,6
3224	486,5	1,4	468,3	223,9	248,4	665,7	471,8
3225	480,0	1,4	468,5	225,3	253,1	651,9	470,7
3226	473,9	1,4	468,5	227,1	257,7	639,0	469,5
3227	470,2	1,4	468,3	228,5	262,3	627,0	468,1
3228	466,5	1,3	467,7	229,4	266,7	616,0	467,0
3229	350,2	6,3	466,6	255,1	271,6	603,5	466,6
3230	365,9	6,2	466,4	246,6	274,1	582,7	466,7

kindling

Piece Size (in):			Weight lbs	Meter Moisture Content Dry Uncorrected %
Thick	x Wide	x Length		
1,5	3,5	14,375		21
1,5	3,5	14,375		21
1,5	3,5	14,375		21
1,5	3,5	6,5		21
1,5	3,5	6,5		21
1,5	3,5	6,5	7,11	21

Piece Size (in):			Weight lbs	Meter Moisture Content Dry Uncorrected %
Thick	x Wide	x Length		

3231	371,4	6,1	466,6	245,0	278,0	560,6	465,7
3232	386,7	6,1	465,3	243,4	283,2	539,2	463,3
3233	458,8	5,9	462,7	240,1	286,7	522,2	460,2
3234	517,5	5,8	458,7	238,4	289,6	515,2	456,1
3235	557,6	5,6	455,3	236,8	292,4	519,2	451,8
3236	573,5	5,5	451,8	236,6	296,6	533,1	448,1
3237	580,4	5,3	448,9	237,0	298,6	551,2	444,8
3238	585,5	5,2	446,8	235,6	300,1	570,4	442,3
3239	593,8	5,0	445,2	234,6	301,0	589,1	440,8
3240	600,1	4,9	444,0	236,5	303,1	607,4	439,4
3241	604,0	4,7	444,0	235,4	303,9	624,7	439,4
3242	606,0	4,5	444,4	234,4	304,9	640,3	439,5
3243	607,8	4,4	444,7	235,8	305,6	654,1	440,0
3244	613,3	4,2	445,7	234,9	306,4	666,7	441,3
3245	614,4	4,1	447,1	234,2	306,6	678,2	442,7
3246	616,4	3,9	448,7	234,0	306,7	689,3	444,6
3247	620,1	3,8	450,3	233,6	306,8	700,1	446,5
3248	625,2	3,6	452,5	233,8	307,3	710,7	448,5
3249	632,5	3,4	454,4	232,6	307,2	721,6	450,8
3250	638,9	3,4	456,3	233,3	307,1	733,1	452,6
3251	646,7	3,2	458,7	232,7	307,0	745,2	455,0
3252	653,8	3,0	461,0	232,0	306,3	757,9	457,3
3253	659,0	2,9	463,8	231,7	306,2	771,1	459,9
3254	663,1	2,7	466,4	231,6	305,8	784,0	462,7
3255	666,2	2,6	469,0	232,2	305,4	796,3	465,3
3256	670,5	2,4	471,9	232,3	305,3	808,1	467,9
3257	670,2	2,2	474,8	232,1	305,1	821,4	470,8
3258	663,5	2,1	477,8	232,7	305,1	833,5	474,3
3259	654,9	2,0	480,7	233,4	304,6	842,2	478,5
3260	651,2	1,8	483,7	233,7	304,8	849,1	483,0
3261	647,1	1,7	486,5	234,4	304,8	855,3	487,9
3262	642,4	1,6	489,4	234,8	304,8	859,7	492,8
3263	635,7	1,4	492,4	236,0	304,4	863,1	497,3
3264	630,6	1,3	495,4	237,0	304,9	865,1	501,6
3265	625,5	1,2	498,4	238,3	305,2	866,6	505,4
3266	613,2	1,2	501,4	239,5	305,0	865,8	509,0
3267	598,5	1,1	504,1	240,6	305,1	858,8	511,9
3268	580,4	1,0	506,8	241,5	305,6	845,9	514,3
3269	561,8	1,0	509,2	242,7	305,3	828,7	516,0
3270	553,6	1,0	511,3	244,4	305,9	809,6	516,9
3271	540,5	0,9	512,8	245,1	305,9	790,7	517,0
3272	527,2	0,9	513,9	245,8	306,0	771,1	516,6
3273	514,1	0,8	514,4	248,3	306,8	751,1	515,2
3274	502,9	0,8	514,7	248,2	306,7	730,7	513,6
3275	490,2	0,8	514,4	249,1	307,2	710,8	511,5
3276	479,9	0,8	513,6	250,3	307,2	691,4	509,1
3277	471,4	0,8	512,8	250,8	307,9	673,1	506,2
3278	464,3	0,8	511,5	251,6	307,8	656,0	503,2
3279	457,2	0,7	510,1	251,4	307,9	640,4	500,3
3280	451,3	0,7	508,2	251,9	308,3	625,9	496,9
3281	446,2	0,7	506,0	252,0	308,9	612,4	493,3
3282	441,8	0,6	503,7	253,0	308,8	600,1	489,6
3283	437,1	0,6	501,5	252,4	309,3	588,6	486,1
3284	434,1	0,6	499,1	252,7	309,9	578,0	482,4
3285	430,2	0,6	496,2	252,7	309,9	568,3	478,7
3286	426,4	0,5	493,7	252,6	310,5	559,2	475,0
3287	423,1	0,5	490,9	252,8	310,6	550,8	471,4
3288	419,9	0,5	488,1	252,1	311,1	542,9	468,0
3289	417,4	0,5	485,2	252,7	311,7	535,5	464,4
3290	414,1	0,5	482,6	251,9	311,4	528,5	461,0
3291	411,2	0,5	479,7	252,3	312,4	522,0	457,6
3292	408,6	0,4	476,9	251,8	312,8	515,8	454,4
3293	405,8	0,4	474,1	251,5	313,1	509,9	450,9
3294	403,4	0,4	471,4	251,4	313,3	504,3	447,9
3295	400,6	0,3	468,6	251,3	313,5	499,0	445,0
3296	399,0	0,3	465,8	250,5	313,3	493,9	442,2
3297	396,1	0,3	462,9	251,3	314,0	489,1	439,2
3298	393,6	0,2	460,4	250,1	314,0	484,4	436,4
3299	391,3	0,3	457,6	250,0	314,1	480,0	433,7
3300	389,2	0,2	455,0	249,0	313,8	475,6	431,1
3301	387,0	0,2	452,3	249,0	313,8	471,3	428,3
3302	385,2	0,2	449,8	248,5	314,4	467,1	425,9
3303	383,5	0,2	447,2	249,6	314,5	463,2	423,5
3304	381,4	0,1	444,7	247,2	314,5	459,2	421,1
3305	379,8	0,1	442,2	247,3	314,2	455,6	418,9
3306	380,1	0,1	439,8	247,5	314,8	451,9	416,3
3307	379,5	0,1	437,5	246,5	314,6	448,7	414,1
3308	378,8	0,0	435,2	245,4	314,6	445,5	412,0

1,5	3,5	14,375	1,51	20,00
1,5	3,5	14,375	1,44	20,00
1,5	3,5	14,375	1,91	20,00

APPENDIX 5: Participants

Danick Power ing.
v-p operation
Services Polytests inc.
450.741.3636
www.polytests.com

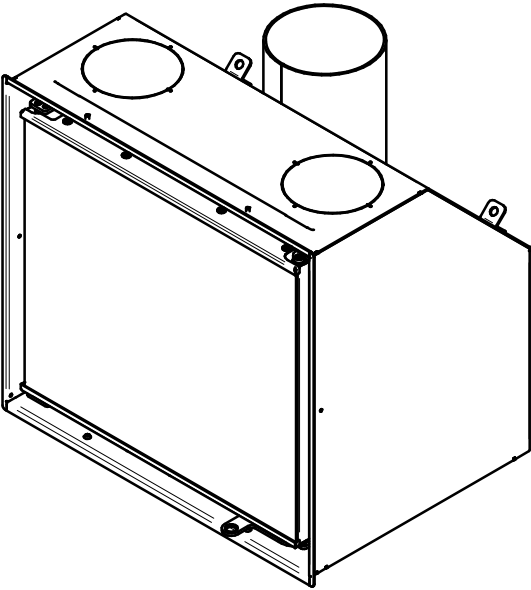
Maxime Martin
Technicien
Services Polytests inc.
450.741.3636
www.polytests.com

APPENDIX 6: Drawings and specifications

Description:

- seperate combustion air inlet Ø125mm; orientation backward or downward
- exhaust dome Ø150mm; orientation backward or upward
- adjustable leveling feet 10-20mm
- swing door with stop right or left
- firebox lining: fireclay or vermiculite

Spartherm-600 S-INSERT-P6



general tolerances
applicable for all single
drawings

Nominal size:	<=6	>6-30	>30-120	>120-400	>400-1000	>1000-2000	>2000-4000
Dimensions:	±0,2	±0,3	±0,5	±0,8	±1,2	±2,0	±3,2
Nominal size of the shorter side:	<=10	>10-50	>50-120	>120-400	>400		
Dimensions [angular minute]:	±60	±30	±20	±10	±5		
Dimensions [mm on 100 mm]:	±1,8	±0,9	±0,6	±0,3	±0,15		

				No. of substitute character:			Designation:			 Maschweg 38; D-49324 Melle tel. 0 54 22/94 410; fax 0 54 22/94 41 14
				Substituted by:			Drawings			
				Material: main material: DC01 (1.0330) DIN EN 10130			Assembly:			
					Name	Date	Kassette - series			
				Drawn:		06.11.2024	Product:			
No	Modifications	Name	Date	Tested:			Spartherm-600 S-INSERT-P6			
Filename.: S600-P6.2.0.00.00-FULL.asm				Gen.:						
Dft - Filename.: 29-2024-740-030.011 Spartherm-600 S-INSERT-P6.dft				Format:	Page: 1	Mass:	Drawing-No.: 29-2024-740-030.011			
Dxf - Filename.:					A4	of: 16				

APPENDIX 7: Operator's manual



INSTALLATION AND OPERATING INSTRUCTIONS

MASONRY INSERT-600

FR · MANUEL D'INSTALLATION ET D'UTILISATION · INSERTS EN MAÇONNERIE 600

INTRODUCTION AND UNIT DESCRIPTION SPARTHERM INSERT-600.

PLEASE READ THIS ENTIRE MANUAL BEFORE YOU INSTALL YOUR INSERT-600.

PLEASE READ THE MANUAL FOR OPERATING INSTRUCTIONS AND HOW TO BURN THE FIRE THAT YOU HAVE A CLEAN AND EFFICIENT FIRE.

FAILURE TO FOLLOW INSTRUCTIONS MAY RESULT IN PROPERTY DAMAGE, BODILY INJURY, OR EVEN DEATH.

Save this manual and keep it in a safe place that it is easy to refer to it.

"DO NOT INSTALL IN A MOBILE HOME"

WARNING: DO NOT OVERFIRE.

IF THE STOVE TOP OR CHIMNEY OR CONNECTOR GLOW RED, YOU ARE OVERFIRING!
THIS IS DANGEROUS AND WILL VOID THE WARRANTY.

This insert has a manufacturer-set minimum low burn rate that must not be altered. It is against federal regulations to alter this setting or otherwise operate this wood heater in a manner inconsistent with operating instructions in this manual.

This range of inserts/stoves/zero clearance inserts have been tested by...

POLYTEST –
Polytests Services Inc.
695 B rue Gaudette,
St-Jean-sur-Richelieu
Québec, Canada, J3B 7S7
450.741.3636
www.polytests.com

AND ARE LISTED TO UL1482-2011 AND ULCS628-93.

THEY ARE ALSO EPA CERTIFIED – U.S. ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 particulate emission standards using CRIB WOOD. 600 insert 1.8 g/hr WARRANTY.

PLEASE REFER TO WARRANTY CONDITIONS IN THE MANUAL.

"U.S. ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 particulate emission standards using crib wood.

SAFETY INFORMATION



WARNING

IF THE INFORMATION IN THESE INSTRUCTIONS IS NOT FOLLOWED EXACTLY, A FIRE OR EXPLOSION MAY RESULT CAUSING PROPERTY DAMAGE, PERSONAL INJURY OR DEATH. IMPROPER INSTALLATION, ADJUSTMENT, ALTERATION, SERVICE OR MAINTENANCE CAN CAUSE INJURY OR PROPERTY DAMAGE, BODILY INJURY OR EVEN DEATH. PLEASE READ ENTIRE MANUAL BEFORE YOU INSTALL AND USE YOUR APPLIANCE. THIS APPLIANCE HAS NOT BEEN TESTED WITH AN UNVENTED GAS LOG SET. TO REDUCE RISK OF FIRE OR INJURY, DO NOT INSTALL AN UNVENTED GAS LOG SET INTO THE APPLIANCE..

- This appliance can be very hot when burning.
- Combustible materials such as firewood, wet clothing, etc. placed too close can catch fire.
- Children and pets must be kept from touching the appliance when it is hot.
- The chimney must be sound and free of cracks. Before installing this unit, contact the local building or fire authority and follow their guidelines.
- Operate only with the door tightly closed.
- Do not use an elevated grate or otherwise raise the fire.
- At least 14 square inches (90,3 square centimeters) of outside air must be admitted to the room or directly to the unit through a 5" (127 mm) diameter pipe. Failure to provide this may starve other fuel burning appliances from an adequate air supply.
- Make sure not to create negative pressure in the installation room, e.g. by means of an exhaust fan or similar mechanical blower, as this could affect

the combustion of the wood insert or increase the possibility of smoke leakage.

- This appliance is designed to burn natural wood only. Higher efficiencies and lower emissions generally result when burning air dried seasoned hardwoods, as compared to softwoods or to green or freshly cut hardwoods.
- Do not burn green or freshly cut wood.
- Do not start a fire with chemicals or fluids such as gasoline, engine oil, etc.
- Do not burn treated wood, coal, charcoal, colored paper, cardboard, solvents or garbage.
- Do not let the appliance become hot enough for any part to glow red.
- KEEP THE STOVE TOP TEMPERATURE BELOW 700°F (371°C). Attempts to achieve heat output rates that exceed design specifications can result in steel distortion and damage.



WARNING

**HOT GLASS WILL CAUSE BURNS.
DO NOT TOUCH GLASS UNTIL COOLED.
NEVER ALLOW CHILDREN TO TOUCH GLASS.**

NOTICE

DO NOT DISCARD THIS MANUAL

- IMPORTANT OPERATING AND MAINTENANCE INSTRUCTIONS INCLUDED.
- READ, UNDERSTAND AND FOLLOW THESE INSTRUCTIONS FOR SAFE INSTALLATION AND OPERATION.
- LEAVE THIS MANUAL WITH PARTY RESPONSIBLE FOR USE AND OPERATION.

Safe Wood-Burning Practices

When using your wood burning appliance, follow these guidelines for safe operation:

Keep flammable items, like curtains, furniture, newspapers, and books, away from your appliance.

Only use newspaper, dry kindling and all-natural or organic fire starters. Never start a fire with gasoline, kerosene, or charcoal starter.

Do not burn wet or green (unseasoned) wood.

Many wax and sawdust logs are made for open hearth wood insert only. Check your wood stove or wood insert operating instructions before using artificial logs.

If you use manufactured logs, choose those made from 100 percent compressed sawdust.

Build hot fires. For most appliances, a smoldering fire is not safe or efficient.

Keep the doors of your wood-burning appliance closed unless loading or stoking the live fire. Harmful chemicals, like carbon monoxide, can be released into your home.

Regularly remove ashes into a covered, metal container. Store the container outdoors on a nonflammable surface.

Keep a fire extinguisher handy.

Do not burn:

1. Garbage
 2. Lawn clippings or yard waste
 3. Materials containing rubber, including tires
 4. Materials containing plastic
 5. Waste petroleum products, paints or paint thinners, or asphalt products
 6. Materials containing asbestos
 7. Construction or demolition debris
 8. Railroad ties or pressure-treated wood
 9. Manure or animal remains
 10. Salt water driftwood or other previously salt water saturated materials
 11. Unseasoned wood
 12. Paper products, cardboard, plywood, or particleboard.
- The prohibition against burning these materials does not prohibit the use of fire starters made from paper, cardboard, saw dust, wax and similar substances for the purpose of starting a fire in an affected wood heater. Burning these materials may result in release of toxic fumes or render the heater ineffective and cause smoke.

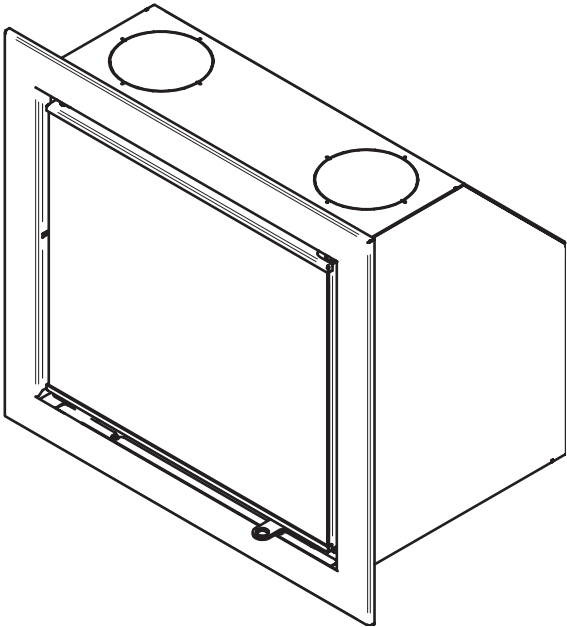
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SPECIFICATIONS MASONRY INSERT-600:

1. INSTALLATION OVERVIEW

	Spartherm Masonry Insert-600
Weight of Insert	149 lbs (67.5 kg)
Insert exterior: Width/depth/height (inches)	W 23" I D 16" 1/8" I H 21" 1/2"
Recommended amount of wood when fueling (lbs/kg) wood: 2-3 logs of wood of app. 18-21" / 46-53cm	1.8 kg/hr
Intermittent operation:	
Single wall connector stove pipe:	6"/153 mm
Chimney pipe - class A. UL-103 HT:	6"/153 mm
Optimal thermal output:	22,000 BTU
Min. /Max. output (kW):	20,345 -21,299 BTU/hr
Tested EPA emission particulate rate:	1.8 g/hr



2. INTRODUCTION



The Spartherm masonry insert have been tested and certified by CSA based on the following standards: UL 127 / ULCS628. EPA: U.S.ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 emission standards using crib wood. Before installing your Spartherm masonry insert, PLEASE NOTE: THE LOCAL AUTHORITY HAVING JURISDICTION (MUNICIPAL BUILDING DEPARTMENT, FIRE PREVENTION BUREAU, ETC) SHOULD BE CONSULTED BEFORE INSTALLATION TO DETERMINE THE NEED TO OBTAIN A PERMIT. Please read this manual carefully before installing or using your masonry insert. Incorrect installation may result in fire. To reduce the risk of fire, follow the installation instructions. Failure to do so may result in property damage, bodily injury or even death. Keep this manual handy so you can refer to it whenever necessary.



WARNING

- THIS APPLIANCE IS HOT WHEN OPERATED AND CAN CAUSE SEVERE BURNS IF CONTACTED.
- ANY CHANGES OR ALTERATIONS TO THIS APPLIANCE OR ITS CONTROLS CAN BE DANGEROUS AND IS PROHIBITED:
- Do not operate appliance before reading and understanding operating instructions. Failure to operate appliance according to operating instructions could cause fire or injury.
- Before installing this appliance, contact the local building or fire authority and follow their guidelines.
- This appliance must be installed by a qualified installer.
- Do not use a wood insert or other product not specified for use with this wood insert.
- Risk of burns. The appliance should be turned off and cooled before servicing.
- Do not operate without fully assembling all components.
- Risk of cuts and abrasions. Wear protective gloves and safety glasses during installation. Sheet metal edges may be sharp.
- Children and adults should be alerted to the hazards of high surface temperature and should stay away to avoid burns or clothing ignition.
- Young children should be carefully supervised when they are in the same room as the appliance. Toddlers, young children and others may be susceptible to accidental contact burns. A physical barrier is recommended if there are at risk individuals in the house. To restrict access to an appliance or stove, install an adjustable safety gate to keep toddlers, young children and other at risk individuals out of the room and away from hot surfaces.
- Clothing or other flammable material must not be placed on or near the appliance. Objects placed in front of the appliance must be kept a minimum of 48" (1220 mm) away from the front face of the appliance.
- Due to high temperatures, the appliance should be located out of traffic and away from furniture and draperies.
- Ensure you have incorporated adequate safety measure to protect infants/toddlers from touching hot surfaces.
- Even after the appliance is out, the glass and/or screen will remain hot for an extended period of time.
- Check with your local hearth specialty dealer for safety screens and hearth guards to protect children from hot surfaces. These screens and guards must be fastened to the floor.
- Any safety screen or guard removed for servicing must be replaced prior to operating the appliance.
- Under no circumstances should this appliance be modified.
- This appliance must not be connected to a chimney flue pipe servicing a separate solid fuel burning appliance.
- Do not operate the appliance with glass door removed, cracked or broken. Replacement of the glass should be done by a licensed or qualified service person.
- Do not strike or slam shut the appliance glass door.
- Only doors / optional fronts certified with the unit are to be installed on the appliance.
- Keep the packaging material out of reach of children and dispose of the material in a safe manner. As with all plastic bags, these are not toys and should be kept away from children and infants.
- If the appliance is not properly installed, a house fire may result. Do not expose the appliance to the elements (e.g. rain, etc.) and keep the appliance dry at all times. Wet insulation will produce an odour when the appliance is used.
- The chimney must be sound and free of cracks. Clean your chimney a minimum of twice a year and as required.
- Do not start a fire with chemicals or fluids such as gasoline, engine oil, etc.
- Your appliance requires periodic maintenance and cleaning. Failure to maintain your appliance may lead to smoke spillage in your home.
- Lower emissions generally result when burning air dried seasoned hardwoods, as compared to softwoods or too green or freshly cut hardwoods. Burning wet unseasoned wood can cause excessive creosote accumulation. When this is ignited it can cause a chimney fire that may result in a serious house fire.
- This appliance is designed to burn natural wood only. Do not burn treated wood, coal, charcoal, coloured paper, cardboard, solvents or garbage.
- Burn wood directly on the refractory bricks. Do not elevate grate or otherwise raise the fire.
- Do not store wood within appliance installation clearances or within the space required for re-fueling and ash removal.
- Ashes must be disposed in a metal container with a tight lid and placed on a non-combustible surface well away from the home or structure until completely cool.
- Ensure clearances to combustibles are maintained when building a mantel or shelves above the appliance. Elevated temperatures on the wall or in the air above the appliance can cause melting, discoloration or damage to decorations, a T.V. or other electronic components.
- Do not install this wood insert in a factory- built wood insert unless certified with the wood insert.

2.1 EXAMPLE OF IDENTIFICATION PLATE

Safety Information

Listed by / Manufactured by:
Spartherm Feuerungstechnik GmbH
Maschweg 38
GER – 49324 Melle, Germany
info@spartherm.com


US
Energy certified

Solid Fuel Room Heater – For Use with Solid Wood Fuel only
Tested to Standards: UL-1482-11, ULC-S628 M93,
U.S. Environment Protection Agency: Certified to comply with 2020
Particulate emission standards using crib wood: emission rate 1.8 g/hr
Model: Spartherm Cassette 600 Insert
Date of Manufacture
Month/Year: 09/2024
Serial Number S 600 Insert - 014

TO PREVENT HOUSE FIRES:
Contact local building or fire officials about restrictions and installation inspection in your area. Install and use only in accordance with manufacturer's installation and operating instructions and local codes. In the absence of any local codes, installation must meet minimum requirements of NFPA 211 in the USA, and B365 in Canada. Refer to manufacturer's instructions and local codes for precautions required for passing a chimney through a combustible wall or ceiling. Inspect and clean chimney system frequently in accordance with manufacturer's instruction. Do not connect this insert to a chimney flue serving another appliance. Do not use grate or elevate fire. Build wood fire directly on hearth. This fireplace insert must be installed with a continuous chimney liner of 6 or 7 inches diameter extending from the fireplace insert to the top of the chimney. The chimney liner must conform to the Class 3 requirements of CAN/ULC-S635, Standard for Lining Systems for Existing Masonry or Factory-Built Chimneys and Vents, or CAN/ULC-S640, Standard for Lining Systems for New Masonry Chimneys.
TO PREVENT CREOSOTE FIRES:
Inspect and clean chimney frequently - under certain conditions of use, creosote buildup may occur rapidly. Do not use fuels other than firewood.
CAUTION: Only operate the wood heater with the doors fully closed. Replace glass only with original 4 mm thick ceramic glass. Areas of the fireplace incorporating warm or cold air ducts shall be enclosed in accordance with the manufacturer's installation instructions. If provided with a hearth extension, the hearth extension must be installed according to the installation instructions! Air is needed for fireplace operation! At least 14 square inches (90.3 square centimeters) of outside air must be admitted to the room or directly to the unit through a 4" (101.6mm) diameter pipe. Failure to provide this may starve other fuel burning appliances from an adequate air supply. Do not obstruct air inlet and outlet in any case. Components used with fireplace must be listed. See manual. Do not use a fireplace insert or other products not specified for use with this product.
CAUTION: Gas logs shall be certified for the application. This unit is not designed to burn with a log set.
This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against federal regulations to operate this wood heater in a manner inconsistent with the operating instructions in the owner's manual.

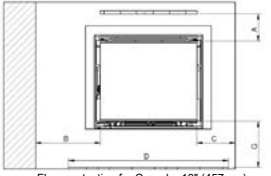
Informations Sur La Sécurité

Listée par / Fabriqué par:
Spartherm Feuerungstechnik GmbH
Maschweg 38
GER – 49324 Melle, Germany
info@spartherm.com

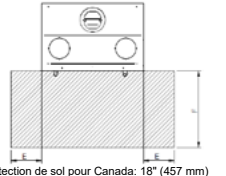

US
Energy certified

Appareil de Chauffage à combustion solides
Testé aux Normes: UL-1482-11, ULC-S628 M93,
U.S. Environment Protection Agency: Certified to comply with 2020
Particulate emission standards using crib wood: emission rate 1.8 g/hr
Model: Spartherm Cassette 600 Insert
Date de Fabrication:
Mois/Année: 09/2024
No de Serie: S 600 Insert - 014

POUR EVITER LES INCENDIES DOMESTIQUES:
Inspection dans votre région. Installez et utilisez uniquement conformément aux instructions d'installation et d'utilisation du fabricant et aux codes locaux. En l'absence de codes locaux, l'installation doit répondre aux exigences minimales de NFPA 211 aux Etats-Unis et de B365 au Canada. Reportez-vous aux instructions du fabricant et aux codes locaux pour connaître les précautions nécessaires pour faire passer une cheminée à travers un mur ou un plafond combustible. Inspectez et nettoyez fréquemment le système de cheminée conformément aux instructions du fabricant. Ne raccordez pas cet insert à un conduit de cheminée desservant un autre appareil. Ne pas utiliser de grille ou élever le feu. Faites du feu de bois directement sur le foyer. Cet insert de foyer doit être installé avec une doublure de cheminée continue de 6 ou 7 pouces de diamètre s'étendant de l'insert de cheminée jusqu'au sommet de la cheminée. Le revêtement de cheminée doit être conforme aux exigences de classe 3 de CAN / ULC-S635, Norme pour les systèmes de revêtement pour maçonnerie existante ou cheminées et événements construits en usine, ou CAN / ULC-S640, Norme pour les systèmes de revêtement pour les nouvelles cheminées de maçonnerie.
POUR EVITER LES FEUX DE CREOSOTE :
Inspectez et nettoyez la cheminée régulièrement - Sous certaines conditions d'emploi, la creosote peut s'accumuler rapidement. Ne pas utiliser d'autres combustibles que le bois.
ATTENTION: N'utilisez le poêle que lorsque les portes sont complètement fermées. Remplacer la vitre uniquement avec du verre Robax céramique de 4 mm. Il faut que les zones du foyer vitré qui portent les canaux d'alimentation d'air chaud et froid soient conformes à l'instruction de montage du fabricant. L'approvisionnement en revêtement fait de matériaux ininflammables devant l'ouverture du foyer vitré doit être installé conforme à l'instruction de montage du fabricant. L'aération suffisante pour l'utilisation du foyer est nécessaire! Dans l'emplacement du foyer vitré, il faut assurer au moins 14 pouces carrés (90,3 centimètres carrés) de l'air de dehors ou il faut assurer l'alimentation en air de combustion directe au foyer vitré par une tube d'un diamètre de 4 pouces carré (101,6mm). Un manque d'air d'appoint pourrait priver les autres appareils de combustion d'une alimentation d'air adéquate. Ne pas obstruer les entrées et sorties d'air en aucun cas. Les composantes utilisées dans l'appareil doivent être répertoriées. Voir manuel. N'utilisez pas d'insert de cheminée ou autres produits qui ne sont pas autorisés pour l'usage de ce produit.
ATTENTION: Ce poêle à bois n'est pas conçu pour brûler avec un bûche à gaz. Ce foyer vitré à bois doit être entretenu et réparé à intervalles réguliers pour assurer un fonctionnement correct. Veuillez consulter s.v.p. pour de plus amples informations les instructions du fabricant. Il est contraire aux dispositions de l'autorité d'exploiter ce foyer vitré à bois incompatible au manuel du fabricant.



Floor protection for Canada: 18" (457mm)



Protection de sol pour Canada: 18" (457 mm)
de l'avant de l'appareil au bord de la protection.

MINIMUM CLEARANCES TO COMBUSTIBLE MATERIALS
A. 7.25" / 184mm
B. 15" / 381mm
C. 15" / 381mm
D. Unit width and add 8" / 203mm on each side
E. 8" / 203mm on each side
F. For USA: 16" / 406mm For Canada 18" / 457mm
IN FRONT OF UNIT G. 9.25" / 235mm
* Recommended amount of wood: 1,8 kg/hr
Min. / Max. output (kW): 20,345 BTU/hr

ECARTEMENT MINIMUM AUX MATERIAUX COMBUSTIBLES
A. 7.25" / 184mm
B. 15" / 381mm
C. 15" / 381mm
D. Unité largeur et ajouter 8" / 203mm de chaque côté
E. 8" / 203mm de chaque côté
F. Pour les USA: 16" / 406mm Pour le Canada 18" / 457mm
DEVANT L'APPAREIL G. 9.25" / 235mm
Quantité de bois recommandée: 1,8 kg/hr
Min. / Max sortie (kW): 20,345 BTU/hr

* **Not Tested** - NFPA Guidelines in the USA, CAN/CSA B365-M91 in Canada. Floor protection must be minimum 3/8-inch non-combustible material extending beneath the stove, and to the front and sides from door opening and to the rear as indicated.

C A U T I O N:
HOT WHILE IN OPERATION. DO NOT TOUCH.
KEEP CHILDREN AND CLOTHING AWAY.
CONTACT MAY CAUSE SKIN BURNS. SEE NAME PLATE
AND INSTRUCTIONS. KEEP FURNISHINGS AND OTHER
COMBUSTIBLE MATERIALS A CONSIDERABLE
DISTANCE AWAY FROM THE APPLIANCE.
NOT SUITABLE FOR MOBILE HOME INSTALLATION.
DO NOT OVERFIRE – IF HEATER OR CHIMNEY CONNECTOR
GLOWS, YOU ARE OVERFIRING.



* **Non testé** - Exigences NFPA aux Etats-Unis, CAN/CSA B365-M91 au Canada. La protection de sol doit avoir une épaisseur de 3/8 pouces (1 cm), être d'un matériau non combustible et être placée devant et à côté de la porte ainsi qu'à l'arrière, comme indiqué.

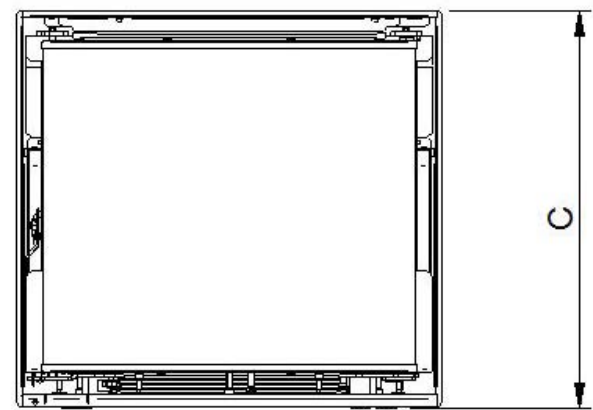
A T T E N T I O N:
CHAUD PENDANT LE FONCTIONNEMENT – NE PAS TOUCHER.
TENIR ÉLOIGNÉS LES ENFANTS ET LES VÊTEMENTS –
LE CONTACT PEU CAUSER DES BRULURES. CONSULTEZ
LA PLAQUE D'IMMATRICULATION ET LES INSTRUCTIONS.
TENIR LES FOURNITURES ET AUTRES MATIERES
COMBUSTIBLES À DISTANCE DE L'APPAREIL.
NE PAS INSTALLER DANS UNE MAISON MOBILE.
EVITER DE SURCHAUFFER – SI LE FEU OU LA CHEMINÉE
DEVIENT ROUGE, VOUS SURCHAUFFEZ.

DO NOT REMOVE THIS LABEL

NE PAS ENLEVER CETTE ETIQUETTE

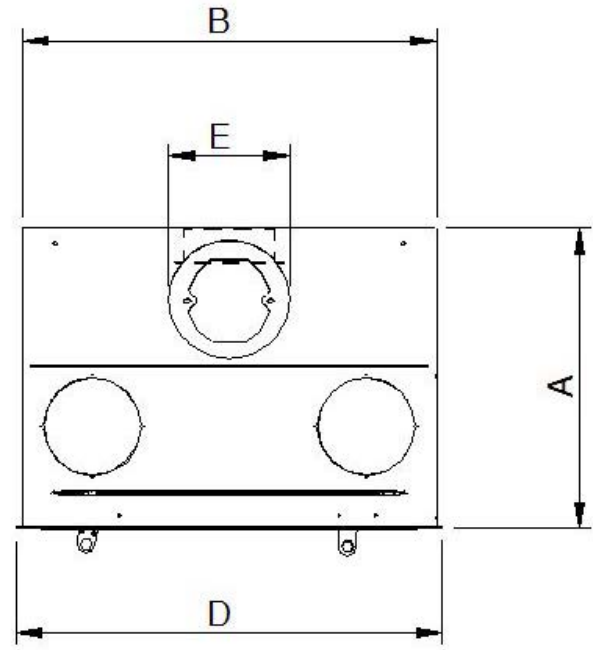
6

2.2 DIMENSIONS



	Insert-600
A	16 1/8" / 410 mm
B	22 5/16" / 566 mm
C	21 1/2" / 544 mm
D	23" / 582 mm
E	6"

AVAILABLE FRAME FINISHES
60 MM - 2 3/8"
80 MM - 3 1/8"
100 MM - 3 15/16"



2.3 SPECIFICATION

Conversion Factors

	Fire chamber volume	Minimum Power	Maximum power	Efficiency*	Chimney type	Unit weight	ideal fuel size
Insert-600	0,95 ft³	20345 BTU/hr	21.299 BTU/hr	62 %	6"	1490 livres	17"

Inches to millimeters (mm): 1" = 25.4 mm

British Thermal Unit BTU/hr to Watt:
1BTU/hr = 0.293 Watt

Kilogramm to Pound: 1kg = 2.205 lbs

Cubicmeter to cubicfeet:
1m³ = 35.314 ft³

CAUTION:

These masonry inserts are not certified for gas log sets.

DO NOT CONNECT THIS APPLIANCE TO A CHIMNEY FLUE SERVING ANOTHER APPLIANCE.

THIS APPLIANCE AND THE COMPONENTS ARE DESIGNED TO BE INSTALLED AND OPERATED AS A SYSTEM. ANY ALTERATION TO OR SUBSTITUTION FOR ITEMS IN THIS SYSTEM, UNLESS ALLOWED BY THESE INSTALLATION INSTRUCTIONS, WILL VOID THE LISTING AND MAY VOID THE PRODUCT WARRANTY. IT MAY ALSO CREATE A HAZARDOUS INSTALLATION. READ THROUGH THESE INSTRUCTIONS THOROUGHLY BEFORE STARTING YOUR INSTALLATION AND FOLLOW THEM CAREFULLY THROUGHOUT YOUR PROJECT.

2.4 GENERAL INSTRUCTIONS



THIS APPLIANCE HAS NOT BEEN TESTED WITH ANY VENTED OR UNVENTED GAS LOG SET: TO REDUCE RISK OF FIRE OR PREVENT INJURY, DO NOT INSTALL A VENTED OR UNVENTED GAS LOG SET INTO THE APPLIANCE.

- Before beginning your installation, consult with your local building code agency or fire officials and insurance representative to ensure compliance.
- Non-toxic smoke will be emitted during the paint curing process, to help dissipate the smoke open a window near the appliance.
- Remove any dust or debris off the top of the appliance before firing the appliance as the paint will become soft as the appliance heats up and will harden as the appliance cures. To cure the paint on your appliance burn your appliance moderately hot during the first few fires.
- To keep the gasket from sticking to the appliance as the paint is curing, periodically open the door every 5-10 minutes.

2.5 GENERAL INFORMATION

- The chimney vent system used on your wood burning appliance should be designed with the

least amount of restriction possible to enable the exhaust products to easily flow through it. Chimney vent systems that are too short or too long (refer to point see "4.3 Chimney liner installation") can also have an adverse affect on the flow of exhaust through it. The wood burning appliance and chimney vent system also require a sufficient supply of combustion air not only to support the combustion in the combustion chamber but to replace the exhaust leaving it so it can flow freely up through the vent system and out into the atmosphere. It is the correct balance of combustion air and the chimney vent system that will ensure the appliance provides you with its optimum performance.

- Be sure to provide sufficient combustion air. There are many other appliances in your home competing for air such as a kitchen range hood, forced air heating devices or a bathroom exhaust fan.

Expansion / contraction noises during heating up and cooling down cycles are normal and to be expected.

After extended periods of non-operation such as following a vacation or a warm weather season, the appliance may emit a slight odour for a few hours. This is caused by dust particles on the firebox burning off. Open a window to sufficiently ventilate the room.

CALIFORNIA PROP 65 WARNING:

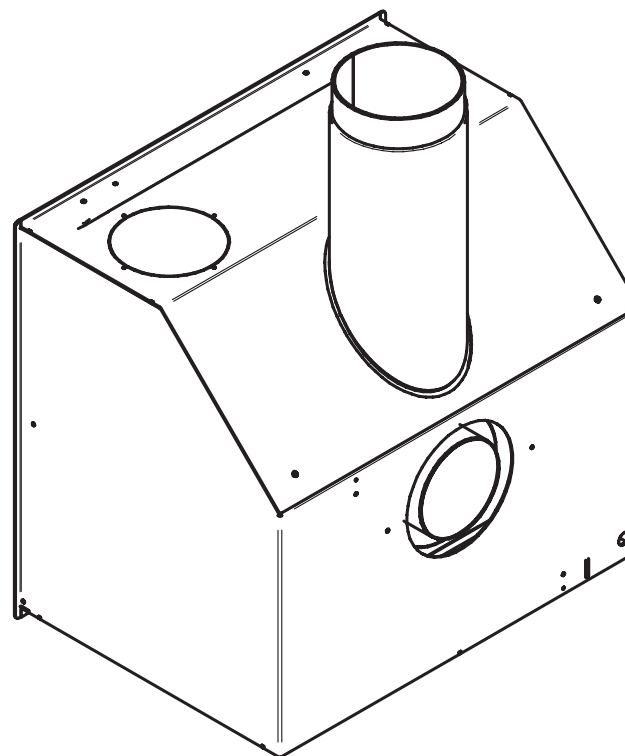
Use of this product may produce smoke which contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

If you experience smoking problems, you may need to open a door, a window or otherwise provide some method of supplying combustion air to the appliance.

2.6 COMBUSTION AIR

When mounting the air system ensure that the air control system provides fresh air from the outside.

Masonry Insert-600 combustion air intake



**NATIONAL
FIREPLACE
INSTITUTE®**



CERTIFIED

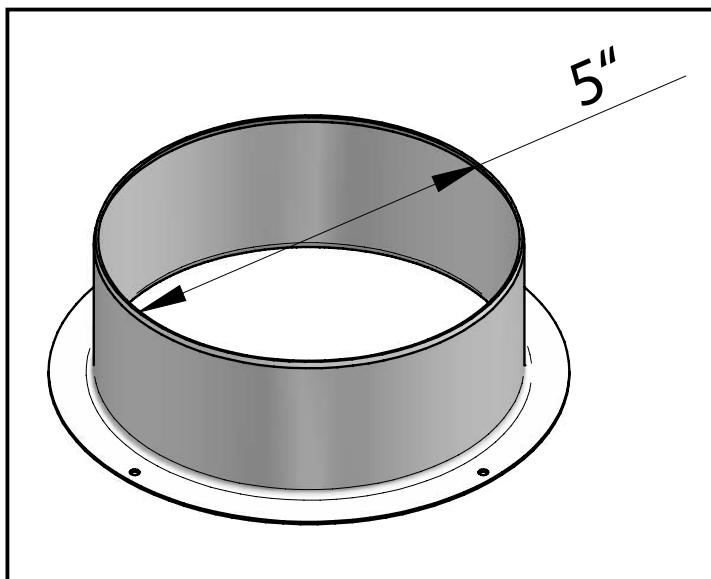
www.nficertified.org

We suggest that our woodburning hearth products be installed and serviced by professionals who are certified in the U.S. by the National Fireplace Institute® (NFI) as NFI Woodburning Specialists or who are certified in Canada by Wood Energy Technical Training (WETT).



2.6.1 CONNECTION DIRECTLY TO THE UNIT

To connect the separate combustion air directly to the unit you need to have the right separate combustion air connector Ø 5". Fix the connector directly to the unit. It can be oriented to the left side, right side or to the back.



Grills

The combustion air ducts will be protected at the outside by a grill. The free passage section of those grills is at least equivalent to the section of the air inlet. Please note that the infiltration of water and the effect of the wind can damage the system.

CLOSURE VALVE

If you decide to connect separate combustion air it is mandatory to install a closure valve to prevent condensate formation and to prevent the room from becoming cold while the stove is not in use. It should ideally be located as close as possible to the outside wall. It can be controlled from inside if it is not too far from the stove (cable length = 47").



PLEASE NOTE: COMBUSTION AIR INTAKE REQUIREMENTS.

It is recommended that the 5" Combustion air intake duct is installed in a correct manner.

Please find the following information. Outside Air- ducts must... - Be protected on the outside by a grill where the free passage section of these grills is at least equivalent to the section of the air inlet.

Please note that the infiltration of wind, weather, snow and water can effect or damage the air combustion system.

- Ideally be fitted with a butterfly valve so that it can manually, be used to close the cold air from entering the firebox.

Please note that the butterfly valve has to be 100% open or 100% closed and should not be used to adjust burn rate!

Try to keep the butterfly valve as close to the outside wall as possible.

-The air-duct should be insulated and the distance from the wood insert to the outside should be as short as possible.

For 5" air duct please refer to the maximum lengths and elbows

Number of 90 degree elbows

4' = 4 elbows

8' = 4 elbows

10' = 2 elbows

12' = 0 elbow

If you exceed these guidelines, you must compensate by using a larger diameter and/or a smoother duct. Careful not to crush the duct!

It should ideally be located as close as possible to the outside wall.

-If it is not possible to bring in combustion air to the wood insert please insure that there is sufficient air to feed the wood insert in the room –please note that this is not ideal.

Please contact your dealer who offers suitable parts for air inlet ducts (pipes and damper).

Make sure that the wire mesh is mounted at the combustion air inlet.

3. INSTALLATION PLANNING

Clean all ashes out of the inside of the existing wood insert opening. Make sure that the chimney and wood insert are free of cracks, loose mortar, creosote deposits, blockage or other signs of deterioration. If necessary, have any repair work done by a qualified professional before installing the insert.

Do NOT remove bricks or mortar from the wood insert. In case of an outside air inlet or ash dump, fill with rockwool insulation. Adhere to minimum clearances as illustrated.



WARNING

WEAR GLOVES AND SAFETY GLASSES FOR PROTECTION. CAREFULLY FOLLOW THE INSTRUCTIONS FOR ASSEMBLY OF THE PIPE AND OTHER PARTS NEEDED TO INSTALL THE APPLIANCE. FAILURE TO DO SO MAY RESULT IN A FIRE, ESPECIALLY IF COMBUSTIBLES ARE TOO CLOSE TO THE APPLIANCE OR CHIMNEY AND AIR SPACES ARE BLOCKED, PREVENTING THE FREE MOVEMENT OF COOLING AIR. DO NOT DRAW OUTSIDE AIR FROM GARAGE SPACES. EXHAUST PRODUCTS OF GASOLINE ENGINES ARE HAZARDOUS. DO NOT INSTALL OUTSIDE AIR DUCTS SUCH THAT THE AIR MAY BE DRAWN FROM ATTIC SPACES, BASEMENTS OR ABOVE THE ROOFING WHERE OTHER HEATING APPLIANCES OR FANS AND CHIMNEYS EXHAUST UTILIZE AIR. THESE PRECAUTIONS WILL REDUCE THE POSSIBILITY OF APPLIANCE SMOKING OR AIR FLOW REVERSAL. THE OUTSIDE AIR INLET MUST REMAIN CLEAR OF LEAVES, DEBRIS ICE AND/OR SNOW OR ANY OTHER OBSTACLES. IT MUST BE UNRESTRICTED WHILE APPLIANCE IS IN USE TO PREVENT ROOM AIR STARVATION WHICH CAN CAUSE SMOKE SPILLAGE AND AN INABILITY

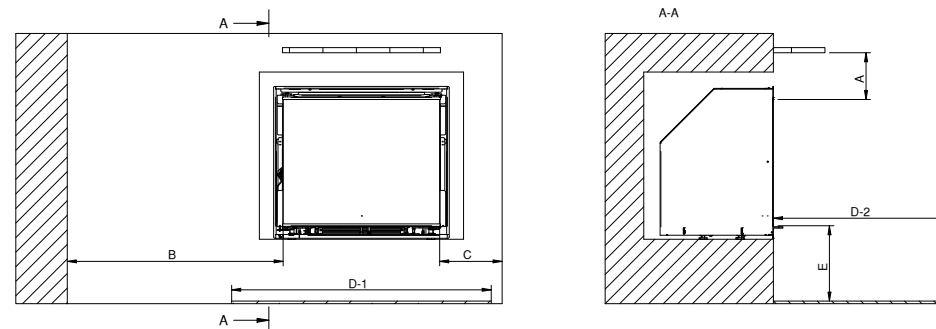
TO MAINTAIN A FIRE. SMOKE SPILLAGE CAN ALSO SET OFF SMOKE ALARMS. NEGATIVE PRESSURE WITHIN YOUR HOME MAY INADVERTENTLY AFFECT YOUR APPLIANCE. TO PREVENT CONTACT WITH SAGGING OR LOOSE INSULATION, THE APPLIANCE MUST NOT BE INSTALLED AGAINST VAPOUR BARRIERS OR EXPOSED INSULATION. LOCALIZED OVERHEATING COULD OCCUR AND A FIRE COULD RESULT. DO NOT USE MAKESHIFT COMPROMISES DURING INSTALLATION. DO NOT BLOCK OR RESTRICT AIR, GRILLE OR LOUVRE OPENINGS. DO NOT ADD A HOOD. KEEP HAND TOOLS IN GOOD CONDITION; SHARPEN CUTTING EDGES AND MAKE SURE TOOL HANDLES ARE SECURE. ALWAYS MAINTAIN THE MINIMUM AIR SPACE REQUIRED TO THE ENCLOSURE TO PREVENT FIRES. DO NOT PACK REQUIRED AIR SPACES WITH INSULATION OR OTHER MATERIALS. COMBUSTION AIR INLET DUCTS ARE NOT TO TERMINATE IN ATTIC SPACES OR CRAWL SPACES.

3.1 MINIMUM CLEARANCES TO COMBUSTIBLES

DO NOT PLACE ANY COMBUSTIBLE MATERIALS (FURNITURE, FIREWOOD, ETC.) WITHIN 48" (1220 mm) IN FRONT AND ON THE SIDES OF THE Insert.

COMBUSTIBLE MATERIALS CAN NOT PROTRUDE ONTO THE METAL PARTS OF THE UNIT, THEY MUST BE COVERED WITH NON COMBUSTIBLE MATERIALS.

Clearance requirements to combustible surfaces



A	Combustible mantle to top of glass
B	Sidewall to insert
C	Side facing
D-1	Hearth extension, width
D-2	Hearth extension, depth

	Canada	USA
A	7 1/4" for 8" thickness	7 1/4" for 8" thickness
B	15"	15"
C	15"	15"
D-1	unit width and add 8" on each side	unit width and add 6" on each side
D-2	18"	16"
E	9 1/4" from the floor to the bottom of the glass or 4 1/2" with R value 2.957	9 1/4" from the floor to the bottom of the glass or 6 1/2" with R value 2.957

Informations to D-1/D-2:

The floor in front of the wood insert requires thermal protection. This protection must be non-combustible. Also this floor protector must be listed to UL 1618 ember protection or in Canada CSA-B365.

Do NOT install in a mobile home

Distance to furniture

The recommend minimum distance from stove to furniture is 48 inches. Note that some furniture is more easily affected by heat and may need to be moved to greater distance. This is your responsibility.

In addition other combustible materials, away from the stove. In general, a distance of 48 inches must be maintained between the stove and moveable combustible item such as drying clothes, newspapers, firewood etc. Failure to meet the required clearances can endanger property and personal safety.

3.2 PLACEMENT

Make sure there is enough space for the wood heater. If the masonry insert is fitted with a frame (which conceals the contours of the recess) an additional tolerance of 1/4" can be set when the recess is made.

The wood heater must be able to expand freely. The brickwork or decorative materials must not enter into contact with the wood heater under any circumstances; leave a gap of at 1/4".

3.3 FIRE EXTINGUISHERS/SMOKE AND CARBON MONOXIDE DETECTORS

Make all homes with a solid fuel burning appliance should have at least one fire extinguisher in a central location, known to all, at least one smoke detector and carbon monoxide (CO) detector in the room containing the appliance. If the smoke detector sounds an alarm, correct the cause but do not deactivate or relocate the smoke detector. If the carbon monoxide detector sounds an alarm, immediately vent the area, evacuate and call your local fire department. If smoke detectors have been previously installed, you may notice that they are operating more frequently.

This may be due to during of stove paint or fumes caused by accidentally leaving the fire door open. Do not disconnect the detectors.

Always check your smoke and CO detectors are working properly.

4. INSTALLATION

4.1 HEARTH EXTENSION



WARNING

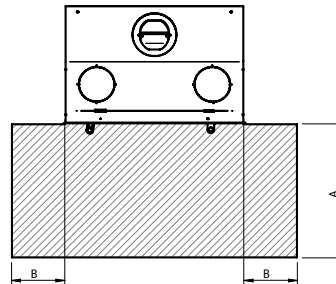
INSTALL THE HEARTH EXTENSION ONLY AS ILLUSTRATED!

A 18" x 8" (457mm x 203mm) for Canada or 16" x 6" (406 mm x 152 mm) for USA minimum hearth extension made of non combustible material is required. To prevent any burning embers falling between the fireplace and the hearth extension from coming into contact with the floor, insert a metal sheet under the front of the wood insert. This sheet must extend 4" (100 mm) on both sides of the wood insert and 2" (50 mm) in front. You can also prevent embers from falling in the joint between the wood insert and the hearth extension by filling it with mortar grout.

The non combustible material that is used must be UL 1618 ember protection or in Canada CSA-B365.

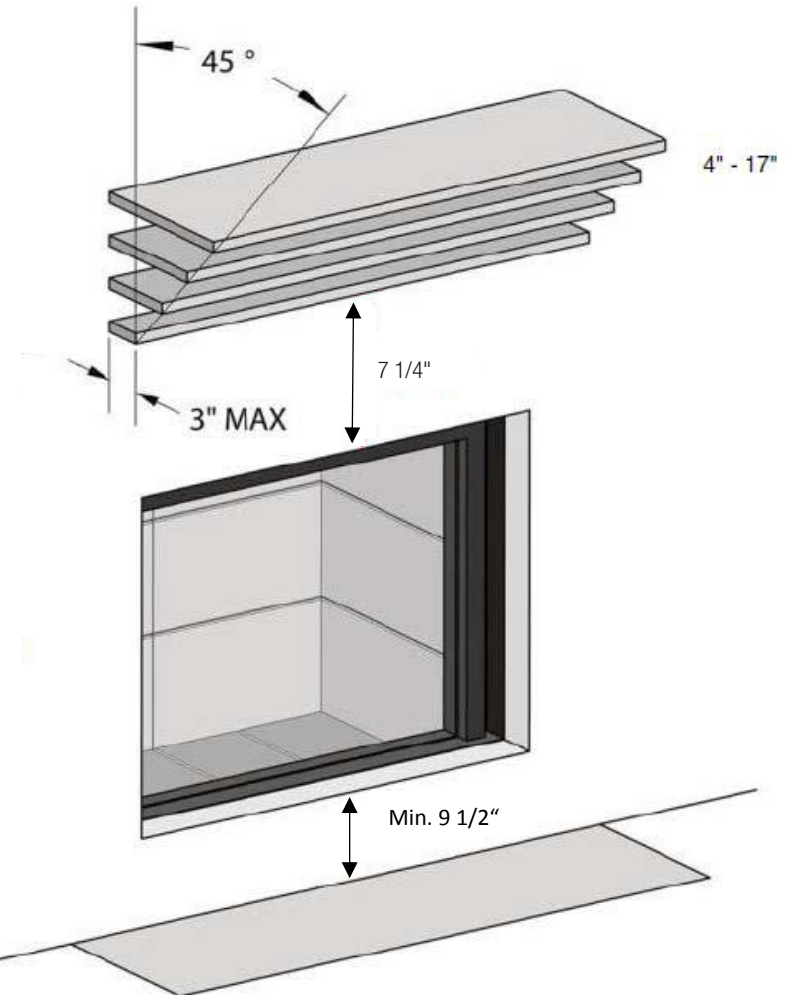
Distance from bottom of the glass to the floor 9 1/2" to the bottom of the glass or 4 1/2" -with R value 2,957 (Canada) or 6,1/2" - with R value 2,957 (USA).

4.1.1 600



	S 600
A	Canada: 18 inches USA: 16 Inches
B	Canada: 8" on each side USA: 6" on each side

4.2 DISTANCE COMBUSTIBLE MANTLE



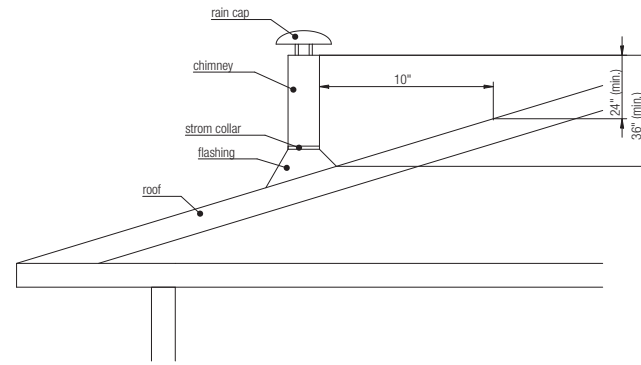
4.3 CHIMNEY LINER INSTALLATION

This wood insert is designed and approved for installation with the following brands of chimney liner measuring 6" and 7" (152 and 178mm) in diameter.

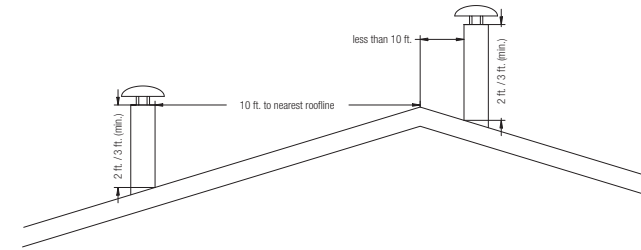
4.3.1 LISTED CHIMNEYS

This appliance must be installed with a listed 6" chimney liner system approved under the following standards: The chimney liner must conform to the Class 3 requirements of CAN/ULC-S635, Standard for Lining Systems for Existing Masonry or Factory-Built Chimneys and Vents, or CAN/ULC-S640, Standard for Lining Systems for New Masonry Chimneys and be installed in accordance with the manufacturer's installation instructions.

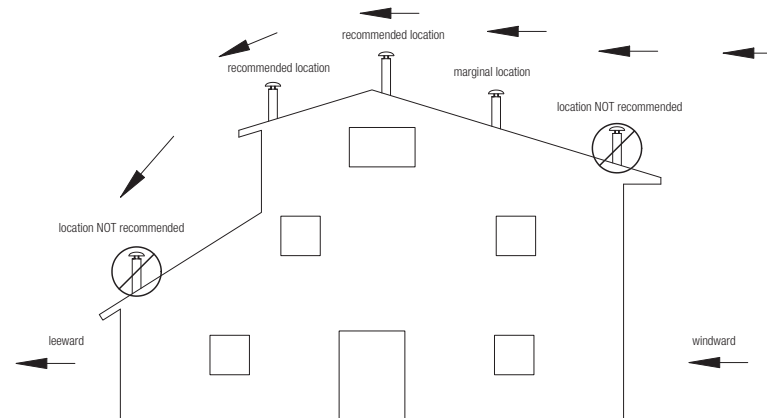
4.3.2 EXAMPLES OF TYPICAL INSTALLATIONS



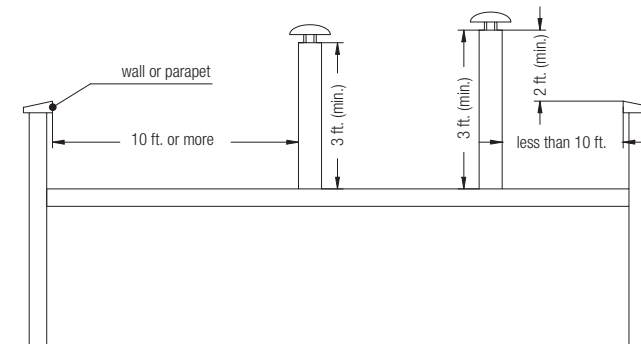
minimum chimney height



pitched roof



multi level roofs



flat roof

This appliance must be installed with a listed 6" (150 mm) or 7" (178 mm) chimney system approved under the following standards: The chimney liner must conform to the Class 3 requirements of CAN/ULC-S635, Standard for Lining Systems for Existing Masonry or Factory-Built Chimneys and Vents, or CAN/ULC-S640, Standard for Lining Systems for New Masonry Chimneys and be installed in accordance with the manufacturer's installation instructions.

This fireplace insert is designed to be installed into a masonry fireplace. The masonry fireplace is to be constructed in accordance to N.F.P.A. 211(Latest Edition), Standards of Chimney, Fireplaces, Vents and Solid-Fuel-Burning Appliances and Equipment or applicable National, Provincial, State or local codes. The installation shall conform to CAN/CSA-B365, Installation Code for Solid –Fuel –Burning Appliances and Equipment.

The combustible floor in front of the fireplace insert must be protected from hot embers by a non-combustible material extending 16" (USA) and 18" (Canada) on the fuel loading side and 8" to the other sides.

Heat protection is required in front of the insert when it is installed less than 9 ¼" above a combustible floor, measured vertically from the combustible floor to the bottom of the glass. The distance from the combustible floor to the bottom of the glass can be reduced to 4 ½" (Canada) 6 ½" (USA) when the hearth protection used, has an R value of 2.957

If this insert is not properly installed, a house fire may result. For your safety, follow the installation directions. Consult your local Fire or Building officials about restrictions and installation inspection requirements in your area.

4.4 MASONRY

4.4.1 TYPICAL EXISTING MASONRY



WARNING

DO NOT CONNECT THIS APPLIANCE TO A CHIMNEY FLUE SERVING ANOTHER FIREPLACE. DO NOT CONNECT TO ANY AIR DISTRIBUTION DUCT OR SYSTEM.

You can install your masonry inserts using your existing masonry chimney liner. To do so, follow the guidelines below. If you are using a masonry chimney, it is important that it be built in compliance with the specifications of the Building Code in your region. It must normally be lined with refractory bricks, metal or clay tiles sealed together with fire cement. (Round flues are the most efficient).

Remove the wood insert damper or fasten it permanently open. We recommend the following method of sealing off the damper area around the liner:

Measure the throat of the wood insert and mark this shape on a piece of 24 gauge sheet metal (flue cover); cut a six-inch (6 ¾" / 171mm) hole to lie directly below the wood insert flue opening. Allow two inches of material for a flange on all sides and cut to these measurements. Bend down the flanges. If you have never done this before, it might be a good idea to make a cardboard pattern and test it first. Fasten this flue cover in position as high as possible with two masonry screws per side through the flanges into the wood insert.

In Canada: Install only flexible or solid chimney liner from the top of the chimney to the insert flue collar. Attach a stainless steel liner connector or elbow to the liner and insert onto the flue collar. Fasten with three screws. Secure the top of the liner to the chimney cap using a liner support and chimney flashing. Cap the top of the chimney liner assembly using an approved rain cap.

In the United States: While it is not required, it is recommended that a chimney liner be installed that is continuous from the insert to the top of the chimney, particularly when the insert is installed in a basement. For this type of connection, use the "In Canada" installation instructions above.

If a continuous liner is not installed, a "direct flue connection" must be made. The direct flue connection requires a non-combustible connector that extends from the insert into the chimney flue liner and also the installed flue cover to be sealed below the entry point of the connector to prevent dilution of combustion products in the chimney flue with air from inside the house. Cap the top of the chimney using an approved rain cap.

THIS UNIT IS NOT TESTED TO BE BUILT INTO A FACTORY BUILT FIREPLACE.

follow manufactures's
instructions for maximum
liner extension above
chimney

rain cap 12" above the chimney

masonry chimney
must have structural
integrity

damper plate
removed or
fastened in open
position

listed chimney liner

connector

floor protector

flue cover (seal) with
non-combustible
material

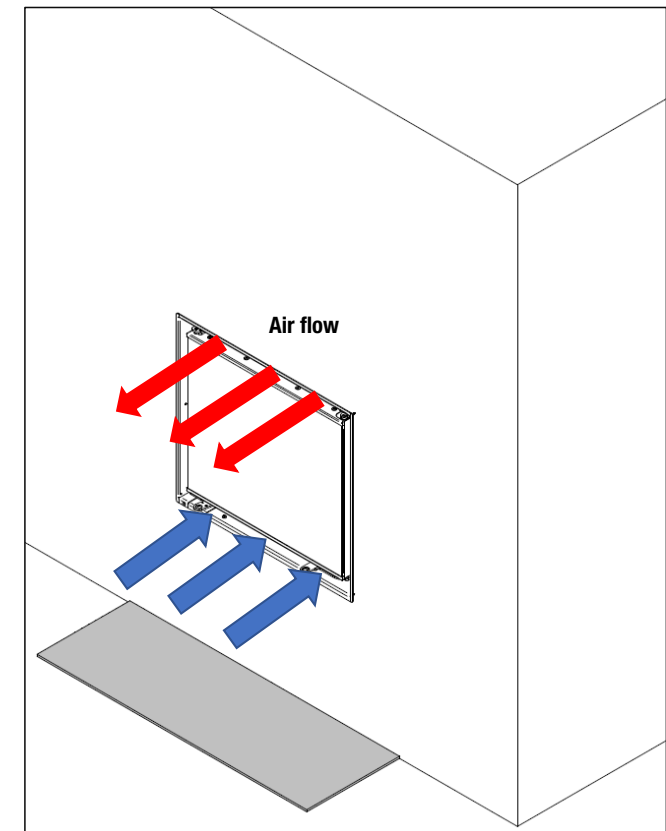
4.5 CONVECTION

Circulation of convection air

The convection air enters into the wood insert via the inlet at the bottom of the wood insert. The hot air for convection comes out of the wood insert via the front outlet.

Circulation of convection air

The convection air enters into the fireplace via the inlet at the bottom of the fireplace. The hot air for convection comes out of the fireplace via the front outlet.



5. FINISHING

5.1 BRICKS AND BAFFLES INSTALLATION

Masonry Insert 600

article designation	assembly sequence	art. no.	quantity	price group
individual bricks				
base brick, front	1+2	1017402	2	C
side wall brick	7+8	1017459	2	B
base brick, rear	3+4	1017403	2	B
rear wall brick	5+6	1019883	2	B
baffle plate	9	1019710	1	D
complete set (without baffle plate)				
set bottom	—	1017638	4	price list
wall set	—	1047756	4	price list
Attention: Surcharge according to price list when ordering in eboris 1300 - black				

WARNING

OPERATION OF THE APPLIANCE WITHOUT THE BAFFLES CAN RESULT IN EXCESSIVE TEMPERATURES THAT COULD DAMAGE THE APPLIANCE, CHIMNEY AND THE SURROUNDING ENCLOSURE.

NOTE: DO NOT OPERATE IF BAFFLE AND MANIFOLD SHIELD ARE NOT IN POSITION.

5.2 DOOR REMOVAL / INSTALLATION

WARNING

BURNING YOUR APPLIANCE WITH THE DOORS OPEN OR AJAR CREATES A FIRE HAZARD THAT MAY RESULT IN A HOUSE AND/OR CHIMNEY FIRE.

DO NOT STRIKE OR SLAM DOOR.

NEVER REMOVE THE DOOR WHEN THE APPLIANCE IS HOT.

Please follow the following steps to dismantle / install the firebox door. Take care when carrying out these tasks as otherwise damage to the casing / door cannot be ruled out. We recommend protecting the casing / metal plates with an overlay.

Dismantling:

1. Use a screwdriver or a similar tool to remove the safety clasp on the stopper side (hinge side) of the door.



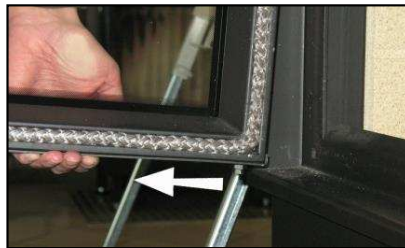
2. Swing the door open. Then tighten the Allen screw on the lower hinge with a 3 mm Allen key.



3. Take hold of the door at the bottom. Raise the door a little with a light lifting movement so that the lower pin of the hinge is exposed.



4. In this position, pull the door a little forward at the bottom.



5. Now allow the door to drop down a little so that it comes away from the upper guidance pin and can be removed.

The door is now free and can be carefully placed to one side.



INSTALLATION: Installation is carried out in the reverse order:

1. Firstly guide the door in a slightly inclined position onto the fixture for the hinge side of the door. In the process, support the door from below so that the fireplace casing is not scratched.



2. Then swing the door inwards and set the lower pin into the lower fixture. To ensure the hexagonal socket can slide into the fixture, move the door a little (swivel the door).

3. Loosen the hexagonal socket on the lower hinge with a 3 mm Allen key.



4. Close the door and then push the safety clasp back onto the pin.

6. OPERATION

WARNING

ALWAYS OPERATE THIS APPLIANCE WITH THE DOOR CLOSED AND LATCHED EXCEPT DURING START UP AND RE-FUELING. ALWAYS WEAR GLOVES TO PREVENT INJURY. DO NOT LEAVE THE FIRE UNATTENDED WHEN THE DOOR IS UNLATCHED AS UNSTABLE WOOD COULD FALL OUT OF THE FIRE CHAMBER CREATING A FIRE HAZARD TO YOUR HOME.

PLEASE USE THE GLOVE THAT IS SUPPLIED WHEN OPERATING THE INSERT.

NEVER EVER LEAVE CHILDREN UNATTENDED WHEN THERE IS A FIRE BURNING IN THE APPLIANCE.

NEVER USE GASOLINE, GASOLINE-TYPE LANTERN FUEL, KEROSENE, CHARCOAL LIGHTER FLUID, OR SIMILAR LIQUIDS TO START OR 'FRESHEN UP' A FIRE IN THIS APPLIANCE. KEEP ALL SUCH LIQUIDS WELL AWAY FROM THE APPLIANCE WHILE IT IS IN USE.

OBJECTS PLACED IN FRONT OF THE APPLIANCE SHOULD BE KEPT A MINIMUM OF 48" FROM THE FRONT FACE.

ANY MODIFICATION OF THE APPLIANCE THAT HAS NOT BEEN APPROVED IN WRITING BY THE TESTING AUTHORITY IS CONSIDERED BREACHING CSA B365 (CANADA) AND ANSI NFPA 211 (USA).

HOT WHILE IN OPERATION. KEEP CHILDREN, CLOTHING AND FURNITURE AWAY. CONTACT MAY CAUSE SKIN BURNS. WEAR SUITABLE GLOVES TO OPERATE YOUR APPLIANCE.

NEVER OPERATE THE STOVE WITH THE GRATE COVER REMOVED.

DO NOT POKE OR STIR THE LOGS WHILE THEY ARE BURNING. USE ONLY FIRELOGS THAT HAVE BEEN EVALUATED FOR THE APPLICATION IN WOOD INSERT AND REFER TO FIRELOG WARNINGS AND CAUTION MARKINGS ON PACKAGING PRIOR TO USE.

WARNING

AVOID BURN RISK. REMOVE OPERATIONAL TOOL AFTER USE!!!

WARNING

PLEASE USE THE GLOVE THAT IS SUPPLIED WHEN OPERATING THE INSERT!

Your Spartherm product is designed with the most advanced technology. The appliance is extremely airtight. It has an exclusive direct outside air supply (optional kit), a safety feature designed to prevent spillage, and to keep your house free of carbon monoxide, in case of a down drafting chimney or an internal negative pressure.

The first fire(s) in your appliance will be difficult to get going and keep going with little amount of heat being generated. This is a result of the moisture being driven out of the fire brick. Allow 30 hours of hot fires (temperatures in excess of 500°F / 260°C - 600°F / 316°C) before your appliance will perform normally. During the break-in period (the first 2 or 3 fires) create only small, hot fires using kindling; this will allow the firebrick to cure. Do not be alarmed if small hairline cracks develop in the firebrick.

This is a normal occurrence and does not pose a safety hazard. The paint may also smell for the first few fires as it cures and it is recommended to open a door or window to alleviate the smell.

To start, a brisk fire is required. Place loosely crumpled paper on the floor of the appliance and cover with dry kindling. Light the paper and leave the door slightly ajar (one inch) until all kindling is burning. To maintain a brisk fire, a hot coal bed must be established and maintained.

Slowly add larger wood (2x4 size pieces). Lay the pieces lengthwise from side to side in the hot coal bed with a shallow trench between, so that the primary air can flow directly into this trench and ignite the fuel above. When the fire seems to be at its peak, medium sized logs may be added. Once these logs have caught fire, carefully close the door. (Closing the door too quickly after refueling will reduce the firebox temperature and result in an unsatisfactory burn.) Remember it is more efficient to burn

medium sized wood, briskly, and refuel frequently than to load the appliance with large logs that result in a smoldering, inefficient fire and dirty glass. As soon as the door is closed, you will observe a change in the flame pattern. The flames will get smaller and lazier because less oxygen is getting into the combustion chamber. The flames, however, are more efficient. The flames will remain lazy but become larger again as soon as the refractory bricks have been heated thoroughly and the chimney becomes heated and provides a good draft. At this point, the roaring fire that you see when the door is opened is wastefully drawing heated room air up the chimney -- certainly not desirable. Always operate with the door fully closed once the medium sized logs have caught fire.

You can now add larger pieces of wood and operate the appliance normally. Once the appliance is entirely hot, it will burn very efficiently with little smoke from the chimney. There will be a bed of orange coals in the firebox and secondary flames flickering just below the top firebrick. You can safely fill the firebox with wood up to the air inlet on the backside of the firebox or, if not present, up to 50% of the fireboxes backside height and will get best burns if you keep the appliance pipe temperatures between 250°F (120°C) and 450°F (270°C). A surface thermometer placed on the front top will help regulate this.

Without an appliance thermometer, you are working blindly and have no idea of how the appliance is operating! An appliance thermometer offers a guide to performance.

Can't get the fire going?

Use more kindling and paper. Assuming the chimney and vent are sized correctly and there is sufficient combustion air, the lack of sufficiently dry quantities of small kindling is the problem. Thumb size is a good gauge for small kindling diameter.

Can't get heat out of the appliance?

One of two things may have happened. The appliance door may have been closed prematurely and the appliance itself has not reached optimum temperature. Reopen the door and/or draft control to re-establish a brisk fire. The other problem may have been wet wood. The typical symptom is sizzling wood and moisture being driven from the wood.

THE COMBUSTION AIR

Spartherm Inserts are PRE SET SINGLE BURN RATE. System that is easy and effective to use.

Air Wash system: This combustion air is designed to keep the glass clean and to feed the fire with combustion air to burn.

Secondary Air system: This air is used to burn off the gases that are released when the fire burns.

WARNING

HOT GLASS – WILL CAUSE BURNS.

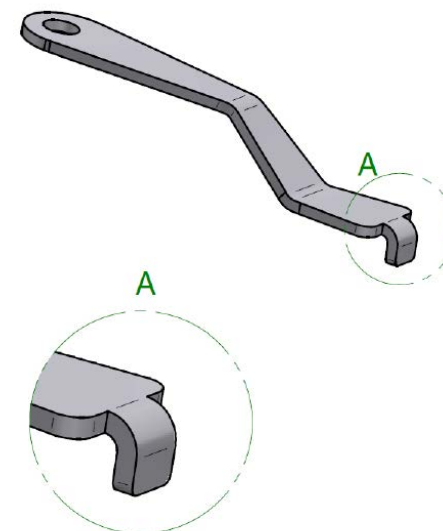
DO NOT TOUCH GLASS UNTIL COOLED

NEVER!!! ALLOW CHILDREN TO TOUCH THE GLASS.

PLEASE NOTE.

The tool that has been provided is for the operation of the air control lever and for opening and closing the masonry insert door.

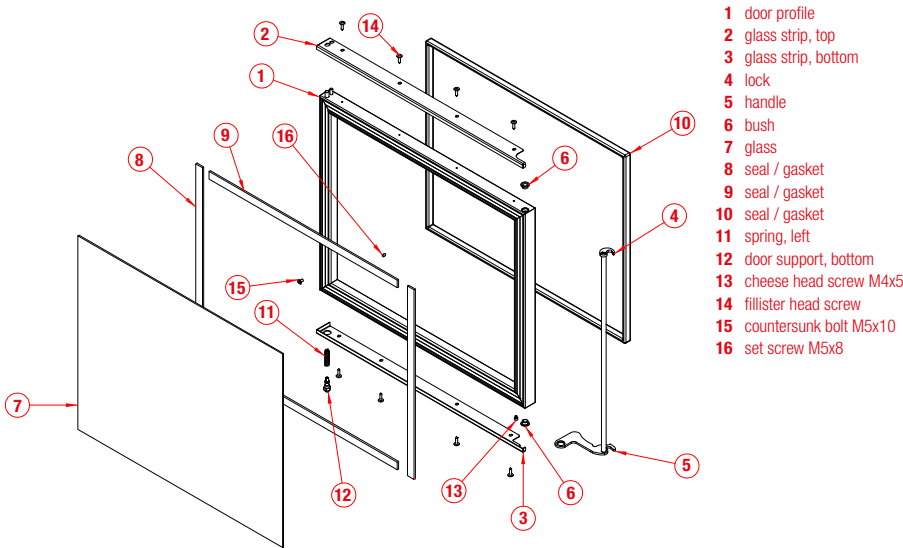
If this tool is not used there is a risk of BURNS.



DOOR ASSEMBLY - SPARE PARTS.

ROBAX 4MM CERAMIC GLASS.

USE ONLY AS PER MANUFACTURERS STANDARD AND SPARE PARTS.



Pos.	name	quantity	SAP
1	door profile	1	—
2	glass strip, top	1	—
3	glass strip, bottom	1	—
4	lock	1	—
5	handle	1	—
6	bush	2	—
7	glass	1	—
8	seal / gasket	2	—
9	seal / gasket	2	—
10	seal/ gasket	1	—
11	spring, left	1	—
12	door support, bottom	1	—
13	cheese head screw M4x5	1	—
14	fillister head screw	8	—
15	countersunk bolt M5x10	1	—
16	set screw M5x8	1	—

! WARNING

The combustion-air damper should NOT be altered for increased firing for any reason!

6.1 FIRE EXTINGUISHERS / SMOKE DETECTORS

All homes with a solid fuel burning appliance should have at least one fire extinguisher in a central location, known to all, and at least one smoke detector in the room containing the appliance. If it sounds an alarm, correct the cause but do not de-activate or relocate the smoke detector.

6.2 FUEL

! WARNING

THIS APPLIANCE IS DESIGNED TO BURN NATURAL WOOD ONLY. DO NOT BURN TREATED WOOD, COAL, CHARCOAL, COLOURED PAPER, CARDBOARD, SOLVENTS OR GARBAGE. THIS APPLIANCE HAS NOT BEEN TESTED WITH AN UNVENTED GAS LOG SET. TO REDUCE RISK OF FIRE OR INJURY, DO NOT INSTALL AN UNVENTED GAS LOG SET INTO THE APPLIANCE. HIGHER EFFICIENCIES AND LOWER EMISSIONS GENERALLY RESULT WHEN BURNING AIR DRIED SEASONED HARDWOODS, AS COMPARED TO SOFTWOODS OR TOO GREEN OR FRESHLY CUT HARDWOODS. DO NOT BURN GREEN OR FRESHLY CUT WOOD.

BURNING WET UNSEASONED WOOD CAN CAUSE EXCESSIVE CREOSOTE ACCUMULATION. WHEN IGNITED IT CAN CAUSE A CHIMNEY FIRE THAT MAY RESULT IN A SERIOUS HOUSE FIRE.

DO NOT STORE FUEL WITHIN THE CLEARANCE TO COMBUSTIBLES, OR IN THE SPACE REQUIRED FOR RE-FUELING AND ASH REMOVAL.

When loading the appliance, ensure that the upper fibre baffles are not forced out of position. For maximum efficiency, when the appliance is thoroughly hot, load it fully to the line of air inlet nozzles at the backside of the firebox or, if not present, to 50% of the fireboxes backside height

and burn at a medium low setting. The whiteness of the bricks and the cleanliness of the glass are good indicators of your operating efficiency. Not enough heat is produced when only a few pieces of wood are burned or the wood may not burn completely. Fuel for the appliance must not be stored closer than the required clearances to combustibles (heat sensitive material).

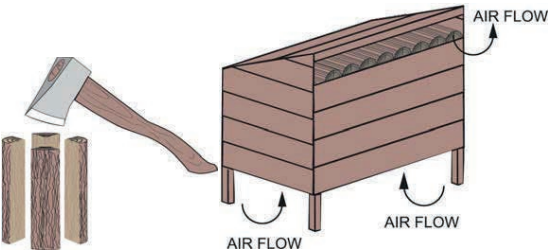
NEVER STORE WOOD IN THE ASH PAN COMPARTMENT (IF APPLICABLE).

NOTE: WHEN LOADING THE APPLIANCE, ENSURE TO KEEP FUEL BACK FROM THE GLASS. IF COALS ARE TO ACCUMULATE ON THE FRONT LIP, THERE IS A CHANCE THEY WILL FALL OUT WHEN THE DOOR IS OPENED.

Burn only dry, clean unpainted wood that has been seasoned. It produces more heat and less soot or creosote. Freshly cut wood contains about 50% moisture while after proper seasoning only about 20% of the water remains. As wood is burned, this water boils off consuming energy that should be used in heating. The wetter the wood, the less heat is given off and the more creosote is produced. Dry firewood has cracks in the end of the grain. Both hardwood and softwood burn equally well in this appliance but hardwood is denser, will weigh more per cord and burn a little slower and longer.

Firewood should be split, stacked in a manner that air can get to all parts of it and covered in early spring to be ready for burning that fall. Dry firewood has cracks in the end grain.

Cut the wood so that it will fit horizontally, front to back, making for easier loading and less of a likelihood that the wood will roll onto the glass.



Manufactured firelogs made by compressing 100% natural wood fibre can be safely used as fuel. Do not use manufactured firelogs if they contain additives such as paraffin, wax, binders etc. Never burn more than two manufactured firelogs at a time.

Do's

- Build a hot fire.
- Use only dry wood.
- Several pieces of medium sized wood are better than a few big pieces.
- Clean chimney regularly.
- Refuel frequently using medium sized wood.

Don't's

- Take ash out immediately. Let it accumulate to a depth of at least one inch. A good ash layer provides for a longer lasting and better burning fire.
- Burn wet wood
- Close the door too soon or damper down too quickly. Burn one large log rather than two or three smaller, more reasonably sized logs.
- Burn at continually "low setting", if glass door is constantly blackened. This means the Firebox temperature is too low and energy is wasted by incomplete combustion.

6.3 LIGHTING A FIRE

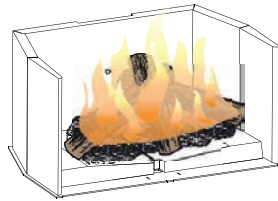
Lighting the fire in your masonry insert is very easy if you follow the instructions given below:

1. A fire may only be started in the masonry insert when the firebox lining has been correctly installed.
2. Turn off any air extraction ventilation (kitchen, bathroom, WC etc.). This will avoid low pressure building up in the installation room that can affect the extraction of flue gases from the wood insert. Check the combustion air supply (if required, open the cover flap)!
3. Open the firebox door (swing open).
4. Place chopped wood into the middle of the firebox using the funeral pyre method (use softwood).
Caution: The height of the wood pile must not exceed the lower marking on the deflector plate!
5. Place standard firelighter cubes under the wood pyre to help start the fire. (paper is not recommended because it burns too quickly and causes ash to circulate).

6. Never use methylated spirits, petrol, oil or other easily combustible liquids.

7. Light the fire using the firelighter cubes and, if required, leave the firebox door open by approx. 3-5 cm. The fire should now light, burning brightly and intensively.

8. When the kindling wood is burning well, add smaller hardwood logs or larger softwood logs using the funeral pyre method and close the door.



9. Close the door.

10. You can find out more about the correct volume of wood to add to the fire in the section "Volume of wood to add per hour".

11. When the wood has been completely burnt and only embers are remaining from the initial wood added to the fire, new wood can now be added as required (hardwood is ideal).

12. Always open the firebox door slowly. This will ensure that you avoid sudden low pressure in the firebox and prevent exhaust gases leaking into the living room.

13. This will prevent any possible smoke leakage through the opened door when adding new wood during the ember phase.

14. Never consistently add more wood than the recommended amount.

Caution: The height of the wood pile must not exceed the lower marking on the deflector plate!

6.3.1 FLASH FIRE

A flash fire is a small fire burned quickly when you don't need much heat. After your kindling has "caught", load at least 3 pieces of wood, stacked loosely. Burn with the draft control fully open if adjustable or open the door upward with 1 1/2 inches for 3 minutes if required.

6.3.2 EXTENDED FIRE

Load your larger pieces of wood compactly, packed close enough to prevent the flames from penetrating it completely.

DO NOT OVERFIRE THE APPLIANCE!
OVERFIRING CAN OCCUR BY:

- A. Burning large amounts of smaller wood pieces such as furniture scraps, skids or treated wood.
- B. Operating the appliance with a poor gasket seal on the main door.
- C. Overfilling your appliance. Go by the following specifications:

Appliance	Wood consumed per hour
Insert-600	1.8 kg/hr

6.3.3 SMOKING

A properly installed appliance should not smoke. If yours does, check the following:

Has the chimney had time to get hot?

Is the smoke passage blocked anywhere in the appliance, chimney connector or chimney?

Is the room too airtight and the air intake not connected to the outside? Try with a window partly open.

Is the smoke flow impeded by a too long horizontal pipe or too many bends?

Is it a weak draft perhaps caused by a leaky chimney, a cold outside chimney, a too large diameter of a chimney, a too short chimney, or a chimney too close to trees or a higher roof?

Has a direct flue connection been used rather than a chimney liner continuous from cap to appliance flue collar.

7. MAINTENANCE



APPLIANCE MAY BE HOT, DO NOT SERVICE UNTIL APPLIANCE HAS COOLED. DO NOT USE ABRASIVE CLEANERS.

Check your chimney and chimney connector for creosote and soot buildup weekly until a safe frequency for cleaning is established.

If accumulation is excessive, disconnect the appliance and clean both the chimney and the appliance. You may want to call a professional chimney sweep to clean them. Both have to be cleaned at least once a year or as often as necessary.

Remove baffle plates and clean above them once a year. Replace any broken bricks.

7.1 ASH REMOVAL PROCEDURES



IMPROPER DISPOSAL OF ASHES RESULTS IN FIRES. DO NOT DISCARD ASHES IN CARDBOARD BOXES. DUMP IN BACK YARDS, OR STORE IN GARAGES. IF USING A VACUUM TO CLEAN UP ASHES, BE SURE THE ASHES ARE ENTIRELY COOLED. USING A VACUUM TO CLEAN UP WARM ASHES COULD CAUSE A FIRE INSIDE THE VACUUM.

Allow the ashes in your firebox to accumulate to a depth of two or three inches; they tend to burn themselves up. When the fire has burned down and cooled, remove any excess ashes but leave an ash bed approximately 1" (25 mm) deep on the firebox bottom to help maintain a hot charcoal bed.

Shovel some ashes out through the door into a metal container with a tight fitting lid. Leave an ash bed approximately 1" (25 mm) deep on the firebox bottom to help maintain a hot charcoal bed. Keep the closed container on a noncombustible floor or ground, well away from all combustible materials. The ashes should be retained

in the closed container until all cinders have thoroughly cooled. Cold wood ashes can be used on the garden or in the compost.

7.2 CREOSOTE FORMATION AND REMOVAL

When wood is burned too slow, it produces tar and other organic vapors, which combine with expelled moisture to form creosote. The creosote vapors condense in the relatively cooler chimney flue of a slow-burning fire. As a result, creosote residue accumulates on the flue lining. When ignited this creosote makes an extremely hot fire. The chimney connector and chimney should be inspected at least once every two months during the heating season to determine if a creosote buildup has occurred. If creosote has accumulated it should be removed to reduce the risk of a chimney fire.

7.3 RUNAWAY OR CHIMNEY FIRE

WARNING

A CHIMNEY FIRE CAN PERMANENTLY DAMAGE YOUR CHIMNEY SYSTEM. THIS DAMAGE CAN ONLY BE REPAIRED BY REPLACING THE DAMAGED COMPONENT PARTS. CHIMNEY FIRES ARE NOT COVERED BY THE WARRANTY.

CAUSES:

- Using incorrect fuel, or small fuel pieces which would normally be used as kindling.
- Leaving the door ajar too long and creating extreme temperatures as the air rushes in the open door.
- Improperly installed or worn gaskets.
- Creosote build up in chimney.

SOLUTIONS:

- Do not burn treated or processed wood, coal, charcoal, coloured paper or cardboard. Do not burn green or freshly cut wood.
- Be careful not to overfire the appliance by leaving

the door open too long after the initial start-up. A thermometer on the chimney connector and/or appliance top helps.

- Replace worn, dried out (inflexible) gaskets.
- Have chimney regularly cleaned.

IN CASE OF A CHIMNEY FIRE:

- Have a well understood plan for evacuation and a place outside for everyone to meet. Prepare to evacuate to ensure everyone's safety.
- Close air control on appliance.
- Call local fire department. Have a fire extinguisher handy. Contact local authorities for further information on how to handle a chimney fire.
- After the chimney fire is out, clean and inspect the chimney or chimney liner for stress and cracks prior to lighting another fire. Also check combustibles around the chimney and the roof.

7.4 CHIMNEY CLEANING

Both the chimney and the appliance must be inspected and cleaned at least once a year.

For serious wood burners, chimney cleaning must be done as needed to avoid chimney fires; the venting systems for controlled combustion appliances may need cleaning as often as once a month. These rates, however, depend on the burning habits of the individual operating the appliance. For example, it is possible to clog a solid fuel appliance chimney in a few days if slow, smoldering fires are burned and the chimney is cold. NOTE: Appliances burned consistently without hot fires may result in significant creosote accumulations in the chimney.

Certain items and considerations are important in chimney cleaning:

- Proper tools should be used, including a brush specifically designed for chimney cleaning.
- The chimney connector and dampers as well as the chimney should be cleaned.
- The appliance's firebox and baffle system should be cleaned if needed.

- The chimney should be inspected and repairs made if needed, preferably by a qualified chimney sweep or mason.

7.5 GLASS REPLACEMENT

WARNING

DO NOT USE SUBSTITUTE MATERIALS

GLASS MAY BE HOT, DO NOT TOUCH GLASS UNTIL COOLED.

CARE MUST BE TAKEN WHEN REMOVING AND DISPOSING OF ANY BROKEN DOOR GLASS OR DAMAGED COMPONENTS. BE SURE TO VACUUM UP ANY BROKEN GLASS FROM INSIDE THE APPLIANCE BEFORE OPERATION.

DO NOT STRIKE, SLAM OR SCRATCH GLASS. DO NOT OPERATE APPLIANCE WITH GLASS REMOVED, CRACKED, BROKEN OR SCRATCHED.

Installation:

Remove the door from the stove and remove the glass retainer. Position the 4 mm ceramic Schott Robax glass in the door, make sure that the glass gasket will properly seal your unit, and replace the retainer, it should rest on the gasket not the glass. Tighten securely, but do not wrench down on the glass as this may cause the glass to break. Replacement Glass Part as for unit.

7.6 CARE OF GLASS

If the glass is not kept clean permanent discolouration and / or blemishes may result. Normally a hot fire will clean the glass. The most common reasons for dirty glass include: not using sufficient fuel to get the appliance thoroughly hot, using green or wet wood, closing the draft so far that there is insufficient air for complete combustion. If it is necessary to clean the glass, buff lightly with a clean dry cloth and non-abrasive cleaner.

DO NOT CLEAN GLASS WHEN HOT! Clean the glass after the first 10 hours of operation with a suitable stove glass cleaner. Thereafter clean as required.

The glass is very strong but do not let burning fuel rest or fall against it and always close the door gently. NEVER FORCE IT SHUT!

If the glass should ever crack or break while the fire is burning, do not open the door until the fire is out and do not operate the appliance again until the glass has been replaced, available from your authorized dealer. DO NOT USE SUBSTITUTE MATERIALS.

WARNING

HOT GLASS WILL CAUSE BURNS. DO NOT TOUCH GLASS UNTIL COOLED. NEVER ALLOW CHILDREN TO TOUCH GLASS.

7.7 CLEANING THE GLASS CERAMIC SHEET

WARNING

THE GLASS CERAMIC SHEET MAY ONLY BE CLEANED WHEN COLD (wood insert NOT BURNING AND COOLED DOWN; NO HOT ASH IN THE FIRE CHAMBER).

WARNING

All Spartherm inserts are supplied with Robax glass in the door. Robax is a ceramic glass.

Do not use substitute glass and order replacement glass from Spartherm through your dealer.

7.8 CARE OF PLATED PARTS

If the appliance is equipped with plated parts, you must clean fingerprints or other marks from the plated surfaces before operating the appliance for the first time. Use a

glass cleaner or vinegar and towel to clean. If not cleaned properly before operating for the first time, the marks can cause permanent blemishes on the plating. After the plating is cured, the fingerprints and oils will not affect the finish and little maintenance is required, just wipe clean as needed. Prolonged high temperature burning with the door ajar may cause discolouration on plated parts.

NOTE: The protective wrap on plated parts is best removed when the assembly is at room temperature but this can be improved if the assembly is warmed, using a hair dryer or similar heat source.

8. REPLACEMENTS

Contact your dealer or the factory for questions concerning prices and policies on replacement parts. Normally all parts can be ordered through your authorized dealer / distributor. FOR WARRANTY REPLACEMENT PARTS, A PHOTOCOPY OF THE ORIGINAL INVOICE WILL BE REQUIRED TO HONOUR THE CLAIM. When ordering replacement parts always give the following information:

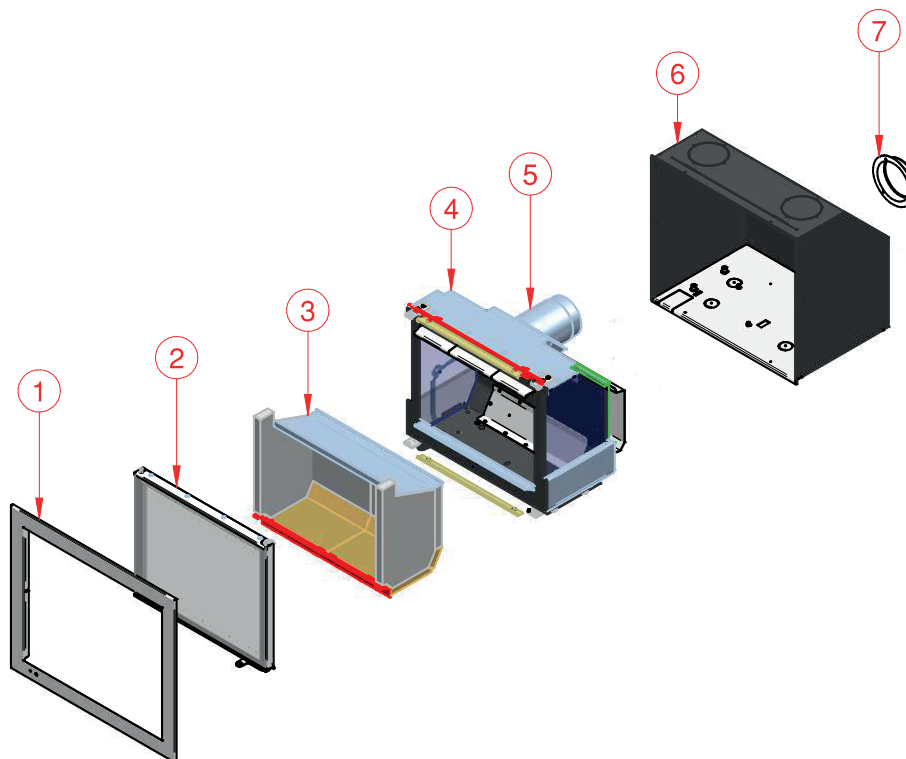
Model & Serial Number of appliance
Installation date of appliance
Part number
Description of part
Finish

IDENTIFIES ITEMS WHICH ARE NOT ILLUSTRATED. FOR FURTHER INFORMATION, CONTACT YOUR AUTHORIZED DEALER.

For refractory bricks and baffle plates replacement see chapter "5.1 Bricks and baffles installation".

NOTICE-

Please refer to the following drawing and specify the spare part number and WHICH UNIT SIZE YOU HAVE FOR REPLACEMENTS



1	Frame
2	Firebox door with ceramic glass
3	Firebox lining
4	Firebox
5	Exhaust gas sockets, rotatable (vertically or horizontally)
6	Convection air jacket
7	Combustion air sockets, outlet to rear

SPARTHERM ACCESSORIES

Masonry Insert Description Part		
Spartherm Insert-600 1065253	Optional Combustion Air Appliance Connector	5" Butterfly Valve
Required Accessories 600 Frame 2 3/8" 1017411		
600 Frame 3 1/8" 1017420		
600 Frame 4" 1017429		

9. TROUBLESHOOTING



WARNING

APPLIANCE MAY BE HOT, DO NOT SERVICE UNTIL APPLIANCE HAS COOLED.

DO NOT USE ABRASIVE CLEANERS.

Problem	Solution
Can't get the fire started.	- Not enough kindling / paper? Add more. - Not enough air? Open the door 1". Also ensure that the air opening is not obstructed. - Cold air blockage? Burn a piece of paper to establish a draft. - Use dry seasoned wood. - Flue blockage? Inspect chimney.
Smokes when door is open.	- Cold air blockage? Burn a piece of paper to establish a draft. - Insufficient draft? Add more pipe. - Let air stabilize before opening door. - Ensure baffles are positioned correctly. - Negative pressure? Open a window near the appliance.
Appliance emits odour.	Paint curing. See "GENERAL INSTRUCTIONS" section.
Stove doesn't burn hot enough.	- Wood is too wet. - Insufficient draft? Add more pipe. - Not enough air? Open the door 1". Also ensure that the air opening is not obstructed.
Wood burns too fast.	- Check door gasket for adequate seal. - Wood may be extremely dry.
Dirty glass.	Burn hotter, smaller fires. Use well seasoned wood.



WARNING

FAILURE TO POSITION THE PARTS IN ACCORDANCE WITH THIS MANUAL OR FAILURE TO USE ONLY PARTS SPECIFICALLY APPROVED WITH THIS APPLIANCE MAY RESULT IN PROPERTY DAMAGE OR PERSONAL INJURY.

8.1 EXPLODED VIEW

10. GENERAL WARRANTY TERMS AND CONDITIONS

10.1 GENERAL INFORMATION

This quality manufactured product is state of the art. The materials used were meticulously selected and are constantly checked, as is our entire production process.

Setting up or installing this product requires specialized knowledge. Our products may therefore only be installed and commissioned by specialized firms and in compliance with statutory regulations as amended.

10.2 WARRANTY PERIOD

The General Warranty Terms and Conditions apply only within the USA and Canada. The warranty period and scope of the warranty in accordance with these terms and conditions shall apply apart from the statutory guarantee, which remains unaffected.

Spartherm Feuerungstechnik GmbH gives a 5-year warranty on:

Basic body wood insert

Spartherm Feuerungstechnik GmbH gives a 24-month warranty on elevating mechanisms, operating devices such as handles, adjustment levers, shock absorbers, electronic and electrical components such as exhausters, governors, original spare parts, all purchased parts and safety devices.

Spartherm Feuerungstechnik GmbH gives a 6-month warranty on wearing parts around the fire, such as refractory bricks, vermiculite, fire grates, seals and glass ceramics.

10.3 REQUIREMENT OF EFFECTIVENESS FOR THE WARRANTY

The warranty period starts on the date of delivery to the dealer / intermediary. This must be verified from a document such as an invoice with the dealer / intermediary's confirmation of delivery. The warranty certificate relating to the product must be produced by the claimant when making a warranty claim.

If such proof is not produced Spartherm Feuerungstechnik GmbH shall not be obliged to honour the warranty.

10.4 WARRANTY EXCLUSIONS

The warranty does not cover:

- wear and tear to the product
- Refractory bricks/ vermiculite:

These are natural products subjected to expansion and contraction during the heating process. This may create cracks. For as long as the linings remain in position in the fire chamber and do not break up, they remain fully functional.

- the Surfaces:

Discoloration of the enamel or galvanized surfaces caused by thermal stress or overload.

- the elevating mechanism:

If the installation instructions are not correctly followed, resulting in overheating of the pulleys and bearings.

- the seals:

Reduced sealing due to thermal stress and hardening.

- the ceramic glass:

Soiling caused by soot or burnt-in residues of burnt materials as well as visibly changed colour or other aspects due to thermal stress.

- improper transport and/or incorrect storage
- improper handling of fragile components such as glass and ceramics
- improper handling and/or use
- lack of maintenance
- incorrect installation or connection of the unit
- Non-observance of the installation and operating instructions
- technical modifications to alter the unit by third parties

- installation that does not comply with industry practice on installation instructions

10.5 NOTE

Your specialist dealer/contractor will gladly advise and assist you in matters not covered by our warranty terms and conditions and undertakings. We particularly advise you to have your wood insert/stove serviced regularly by a stove fitter.

Technical data subject to change errors and omissions excepted.

This heater must be serviced annually depending on usage.

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EN Your specialist dealer | **FR** Votre revendeur spécialisé



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www.youtube.com/sparthermgermany

www.spartherm.com



Spartherm Feuerungstechnik GmbH

Maschweg 38 | 49324 Melle | Tel.: +49 5422 9441-0

Informations Sur La Sécurité

Listée par / Fabriqué par:
Spartherm Feuerungstechnik GmbH
Maschweg 38
GER – 49324 Melle, Germany
info@spartherm.com

Appareil de Chauffage a combustion solides
Tested aux Normes: UL-1482-11, ULC-S628 M93,
U.S. Enviroment Protection Agency: Certified to comply with 2020
Particulate emission standards using crip wood: emission rate 1.8 g/hr
Model: Spartherm Cassette 600 Insert
Date de Fabrication:
Mois/Année: 09/2024
No de Serie: S 600 Insert - 014

POUR EVITER LES INCENDIES DOMESTIQUES:

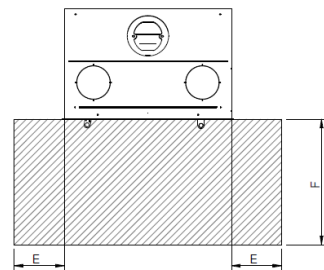
Inspection dans votre région. Installez et utilisez uniquement conformément aux instructions d'installation et d'utilisation du fabricant et aux codes locaux. En l'absence de codes locaux, l'installation doit répondre aux exigences minimales de NFPA 211 aux États-Unis et de B365 au Canada. Reportez-vous aux instructions du fabricant et aux codes locaux pour connaître les précautions nécessaires pour faire passer une cheminée à travers un mur ou un plafond combustible. Inspectez et nettoyez fréquemment le système de cheminée conformément aux instructions du fabricant. Ne raccordez pas cet insert à un conduit de cheminée desservant un autre appareil. Ne pas utiliser de grille ou élever le feu. Faites du feu de bois directement sur le foyer. Cet insert de foyer doit être installé avec une doublure de cheminée continue de 6 ou 7 pouces de diamètre s'étendant de l'insert de cheminée jusqu'au sommet de la cheminée. Le revêtement de cheminée doit être conforme aux exigences de classe 3 de CAN / ULC-S635. Norme pour les systèmes de revêtement pour maçonnerie existante ou cheminées et événements construits en usine, ou CAN / ULC-S640. Norme pour les systèmes de revêtement pour les nouvelles cheminées de maçonnerie.

POUR EVITER LES FEUX DE CREOSOTE :

Inspectez et nettoyez la cheminée régulièrement - Sous certaines condition d'emploi, la creosote peut s'accumuler rapidement. Ne pas utiliser d'autres combustibles que le bois.

ATTENTION: N'utilisez le poêle que lorsque les portes sont complètement fermées. Remplacer la vitre uniquement avec du verre Robax céramique de 4 mm. Il faut que les zones du foyer vitré qui portent les canaux d'alimentation d'air chaud et froid soient conformes à l'instruction de montage du fabricant. L'approvisionnement en revêtement fait de matériaux ininflammables devant l'ouverture du foyer vitré doit être installé conforme à l'instruction de montage du fabricant. L'aération suffisante pour l'utilisation du foyer est nécessaire! Dans l'emplacement du foyer vitré il faut assurer au moins 14 pouces carée (90,3 centimètres carée) de l'air de dehors ou il faut assurer l'alimentation en air de combustion directe au foyer vitré par une tube d'un diamètre de 4 pouces carée (101,6mm). Un manque d'air d'appoint pourrait priver les autres appareils de combustion d'une alimentation d'air adéquate. Ne pas obstruer les entrées et sorties d'air en aucun cas. Les composantes utilisées dans l'appareil doivent être répertoriées. Voir manuel. N'utilisez pas d'insert de cheminée ou autres produits qui ne sont pas autorisés pour l'usage de ce produit.

ATTENTION: Ce poêle à bois n'est pas conçu pour brûler avec un bûche à gaz. Ce foyer vitré à bois doit être entretenu et réparé à intervalles réguliers pour assurer un fonctionnement correct. Veuillez consulter s.v.p. pour de plus amples informations les instructions du fabricant. Il est contraire aux dispositions de l'autorité d'exploiter ce foyer vitré à bois incompatible au manuel du fabricant.



Protection de sol pour Canada: 18" (457 mm)
de l'avant de l'appareil au bord de la protection.

ECARTEMENT MINIMUM AUX MATERIAUX COMBUSTIBLES

- | | | |
|----|--|----------------------------|
| A. | 7.25" / 184mm | |
| B. | 15" / 381mm | |
| C. | 15" / 381mm | |
| D. | Unité largeur et ajouter 8" / 203mm de chaque côté | |
| E. | 8" / 203mm de chaque côté | |
| F. | Pour les USA: 16" / 406mm | Pour le Canada 18" / 457mm |
| G. | 9.25" / 235mm | |

G. 9.25
DEVANT L'APPAREIL

Quantité de bois recommandée: 1,8 kg/hr
Min. / Max sortie (kW): 20,345 BTU/hr

* **Non testé** - Exigences NFPA aux Etats-Unis, CAN/CSA B365-M91 au Canada. La protection de sol doit avoir une épaisseur de 3/8 pouces (1 cm), être d'un matériau non combustible et être placée devant et à côté de la porte ainsi qu'à l'arrière, comme indiqué.

ATTENTION:

**CHAUD PENDANT LE FONCTIONNEMENT – NE PAS TOUCHER.
TENIR ÉLOIGNÉS LES ENFANTS ET LES VÊTEMENTS –
LE CONTACT PEU CAUSER DES BRULURES. CONSULTEZ
LA PLAQUE D'IMMATRICULATION ET LES INSTRUCTIONS.
TENIR LES FOURNITURES ET AUTRES MATIÈRES
COMBUSTIBLES À DISTANCE DE L'APPAREIL.
NE PAS INSTALLER DANS UNE MAISON MOBILE.
ÉVITER DE SURCHAUFFER – SI LE FEU OU LA CHEMINÉE
DEVIENT ROUGE, VOUS SURCHAUFFEZ.**



NE PAS ENLEVER CETTE ETIQUETTE

APPENDIX 8: Photographs of test set up

Dilution picture Dia 8 no. EG-029

Polytests Services Inc. 695 B rue Gaudette, St-Jean-sur-Richelieu Québec, Canada, J3B 7S7



Velocity ports at 90 degrees and tunnel temperature sensor location

Particulate sample extraction ports located 48 inches under (requirement $4D=32$ inches minimum) velocity ports and 18 inches above downstream Tee. (Requirement $2D=16$ inches minimum)

Adjustable damper for flow adjustments

Extraction blower



Last elbow from
horizontal run

8 inches diameter
stainless steel pipe

Velocity ports located 138
inches downstream of the
last elbow (requirement
 $8D=64$ inches minimum)
and 48 inches upstream of
the sampling ports
(requirement $4D=32$
inches minimum)

Total length between hood and sampling port: 23 feet.



Two 8 inches elbow with horizontal mixing section.

60 inches horizontal run between two elbows. Mixing section, No mixing baffle. 8 inches diameter pipe

Hood diameter 32 (requirement $4D=32$ inches minimum) inches and height of 24 inches (requirement $3D=24$ inches minimum)

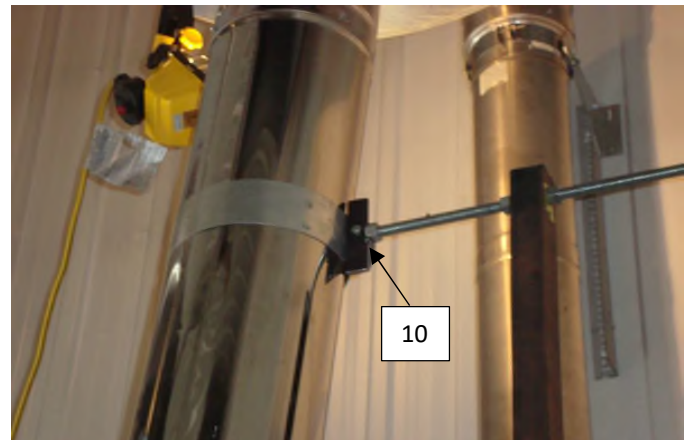
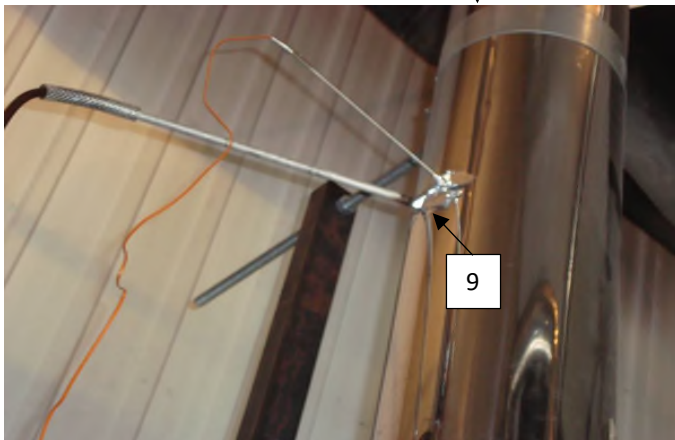
All pipe joints are sealed.

Stack sampling



Gas analysis and temperature probe

chimney support



9

 : Temperature and gas analyser sampling ports located 9 feet above platform

10

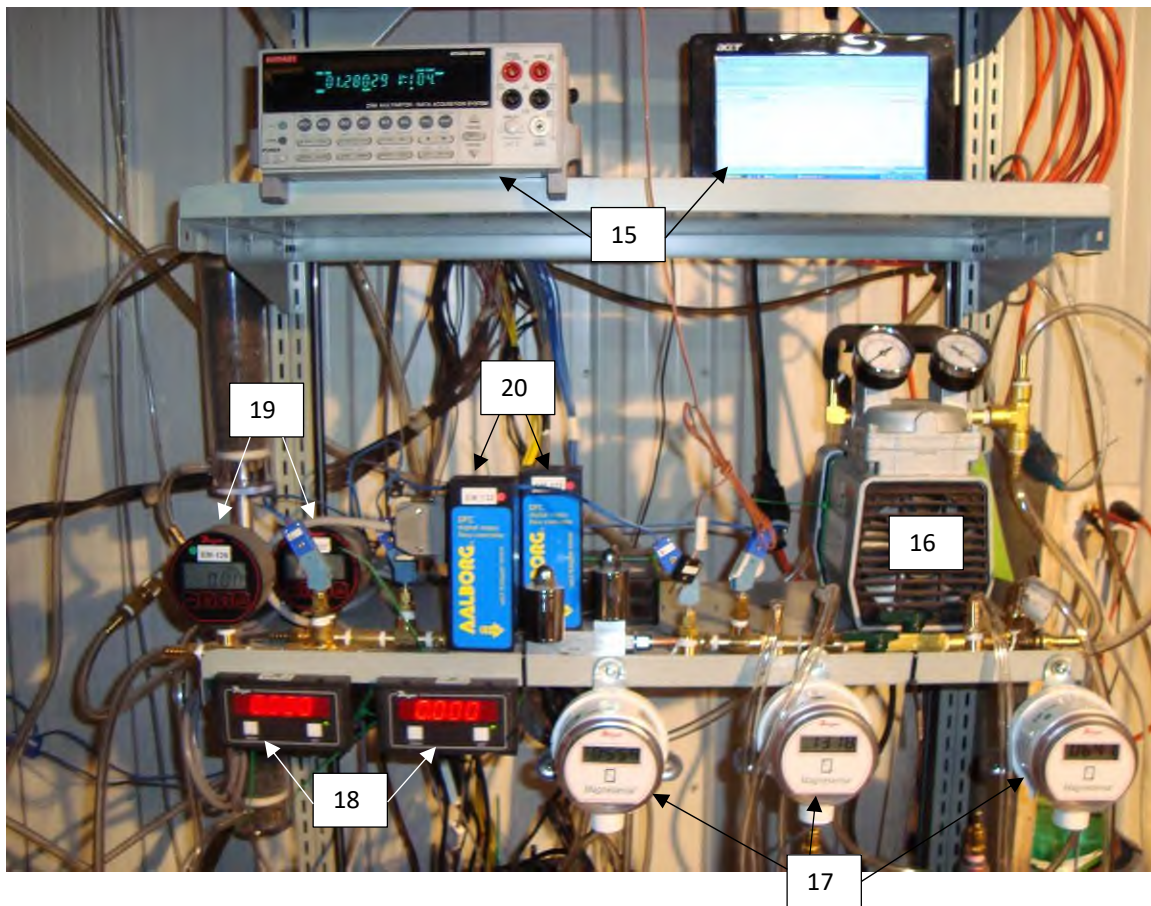
 : Exhaust system support bracket

Draft sampling



14 : Draft sampling port located 6 in. from the flue outlet

Equipment's



15 : Acquisition system

16 : Vacuum pump

17 : Digital manometer

18 : Digital read out for mass flow meter

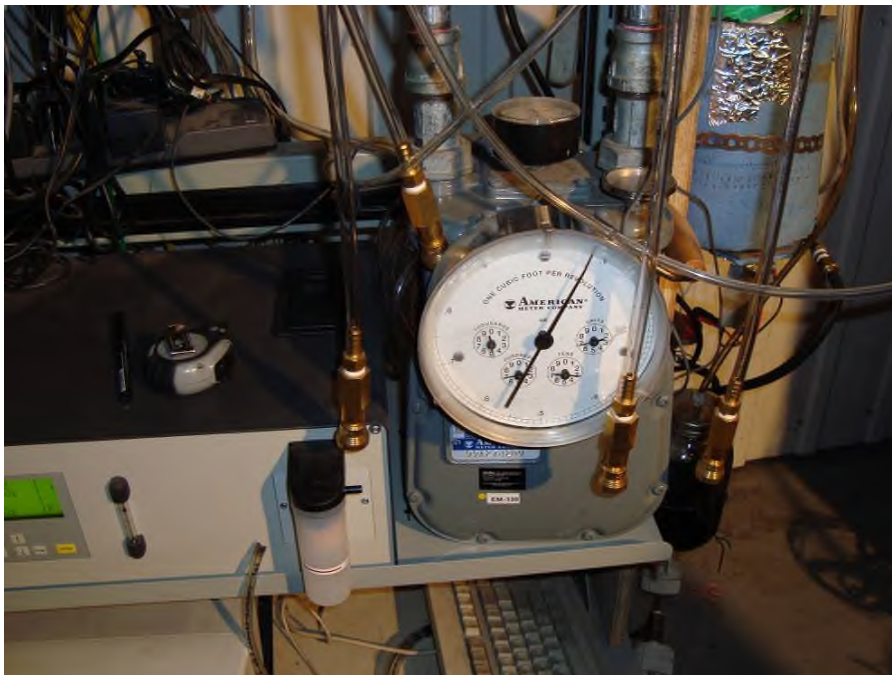
19 : Digital vacuum gage

20 : Mass flow meter

Gaz analyser



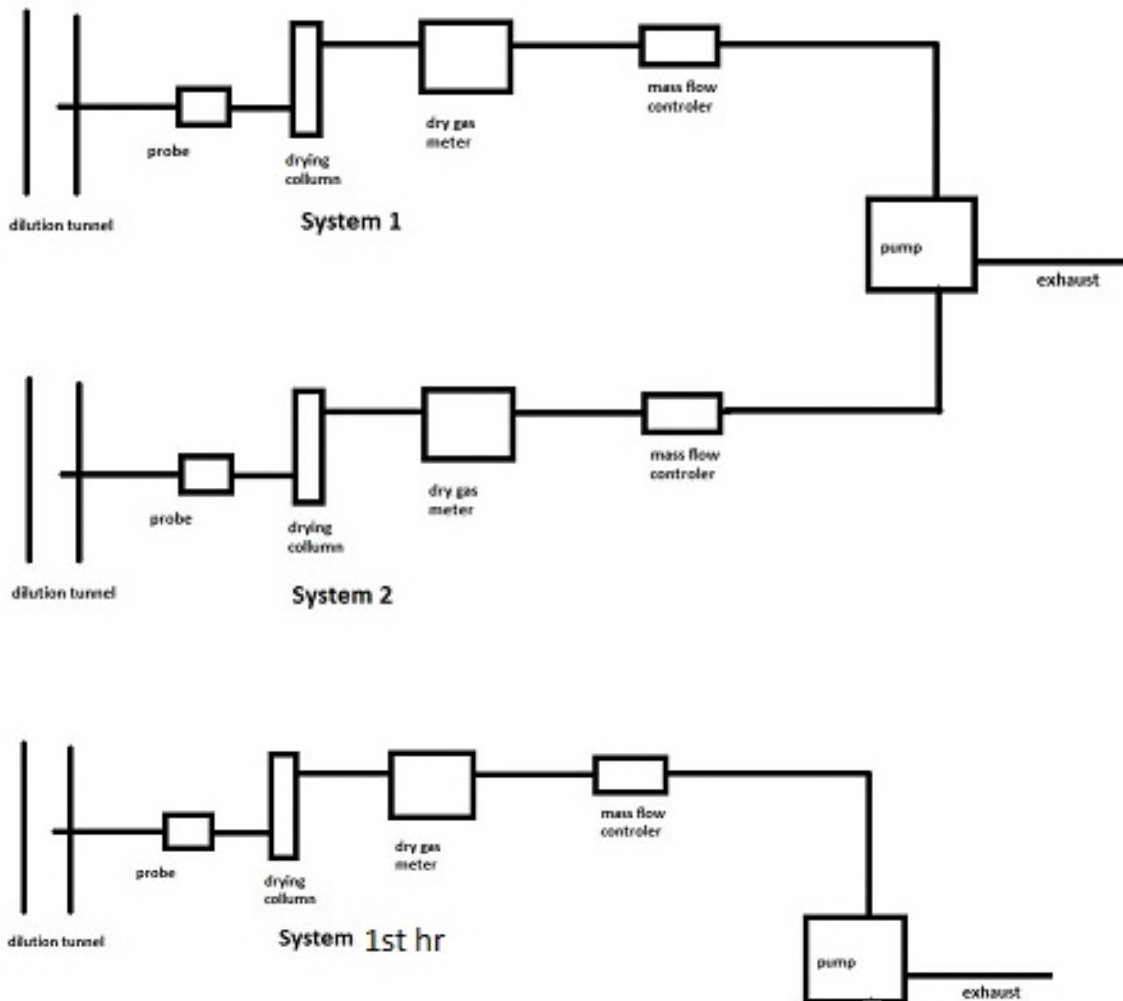
Reference dry gas meter



Dry gas meter for train 1, train 2 and room filter.



Dilution tunnel sample system



Dilution tunnel

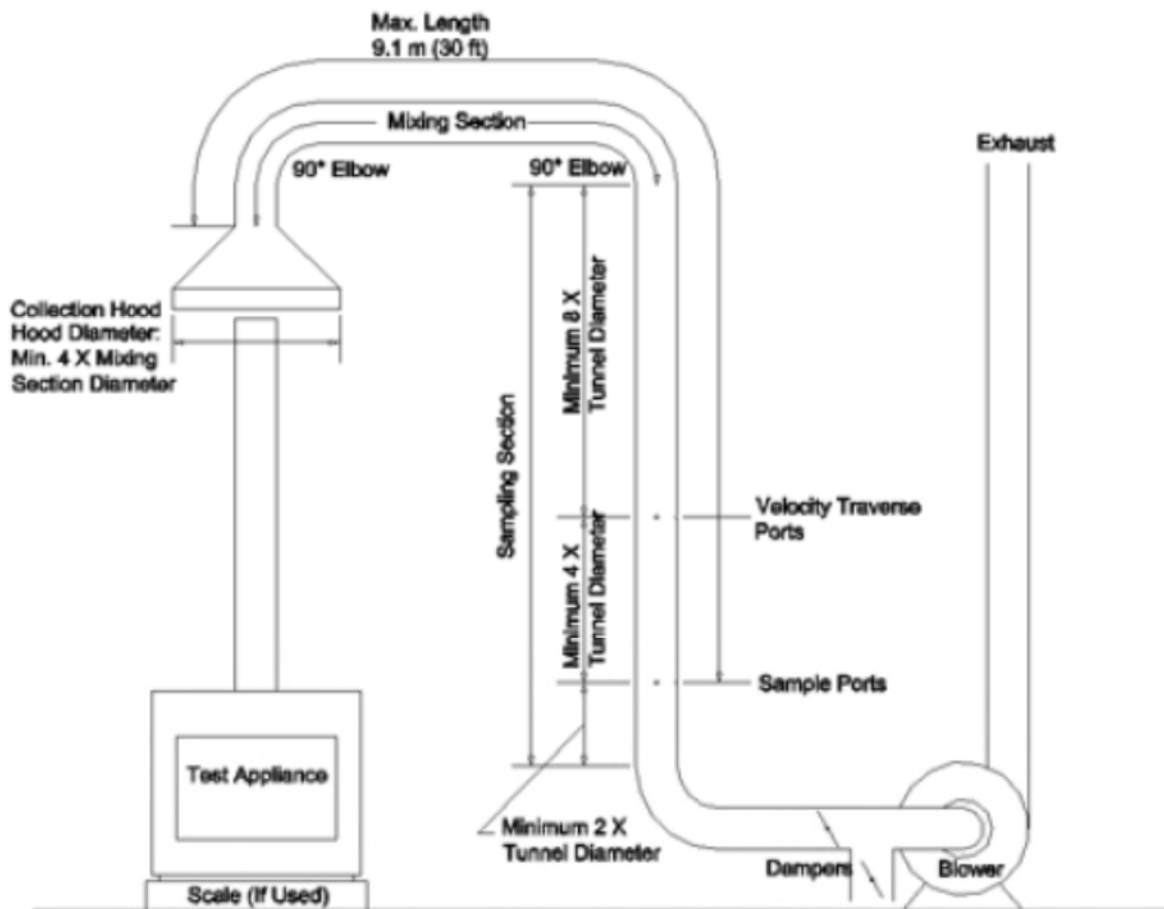


FIG. 3 Steel-Constructed Dilution Tunnel Apparatus

APPENDIX 9: Test load photographs

Run 1 September 16th 2024

Testing load



Preburn load



Charcoal / coal bed for load



Load in stove



Run 2 September 17th 2024

Testing load



Preburn load



Charcoal / coal bed for load



Load in stove



APPENDIX 10: Laboratory Operating Procedures

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SFBA EMISSIONS AND EFFICIENCY TESTING LABORATORY OPERATING PROCEDURE

INTRODUCTION

This document provides a step-by-step guide for the technician conducting tests to EPA standard requirements. Procedures outlined here, when followed, will result in tests in conformance with EPA Methods 28R, ASTM E2780, ASTM E2515, ASTM E2618, Method 28WHH, Method 28 PTS, Method ALT-125, ASTM E3053, ALT-134, ASTM E2779

The primary measurements to be made are particulate emissions rates. The technician's duties include the following steps.

1. Incoming inspection of test units.
2. Set-up of test units.
3. Preliminary testing to establish unit operating procedures and familiarity with operating controls.
4. Calibration of test equipment.
5. Set-up, checking and operation of sampling apparatus.
6. Conduct of tests including complete record keeping and data recording for non-automated functions.
7. Operation of hardware and software included in automatic data acquisition system.
8. Review and analysis of data at test completion to ensure test validity.

The technician running this test must be familiar with the following documents, which are to be kept in the laboratory at all times.

EPA METHODS

1. EPA METHODS 28R
2. ASTM E2780
3. ASTM E2515
4. ASTM E2618
5. METHOD 28WHH
6. METHOD 28 PTS
7. ALT-125
8. ASTM E3053
9. ALT-134
10. ASTM E2779

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SFBA EMISSIONS AND EFFICIENCY TESTING LABORATORY OPERATING PROCEDURE

I. APPLIANCE INSPECTION AND SET-UP

A. INCOMING INSPECTION

1. Check for completeness of unit including parts, accessories, installation and operating instructions, drawings and specifications etc. Note any discrepancies or missing parts or information.
2. Check for shipping damage. If damage has occurred, notify the laboratory manager. In some cases, repairs may be made, provided the manufacturer and laboratory manager concur that repairs will not affect the unit's performance. If damage is irreparable, a new unit will need to be obtained.
3. Note whether unit is catalytic or non-catalytic.
4. Mark unit with manufacturer's name, model number, work order number and date received.
5. If unit is safety listed, note label data including listing agency and serial number. If unit is not listed, mark all data sheets "UNLISTED". Test results will not be released until unit passes safety tests without modification unless authorized by laboratory manager.

B. UNIT SET-UP

1. All new units must be operated for a breaking in period as follows.

- a) Fifty (50) hours at medium burn rate with Douglas Fir scrap or cordwood. Between 18% and 25% MC.

During these break-in runs the unit may be connected to a lab chimney and fuel additions noted into the corresponding data acquisition file. For catalytic units, a thermocouple must be installed in the catalyst.

Record catalyst temperature at 1-hour intervals or on chart recorder. Operating should continue until data shows at least fifty (50) hours of operation with catalyst temperature in excess of 500 degrees Fahrenheit (active range).

For non-catalytic units a stack thermocouple should be installed and stack temperature recorded at 1-hour intervals. 50 hours minimum burn time with a stack temperature of at least 250 degrees Fahrenheit is required.

Once break-in is completed, allow unit to cool. Clean unit thoroughly.

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2. Unit is to be placed on scale for testing. Prior to proceeding with verification process, scale should be turned on and allowed to warm up for one (1) hour minimum. Zero scale and check calibration with standard weights. One (1) 1 kg weight and one (1) 2 kg weight are provided for this purpose. Use scale verification test form no. EPA-7-TP to record results. If scale fails to reproduce weights within tolerance, check with laboratory manager before proceeding.
3. If scale checks out, place unit on scale and align so chimney will be centered in hood.
4. Attach chimney connector and chimney. Be sure all joints are sealed below sampling points. Chimney and connector should be cleaned with a wire brush. Be sure chimney connector terminates and chimney starts at proper level above scale platform. Chimney must be supported from scale so that it does not touch test enclosure or hood walls.
5. Thermocouples should be attached to surfaces of unit prior to testing. EPA requires a thermocouple on the bottom of the firebox. This must be installed prior to putting the unit on the scale. In some cases, the required thermocouple locations will be inaccessible on finished units. These units should have thermocouples installed by the manufacturer during construction. Check with the laboratory manager if problems are encountered in proper thermocouple attachment.
6. Measure firebox dimensions and record on data forms nos. EPA-2-TP. Make a three-dimensional sketch of the firebox including firebrick, baffles and obstructions. Calculate firebox volume in cubic feet with both addition and subtraction methods using forms nos. EPA-3-TP and EPA-4-TP. See Section 6.2.4 of EPA Method 28 for details of firebox volume determination.
7. If unit is catalytically equipped, additional thermocouples must be installed upstream and downstream of catalyst. Thermocouples should also be placed in the primary and secondary combustion chambers of all units.
8. Plug thermocouples into data acquisition system jacks making a check of locations and jack numbers for each test on data form no. EPA-5-TP.
9. Note that inserts are tested as if they are freestanding stoves.
10. Dilution tunnel should be cleaned prior to each certification test series and at anytime a higher burn rate follows a lower test burn rate.

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II. SAMPLING SYSTEM – SET-UP

A. GAS ANALYSIS

1. Instruments should be turned on and allowed to warm up for one (1) hour minimum.
2. Calibrate analyzers as follows:

NOTE: Prior to proceeding with calibration, make sure to use NIST traceable calibration gas bottles. Adjust flow meter, if necessary, at each instrument to required flow value.

- a) Using span gas, adjust span control to values specified on calibration gas label.
- b) Using nitrogene, adjust zero controls to provide a 0.00 analyzer readout.
- c) Repeat a) and b) until no further adjustment is required.
- d) Check readout vs. calibration gases (2) labels.

The CO₂ and CO analyzers are “ZEROED” on nitrogen. The O₂ analyzer is spanned on air and set for 20.9%. It is zeroed on nitrogen as well.

3. Check for response time synchronization.
 - a) With no fire in unit, allow reading to stabilize (O₂ should be 20.93, CO and CO₂ should equal 0).
 - b) Flow the calibration gas in the unit and start stop watch. Note the time required for each unit to reach .90 of the calibration gas bottle value. If all three analyzers reach this value within 15 seconds of each other, synchronization is adequate. If not, contact the laboratory manager. Synchronization is adjusted by internal instrument setting.
4. Set-up sample clean-up and water collection train as follows.
 - a) Load impingers as follows:
Impinger #1: 100 ml distilled water and 5 ml H₂SO₄
Impinger #2: 100 ml distilled water and 5 ml H₂SO₄
Impinger #3: Empty
Impinger #4: 200 – 300 grams silica gel (dry)
 - b) Place impingers in container and connect with “U TUBES”. Grease carefully on bottom half of ball joint so that grease will not get into tubes.

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- c) Connect filter to first impinger and sample line to last impinger.
- e. Leak check system as follows.
 - 1) Plug probe.
 - 2) Turn on sample system.
 - 3) Observe sample flow rotometer and vacuum gauge. If necessary, use vacuum; adjust valve to set vacuum to the maximum inches Hg.
 - 4) If the float in rotometer does not stabilize below 10 on scale, system must be resealed.
 - 5) Repeat leak check procedure until satisfactory results are obtained.
- f) Just prior to starting test, fill impinger container with water and ice and record ambient conditions on data form no. EPA-8-TP.

B. DILUTION TUNNEL SAMPLE TRAIN SET-UP

- 1. Filters and holders.
 - a) Clean probes and filter holder front housings carefully and desiccate for at least 48 hours prior to use.
 - b) Filters should be numbered and filter and probe combinations labeled prior to use.
 - c) Weigh desiccated filters and probe-filter units on analytical balance. Record weights data form no. EPA-10-TP. Note that probe and front half of front filter are to be weighed as a unit.
 - d) Carefully assemble filter holder units and connect to sampling systems. Check "DRIERITE" columns for adequate dry absorbent (blue).
- 2. Leak checking.
 - a) Each sample system is to be checked for leakage prior to inserting probes in tunnel.
 - b) Plug probes and start samplers, adjust pump bypass valve to produce a vacuum reading of 10 inches Hg. (NOTE: During test, vacuum must not exceed 10 inches unless posttest leak check shows acceptable results.)
 - c) Allow vacuum indication to stabilize for two (2) minutes, then record time and dry gas (DGM₁) and (DGM₂) meter readings. Wait ten (10) minutes and record dry gas meter readings again (DGM₃, DGM₄).

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NOTE: If mark, system is leaking too much and all seals should be checked.

d) Calculate leakage rate as follows.

1) System 1: $\frac{(DGM_3 - DGM_1)}{10} = CFM_1$

2) System 2: $\frac{(DGM_4 - DGM_2)}{10} = CFM_2$

If CFM_1 or CFM_2 is greater than .02 CFM, leakage is unacceptable and system must be resealed.

If CFM_1 or CFM_2 is greater than $0.04 \times \text{sample rate}$, leakage is unacceptable. For most tests, the sample rate will be about 0.15 CFM, thus leakage rates in excess of $0.04 \times 0.15 = 0.006$ CFM are not acceptable. Record leakage rates on form no. EPA-5-TP

e) Once leakage check is satisfactory, unplug probe and set flow to appropriate rate for test. This should be done in the minimum amount of time necessary and with the probes in ambient air. Do not insert probes in tunnel until the start of the test run. When flow is established, replug probes to prevent contamination.

III. TEST CONDUCT

A. FUEL LOAD

1. Determine optimum load weight by multiplying firebox volume in cubic feet by 7 or (10 and 12 for cordwood method). This is the load weight on an as-fired basis.
2. Determine piece size to obtain the requested load configuration and meet the test load weight criteria. The load should consist of the following: **TO BE DETERMINED**
3. Weigh out test load and adjust weight by shortening all pieces equally if necessary. Record individual piece load on form no. EPA-11-TP.

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4. Measure and record moisture content of each fuel piece using Delmhorst moisture meter. Determine if fuel load moisture content is in required range. If not, construct new load using wood with required moisture content. All wood in the humidity chamber should be within range. Contact project manager if you cannot find suitable pieces. Record moisture of each individual piece load on form no. EPA-11-TP.

B. UNIT START-UP

1. Before lighting a fire, turn on dilution tunnel and set tunnel velocity to 500ft/min Record readings on data form no. EPA-9-TP.
2. Check draft imposed on cold stove with all inlets closed and a draft gauge in the chimney. If draft is greater than 0.005 inches water column, adjust tunnel to stack gap until draft is less than 0.005.
3. Check for ambient airflow around unit with hot wire anemometer. Must be less than 50 ft/min.
4. Check all equipment for proper operation. Analyzers should be on and in sample mode. Computer should be loaded with test program and awaiting test start command.
5. Zero scale and start fire with uncolored newspaper and kindling representing 10 % of test load with the same type of fuel.
6. Once kindling is burning well after 5 minutes, add splitted pieces having a bottom surface around 4 sq. inches and representing 25% of test load weight. Operate at high fire for 15 minutes. Then adjust settings to intended test run levels as per the manufacturers.
7. Following addition of pretest fuel load (splitted pieces), start computer for data logging.
8. All fuel additions, air intake settings and operational characteristics shall be noted with associated time stamp on form no. EPA-1-TP.

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C. TEST RUN

1. Once the targeted test fuel bed weight is obtained, the test is to be started as follows:

- a) Insert the sample probes into the tunnel being careful not to hit sides of tunnel with probe tip.
- b) Check tunnel pitot tube for proper position. (Pitot should be carefully cleaned prior to each test.)
- c) Turn on probe sample systems and stack sampler.
- d) Open stove door, rake coals and load stove as follows: **TO BE DETERMINED**
- e) Close door or follow manufacturer's start-up procedures. (Five (5) minutes maximum time before all doors and controls must be set to final positions for duration of test. 15 minutes or 15% of lad burned allowed for ALT-125 method))
- f) An alarm will sound an audible signal at the (10) minutes intervals. This signals a reading interval. You must verify at each interval that the following readings are correctly logged by the data acquisition system and make observations of any unusual or non-routine events that could occur.

- 1) Rotometer readings.
- 2) Tunnel pitot tube reading.

(Zero regularly between readings)

- 3) Gas meter readings.
- 4) Temperature readings.
- 5) Draft reading
- 6) Test load weight
- 7) CO, CO₂ and O₂ readings
- 8) Observations of any unusual or non-routine events.

- g) During the test, any condition approaching unacceptable limits will be noted. The filter probes and housings are installed in small holders just outside the tunnel. If the filter temperature gets too high, you will have to increase the water flow through the cooling unit until acceptable temperatures are obtained. In between readings, check on other equipment. Be sure dryers and filters are working and monitor impinger train for proper water and ice levels etc.
- h) When the fuel charge is consumed, it will signal end of test and shut down the sampling systems. When this occurs,

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remove filter holder and probes from tunnel and impingers from sample line.

IV. POST TEST PROCEDURES

A. SAMPLE RECOVERY – FILTER TRAINS

1. Carefully clean outside of probes and filter housings with alcohol.
2. Disassemble filter holder and transfer filters to clean petri dish. Scrape gasket with scalpel and collect any loose material on filters.
3. Place probe and front half of first filter holders (still assembled) and filters in desiccator. Allow 48-hour desiccation before weighing.
4. Weigh probe filter holder units and filters at six (6) hour intervals minimum until weight change between weightings is less than 0.2 mg. Record all weights taken on data form no. EPA-10-TP.

B. CALCULATION OF RESULTS

The computer program carries out all final calculations. When run, it will ask for data from forms used during the test. Enter data as called for.

GENERAL

This guide cannot cover every possible contingency, which may develop during a particular test program. Many questions, which may arise, can be answered by a complete understanding of the test standards and their intent. When in doubt on any detail, check with the laboratory manager and be sure you understand the procedures involved.

It is critical that all spaces on the data forms be properly filled in. Each test must be represented by a complete record of what was done and when.

APPENDIX 11: Sample calculations

Validation du fichier de calcul avec les équations provenant des normes:

ASTM E2515-11

ASTME2618

Dry burn rate (BR)

Equation used

B415.1, 13.4

$$BR = \left[\frac{60W_{WD}}{\theta} \right] \left[\frac{100 - \%M_W}{100} \right]$$

Nomenclature

BR	Dry wood burn rate, kg/hr (lb/hr)
W_{WD}	Total mass of wood burned (wet basis) during the test run, kg (lb)
θ	Total time of test run, minutes
$\%M_W$	Average moisture in test fuel charge, wet basis, %
	To convert from dry basis to wet basis: % moisture wet basis =

Sample calculation

Data

W_{WD}	6,598 lbs
θ	86 min
$\%M_W$	16,21 %

Calculation

BR	1,750 Dry kg/hr
----	-----------------

Volume of gas sample corrected to dry standard conditions ($V_{m(std)}$)

Equation used

ASTM 2515, equation 6

$$V_{m(std)} = K_1 V_m Y \left[\frac{P_{bar} + \left(\frac{\Delta H}{13.6} \right)}{T_m} \right]$$

Nomenclature

$V_{m(std)}$	Volume of gas sample , corrected to standard conditions, dscm ³ (dscf)
K_1	17.64 R/in Hg
V_m	Volume of gas sample
Y	DGM calibration factor
P_{bar}	Barometric pressure mmHg (in Hg)
ΔH	Average pressure at the outlet of the dry gas meter mm water (in. Water)
T_m	Absolute average dry gas meter temperature K (R)

Sample calculation

Data

V_m	16,81 dcf
Y	1,0011
P_{bar}	29,72 in Hg
ΔH	-1,0783 in Hg
T_m	536,2 R

Calculation

$V_{m(std)}$	15,86 dscf
--------------	------------

Total amount of particulate matter collected (m_n)

Equation used

ASTM 2515, equation 12 $m_n = F_1 + F_2 + \Delta PF$

Nomenclature

- m_n Total amount of particulate matter collected, mg
- F_{1 + F2} Particulate matter collected on filters, mg
- ΔPF Post-test weight gain of probe and filter holder assembly, mg

Sample calculation

Data

- F_{1 + F2} 0,0013 g
- ΔPF 0,001 g

Calculation

- m_n 2,400 mg
- Calculation based of train 2 data

Particulate concentration (C_s)

Equation used

ASTM 2515, equation 13

$$C_s = (0,001 \text{ g/mg}) \times \left(\frac{m_n}{V_{m(\text{std})}} \right)$$

Nomenclature

C_s	Concentration of particulate matter in stack gas or dilution tunnel, dry basis, corrected to standard conditions, g/dsm ³ (g/dscf)
m_n	Total amount of particulate matter collected in the sampling train, mg
$V_{m(\text{std})}$	Volume of gas sample measured corrected to dry standard conditions, dsm ³ (dscf)

Sample calculation

Data

m_n	2,400 mg
$V_{m(\text{std})}$	15,86 dscf

Calculation

C_s	0,000151 g/dscf
Calculation based of train 2 data	

Particulate concentration for room air (C_r)

Equation used

ASTM 2515, equation 14

$$C_r = (0,001 \text{ g/mg}) \times \left(\frac{m_r}{V_{mr(std)}} \right)$$

Nomenclature

C _r	Concentration of particulate matter in room air, dry basis, corrected to standard conditions, g/dsm ³ (g/dscf)
m _r	Total amount of particulate matter collected in the sampling train, mg
V _{mr(std)}	Volume of room air sample measured corrected to dry standard conditions, dsm ³ (dscf)

Sample calculation

Data

m _r	0,100 mg
V _{mr(std)}	15,25 dscf

Calculation

C _r	0,000007 g/dscf
Calculation based of train 2 data	

Adjustment factor for alternative pitot tube placement (FP)

Equation used

ASTM 2515, equation 1

$$F_P = \frac{V_{strav}}{V_{scent}}$$

Nomenclature

V_{strav}	Average gas velocity caclulated after the Pitot tube traverse
V_{scent}	Average gas velocity at the center of the dilution tunnel cacluated after the multi-point Pitot traverse
F_P	Adjustment factor for center of tunnel pitot tube placement

Sample calculation

Data

V_{strav}	0,26458024
V_{scent}	0,280177094

Calculation

F_P	0,944332
-------	----------

Average dilution tunnel gas velocity (V_s)

Equation used

ASTM 2515, equation 9

$$V_s = F_p K_p C_p (\sqrt{\Delta P})_{avg} \sqrt{\frac{T_s}{P_s M_s}}$$

Nomenclature

V_s	Average dilution tunnel gas velocity, m/s (ft/s)
K_p	Pitot tube constant For the metric units: $34.97 \text{ m/sec} \left[\frac{(\frac{g}{g-mole})(mm \text{ Hg})}{(^{\circ}K)(mm \text{ H}_2\text{O})} \right]^{1/2}$ For English units: $85.49 \text{ ft/sec} \left[\frac{(\frac{lb}{lb-mole})(in \text{ Hg})}{(^{\circ}R)(in \text{ H}_2\text{O})} \right]^{1/2}$
C_p	Pitot tube coefficient (use 0.99 for standard pitot tube, 0.84 may be used for S-type tubes constructed according to Method 2 specifications)
F_p	Pitot tube correction factor
$(\sqrt{\Delta P})_{avg}$	Average square root of each individual velocity head (ΔP)
P_{bar}	Barometric pressure at measurement site, mm H ₂ O (in. H ₂ O)
P_g	Stack static pressure, mm Hg (in. Hg)
P_s	Absolute dilution tunnel static gas pressure, mm Hg (in. Hg), or $P_{bar} + P_g$
M_s	Molecular weight of dilution tunnel gas, wet basis, g/g-mole (lb/lb-mol) may be assumed to be 28.78 or 29 for CSA B415
t_s	Dilution tunnel temperature, $^{\circ}C$ ($^{\circ}F$)
T_s	Absolute dilution tunnel temperature, $^{\circ}K$ ($^{\circ}R$), or $273 + t_s$ for metric units, $460 + t_s$ for English units

Sample calculation

Data

K_p	85,49
C_p	0,99
F_p	0,944
$(\sqrt{\Delta P})_{avg}$	0,2732 in H ₂ O ^{1/2}
P_{bar}	29,72 in Hg
P_g	0,27 in H ₂ O
P_s	29,74 in Hg
M_s	29 lb/lb-mol
t_s	127,54 F
T_s	587,54 R

Calculation

V_s	18,0196 ft/s
-------	--------------

Average dilution tunnel gas flow rate (Q_{std})

Equation used

ASTM 2515, equation 3

$$Q_{std} = 60(1 - B_{ws})V_s A \left(\frac{T_{std}}{T_s} \right) \left(\frac{P_s}{P_{std}} \right)$$

Nomenclature

Q_{std}	Total gas flow rate corrected to dry standard conditions, dsm^3/min (dscf/min)
60	Conversion factor minutes per hour
B_{ws}	Water vapour in the dilution tunnel stream, proportion by volume (may be assumed to be 2%)
V_s	Average dilution tunnel gas velocity, m/s (ft/s)
A	Cross-sectional area of dilution tunnel, m^2 (ft^2)
T_{std}	Standard absolute temperature, 293 °K (528°R)
T_s	Absolute average dilution tunnel temperature, °K (°R), or $273 + t_s$ for metric units, $460 + t_s$ for English units
t_s	Dilution tunnel temperature, °C (°F)
P_s	Absolute dilution tunnel static gas pressure, mm Hg (in. Hg), or $P_{bar} + P_g$
P_{bar}	Barometric pressure at measurement site, mm Hg (in. Hg)
P_g	Dilution tunnel static pressure, mm Hg (in. Hg)
P_{std}	Standard absolute pressure, 760 mm Hg (29.92 in. Hg)

Sample calculation

Data

B_{ws}	0,02
V_s	18,020
A	0,196 ft^2
T_{std}	528 R
T_s	587,54 R
P_s	29,742 in Hg
P_{std}	29,92 in Hg

Calculation

Q_{std}	185,85 dscf/min
-----------	-----------------

Particulate emission rate (E)

Equation used

$$E = (C_S - C_r)Q_{std}$$

Nomenclature

E	Particulate emission rate, g/hr
C_S	Concentration of particulate matter in stack gas or dilution tunnel gas, dry basis corrected to standard conditions, g/dscm ³ (g/dscf)
C_r	Concentration of particulate matter in room air, g/dscm ³ (g/dscf)
Q_{std}	Total gas flow rate, dry basis corrected to standard conditions, dsm ³ /min (dscf/min)

Sample calculation

Data

C_S	0,000151 g/dscf
C_r	0,000007 g/dscf
Q_{std}	185,85 dscf/min

Calculation

E	0,03 g/min
E	1,61 g/h
Calculation based on train 2 data.	

Total particulate emission rate (E_T)

Equation used

ASTM 2515, equation 15 $E_T = (C_S - C_r)Q_{std}\theta$

Nomenclature

E _T	Total particulate emission, g
C _S	Concentration of particulate matter in stack gas or dilution tunnel gas, dry basis corrected to standard conditions, g/dscm ³ (g/dscf)
C _r	Concentration of particulate matter in room air, g/dscm ³ (g/dscf)
Q _{std}	Total gas flow rate, dry basis corrected to standard conditions, dsm ³ /min (dscf/min)
θ	Total sampling time, min

Sample calculation

Data

C _S	0,000151 g/dscf
C _r	0,000007 g/dscf
Q _{std}	185,85 dscf/min
θ	86 min

Calculation

E 2,31 g
Calculation based on train 2 data.

Average gas velocity in dilution tunnel during each min interval, i, of the test run

Equation used

ASTM 2515, equation 10

$$v_{si} = F_p K_p C_p \sqrt{\Delta p_i} \sqrt{\frac{T_{si}}{P_s M_s}}$$

Nomenclature

	Average gas velocity in dilution tunnel during each min interval, i of the test run
v_{si}	m/sec (ft/sec)
F_p	Pitot tube correction factor
K_p	Pitot tube constant
	For the metric units: $34.97 \text{ m/sec} \left[\frac{\left(\frac{\text{g}}{\text{g-mole}} \right) (\text{mm Hg})}{(^{\circ}\text{K}) (\text{mm H}_2\text{O})} \right]^{1/2}$
	For English units: $85.49 \text{ ft/sec} \left[\frac{\left(\frac{\text{lb}}{\text{lb-mole}} \right) (\text{in Hg})}{(^{\circ}\text{R}) (\text{in H}_2\text{O})} \right]^{1/2}$
C_p	Pitot tube coefficient (use 0.99 for standard pitot tube, 0.84 may be used for S-type tubes constructed according to Method 2 specifications)
Δp_i	interval, i, of the test run
T_{si}	Absolute average gas temperature in the dilution tunnel during the i^{th} minutes
P_s	Absolute dilution tunnel static gas pressure, mm Hg (in. Hg), or $P_{\text{bar}} + P_g$
M_s	Molecular weight of dilution tunnel gas, wet basis, g/g-mole (lb/lb-mol) may be assumed to be 28.78

Sample calculation

Data

i=1		i=2	
F_p	0,944	F_p	0,944
K_p	85,49	K_p	85,49
C_p	0,99	C_p	0,99
Δp_i	0,072 in H ₂ O	Δp_i	0,071 in H ₂ O
T_{si}	612,5 R	T_{si}	650,4 R
P_s	29,74 in Hg	P_s	29,74 in Hg
M_s	29 lb/lb-mol	M_s	29 lb/lb-mol

Calculation

i=1		i=2	
v_{si}	18,05 ft/sec	v_{si}	18,51 ft/sec

Percent of proportional sampling rate (PR)

Equation used

B415, equation 13.1

$$PR = \left(\frac{\theta V_{mi(std)} V_S T_m T_{Si}}{\theta_i V_m V_{Si} T_{mi} T_S} \right) \times 100$$

Nomenclature

PR	Percent of proportional sampling rate (%)
θ	Total sampling time, min
θ_i	Time of interval, 1 min
V_m	Volume of gas sample measured by the DGM, dsm ³ (dscf)
$V_{mi(std)}$	Volume of gas sample measured by the digital mass flow controller during the i th 1 minutes interval, dsm ³ (dscf)
V_S	Average gas velocity in the dilution tunnel, ft/min
V_{Si}	Average gas velocity in the dilution tunnel during the i th 10 minutes interval, ft/min
T_m	Absolute average digital mass flow controller temperature, K (R)
T_{mi}	Absolute average digital mass flow controller temperature during the i th 1 minutes
T_S	Absolute average gas temperature in the dilution tunnel, K (R)
T_{Si}	Absolute average gas temperature in the dilution tunnel during the i th 1 minutes

Sample calculation

Data

train =1			train =2		
θ	86	min	θ	86	min
θ_i	1	min	θ_i	1	min
V_m	13,98	dcf	V_m	15,87	dcf
$V_{mi(std)}$	0,166	cuft	$V_{mi(std)}$	0,1805	cuft
V_S	18,02	ft/sec	V_S	18,02	ft/sec
V_{Si}	18,064	ft/sec	V_{Si}	18,064	ft/sec
T_m	533,7	R	T_m	536,2	R
T_{mi}	531,76	R	T_{mi}	531,74	R
T_S	587,54	R	T_S	587,54	R
T_{Si}	612,5	R	T_{Si}	612,5	R

Calculation

train=1		train=2	
PR	106,5 %	PR	102,6 %

Filter face velocity check

Equation used

$$FV_{max} = \frac{V_{mL}}{1} \times \frac{1}{F_A}$$

Nomenclature

FV_{max}	Maximum filter face velocity during the test run, m/min (ft/min)
V_{mL}	Largest 1 minute interval metered gas volume value recorded during the test run, dm ³ (dcf)
F_A	Filter area exposed to gas sample during train operation, m2 (ft ²)

Sample calculation

Data

V_{mL}	0,178 dcf
F_A	0,0116 ft ²

Calculation

FV_{max}	15,37 ft/min
------------	--------------

Dual train precision

Equation used

$$\frac{\text{Train 1} - \text{average train 1 and train 2}}{\text{average train 1 and train 2}} \times 100 \leq 7.5\%$$

Nomenclature

Dual train precision	Deviation between emission's train 1 and 2
Train 1	Total emission for train 1
Train 2	Total emission for train 2

Sample calculation

Data

Train 1	2,41 g
Train 2	2,31 g

Calculation

Dual train precision	2,08 %
----------------------	--------

Analyzer drift checks

Equation used

$$Drift = \frac{\Delta R}{span} \times 100$$

Nomenclature

Drift	The change in analyzer response to calibration gas over the duration of the test run
ΔR	The difference between the analyzer response at the end of the test run and the
Span	The upper limit of the instrument range, ppmv or %

Sample calculation

Data

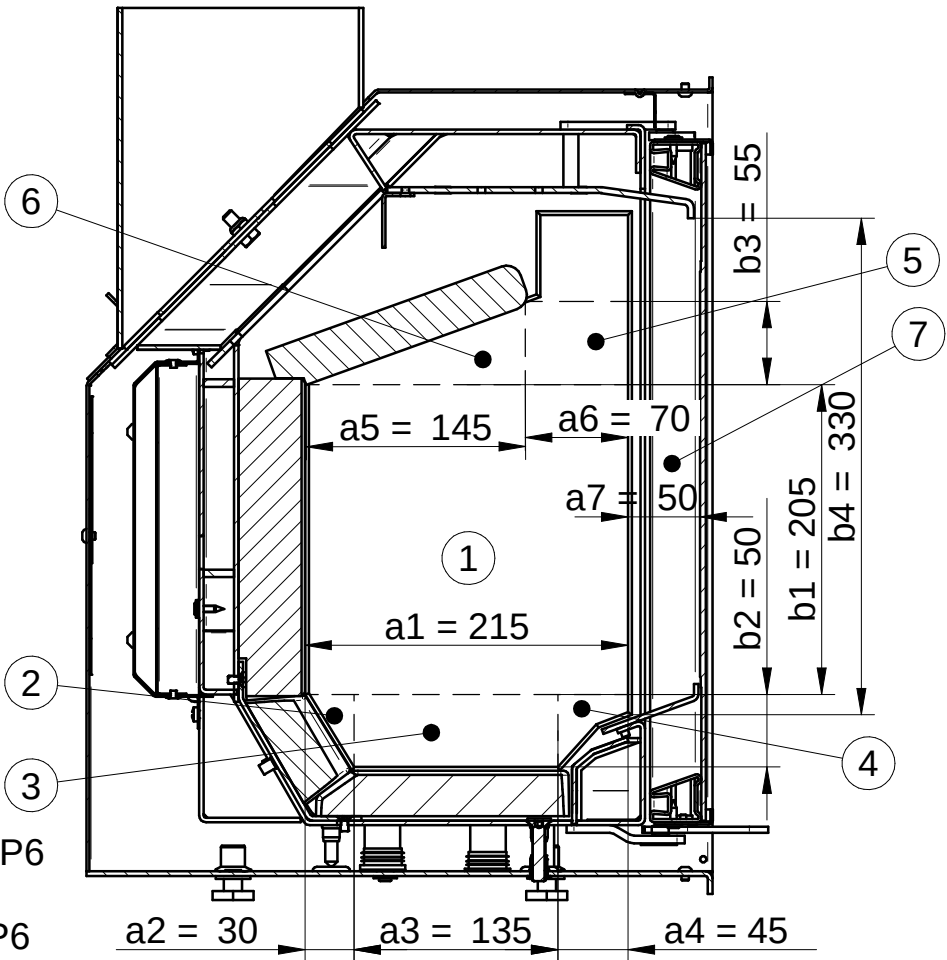
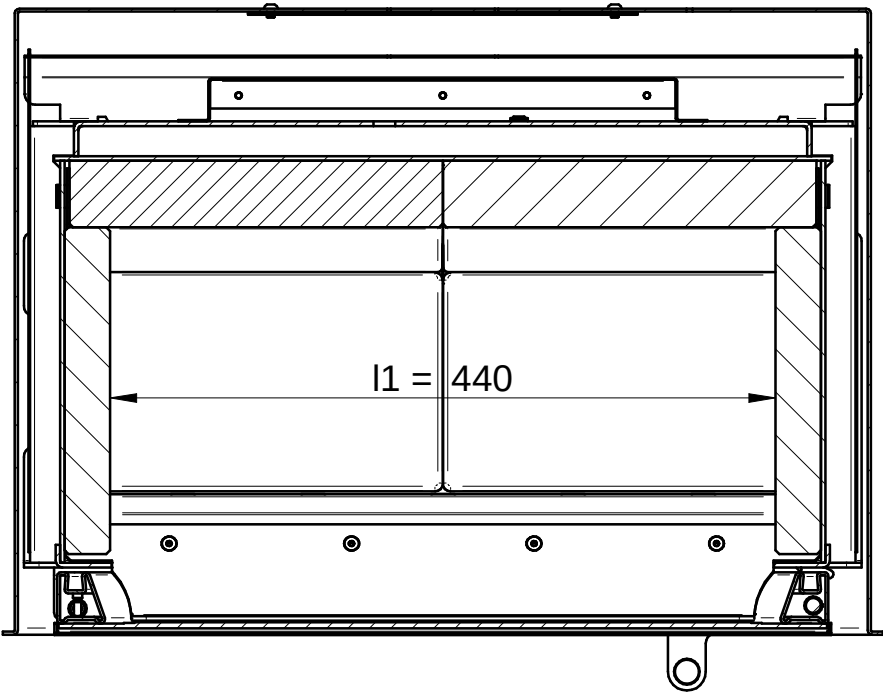
ΔR	0,015 %
Span	5 %

Calculation

Drift	0,30 %
-------	--------

Calculated with CO concentration values.

APPENDIX 12: Volume calculations



Spartherm-600 M-INSERT-P6
Spartherm-600 M-ZC-P6
Spartherm-600 M-Module-P6

				No. of substitute character:			Designation: combustion chamber volume			 SPARTHERM® THE FIRE COMPANY Maschweg 38; D-49324 Melle tel. 0 54 22/94 410; fax 0 54 22/94 41 14			
				Substituted by:							Assembly: Kassette - series		
				Material:									
					Name	Date	Product: Spartherm-600 S-P6						
						15.11.2024							
No	Modifications		Name	Date	Tested:		Drawing-No.: 29-2024-740-030.014						
Filename.: S600-P6.2.0.00.00-FULL.asm					Gen.:								
Dft - Filename.: 29-2024-740-030.014 Spartherm-600 M P6, combustion chamber volume					Scale	Format:	Page: 1	Mass:					
Dxf - Filename.:						A4	of: 2						

calculation									
part	1	A1 =	a1	·	b1				
		=	0,215	·	0,205	=	0,0441	m²	
		V1 =	A 1	·	l1				
			0,044075	·	0,44			= 0,0194	m³
								= 0,6852	ft³
part	2	A2 =	a2	·	b2	:	2		
		=	0,03	·	0,05	:	2,0000	=	0,00075 m²
		V2 =	A 2	·	l1				
			0,00075	·	0,44			= 0,0003	m³
								= 0,0106	ft³
part	3	A3 =	a3	·	b2				
		=	0,135	·	0,05	=	0,0068	m²	
		V3 =	A 3	·	l1				
			0,0068	·	0,44			= 0,0030	m³
								= 0,1060	ft³
part	4	A4 =	a4	·	b2	:	2		
		=	0,045	·	0,05	:	2,0000	=	0,00113 m²
		V4 =	A 4	·	l1				
			0,0011	·	0,44			= 0,0005	m³
								= 0,0177	ft³
part	5	A5 =	a6	·	b3				
		=	0,07	·	0,055	=	0,0039	m²	
		V5 =	A 5	·	l1				
			0,0039	·	0,44			= 0,0017	m³
								= 0,0601	ft³
part	6	A6 =	a5	·	b3	:	2		
		=	0,145	·	0,055	:	2,0000	=	0,00399 m²
		V6 =	A 6	·	l1				
			0,0040	·	0,44			= 0,0018	m³
								= 0,0636	ft³
part	7	A7 =	a7	·	b4				
		=	0,33	·	0,04			=	0,0132 m²
		V7 =	A 7	·	l1				
			0,0132	·	0,44			= 0,0058	m³
								= 0,2049	ft³
total		usable volume		0,0266		m³			
		part 1 - Part 6		0,94		ft³			
total		volume over all		0,0324		m³			
		part 1 - Part 7		1,15		ft³			

No	Modifications	Name	Date	No. of substitute character:	Designation:
				Substituted by:	combustion chamber volume
				Material:	Assembly:
					Kassette - series
				Drawn:	Product:
					Spartherm-600 S-P6
				Tested:	Drawing-No.:
				Gen.:	29-2024-740-030.014
				Scale	
				Format:	
				A4	
				Page:	
				of:	
				2	
				2	
				Mass:	

	
SPARTHERM®	
THE FIRE COMPANY	
Maschweg 38; D-49324 Melle	
tel. 0 54 22/94 410; fax 0 54 22/94 41 14	

APPENDIX 13: Operating instruction

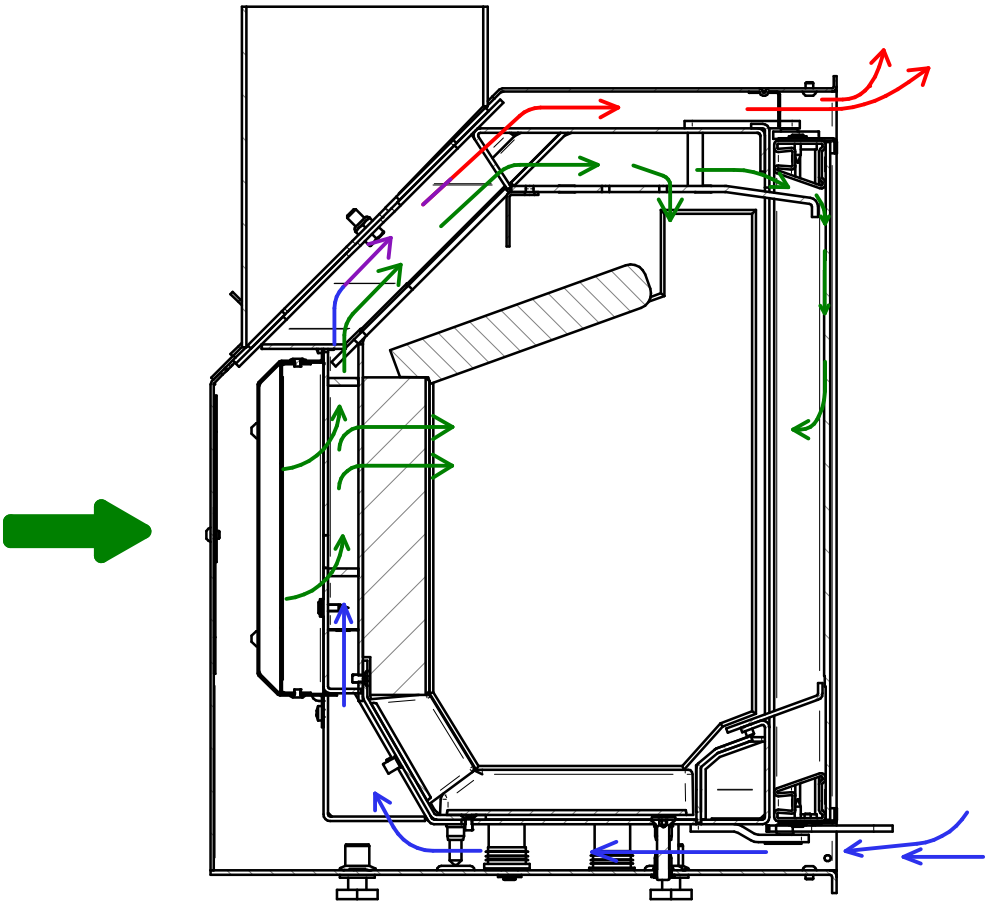
Spartherm 600 loading procedure

- Start the fire with approx 4lbs of kindling
- Keep door slightly open for a couple of minutes to ignite the fire
- Around 1.2lbs the preload can be inserted
- Close the door and let it burn to the allowable range of loading
- Around 1.4lbs, rake and level the coal
- Put the testing load in the firebox
- Keep the door slightly open for 3 to 4 minutes for a good ignition
- Close the door

APPENDIX 14: Drawing Air flow pattern

section A-A

detail air flow pattern



green: combustion air
blue: cold convection air
red: hot convection air

				No. of substitute character:				Designation:		 Maschweg 38; D-49324 Melle tel. 0 54 22/94 410; fax 0 54 22/94 41 14
				Substituted by:				Drawings		
				Material: main material:				Assembly:		
				DC01 (1.0330) DIN EN 10130				Kassette - series		
					Name		Date		Product:	
				Drawn:			06.11.2024			
				Tested:				Spartherm-600 S-INSERT-P6		
				Gen.:				Drawing-No.: 29-2024-740-030.011		
No	Modifications		Name	Date	Format:	Page:	16	Mass:		
Filename.: S600-P6.2.0.00.00-FULL.asm					of:	16				
Dft - Filename.: 29-2024-740-030.011 Spartherm-600 S-INSERT-P6.dft										
Dxf - Filename.:										

APPENDIX 15: 30 days notice, WHA, Others

**U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)
30-DAY NOTIFICATION FORM
PURSUANT TO 40 CFR PART 60 SUBPARTS AAA AND QQQQ
2015 STANDARDS OF PERFORMANCE FOR NEW RESIDENTIAL WOOD HEATERS, NEW
RESIDENTIAL HYDRONIC HEATERS AND FORCED-AIR FURNACES**

Disclaimer: The statutory provisions and the EPA regulations described in this document contain legally binding requirements. This document is not a substitute for those provisions or regulations, nor is it a regulation itself. In the event of a discrepancy, please refer to 40 CFR PART 60 Subparts AAA AND QQQQ, Sections 60.533 and 60.5475. This document may be revised periodically without public notice. If you have additional questions, please contact Rafael Sanchez at 202-564-7028 or via email at sanchez.rafael@epa.gov.

- ▶ The manufacturer of an affected wood/pellet heater/central heater model line must notify the Administrator of the date that certification testing is scheduled to begin by email to WoodHeaterReports@epa.gov.
- ▶ This notice must be received by the EPA at least 30 days before the start of testing.

GENERAL INFORMATION

Manufacturer's Name:
SPARTHERM Feuerungstechnik GmbH

**Appliance Type
(Circle One):**

Single Burn
Rate Heater

**Hydronic Heater
Type (Circle
One):**

**Forced-Air
Furnace Type
(Circle One):**

Fuel Type:

Crib

Model Name and Number:
Spartherm S 600

Catalyst: Yes ☐ No ☒ X

Mailing Address:
Maschweg 38 Melle 49324

Street Address:
Maschweg 38

City: Melle

State: Lower Saxony

ZIP Code: 49324

Phone: +4915222644162

Fax: n/a

Web Site: www.spartherm.com

Address of Manufacturing Facility:
Maschweg 38

City: Melle

State: Lower Saxony

ZIP Code: 49324

EPA APPROVED TEST LABORATORY

Name and Title of Authorized Representative: Danick Power

Company: Services Polytests inc.

**U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)
30-DAY NOTIFICATION FORM
PURSUANT TO 40 CFR PART 60 SUBPARTS AAA AND QQQQ
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- ▶ This notice must be received by the EPA at least 30 days before the start of testing.

Phone: 450 741-3636	E-mail: Dpower@polytests.com	Fax: NA
City: St-jean-sur-richelieu	State: Canada, Quebec	ZIP Code: J3B 7S7

EPA APPROVED THIRD-PARTY CERTIFIER

Name and Title of Authorized Representative: Bill Bellamy, Certifier 2 -HOCO Appliances.

Company:
CSA

Phone: 18667974272	E-mail: bill.bellamy@csagroup.org	Fax:
City: Toronto	State: Ontario	ZIP Code: M9W 1 R3

COMPLIANCE TEST INFORMATION

Test Method(s):
Method 28R, Single Burn Rate

Date(s) of Proposed Test:
Week September 16 2024

Testing Location:

Polytests Services Inc.
695 B rue Gaudette,
St-Jean-sur-Richelieu
Québec, Canada, J3B 7S7
450.741.3636

**U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)
30-DAY NOTIFICATION FORM
PURSUANT TO 40 CFR PART 60 SUBPARTS AAA AND QQQQ
2015 STANDARDS OF PERFORMANCE FOR NEW RESIDENTIAL WOOD HEATERS, NEW
RESIDENTIAL HYDRONIC HEATERS AND FORCED-AIR FURNACES**

Disclaimer: The statutory provisions and the EPA regulations described in this document contain legally binding requirements. This document is not a substitute for those provisions or regulations, nor is it a regulation itself. In the event of a discrepancy, please refer to 40 CFR PART 60 Subparts AAA AND QQQQ, Sections 60.533 and 60.5475. This document may be revised periodically without public notice. If you have additional questions, please contact Rafael Sanchez at 202-564-7028 or via email at sanchez.rafael@epa.gov.

- ▶ The manufacturer of an affected wood/pellet heater/central heater model line must notify the Administrator of the date that certification testing is scheduled to begin by email to WoodHeaterReports@epa.gov.
- ▶ This notice must be received by the EPA at least 30 days before the start of testing.

Markus Aumann – International Sales

Print Name and Title of Authorized Official

Signature

06/August/2024

Date

Remarks:

v1

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)
2015 Standards of Performance for New Residential Wood Heaters, New Residential
Hydronic Heaters and Forced-Air Furnaces Application
40 CFR PART 60 SUBPARTS AAA AND QQQQ

Disclaimer: The statutory provisions and the EPA regulations described in this document contain legally binding requirements. This document is not a substitute for those provisions or regulations, nor is it a regulation itself. In the event of a discrepancy, please refer to 40 CFR PART 60 Subparts AAA AND QQQQ, Sections 60.533(b), 60.5475(b), and Appendix A-8. This document may be revised periodically without public notice. If you have additional questions, please contact Rafael Sanchez at 202-564-7028 or via email at sanchez.rafael@epa.gov.

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Compliance Statements and Acknowledgements – Sections 60.533(b) and 60.5475(b)	4
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Wood Burning Heaters	6
I. Test Method 28R for Certification and Auditing of Wood Heaters	6
A. <i>Summary Results – Adjustable Wood Burning Heaters</i>	6
Weighted average summary	Fehler! Textmarke nicht definiert.
Weighted average Final results.....	Fehler! Textmarke nicht definiert.

**APPLICATION FOR A CERTIFICATE OF COMPLIANCE PURSUANT TO 40 CFR
PART 60 SUBPARTS AAA AND QQQQ
2015 STANDARDS OF PERFORMANCE FOR NEW RESIDENTIAL WOOD HEATERS, NEW
RESIDENTIAL HYDRONIC HEATERS AND FORCED-AIR FURNACES**

GENERAL INFORMATION

Manufacturer's Name: Spartherm Gmbh

Heater Type (Circle One):			Single Burn Rate Heater			
Hydronic Heater Type (Circle One):						
Forced-Air Furnace Type (Circle One):						
Fuel Tested:	Crib					

Test Method(s): Method 28R; AMSTE2780 ; ASTME2515 **Catalyst:** no

Model Name and Design Number (The model name and design number must clearly distinguish one model from another. The name and design number cannot include the EPA symbol or logo or name or derivatives such as "EPA): Spartherm S 600 Z/C, Spartherm S 600 Module, Spartherm S 600 insert

Physical Address (Street number and Address, not P.O. Box): 38 Maschweg **Mailing Address:** SAME

City: Melle	State: Lower Saxony	ZIP Code: 49324
Phone: +4915222644162	Email:	Website:

EPA Submission Date of 30 day Notice:

MANUFACTURER'S AUTHORIZED REPRESENTATIVE INFORMATION

Name: Markus Aumann

Position/Title: International Sales

Address: 38 Maschweg

City: Melle	State: Lower Saxony	ZIP Code: 49324
Phone: +4915222644162	E-mail: m.aumann@spartherm.com	Website: www.spartherm.com

Remarks:

**APPLICATION FOR A CERTIFICATE OF COMPLIANCE PURSUANT TO 40 CFR
PART 60 SUBPARTS AAA AND QQQQ
2015 STANDARDS OF PERFORMANCE FOR NEW RESIDENTIAL WOOD HEATERS, NEW
RESIDENTIAL HYDRONIC HEATERS AND FORCED-AIR FURNACES**

EPA-APPROVED TEST LABORATORY

Name of Test Laboratory:
Polytests Services inc.

Name of Person Authorized or Responsible for Conducting Compliance Test: Danick Power

Position/Title: VP operation

Address: 695-B Gaudette,

City: St-Jean-sur-Richelieu

State: Quebec, Canada

ZIP Code: J3B 7S7

Phone: 450 741-3636

Email: dpower@polytests.com

Website: www.polytests.com

Remarks:

EPA-Approved Third Party Certifier

Name of Certifier Entity: CSA Group

Name of Person Authorized or Responsible for Reviewing Test Report and/or Issuing Certification of Conformity:
Bill Bilamy

Position/Title: Project Manager
Certifier II – HOCO Appliances

Address: 178 Rexdale Boulevard,

City: Toronto

State: Ontario

ZIP Code: M9W 1R3

Phone: T 705 331 5450

Email:
bill.bellamy@csagroup.org

Website: csagroup.org

Remarks:

COMPLIANCE STATEMENTS AND ACKNOWLEDGEMENTS – SECTIONS 60.533(B) AND 60.5475(B)

INSTRUCTIONS: PLEASE READ THE BELOW STATEMENTS AND AFFIRMATIONS AND ADDRESS ACCORDINGLY.

FOR EMISSIONS DATA SUMMARY TABLES SEE ATTACHMENTS

1. Engineering Drawings Statement

Engineering drawings and specifications of components that may affect emissions (including specifications for each component listed in paragraphs (k)(2), (3) and (4) of 60.533(b) and 60.5475(b). Manufacturers may use assembly or design drawings that have been prepared for other purposes, but must designate on the drawings the dimensions of each component listed in paragraph (k) of this section. Manufacturers must identify tolerances of components listed in paragraph (k)(2) of 60.533(b) and 60.5475(b) that are different from those specified in that paragraph, and show that such tolerances cannot reasonably be anticipated to cause wood heaters in the model line to exceed the applicable emission limits. The drawings must identify how the emission-critical parts, such as air tubes and catalyst, can be readily inspected and replaced.

All components include dimensions and production tolerances which meet or exceed the prescribed requirements and facilitate inspection. Replacement procedures are clearly documented in service kits. YES

2. Firebox Statement Requirement

A statement whether the firebox or any firebox component (including the materials listed in paragraph (k)(3) of 60.533(b) and 60.5475(b) will be composed of material different from the material used for the firebox or firebox component in the wood heater on which certification testing was performed, a description of any such differences and demonstration that any such differences may not reasonably be anticipated to adversely affect emissions or efficiency.

No – the firebox and any firebox component will not be made of different materials than what was used in the certification testing. YES

3. CBI

Clear identification of any claimed confidential business information (CBI). Submit such information under separate cover to the EPA CBI Office; Attn: Residential Wood Heater Compliance Program Lead, 1200 Pennsylvania Ave., NW, Room 7138, MS:2227A, Washington, DC 20460. **Note that all emissions data, including all information necessary to determine emission rates in the format of the standard, cannot be claimed as CBI.**

CBI was sent to EPA Testing Laboratory Polytest INC. YES

4. Valid Certification Statement

All documentation pertaining to a valid certification test, including the complete test report and, for all test runs: Raw data sheets, laboratory technician notes, calculations and test results. Documentation must include the items specified in the applicable test methods. Documentation must include discussion of each test run and its appropriateness and validity, and must include detailed discussion of all anomalies, whether all burn rate categories were achieved, any data not used in the calculations and, for any test runs not completed, the data collected during the test run and the reason(s) that the test run was not completed and why. The burn rate for the low burn rate category must be no greater than the rate that an operator can achieve in home use and no greater than is advertised by the manufacturer or retailer. The test report must include a summary table that clearly presents the individual and overall emission rates, efficiencies and heat outputs. Submit the test report and all associated required information, according to the procedures for electronic reporting specified in § 60.537(f) and 60.5475(f).

Yes all requirements in the above section is covered as per the requirements in the test report. YES

5. Warranties

A copy of the warranties for the model line, which must include a statement that the warranties are void if the unit is used to burn materials for which the unit is not certified by the EPA and void if not operated according to the owner's manual.

All warranty data is included in the manual and includes the necessary statements as per this section. YES

6. Q/A Statement

A statement that the manufacturer will conduct a quality assurance program for the model line that satisfies the requirements of paragraph (m) of this section.

Yes, included with the report is on quality assurance inspection program. YES

7. Laboratory Sealing of Unit

A statement describing how the tested unit was sealed by the laboratory after the completion of certification testing and asserting that such unit will be stored by the manufacturer in the sealed state until 5 years after the certification test.

The unit has been sealed at the testing facility by the technicians performing the test. There is metal banding encasing the unit preventing the door from being opened and modifications made. The unit is clearly permanently labeled as the EPA test unit.YES

8. Statements that the wood heaters manufactured under this certificate will be—

- (i) Similar in all material respects that would affect emissions as defined in § 60.531 to the wood heater submitted for certification testing, and labeled as prescribed in § 60.536 and 60.5478.
- (ii) Accompanied by an owner's manual that meets the requirements in § 60.536 and 60.5478. In addition, a copy of the owner's manual must be submitted to the Administrator and be available to the public on the manufacturer's web site.

Yes, the wood heater manufactured will be of similar material to the wood heater tested. Each unit will be accompanied by its owner's manual and will be available on the websites.YES

9. Third Party Certification Statement

A statement that the manufacturer has entered into contracts with an approved laboratory and an approved third-party certifier that satisfy the requirements of paragraph (f) of this section.YES

10. Approved laboratory/third party Statement

A statement that the approved laboratory and approved third-party certifier are allowed to submit information on behalf of the manufacturer, including any claimed to be CBI.

Yes, both the approved laboratory and third party certifier have been given permission to submit information on behalf YES

11. Manufacturer's Website Certification Test Reports Availability Statement

A statement that the manufacturer will place a copy of the certification test report and summary on the manufacturer's web site available to the public within 30 days after the Administrator issues a certificate of compliance.

We will place a copy of the certification test and summary on the websites within 30 days of the certificate.YES

12. Transferability Acknowledgement Statement

A statement of acknowledgment that the certificate of compliance cannot be transferred to another manufacturer or model line without written approval by the Administrator.

We acknowledge that the certificate of compliance cannot be transferred to another manufacturer or model line without notification and written approval by the administrator.YES

13. Statement about Selling Wood Heaters without an EPA Certificate

A statement acknowledging that it is unlawful to sell, distribute or offer to sell or distribute an affected wood heater without a valid certificate of compliance.

We acknowledge that we cannot sell, distribute or offer to sell the wood heater without a valid certificate of compliance.YES


Print Name and Title: MARKUS AUMANN

Date: 27/10/2024

Signature of responsible representative of the manufacturer certifying the accuracy of the above statements:

The authorized or responsible party whose signature is above is certifying that the manufacturer has complied with and will continue to comply with all requirements of the 2015 NSPS for compliance certification and that the manufacturer remains responsible for compliance regardless of any error by the test laboratory or third-party certifier.

Attachments

Instructions: Please complete the section applicable to your certification request. You may substitute your own data tables in lieu of the ones shown below provided that all the information is captured.

WOOD BURNING HEATERS

I. Test Method 28R for Certification and Auditing of Wood Heaters

A. *SUMMARY RESULTS – SINGLE BURN RATE WOOD BURNING HEATERS*

Test No.	Burn Rate (Kg/hr)	(E) Ave. Emission Rate g/hr	(OHE) % HHV	Heat Output (BTU/HR)	CSA B415.1 CO emission g/min
1	1,749	1,65	61,9%	20 345	0,7
2	1,826	1,80	62,1%	21 299	0,9
Weighted particulate emission average of 2 test runs: 1,8 grams per hour.					
Weighted average HHV efficiency of 2 test runs: 62 %.					
Average Co 0,8 gr/min					