Fueling instructions for use with ASTM E3053-17
Evergreen High burn Procedure

Test Fuel:

Follow the guidelines of the cordwood standard (E3053-17) for correct moisture and weight ratios for the Kindling, startup, core and sub loads. The nominal length for the core and sub load is 15".

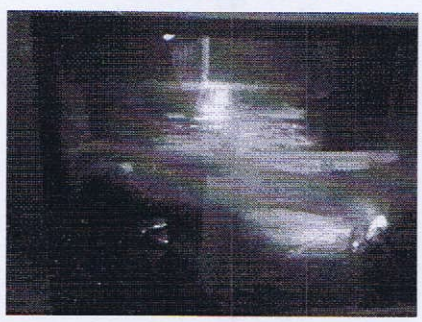
Startup and kindling loading:

Kindling and startup should be loaded as follows for a top-down start:

1) 2 medium sized pieces (1" x 1" – 2" x 2") of kindling oriented diagonally on the bottom of the firebox
2) 2 large pieces (1" x 1" – 2 ½" x 2 ½") of startup fuel placed diagonally on top of the bottom layer. In the middle of the 2 large startup pieces place one medium sized kindling piece making sure to leave at least ½" gap between each piece to provide proper air flow.
3) Repeat step 2 (see pic below) until you get 4-5 total layers depending on the weight restriction of the startup/kindling fuel (leaving enough extra kindling weight for step 4/5, usually 1-1.5 lbs)
4) Take 4-6 pieces of small-medium (1/4" x 1" – 1/4" x 2") sized kindling and place them on top of the last layer and make sure there are no gaps between them.
5) Finally, take small kindling pieces (no greater than ¼" x ¼") and build a cabin-style stack on top of the layer of kindling from step 4. Each layer should have 3-4 pieces of kindling that are between 5" and 7" in length with 0.75"-1.5" in between each other. Build these layers until they are between about 1" away from the secondary air tubes.
6) With the air control fully open and bypass closed use a hand-held propane torch to ignite only the top 3 layers of the small kindling cabin at the very top. Use the torch only to barely start the very top on fire (approximately 15-25 seconds). Immediately close the door after ensuring the top layer is lit.

Pre Ignition

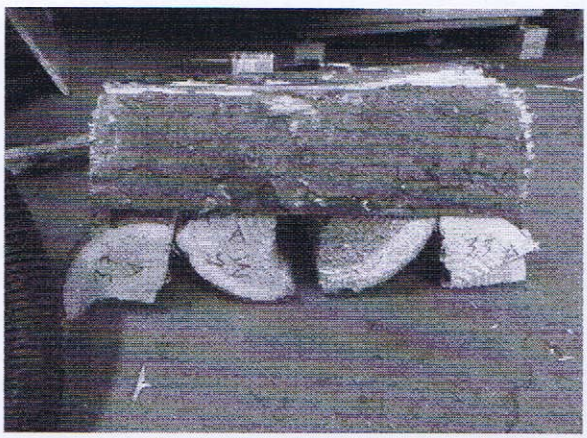
Lit and door closed

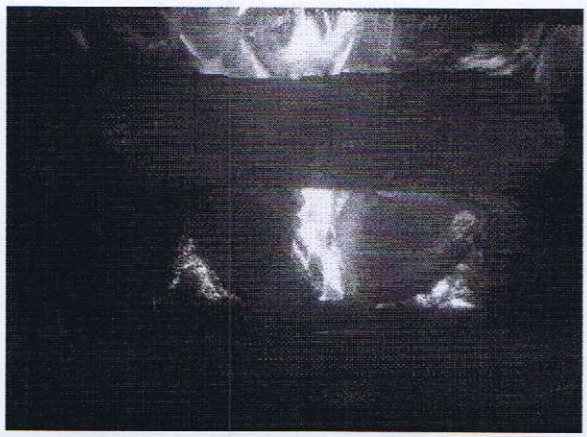


High Fire Test Start:

High fire fuel load should be loaded at the bottom of the allowable coal bed range to allow the startup/kindling fuel to burn down and establish a uniform coal bed.

The fuel load consists of a bottom layer of 4 pieces and a top layer of two pieces. The bottom layer should be comprised of 4 pieces loaded North-South with the top layer being only two pieces loaded East-West. Upon loading, the bottom layer should be condensed together but leaving a ½" to a 1" gap in the middle, loaded fully to the back of the firebox while being centered east-west. The top layer should be loaded towards the front of the firebox in an east-west fashion (flush with the bottom layer) leaving a ¼" to ¾" gap between the two pieces while being centered east-west.





High Fire Test End:

The test should be ended at the top of the allowable weight range.

Fueling instructions for use with ASTM E3053-17
Evergreen Medium and Low burn Procedure

Test Fuel:

Follow the guidelines of the cordwood standard (E3053-17) for correct moisture and weight ratios for the core and sub loads. The nominal length is 15"

Coal Bed:

The coal bed is always a result of running a high burn. As soon as the high burn has been completed, move the bigger raw pieces toward the middle and front of the firebox stacked up for best combustion to get a uniform coal bed prior to the next fuel load.

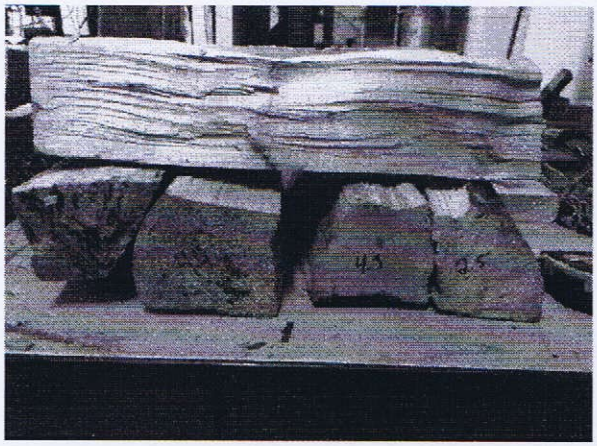
Settings & Fuel Loading:

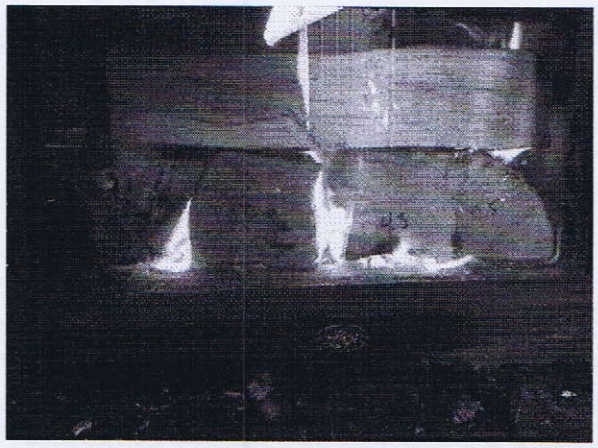
Low Fire: (Fully Closed) - 3/16" as measured from the air control inlet
Medium Fire: 5/16" from fully closed

Fuel Loading:

Low and Medium fire should be loaded with a coal bed of approximately 3.1 lbs +/- 0.2 lbs. Level the coal bed before you start sampling and make sure that any large pieces of charcoal get moved to the side to allow room for the fuel load. Keep the bypass closed and the air control fully open (same as it was during high burn).

The fuel load consists of a bottom layer of 4 pieces and a top layer of 2 pieces. The bottom layer should be comprised of 4 pieces loaded north-south with the top layer being only 2 pieces loaded east-west. Upon loading, the bottom layer should be loaded fully to the back of the firebox with approximately a 1" – 3/4" gap in middle and centered east-west and the outside pieces being as compact as possible with the middle pieces. The top layer should be loaded fully back and centered east-west with approximately a 1/2"- 1" gap in between pieces.





After the fuel is loaded close the door by pushing forward but not latching it leaving a small crack. Keep the door cracked until fire starts to come out of the secondary air tubes. After the secondary air tubes have lit off for approximately 15 seconds, close and latch the door (This is usually between 2 and 3 minutes from the beginning of sampling). When the top layer of the fuel load is burning 75-80%, or significant smoke is visible, shut the air down to the proper setting to achieve the desired burn rate (this is usually between 3 and 4 minutes from the beginning of sampling).

Evergreen aging record 65.3 hours at medium burn rate			
Evergreen wood heater Date 6/28/17 Crib fuel test			
Time/hrs	Fuel added Lbs	Fuel moisture (dry basis)	Flue gas f°
0.0	5.7	20%	508
1.0	15	19.20%	197
2.0			426
3.0			233
4.0			206
5.0			185
5.2			177
Evergreen wood heater Date 6/29/17 Crib fuel test			
Time/hrs	Fuel added Lbs	Fuel moisture (dry basis)	Flue gas f°
0.0	5.6	21%	507
1.0	15.8	19.41%	218
2.0			459
3.0			378
4.0			241
5.0			197
6.0			178
6.8			154
Evergreen wood heater Date 10/11/17 Crib fuel test			
Time/hrs	Fuel added Lbs	Fuel moisture (dry basis)	Flue gas f°
0.0	5.3	20%	540
1.0	16.1	20.20%	239
2.0			473
3.0			353
4.0			235
5.0			207
5.6			186
Evergreen wood heater Date 10/12/17 Crib fuel test			
Time/hrs	Fuel added Lbs	Fuel moisture (dry basis)	Flue gas f°
0.0	6.3	22%	632
1.0	15.7	20.20%	241
2.0			499
3.0			291
4.0			217
5.0			194

Evergreen wood heater

Date 6/22/18 Crib fuel test

Time/hrs	Fuel added Lbs	Fuel moisture (dry basis)	Flue gas f°
0.0	6.3	22.10%	651
1.0	14.5	19.65%	214
2.0			364
3.0			218
4.0			179
5.0			174
5.2			165

Evergreen wood heater

Date 4/16/18 Cordwood test

Time/hrs	Fuel added Lbs	Fuel moisture (dry basis)	Flue gas f°
0.0	25.2	21.50%	445
1.0			586
2.0			464
3.0			324
4.0			295
5.0			277
6.0			265
6.4			219

Evergreen wood heater

Date 7/3/18 Cordwood test

Time/hrs	Fuel added Lbs	Fuel moisture (dry basis)	Flue gas f°
0.0	25.4	20.10%	384
1.0			446
2.0			370
3.0			268
4.0			228
5.0			206
6.0			190
7.0			166
8.1			146

Evergreen wood heater

Date 7/20/18 Cordwood test

Time/hrs	Fuel added Lbs	Fuel moisture (dry basis)	Flue gas f°
0.0	25.6	21.10%	431
1.0			476
2.0			430
3.0			318
4.0			247
5.0			238
6.0			221
7.0			179

Evergreen wood heater			
Date 8/7/18 Cordwood test			
Time/hrs	Fuel added Lbs	Fuel moisture (dry basis)	Flue gas f°
0.0	25.2	22%	402
1.0			385
2.0			339
3.0			238
4.0			220
5.0			194
6.0			191
7.0			176
8.0			160

Evergreen wood heater			
Date 8/8/18 Cordwood test			
Time/hrs	Fuel added Lbs	Fuel moisture (dry basis)	Flue gas f°
0.0	27.8	20.70%	442
1.0			388
2.0			325
3.0			259
4.0			211
5.0			197
6.0			188
7.0			174
8.0			162