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Results of Testing the SSM Charcoal Stove C26-11
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The SSM Charcoal Stove was received at the Aprovecho laboratory in Jan of 2018. Aprovecho conducted standard laboratory testing [WBT 4.2.3 Charcoal Guidelines, LEMS] to determine the fuel use, cooking power, and emissions of the stove. The hot start phase was omitted since the stoves are low mass.

A flat bottom pot was used in all tests. The pot dimensions were 24 cm in diameter, and 16 cm in height. The pot was filled with 5 L of water. A 10 mm skirt was used with the pot. The skirt had a height of 15 cm.

The stove was filled with 300 g of natural hardwood lump charcoal (Royal Oak brand). The size of the pieces was such that they fell through a 1" square screen. The fuel had a moisture content of 3% (wet basis).

The charcoal was lit using a quantity of gelled alcohol (Meeko's Red Devil brand) equal to 10% of the mass of the charcoal load. The gel was poured on top of the charcoal load. The alcohol gel was ignited while the stove's mass was being measured by an electronic balance. The charcoal was considered lit when 10% of its mass was burned away. The charcoal was manually fanned starting from the time the alcohol had burned away to the time when 10% of the mass of the charcoal burned away.

Figure 1: SSM C26-11 Charcoal Stove with pot

Test Results 测试结果

The test results are shown in Figure 2. The IWA metrics are provided, as well as temperature corrected time to boil and high and low firepower. The calculation of each of the metrics is provided in the WBT protocol.

The PM metrics are highly variable because PM production in charcoal stoves is very dependent on the amount of volatiles in the fuel and a lesser effort was made to eliminate pieces of char that contained visible volatiles.

Stove type/model 炉子种类		ssmsmallchar1	ssmsmallchar2	ssmsmallchar3	ssmsmallchar1		
Location 地点		apro	apro	apro	Average royal oak lump char	Stdev	COV
Wood species 木柴规格		royal oak lump char	royal oak	df char			
Date 日期		1.3.18	1.3.18	1.5.18	1.3.18		
IWA Performance Metrics	**units**	**Value**	**Value**	**Value**			
High Power Thermal Efficiency	%	38.7%	35.8%	42.0%	38.8%	3.1%	8%
Low Power Specific Consumption	MJ/min/L	0.005	0.006	0.005	0.005	0.001	14%
High Power CO	g/MJ	13.22	10.58	12.28	12.03	1.34	11%
Low Power CO	g/min/L	0.022	0.018	0.023	0.021	0.003	13%
High Power PM	mg/MJ	78.6	17.6	94.0	63.4	40.4	64%
Low Power PM	mg/min/L	0.027	0.033	0.030	0.030	0.003	9%
Indoor Emissions CO	g/min	0.79	0.75	0.93	0.82	0.09	11%
Indoor Emissions PM	mg/min	4.7	1.2	7.1	4.4	2.9	68%
		Tier	**Tier**	**Tier**			
High Power Thermal Efficiency 高功率热效应		3.3	3.0	3.6	3.3		
Low Power Specific Consumption 低功率具体消耗		4.7	4.6	4.7	4.6		
High Power CO 高功率一氧化碳		1.5	2.2	1.7	1.7		
Low Power CO 低功率一氧化碳		4.7	4.8	4.7	4.7		
High Power PM 高功率PM		3.7	4.5	3.5	3.8		
Low Power PM 低功率PM		4.9	4.9	4.9	4.9		
Indoor Emissions CO 室内一氧化碳排放		1.5	1.6	1.1	1.4		
Indoor Emissions PM 室内PM排放		3.5	4.3	3.1	3.6		
Basic Operation							
COLD START 冷启动							
Temp-Corrected Time to Boil 煮开矫正时间	min	30.9	25.5	32.9	30	4	13%
Firepower 火力	watts	2,580	3,297	3,002	2,960	361	12%
SIMMER 蒸							
Firepower 火力	watts	347	360	330	346	15	4%

Figure 2 Test results.

References

WBT 4.2.3
http://cleancookstoves.org/binary-data/DOCUMENT/file/000/000/399-1.pdf

Charcoal Guidelines
http://cleancookstoves.org/binary-data/DOCUMENT/file/000/000/453-1.pdf

LEMS
https://drive.google.com/open?id=0B7DK_kPlyXKcX3hHYnp1MnZhZGM