

## Supporting Information

The main operational differences of four widely used testing methods:

**Table S1** The main operational differences between test methods

Item	IS 13152 [1]	NY/T 2370-2013 [2]	HTP 2012 [3]	WBT v4.2.3 [4]
<b>Pot sizes, initial mass of water and fuel</b>	Depending on the burn rate and makes the test last for one hour, recommend combinations are listed in the document	Depending on the cooking power, recommend combinations are listed in the document	Recommended two standard pots, 80% full: Pot 1 (6.4 L, 254 mm diameter 127 mm high); Pot 2 (3 L, 203 mm diameter 115 mm high). Excess fuel to complete the high-power, medium-power and low-power tests	Local standard pot 7 L (with 5 L water) or 3 L (with 2.5 L water), or add water to 2/3 pot volume; Excess fuel to complete cold start, hot start and simmering tests
<b>Fuel adding operations</b>	Continuous loaded: add 1/10 of total fuel every 6 minutes	Batch loaded: Add all fuel at once before ignition	Continuous adding fuel according to manufacturer's instructions	Continuous adding according to operational needs
<b>Operation during the test (testing stages, lid operations and ending operations)</b>	Lid on all the time, when the 1 <sup>st</sup> pot reaches 5°C below the boiling point, change to the 2 <sup>nd</sup> pot and continue, keep pots swapping until there is no visible flame (almost one hour)	Heating with lid on, when the temperature reaches boiling point take off the lid, until the temperature drops to 5°C below the boiling point	Control air flow or fuelling to achieve the high, medium and low power levels, pot lid on at all times, High power, heat to bill and hold for 10 minutes, medium and low power, stable for 15 minutes each	Cold start, Hot start (high power) ends when the temperature reaching the local boiling point; simmer (low power) lasts for 45 minutes, Lid off all the time

The main emission performance outputs of four widely used testing methods:

**Table S2** The outputs of the test methods

Methods	NY/T 2370-2013	IS 13152	WBT v4.2.3	HTP 2012
<b>Indicators</b>	TPM, NO <sub>x</sub> , CO, Ringelmann blackness SO <sub>2</sub>	CO <sub>2</sub> , CO, TPM(PM <sub>2.5</sub> )	PM, CO, CO <sub>2</sub>	O <sub>2</sub> , CO <sub>2</sub> , CO, TPM
<b>Units</b>	TPM, NO <sub>x</sub> , SO <sub>2</sub> : mg/m <sup>3</sup> ; CO: %; Ringelmann blackness: level	CO <sub>2</sub> , CO: ppm or %; TPM(PM <sub>2.5</sub> ): mg/m <sup>3</sup> ; all converted to g/MJ <sub>d</sub> or mg/MJ <sub>d</sub>	PM: mg/MJ; CO <sub>2</sub> : g/MJ; CO: g/MJ	O <sub>2</sub> , CO <sub>2</sub> : ppm or %; CO: ppm; TPM: µg/m <sup>3</sup>

\* The abbreviations in the table follow: TPM – total particle matter, PM – particle matter;

CO – carbon monoxide; CO<sub>2</sub> - carbon dioxide; SO<sub>2</sub> - sulfur dioxide; NO<sub>x</sub> - nitrogen oxides.

**References:**

- [1]. Bureau of Indian Standards, Indian Standard on Portable Solid Biomass Chulha (CIS 13152 (Part 1): 2013), New Delhi, **2013**.
- [2]. Ministry of Agriculture, Test performance method of domestic biofuel cooking stove (NY/T 2370-2013), Beijing, **2013**.
- [3]. University of Johannesburg, The heterogeneous testing procedure for thermal performance and trace gas emissions, South Africa, **2012**.
- [4]. Global Alliance for Clean Cookstoves, The Water Boiling Test (WBT V4.2.3), **2014**.