



BSI Standards Publication

Clean cookstoves and clean cooking solutions — Test protocols for institutional cookstoves

National foreword

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Foreword

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This document was prepared by Technical Committee ISO/TC 285, *Clean cookstoves and clean cooking solutions*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document is applicable for evaluating institutional cookstoves. Institutional cookstoves often have characteristics requiring specific considerations not already covered under [ISO 19867-1](#) and [ISO 19869](#). These considerations include, but are not limited to, the following.

- The cooking vessels and contents used with some institutional cookstoves may be too heavy to be practically removed for weighing, as specified in [ISO 19867-1](#).
- Institutional cookstoves tend to operate at high firepower with substantial release of emissions requiring specific measurement considerations.
- Built-in-place institutional cookstoves can be difficult or impossible to transport to a laboratory for testing, and this may require them to be tested in place (in situ).
- For some institutional cookstoves that produce char, the hot char remaining at the end of test phases can be difficult or unsafe to remove for weighing, as specified in [ISO 19867-1](#) and [ISO 19869](#).
- Institutional cookstoves often have longer operating durations and more specialized cooking tasks than household cookstoves. Test phases specified in [ISO 19867-1:2018](#), 6.2 are not applicable for most institutional cookstoves.
- Heat radiation from chimneys is a safety concern because of the higher firepower of institutional cookstoves compared with household cookstoves.

Because of these reasons, additional guidance is needed for testing institutional cookstoves.

Institutional cookstoves may be tested for either energy performance only (such as efficiency, power and/or specific energy consumption), or energy performance and air pollutant emissions together. Institutional cookstoves may be tested separately for safety (see [Clause 7](#)) and/or durability (see [Clause 8](#)).

An institutional cookstove may be tested in a laboratory if the cookstove is either portable (can be transported to the laboratory) or can be built-in-place in the laboratory, as specified in [Clause 5](#). An institutional cookstove may be tested in situ (rather than, or in addition to, in a laboratory), as specified in [Clause 6](#).

In [Table 1](#), options are listed for testing institutional cookstoves for energy performance and air pollutant emissions either in the laboratory or in situ, along with primary energy performance and emissions metrics. Primary and other metrics are described in [Clauses 5](#) and [6](#).

The performance of two or more different institutional cookstoves may be compared with the same appropriate protocol options and test conditions, as specified in this document.

It is common for an institutional cookstove to be one element of larger, multi-component systems. These systems may include multiple fuel/energy sources or modes of operation. Therefore, multiple tests or protocols may be required to evaluate the range of potential use scenarios for a given cooking system.

Table 1 — Testing options

Testing options	Primary energy performance metrics (units)		Primary emissions met- rics (units) ^a
Water-heating test With test sequence defined by either field data in 5.2.6 or protocol, in 5.2.7 — Laboratory testing, Clause 5 — In situ testing, Clause 6	Thermal efficiency (%) Specific energy con- sumption, fuel energy / product mass (MJ/kg)	Cooking power (kW) Firepower (kW)	Emission factors, pollutant mass / delivered energy (mg/MJ) Pollutant mass/ fuel energy(mg/MJ) Emission rates (mg/min)
Controlled cooking test — Laboratory testing, Clause 5 — In situ testing, Clause 6	Specific energy con- sumption, fuel energy / product mass (MJ/kg)	Firepower (kW)	Emission factors pollutant mass/ fuel energy (mg/MJ) Emission rates (mg/min)
Uncontrolled cooking test — In situ testing, Clause 6	Usage (min/day)		
^a NOTE Emissions testing is optional, as described in the Introduction.			