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Josef Davidssons Eftr. AB
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Testing a Cooker fired by solid fuel, model Heimdall 790

(7 appendices)

The assignment

Testing the cooker fired by solid fuel, model Heimdall 790 in accordance with EN 12815:2001/A1:2004/AC:2007 and EN 16510-1:2018. EN 16510-1:2022 and EN 16510-2-3:2022 shall also be taken into account.

Item for testing

The cooker Heimdall 790, is manufactured by Josef Davidssons Eftr. AB, Reftele Sweden. The appliance arrived at RISE on 6th November 2023. The item was selected by the client, and was in used condition on arrival.

This test report relates only to the actual item tested.

Technical description

The cooker Heimdall 790 is a dry cooker without water and is equipped with an oven and a hotplate. The cooker is mainly made of steel. The hotplate is made of COR-TEN® steel. Combustion air is supplied via one thermostat (primary air) and one manual control (secondary air). The combustion chamber is lined with vermiculite. The bottomgrate has no winter or summer mode. A flue gas diverter is accessible on top of the hotplate. The cooker Heimdall 790 is an intermittent burning appliance.

The chimney connection is mounted on the rear side of the appliance. The chimney can optionally be mounted on top of the hotplate. However, when installing the chimney on top of the hotplate the chimney has to be supported so that no weight rests on the hotplate.

The cooker Heimdall 790 is intended to be supplied with combustion air from outside via an air duct and is classified as type BE according to EN 16510-1:2018 and EN 16510-1:2022 table 1.

Informative material supplied

Manual:

- Heimdall 790 Manual för förberedelser, installation, handhavande och skötsel, dated 2023-12-19

Drawings:

- Eldstad
- Vedspis

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Accred. No. 1002
Testing
ISO/IEC 17025

Test procedure

Testing was carried out at/by RISE department Infrastructure-Development during November 2023, in accordance with European Standard EN 12815:2001/A1:2004/AC:2007 and EN 16510-1:2018. EN 16510-1:2022 and EN 16510-2-3:2022 was also taken into account.

Particulate matter (PM) was measured according to EN 16510-1:2018, annex F.2 (heated filter).

The emission values and temperatures were measured continuously during three test periods.

Birch wood logs with the length of 32 cm were used as fuel (see appendix 5).

The chimney was mounted on the rear side of the cooker and had a diameter of 150 mm and a height of about 5 m above floor level

The following parameters were measured and/or calculated (as appropriate) every 20 second:

- Ambient temperature
- Flue gas temperature
- Oven temperature
- Flue draught
- CO₂ concentration
- CO concentration
- O₂ concentration
- THC concentration
- NO_x concentration

Also recorded or calculated values:

- The total efficiency
- Space heat output
- The mean CO emission at 13% O₂
- The mean OGC emission at 13% O₂
- The mean NO_x emission at 13% O₂
- The mean PM emission at 13% O₂

Results

Table 1 shows a summary of the test results. The results are calculated as mean values from three test results. For complete test results see appendix 3.

Table 1: Summary results.

Description	Unit	Results
Efficiency	%	80,0
Seasonal efficiency according to EN 16510-1:2022 clause A.6.2.1.5	%	70,0
Energy Efficiency Index	EEI	116
Energy Class	-	A+
Space heat output	kW	5,7
Flue gas temperature	°C	180
CO	% at 13% O ₂	0,094
CO	mg/m ³ _n dry gas at 13% O ₂	1177
OGC	mg/m ³ _n dry gas at 13% O ₂	113
NO _x	mg/m ³ _n dry gas at 13% O ₂	102
PM (particulates)	mg/m ³ _n dry gas at 13% O ₂	33

Comments

The cooker Heimdall 790, manufactured by Josef Davidssons Eftr, AB, Sweden complies with the requirements according to EN 12815:2001/A1:2004/AC:2007, EN 16510-1:2018, EN 16510-1:2022 and EN 16510-2-3:2022.

Environmental sustainability according to EN 16510-1:2022 has not been assessed by RISE. Notified Bodies should refrain from conducting assessments in relation to Environmental Sustainability under AVCP system 3 according to document NB-CPR/ALL/23/223 issued 5 December 2023. NBs should await the implementation of AVCP system 3+.

The cooker Heimdall 790 also complies with the Swedish building regulations BFS 2011:6 with changes including BFS 2020:4.

For comparisons between test results and possible requirement levels, the following decision rule (according to EN ISO/IEC 17025:2017 7.8.6) has been applied: Measured values are evaluated without regard to measurement uncertainty.

RISE Research Institutes of Sweden AB

Infrastructure and Concrete technology - Infrastructure development

Performed by

Examined by



Henrik Persson



Anders Hjörnhede

Appendices

Appendix 1 Identification

Appendix 2 Requirements

Appendix 3 Results from testing

Appendix 4 Instrumentation and uncertainty of measurement

Appendix 5 Test fuel specification

Appendix 6 Calculation of Ecodesign and Energy Efficiency Index (EEI)

Appendix 7 Graphs