

"TERMOPLAM" - Ltd.	QUALITY FORM	CODE: FC 13-5.2
R. Bulgaria Sofia city	PROTOCOL from type testing of the product	VERSION: 05
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"TERMOPLAM" - Ltd. SOFIA
Permission for assessing the performance of construction products № CPR 22 - NB 2608
since 04.10.2015, from MRDPW

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HEAD OF LABORATORY:.....

(eng. Plamen Iliev)

PROTOCOL
from
(type testing of the product)
№ 154/27.06.2021

I. OBJECT OF TEST:

Room heater fired by solid fuel: BERNA LUX S, 2021
(Name, type, model, serial number and year of manufacture of the product)

II. MANUFACTURER:

"BLIST" d.o.o Belosevac bb, 14000 Valjevo, Serbia
(Name and address)

III. APPLICANT FOR THE TEST:

"BLIST" d.o.o Belosevac bb, 14000 Valjevo, Serbia
Request № 154/02.06.2021
(Name, address, № and date of the request-query)

IV. NORMATIVE AND TECHNICAL BASIS FOR EXECUTION OF TEST:

EN 13240:2001/A2:2004/AC:2007 Room heaters fired by solid fuel-Requirements and test methods;
(№ and name of the legal document)

V. TEST RESULTS:

The test results are given in Table 1 and Table 2.

Table 1

1	2	3	4	5	6
№	Essential Characteristics	Unit	Test results	Value and tolerance of the indicator; Point from the standard	Test Conditions
-	Fire safety				
p.4.2.1	General construction (Non-combustible materials)	-	Yes	-	-
p.4.2.3	Cleaning of heating surfaces (Access and cleaning)		Yes	-	-
p.4.2.4	Flue spigot or socket (Contact surface)	mm	30 Yes	≥25 vertical	-
p.4.2.6	Ashpan and ash removal (2 full charges and passability)		Yes	-	-
p.4.2.7	Bottomgrate (Correct installation and easy cleaning)		Yes	-	-
p.4.2.8	Combustion air supply (Regulator and an indications)		Yes	-	-
p.4.2.10	Firedoors and charging doors (Size and retention of coal)		Yes	-	-
p.4.2.12	Front firebars and/or deepening plate (Correct installation and retention of fuel)		Yes	-	-
p.5.2	Operation with open firedoors (Release of zest)		Not intended	-	A.4.9.1
p.5.4	Temperature rise in the fuel storage container (other than fuel hopper) (Exceeding)	°C	44.609 Yes	Tr+65°C=29.2+65=94.2 °C	Tr= 29.2 °C A.4.7 & A.4.9
p.5.5	Temperature rise of the operating compopnents (handles)	°C	51.111 Yes	wood/rubber Tr □□+60K=29.2+60=□89.2° C	Tr= 29.2 °C
p.5.6	Temperatures of adjacent combustible materials (Exceeding)	°C	62.900 Side Panel Yes	Tr+65°C=29.2+65=94.2 °C	Tr= 29.2 °C A.4.7
p.6.1	Flue gas temperature- ta	°C	254	-	Tr= 29.2 °C
-	Emissions from combustion products				
p.4.2.1	General construction (Poisonous gas and coal)		No	-	-
p.4.2.2	Integral boiler (Material Certificate)		Not applicable	-	table 2÷7
p.4.2.5	Flueways (Size in the narrowest Part-Cleaning)	mm	≥30 Yes	≥30	-
p.4.2.8	Combustion air supply (Ash or fuel does not interfere with the work)		Yes	-	-
p.4.2.9	Control of flue gas (Incomplete closure of output)	cm ² %	≥ 20 Yes	≥ 20 cm ² or ≥ 3%	-
p.4.2.11	Flue bypass device (Easy management, clear marking)		Yes	-	-

1	2	3	4	5	6
p.5.1	Natural draught (Mode for continuous combustion)	-	Not intended	-	A.4.9.3
	Common chimney		Not intended	-	A.4.9.3
	Draught	Pa	Not intended	≥ 3	-
	Volume of CO at draught ≤ 3 Pa	CO _B dm ³	Not intended	≤ 3 ≤ 250	A.6.2.8 Duration ≥ 10 h
p.5.2	Operation with open firedoors (Release of exhaust gases)		Not intended	-	A.4.9.1
p.6.2	Carbon monoxide emissions (Concentration at 13% O ₂)	%	0.0805	$\leq 1\%$	A.4.7
-	Release of dangerous substances ZA1				-
p.5.8	Electrical safety		Not applicable	EN 60335-2-102:2016	-
	Presence		Not applicable		
	Complies		Not applicable		
-	Maximum operating pressure				
p.4.2.2	Integral boiler (Prevention of air leakage, water or smoke)		Not applicable	-	A.4.7
p.5.3	Strength and leak tightness of boiler shells (Weatherproofing and resistance to mechanical deformation Pressure test)	bar	Not applicable	$p_{test} = 2 \times p_{nom} = 4$ bar 10 min	A.4.9.4 A.4.9.4 A.4.7
p.5.7	Thermal discharge control (In a closed system if it activates)	°C	Not applicable	$\leq 105^{\circ}\text{C}$	A.4.9.5
-	Mechanical stability (Maintenance of chimney / flue pipe)				
p.4.2.1	General construction (Properly designed & marked details)		Yes		-
p.4.2.4	Flue spigot or socket (For appliances with lime filling)	mm	Not applicable	≥ 6 vertical	-
-	Heat emission (Energy efficiency)				
p.6.3	Efficiency	%	78.6 Yes	$> 50\%$	A.4.7
p.6.4	Flue draught (Value of draft)	Pa	Yes	acc. figure 1	A.4.7
					A.4.8 A.4.9
p.6.5	Recovery (Renewal of a good level)	min	8 Yes	20 min	A.4.8 A.4.8.4
p.6.6	Refueling Intervals (Period of burning process)	h	0.75 Yes	acc. figure 10	A.4.7 A.4.8
p.6.7	Space heating output (Value of the measured power)	kW	5.2	-	A.4.7
p.6.8	Water heating output (Value of the measured power)	kW		-	A.4.7

VI. TEST OBJECTIVES :

- 6.1. Test operation at rated power;
- 6.2. Test duration of burning;
- 6.3. Testing combustion at reduced heat flow;
- 6.4. Testing of recovery capability;
- 6.5. Safety test.

VII. USED EQUIPMENT:

- 7.1 Air speed meter TESTO 405-V1.
- 7.2 Digital thermometer MS8127 with perceiver - DS18B20 to ambient temperature, and walls of the test area;
- 7.3 Vacuum-gauge- Testo 512;
- 7.4 Electronic stopwatch Casio FA109;
- 7.5 Thermohygrometer HAMA;
- 7.6 Gas analyzer KANE KM800;
- 7.7 Scales up to 510 kg - to measure the weight of the testing device;
- 7.8 Scales from 5 g to 40 kg - measuring the weight of the fuel;
- 7.9 Tape measure;
- 7.10 Caliper;
- 7.11 Auxiliary devices: PC package applications;

VIII. REQUIREMENTS:

- | | |
|---|----------------|
| 8.1 Have met the safety measures required under Section 5; | Yes |
| 8.2 The test subject complies to the installation and exploitation manual according to section 7; | Yes |
| 8.3. Existence of a plate according to point 8; | Yes |
| 8.4 Requirements regarding the type of fuel - see. Annex B, dimensions and arrangement , and that the camera meets the manufacturer's instructions; | Yes |
| 8.5 Real values of measuring thicknesses and others, along with additional certificates for plumbing parts - after the test in accordance with A.4.9.4; | Not applicable |
| $p_{test} = 2 * p_{nom} =$ bar leaks and visible deformation (elastic and plastic)
$p_{nom} =$ bar | |

Certificate Number: № -

- | | |
|---|----------------|
| 8.6 Testing of the thermal protection of outputs (safety) according to A.4.9.5; | |
| - presence of mounted discharge spiral: | Not applicable |
| - reacts: | Not applicable |
| 8.7 Distance from the heater to the part with the highest measured temperature of trihedron: in accordance with item 5.6; | 410 mm |
| Type of fuel: | Side Panel |
| - Beech wood with humidity $W=9,8 \pm 0,2\%$ with a test report № 2606/27.11.2020 issued by, the EUROTTEST - Control SA | |
| 8.8 Mass of fuel burned per hour kg / h according to Table A.3; | B= 1.36 kg/h |
| 8.9 Mass flow rate of the exhaust gases g/s according to paragraph A.6.2.5; | M= 5.5 g/s |

Table 2

1	2	3	4	5	6	7
№	Essential Characteristics	Unit of value	№ of specimen	Test results	Value and tolerance of indicator Standard & Norm. doc	Test conditions
1	Ambient temperature- Tr	°C		29.2		29.2 °C; ≤ 0.01 m/s
2	Temperature of exhaust gas- ta	°C		254		
3	CO	%		0.0805	≤ 1,0% acc. p.6.2	
4	CO ₂	%		7.1		
5	M _w	kg/h				
6	tentering water	°C				
7	textiting water	°C				
8	η	%		78.6	≥ 50% acc. p.6.3	
9	O ₂	%		13.7		
10	Mass of fireplace (Dry/Wet)	kg		30		
11	Spatial thermal power	kW		5.2		
12	Water heat output	kW				
13	Total thermal power	kW		5.2		



CONDUCTING THE TEST:.....

(eng. Georgi Iliev)

CAUTION:

The test results apply only to test samples.

Recreating this test report is only permitted in a holistic manner.

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