

CERTIFIKÁT CERTIFICATE

č. / No. 0014/104/2020

Výrobca / Manufacturer: **FLAMA s.r.o.**
Dlhá 418
972 13 Nitrianske Pravno
Slovenská republika / Slovak Republic

Výrobok / Product: **Spotrebiče na vykurovanie obytných priestorov na tuhé palivá**
Krbové kachle
Roomheaters fired by solid fuel
Fireplace stove

Typ / Type: **ELDUR EKO**

Týmto certifikátom sa potvrdzuje zhoda vlastností uvedeného typu výrobku s technickými požiadavkami uvedenými v:

This certificate confirms the compliance of the product type characteristics with the technical requirements given in:

EN 13240:2001
EN 13240:2001/A2:2004

Certifikát je vydaný na základe skúšok vzorky typu výrobku. Výsledky sú uvedené v Správe o skúške typu stavebného výrobku č.S03/20/0001/3801/SC zo dňa 25.02.2020.

The certificate has been issued on the basis of the tests of the product type sample. The results are recorded in the Report of type test of construction product No.S03/20/0001/3801/SC dated February 25th. 2020

Dátum vydania / Issue date: 01.03.2020

Platnosť do / Expiry date: 28.02.2023

Vydanie / Issue: 1



Ing. Dušan Hanko
vedúci certifikačného orgánu
certifikujúceho výrobky
Head of Product Certification Body

Tento certifikát je vydaný za nasledujúcich podmienok:

1. Certifikát sa vzťahuje len na typ výrobku, ktorý bol podrobený skúškam uvedeným vo vyššie uvedenej správe.
2. Tento certifikát sa nevzťahuje na výrobný proces/vnútropodnikovú kontrolu.
3. Certifikát neznamena, že certifikačný orgán vykonáva dozor alebo kontrolu výroby.
4. Výrobca musí zabezpečiť zhodu následne vyrábaných výrobkov s certifikovaným typom.
5. Zmeny, ktoré majú vplyv na zhodu s certifikačnými požiadavkami, môžu podmieniť ďalšiu platnosť certifikátu dôkazom o dodržiavaní podmienok, za ktorých bol certifikát udelený, alebo dodatočným hodnotením.

This certificate is issued under the following conditions:

1. *The certificate applies only to the product type submitted to the tests specified in the report referenced above.*
2. *The production process/factory production control is not covered by this certificate.*
3. *The certificate does not imply that the certification body has performed any surveillance or control of the production process.*
4. *The manufacturer shall ensure the conformity of subsequent production items with the certified type.*
5. *Changes that may affect the conformity with the certification requirements may make the continuation of the certificate validity dependent on the evidence as for the observance of requirements under which the certificate has been awarded, or on an additional evaluation.*



TEST CERTIFICATE

Nr: O-203000001/1/2020

Producer: FLAMA s.r.o.
Dlhá 418
972 13 Nitrianske Pravno
Slovak Republic

Product: Roomheaters fired by solid fuel

Type: ELDUR EKO

Test results:

- EN 13240 : 2001/A2:2004 - fuel: wood logs, stoking: manual

		ELDUR EKO
power declared	kW	5,50
power measured	kW	5,82
efficiency	%	77,67
CO (calc. na 13 % O ₂)	%	0,104
CO (calc. na 13 % O ₂)	mg/m ³	1301
OGC (calc. na 13 % O ₂)	mg/m ³	36
NOx (calc. na 13 % O ₂)	mg/m ³	36
dust (calc. na 13 % O ₂)	mg/m ³	33

- Commission regulation (EU) 2015/1185 of 28/4/2015 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign for local space heaters

		ELDUR EKO
seasonal space heating energy efficiency η_s	%	67,67
emission CO (calc. na 13 % O ₂)	mg/m ³	1301
emission OGC (calc. na 13 % O ₂)	mg/m ³	36
emission dust (calc. na 13 % O ₂)	mg/m ³	33
emission NOx (calc. na 13 % O ₂)	mg/m ³	36

- Commission delegated regulation (EU) 2015/1186 of 24/4/2015 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to the energy labelling of local space heaters

		ELDUR EKO;
seasonal space heating energy efficiency in active mode η_{son}	%	77,67
biomass label factor BLF	-	1,45
correction factor F2	%	0,00
correction factor F3	%	0,00
correction factor F4	%	0,00
correction factor F5	%	0,00
energy efficiency index EEI	%	102,6
energy efficiency class	-	A

Test certificate is issued on base of type test of product. Results of particular measurements are taken from test report No.: 204000001/314 from 24th. February 2020, issued by accredited Testing Laboratory of TSÚ Piešťany š.p., Slovak Republic – Technical Equipments of Buildings and Construction, certificate of accreditation No.: S-047 from 23rd. July 2019.

Date of issue:: 24th. February 2020

TECHNICKÝ SKUŠOBNÝ
ÚSTAV PIEŠŤANY, š.p.
Skoková TSÚ
Krajinská cesta 2929/9
02101 PIEŠŤANY
+314-

Ing. Marcel Svoboda

Technical Head of Testing Laboratory TZBaS

Copies:

1 – applicant / producer

2 - TSÚ Piešťany š.p.

REPORT OF TYPE TEST OF CONSTRUCTION PRODUCT**No. S03/20/0001/3801/SC**

in accordance with Regulation (EU) No. 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC

Product: Roomheaters fired by solid fuel
Fireplace stove ELDUR EKO

Number of product group: 3801
(ČSK)

Manufacturer: FLAMA s.r.o.
Dlhá 418
972 13 Nitrianske Pravno
Slovak Republic

Place of manufacture: FLAMA s.r.o.
Dlhá 418
972 13 Nitrianske Pravno
Slovak Republic

Product description, intended use of the construction product:

Fireplace stove ELDUR EKO are intended for heating of living spaces, cottages, recreational houses. Recommended fuel are wood logs with maximal humidity 20%, maximal length of wood logs 33 cm. The body of the fireplace stove is welded from steel plates. The combustion chamber walls are tiled with fire-proof material – vermiculite to improve the combustion characteristics and improve the stove efficiency. The charging door are glassed by heat-resistance glass. The primary air regulator and secondary air regulator are located on the charging door. The tertiary combustion air is supplied into the combustion chamber, the flowing is not controlled. The cast iron grate is located on the bottom of combustion chamber, the steel ash box is under the cast iron grate. The connection to chimney is located on the upper side of stove, the internal diameter of connection is 149 mm. The stove body is tiled by ceramic plates.

Detailed information about fireplace stove ELDUR EKO is listed in the technical documentation delivered by manufacturer with stove.

Pictures of fireplace stove ELDUR EKO during the tests :



Table 1 : Measured values of fireplace stove ELDUR EKO

		ELDUR EKO
output power declared	kW	5,50
output power measured	kW	5,82
efficiency	%	77,67
CO _{13%O2}	%	0,104
CO _{13%O2}	mg/m ³	1301
CO	mg/MJ	872
OGC _{13%O2}	mg/m ³	36
OGC	mg/MJ	24
Nox _{13%O2}	mg/m ³	36
NOx	mg/MJ	24
dust _{13%O2}	mg/m ³	33
dust	mg/MJ	22
flue gas temperature	°C	244,3

Specification of samples / number: 1 piece of fireplace stove ELDUR EKO
evidence No. of sample : 314/1220/20

Method of taking of samples : submitted by the manufacturer

Place of taking of samples: submitted by the manufacturer

Date of taking of samples: 04th. February 2020

Test evaluation:

Tests of :

- **Fire safety**
- **Emission of combustion products**
- **Release of dangerous substance**
- **Surface temperatures**
- **Mechanical resistance**
- **Thermal output/energy efficiency**

were performed by Testing Laboratory of Notified Body No. 1299. Test report is enclosed.

Test results and evaluation:

Characteristic	Basic requirement	Test specification	Specification for determining of compliance	Identified performance (document No. – see list of used documents)	Evaluation
Fire safety	2	EN 13240:2001/A2:2004 Annex A cl. A1÷A4	EN 13240:2001/A2:2004: cl. 4.2.1, 4.2.3, 4.2.4, 4.2.6, 4.2.7, 4.2.8.1, 4.2.8.2, 4.2.10, 4.2.12, 5.2, 5.4, 5.6, 6.1	204000001/314	Meets requirement
Emission of combustion products	3	EN 13240:2001/A2:2004 Annex A cl. A1÷A4	EN 13240:2001/A2:2004: cl. 4.2.1, 4.2.3, 4.2.4, 4.2.5, 4.2.6, 4.2.7, 4.2.8.1, 4.2.8.2, 4.2.10, 5.2, 6.2	204000001/314	Meets requirement
Release of dangerous substance	3,4	EN 13240:2001/A2:2004 Annex A cl. A1÷A4	EN 13240:2001/A2:2004: annex B table ZA1	204000001/314	Meets requirement
Surface temperature	2,4	EN 13240:2001/A2:2004 Annex A cl. A1÷A4	EN 13240:2001/A2:2004: cl. 4.2.1, 5.4, 5.5, 5.6	204000001/314	Meets requirement
Mechanical resistance (to carry a chimney/flue)	4	EN 13240:2001/A2:2004 Annex A cl. A1÷A4	EN 13240:2001/A2:2004: cl. 4.2.1, 4.2.4	204000001/314	Meets requirement
Thermal output/ Energy efficiency	6	EN 13240:2001/A2:2004 Annex A cl. A1÷A4	EN 13240:2001/A2:2004: cl. 6.3, 6.4, 6.6, 6.7	204000001/314	Meets requirement

Legend to the table:

Basic requirements for construction works /construction products/ according to Annex I of the Regulation 305/2011/EU of the European Parliament and of the Council

2. Safety in case of fire
3. Hygiene, health and the environment
4. Safety and accessibility in use
6. Energy economy and heat retention

This report confirms the conformity of performance of the construction product:

- Fire safety
- Emission of combustion products
- Release of dangerous substance
- Surface temperatures
- Mechanical resistance
- Thermal output/energy efficiency

with this technical specification:

EN 13240:2001, EN 13240/A2:2004 – Roomheaters fired by solid fuel. Requirements and test methods.

List of used documents:

1. Producer's application form No.S03/20/0001/3801 for product assessment dated 03rd. February 2020, registered on 11th. February 2020
2. Confirmation of application – letter No. 314/07/2020 – dated 18th. February 2020
3. Test report No. 204000001/314 dated 24th. February 2020, issued by TSÚ Piešťany, š.p.
4. Installation and operating manual supplied by manufacturer
5. Technical drawings of fireplace stoves supplied by manufacturer
6. Label of fireplace stove supplied by manufacturer

Date of drawing up: February 25th, 2020

Drawn up by:

Ján Barančík
technical expert


.....
(signature)

Approved by:

Ing. Dušan Hanko
On behalf of Notified Body




.....
(signature)

stamp;



**TECHNICKÝ SKÚŠOBNÝ
ÚSTAV PIEŠŤANY, š.p.**

Krajinská cesta 2929/9, 921 01 Piešťany, Slovenská republika



SNAS

Reg. No. 009/S-047

Skúšobne TSÚ - Skúšobňa technických zariadení budov a stavieb

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Task No.: 204000001

Page: 1 from 13

Number of annexes: 3

Print No.: 1

Test Report

No.: 204000001/314

Test name: FUNCTIONAL AND OPERATIONAL PROPERTIES
Tests of safety operation, efficiency and heat output, emissions

Test subject - name: Roomheater fired by solid fuel

Type - marking: Fireplace stove
ELDUR EKO

Manufacturer: FLAMA s.r.o.
Dlhá 418
972 13 Nitrianske Pravno
Slovak Republic

Applicant: FLAMA s.r.o.
Dlhá 418
972 13 Nitrianske Pravno
Slovak Republic

Application/order No.: S03/20/0001/3801 dated 03rd. February 2020

Test performed in: TSÚ Piešťany, š.p.

Test method - procedure: EN 13240:2001, EN 13240/A2:2004

Test performed on: 04th ÷ 05th. February 2020


Date of issue: 24th. February 2020

Distribution list: 1 - applicant / producer
2 - TSÚ Piešťany, š.p.

TECHNICKÝ SKÚŠOBNÝ
ÚSTAV PIEŠŤANY, š.p.
Skúšobňa TSÚ
Krajinská cesta 2929/9
921 01 PIEŠŤANY
-314-

**Testing and test report
made by :**


Ing. Peter Pollák
Testing Engineer

**Responsible
and approval person:** 
Ing. Marcel Svoboda
The Technical Head
of Laboratory

1. Test methods:

EN 13240:2001, EN 13240/A2:2004, MPS 11/2.2/2018

2. Test sample:Submitted by manufacturer on 04th. February 2020 in number :

- 1 piece of fireplace stove type ELDUR EKO
- registration number of sample: 314/1220/20

3. Process and results of tests, measuring and finding:

Item No.	Requirement	Compliance with the requirement
EN 13240 clause 4 – MATERIALS, DESIGN AND CONSTRUCTION		
EN 13240 cl. 4.2 Construction		
EN 13240 clause 4.2.1 - General construction:		
1.	Assurance of operational capability of the appliance in term of: <ul style="list-style-type: none"> • the shape and dimensions of the components and equipment • the method of design and manufacture • the method of assembly and installation if assembled on site • resistance of mechanical, chemical and thermal stresses <i>In terms of design, materials used and resistance of mechanical stresses fireplace stove are safety and operation capable.</i>	+
2.	Reliably and safely operation such that during normal operation no : <ul style="list-style-type: none"> • escape of combustion gas posing a hazard into the test room • nor embers fall out <i>During the test any escape of combustion gas into the test room or falling out of embers from stove occurred.</i>	+
3.	Non-combustible materials should be used, except that it shall be permissible to use combustible materials for the following applications : <ul style="list-style-type: none"> • components or accessories fitted outside the appliance • internal components of controls and safety equipment • operating handles • electrical equipments <i>Non-combustible materials are used in the stove – steel, glass, vermiculit</i>	+
4.	No part of appliance shall comprise any material known to be harmful. <i>No harmful materials are used.</i>	+
5.	When fired with solid mineral fuels, the appliance shall have a bottomgrate and an ashpan.	0
6.	All operations which the user carries out, should be easy, safe and effective, including: <ul style="list-style-type: none"> • loading and emptying of the appliance • adjusting controls • de-ashing <i>Operation of stove is easy and safe, operational procedure is described in operational manual.</i>	+
7.	Component parts, which require periodic replacement and/or removal shall be either so designed or marked for identification to ensure correct fitting. <i>Parts of stove required exchange or de-assembly are clearly marked for correct assembly. Using of only original parts is described in the operational manual.</i>	+

Item No.	Requirement	Compliance with the requirement																					
EN 13240 clause 4.2.2 – Integral boiler:																							
8.	<ul style="list-style-type: none">•shall be made from steel or cast iron•shall be capable of operating at the maximum operating pressure declared by the manufacturer•the parts which form a seal, to be located securely by means of bolts, gaskets or welding to prevent the leakage o fair/water or combustion products•adjacent surfaces between metal components shall be gastight•seal made with fire-cement shall be supported by adjacent metal surfaces	0																					
EN 13240 clause 4.2.2.1 - Boilers constructed of steel																							
EN 13240 clause 4.2.2.1.1 – Welding and welding materials																							
9.	The materials listed in the Table 3 of EN 13240 shoall be used for parts subjected by pressureof water.	0																					
EN 13240 clause 4.2.2.1.2 Nominal minimum wall thicknesses (steel)																							
10.	<table><tr><td colspan="3">Nominal minimum wall thickness of sheets and tubes (except immersions coils, safety heat exchangers) made from non-alloy steel shall be in accordance with value in the table :</td></tr><tr><td>Application</td><td>Non-alloy steels</td><td>Stainless steel</td></tr><tr><td>Walls which are in contact with fire and/or water</td><td>5</td><td>3</td></tr><tr><td>Walls of convection heating surfaces (except circular tubes)</td><td>4</td><td>2</td></tr><tr><td>Circular tubes in convection part of heat exchanger</td><td>3,2</td><td>1,5</td></tr><tr><td>Water cooled grate tubes</td><td>4</td><td>3</td></tr><tr><td>Surfaces not in contact with fuel or combustion gases</td><td>3</td><td>2</td></tr></table>	Nominal minimum wall thickness of sheets and tubes (except immersions coils, safety heat exchangers) made from non-alloy steel shall be in accordance with value in the table :			Application	Non-alloy steels	Stainless steel	Walls which are in contact with fire and/or water	5	3	Walls of convection heating surfaces (except circular tubes)	4	2	Circular tubes in convection part of heat exchanger	3,2	1,5	Water cooled grate tubes	4	3	Surfaces not in contact with fuel or combustion gases	3	2	0
Nominal minimum wall thickness of sheets and tubes (except immersions coils, safety heat exchangers) made from non-alloy steel shall be in accordance with value in the table :																							
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Circular tubes in convection part of heat exchanger	3,2	1,5																					
Water cooled grate tubes	4	3																					
Surfaces not in contact with fuel or combustion gases	3	2																					
EN 13240 clause 4.2.2.2 - Boilers constructed of cast iron																							
EN 13240 clause 4.2.2.2.1 - Cast iron parts subject to water pressure																							
11.	<table><tr><td colspan="2">The mechanical properties of cast iron used for parts subject to water pressure shall,as a minimum, correspond to the values listed in the Table 4 of EN 13240.</td></tr><tr><td colspan="2">Grey cast iron (in accordance with EN 1561:1997)</td></tr><tr><td>tensile strenght Rm</td><td>>150 N/mm²</td></tr><tr><td>Brinell hardness</td><td>160 HB to 220 HB</td></tr><tr><td colspan="2">Spheroidal graphite iron (in accordance with EN 1563:1997)</td></tr><tr><td>tensile strenght Rm</td><td>>400 N/mm²</td></tr><tr><td>elongation</td><td>18% A3</td></tr></table>	The mechanical properties of cast iron used for parts subject to water pressure shall,as a minimum, correspond to the values listed in the Table 4 of EN 13240.		Grey cast iron (in accordance with EN 1561:1997)		tensile strenght Rm	>150 N/mm ²	Brinell hardness	160 HB to 220 HB	Spheroidal graphite iron (in accordance with EN 1563:1997)		tensile strenght Rm	>400 N/mm ²	elongation	18% A3	0							
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EN 13240 clause 4.2.2.2.2. – Minimum wall thicknesses (cast iron)																							
12.	<table><tr><td colspan="3">The wall tickness of the casting section shall be not less than the minimum thcknesses listed in the Table 5 of the EN 13240</td></tr><tr><td rowspan="2">Nominal heat output kW</td><td>Grey cast iron</td><td>Spheroidal graphite cast iron</td></tr><tr><td colspan="2">Minimum wall thickness in mm</td></tr><tr><td><30</td><td>3,5</td><td>3,0</td></tr><tr><td>≥30<50</td><td>4,0</td><td>3,5</td></tr></table>	The wall tickness of the casting section shall be not less than the minimum thcknesses listed in the Table 5 of the EN 13240			Nominal heat output kW	Grey cast iron	Spheroidal graphite cast iron	Minimum wall thickness in mm		<30	3,5	3,0	≥30<50	4,0	3,5	0							
The wall tickness of the casting section shall be not less than the minimum thcknesses listed in the Table 5 of the EN 13240																							
Nominal heat output kW	Grey cast iron	Spheroidal graphite cast iron																					
	Minimum wall thickness in mm																						
<30	3,5	3,0																					
≥30<50	4,0	3,5																					

Item No.	Requirement			Compliance with the requirement
EN 13240 clause 4.2.2.3 – Boiler shell tappings				
13..	The threads of boiler shell tappings, for flow and return pipes, shall be not less than the minimum designation thread size given in the Table 6 of EN 13240:			0
	Nominal heat output kW	Gravity circulation thread size	Pumped circulation thread size	
	≤ 22	1“	½“	
	> 22 ≤ 35	1 ¼“	1“	
	> 35 < 50	1 ½“	1“	
14.	Where tapered threads are used, they shall be in accordance with the requirements of ISO 7-1:1994 and ISO 7-2:2000.			0
15.	Where paralel thereads are used, they shall be in accordance with ISO 228-1:2000 and ISO 228-2:1987.			0
16.	The design and position of flow tappings shall be such that air will not be retained within the boiler shell.			0
17.	Minimum depth of tapping or lenght of thread shall be not less as values given in the Table 7 of EN 13240.			0
	Thread size		Minimum depth or length of thread in mm	
	½" to ¼"		16	
	1 ½"		19	
18.	If boilers are supplied with reducing bushes in horizontal flow tappings, these shall be eccentric and fixed so that the reduced outlet is uppermost.			0
EN 13240 clause 4.2.2.4 - Boiler waterways				
EN 13240 clause 4.2.2.4.1 - Design of all boiler waterways				
19.	The design of the boiler shall ensure . • a free flow of water through all parts. • to minimize the build up of sediments, sharp or wedge-shaped waterways with a taper towards the bottom shall be avoided.			0
20.	Where inspection holes are provided in the boiler to give access for inspection and cleaning of the waterways, they shall be a minimum of 70 mm x 40 mm or have a minimum diameter of 70 mm and be sealed with a gasket and cap.			0
EN 13240 clause 4.2.2.4.2 - Boiler waterways used with indirect water systems				
21.	The minimum internal dimension of waterways throughout the main body of the appliance shall be not less than 20 mm except where waterways have to be locally reduced to facilitate manufacture or are in areas not in direct contact with burning fuel, in these cases the width of the waterways shall not be less than 15 mm.			0
EN 13240 clause 4.2.2.4.3 - Boiler waterways used with direct water systems				
22.	The minimum internal dimensions of waterways in boilers designed for direct water systems shall be not less than 25 mm.			0
EN 13240 clause 4.2.2.4.4 - Venting of the water sections				
23.	The boiler and its components shall be designed in such a way that their respective water sections can be vented.			0
24.	The boiler shall be so designed that under normal operation in accordance with the manufacturer's installation instructions, no undue boiling noises occur.			0
EN 13240 clause 4.2.2.4.5 - Water tightness				
25.	Holes, for screws and similar components, which are used for the attachment or removal of parts, shall not open into waterways or spaces through which water flows. NOTE This does not apply to pockets for measuring, control and safety equipment.			0

Item No.	Requirement	Compliance with the requirement
EN 13240 clause 4.2.3 - Cleaning of heating surfaces:		
26.	All heating surfaces shall be accessible from the flue gas side. <i>The heating surface are accesible from the gas side, cleaning is possible by standard used cleaning tools.</i>	+
27.	Where cleaning and servicing of the boiler and its components require the use of special tools, these shall be supplied by the appliance manufacturer.	0
EN 13240 clause 4.2.4 - Flue spigot or socket:		
28.	For horizontal flue connection, the flue spigot/socket shall be designed to allow fitting, internal or external, over a length of at least 40 mm, of a flue gas connector.	0
29.	For vertical flue connection, the fitting shall overlap by at least 25 mm. <i>The overlapping for chimney connection is greater than 25 mm, internal diameter of connection is 149 mm.</i>	+
EN 13229 clause 4.2.5 - Flueways:		
30.	It shall be possible to clean the flueways of the appliance completely using commercially available tools or brushes, unless special tools or brushes are provided by the appliance manufacturer. <i>Heating surface are possibily to clean from the gas side by standard tools.</i>	+
31.	The size of the flueway: • in its minimum dimension shall be not less than 30 mm <i>The flueways are greater than 30 mm.</i>	+
	• except it shall be permissible to reduce it to not less than 15 mm for appliances designed only to burn fuels other than bituminous coals and peat briquettes, and where an access door(s) is provided for cleaning the flueway.	0
EN 13240 clause 4.2.6 - Ashpan and ash removal:		
32.	Ashpan volume shall be capable of containing the combustion residue from two full charges of fuel whilst retaining sufficient space above to allow adequate primary air flow through the bottomgrate or firebed. <i>The ashpan volume is sufficient for two full charges of fuel and does not reduce the primary air flow, the primary air inlet is not constrained by ash in the ash box.</i>	+
33.	If the ashpan resides in the appliance it shall be located in the ashpit in such a way that it allows : • free passage of primary air • in such a position that it does not obstruct any primary air inlet control <i>The location of ashbox does not obstruct the primary air flowing.</i>	+
34.	Design and construction of the ashpan shall ensure: • effective collects the residue from beneath the bottomgrate • easy and withdrawn, carried and emptied, without undue spillage of residue material. • when hot, the tool(s) for manipulation shall be provided <i>The ashpan is easy accessible , ash box effective collects the residues of fired fuel.</i>	+
EN 13240 clause 4.2.7 - Bottomgrate:		
35.	Where the bottomgrate is removable it shall be so designed or marked as to ensure correct fitting. <i>The bottomgrate is marked to ensures its correct fitting.</i>	+
36.	If a de-ashing mechanism is fitted it shall be capable of effectively de-ashing the fuelbed.	0
37.	The de-ashing should be possible without undue effort. <i>De-ashing is easy and safe, the ash box is accessible after charging door's opening.</i>	+
38.	If it is necessary to remove the ashpit door to de-ash the fire, the appliance should be designed to minimise ash or fuel spillage during the de-ashing operation.	0

Item No.	Requirement	Compliance with the requirement
EN 13240 clause 4.2.8 - Combustion air supply:		
EN 13240 clause 4.2.8.1 - Primary air inlet control:		
39.	The appliance shall be fitted with controlled primary air regulator.	+
40.	Primary air inlet control shall be : • with thermostatic control, or	0
	• with manual control <i>The primary air inlet control is manually controled, regulator is located on the charging door under the door's glass..</i>	+
	• only with thermostatic control for boiler outputs over 7,5 kW	0
41.	The adjusting control shall be: • clearly visible or <i>The position of primary air regulator is clearly visible.</i>	+
	• permanently marked so that its operation is readily understandable. <i>The position of regulator is easy and understandable.</i>	+
42.	The „cold“ setting of the air regulator shall be clearly marked and method of adjustment shall be described in the instructions.	0
43.	The design shall be such that during operation of the appliance, neither ash nor unburned fuel can prevent the movement or closure of the air inlet control. <i>The design of primary air regulator ensures that the air regulation is not obstructed by ash and unburned fuel..</i>	+
44.	The thermostat shall have a variable temperature range and be of immersion or dry pocket type.	0
EN 13240 clause 4.2.8.2 - Secondary air inlet control:		
45.	The secondary air entry shall be so designed that the passage of air is not restricted when the firebox is filled to the manufacturer's recommended capacity. <i>The secondary air inlet control is manually controled, the secondary air regulator is located on the charging door over door's glass.</i>	+
EN 13240 clause 4.2.9 - Control of flue gas:		
46.	The flue damper : • must not block the flue totally • shall be easy to operate • shall incorporate an aperture within the blade, which in a continuous area occupies at least 20 cm ² or 3% of the cross-sectional area of the blade if this is greater • the position of the damper shall be recognizable from the setting of the device	0
47.	If a draught regulator is fitted the minimum cross sectional area requirement shall not be applicable but the device shall be easily accessible for cleaning.	0
EN 13240 clause 4.2.10 - Firedoors and charging doors:		
48.	The charging door shall be large enough to allow the appliance to be filled with the commercial fuels recommended by the manufacturer. <i>The charging door is adequate large for recommended fuel filling (wood logs).</i>	+
49.	The firedoors and charging doors shall be designed to prevent accidental opening and to facilitate positive closure. <i>The charging door is blocked in the closed position by locking mechanism.</i>	+
50.	Charging door shall be designed to prevent accidental opening and to facilitate positive closure. <i>Charging door are fitted with locking mechanism.</i>	+
EN 13240 clause 4.2.11 - Flue bypass device:		
51.	Shall be easily operable	0
52.	The extreme positions corresponding to full opening and closing shall be stable and easily identifiable.	0

Item No.	Requirement	Compliance with the requirement								
EN 13240 clause 4.2.12 – Front firebars and/or deepening plate:										
53.	The front firebars shall be designed to retain the fuel or ash such that there is no undue spillage of ash or burning fuel from the roomheater during normal operations, particularly during refuelling or de-ashing. <i>The front firebars prevent of ash or fired residues to fall out from stove during stove refuelling or operation.</i>	+								
54.	The removable front firebars and/or deepening plate, they shall be of a design such that they can neither be incorrectly fitted not accidentally dislodged.	0								
EN 13240 clause 4.2.13 – Solid mineral fuels and peat briquettes burning appliances										
55.	When the recommended fuels are solid mineral fuel and peat briquettes the appliance shall have a bottomgrate and an ashpan.	0								
EN 13240 clause 5 – SAFETY										
EN 13240 clause 5.1 - Natural draught:										
56.	Where the appliance manufacturer claims that a continuous burning appliance can be connected to the chimney serving more that one appliance and can be operated with solid mineral fuel and peat briquettes,. Then when tested in accordance with A.4.9.3. either the flue draught shall not be less than 3 Pa, or where the flue draught falls bellow 3 Pa then over a period of 10 hours the emitted quantity of CO shall not be greater than 250 dm ³ .	0								
57.	Such an appliance shall be clearly labelled to indicate whether or not it can be installed into a shared flue.	0								
EN 13240 clause 5.2 - Operation with open firedoors:										
58.	The operation of an appliance with an open firebox under the conditions described in A4.9.1. shall only be permitted when: • any escape of harmful combustion gases • any loss of the firebed from the appliance, does not occur under the test conditions described in section A.4.9.1. <i>Any escape of harmful combustion gases not occured during the test. Any loss of firebed not occured during the test.</i>	+								
EN 13240 clause 5.3 - Strength and leaktightness of boiler shells										
59.	The boiler shell and its water carrying components shall not leak or become permanently deformed when subjected to the type pressure test described in A.4.9.4.	0								
EN 13240 cl. 5.4 – Temperature rise in the fuel storage container (other than fuel hopper)										
60.	When tested in accordance with A.4.7. and A.4.9 the temperatures measured in the fuel storage container shall not exceed the ambient room temperature by more than 65 K. <i>Measured temperature in fuel storage container [°C]:</i> <table><tr><td>Type of product</td><td>ELDUR EKO</td></tr><tr><td>ambient temperature</td><td>18,1</td></tr><tr><td>temperature of fuel container bottom</td><td>33,5</td></tr><tr><td>temperature in centre of fuel storage container</td><td>62,4</td></tr></table> <i>The producer describes in the operational manual that fuel container is possible to fill by fuel maximally to 2/3 of volume and fuel must not touch of covering shading sheet.</i>	Type of product	ELDUR EKO	ambient temperature	18,1	temperature of fuel container bottom	33,5	temperature in centre of fuel storage container	62,4	+
Type of product	ELDUR EKO									
ambient temperature	18,1									
temperature of fuel container bottom	33,5									
temperature in centre of fuel storage container	62,4									

Item No.	Requirement	Compliance with the requirement														
EN 13240 clause 5.5 - Temperature rise of the operating components:																
61.	<p>If the manipulation of the operating components does not require the assistance of tools, the surface temperatures, measured only in the areas to be touched, shall not exceed the ambient room temperature by more than the following when tested in accordance with A.4.7:</p> <ul style="list-style-type: none">• 35 K for metal• 45 K for porcelain, vitreous enamel or similar materials• 60 K for plastics, rubber or wood <p>If these temperatures are exceeded, the manufacturer shall indicate in the instructions the need to use an operating tool. This tool shall be supplied with the appliance.</p> <p><i>Measured temperatures [°C]:</i></p> <table><tr><td><i>Type of product</i></td><td>ELDUR EKO</td></tr><tr><td><i>ambient temperature</i></td><td>18,1</td></tr><tr><td><i>handle of charging door (metal)</i></td><td>90,9</td></tr><tr><td><i>regulator of primary air (metal)</i></td><td>148,7</td></tr><tr><td><i>regulator of secondary air (metal)</i></td><td>133,8</td></tr></table> <p><i>In the operational manual the producer indicates using of operational tools and gloves delivered with appliance.</i></p>	<i>Type of product</i>	ELDUR EKO	<i>ambient temperature</i>	18,1	<i>handle of charging door (metal)</i>	90,9	<i>regulator of primary air (metal)</i>	148,7	<i>regulator of secondary air (metal)</i>	133,8	+				
<i>Type of product</i>	ELDUR EKO															
<i>ambient temperature</i>	18,1															
<i>handle of charging door (metal)</i>	90,9															
<i>regulator of primary air (metal)</i>	148,7															
<i>regulator of secondary air (metal)</i>	133,8															
EN 13240 clause 5.6 - Temperature of adjacent combustible materials:																
62.	<p>When tested, during the test performance related to the nominal heat output and the temperature safety test, and when the appliance is installed in accordance with the clearance distances specified in the manufacturer's installation instructions, the temperature of the test hearth and walls and/or ceiling or any other structure surrounding the appliance comprising combustible material shall not exceed the ambient temperature by more than 65 K. If the temperature of the surrounding walls exceeds the ambient temperature by more than 65 K, manufacturer shall provide the necessary information for insulating of walls or indicate the clearance distance required.</p> <p><i>Measured temperatures [°C]:</i></p> <table><tr><td><i>Type of product</i></td><td>ELDUR EKO</td></tr><tr><td><i>ambient temperature</i></td><td>18,1</td></tr><tr><td><i>temperature at 200 mm left side</i></td><td>47,8</td></tr><tr><td><i>temperature at 200 mm right side</i></td><td>48,2</td></tr><tr><td><i>temperature at 200 mm back side</i></td><td>46,9</td></tr><tr><td><i>temperature at 1200 mm front side</i></td><td>50,8</td></tr><tr><td><i>floor temperature in front of / behind</i></td><td>41,2 // 40,5</td></tr></table> <p><i>In the operational manual the producer indicates the distances from combustible material : 200mm from left, right and back side, 1200 mm from front side of stove. The measured temperatures do not exceed ambient temperature over 65°C.</i></p>	<i>Type of product</i>	ELDUR EKO	<i>ambient temperature</i>	18,1	<i>temperature at 200 mm left side</i>	47,8	<i>temperature at 200 mm right side</i>	48,2	<i>temperature at 200 mm back side</i>	46,9	<i>temperature at 1200 mm front side</i>	50,8	<i>floor temperature in front of / behind</i>	41,2 // 40,5	+
<i>Type of product</i>	ELDUR EKO															
<i>ambient temperature</i>	18,1															
<i>temperature at 200 mm left side</i>	47,8															
<i>temperature at 200 mm right side</i>	48,2															
<i>temperature at 200 mm back side</i>	46,9															
<i>temperature at 1200 mm front side</i>	50,8															
<i>floor temperature in front of / behind</i>	41,2 // 40,5															
EN 13240 clause 5.7 - Thermal discharge control																
63.	For appliances fitted with a boiler designed to operate on a sealed system and where a thermal discharge control is fitted as part of the appliance, when tested in accordance with A.4.9.5, the control shall operate when the water flow temperature exceeds either 105 °C or the manufacturer's declared operating temperature, whichever is the lower.	0														
EN 13240 cl. 5.8 – Electrical safety																
64.	The appliance shall comply with the electrical safety requirements of EN 50165 if mains operated electrical equipment is fitted as part of the appliance.	0														

Item No.	Requirement		Compliance with the requirement
EN 13240 clause 6 – PERFORMANCE REQUIREMENTS			
EN 13240 clause 6.1 - Flue gas temperature			
65.	The average flue gas temperature of the flue gas temperature measured during the test of the operational properties at the nominal heat output shall be recorded in the installation instructions.		+
	Type of product	ELDUR EKO	
	combustion gas temperature at nominal heat output	244,3°C	
	primary air regulator setting	closed	
	secondary air regulator setting	open to 75%	
EN 13240 clause 6.2 - Carbon monoxide emission			
66.	When measured in accordance with A.4.7, the mean carbon monoxide (CO) concentration calculated to 13% oxygen (O2) content in the flue gas shall be less than or equal to the manufacturer's declared value and shall not exceed 1,0%.		+
	Type of product	ELDUR EKO	
	average CO concentration calculated to 13% O ₂ at nominal heat output:	0,104 %	
EN 13240 clause 6.3 - Efficiency at nominal heat output:			
67.	When tested in accordance with A.4.7, the measured total efficiency from the mean of at least two test results at nominal heat output shall be greater than or equal to the manufacturer's declared value and shall equal or exceed 50 %.		+
	Type of product	ELDUR EKO	
	efficiency	77,67%	
	primary air regulator setting	closed	
	secondary air regulator setting	open to 75%	
EN 13240 clause 6.4 - Flue draught:			
68.	The flue draught value, related to the appliance's nominal heat output, shall be taken from Figure 1 of EN 13240. Where the flue draught value needs to be exceeded in order to obtain the manufacturer's declared nominal output, the required flue draught shall be clearly stated in the appliance's installation instructions.		+
	Type of product	ELDUR EKO	
	average draught at nominal heat output	12.9 Pa	
EN 13240 clause 6.5 – Recovery			
69.	At the conclusions of the slow combustion or reduced combustion test periods it shall be possible to satisfactorily revive the fire. Recovery shall be deemed to be satisfactory if the refuel charge is visibly ignited within a time of 20 minutes.		0
EN 13240 clause 6.6 - Refuelling intervals			
70.	When the appliances is operated with closed doors, the minimum times for maintenance of combustion with one added test load of fuel shall be not less than the values given in Table 10. Where the refuelling interval declared by the manufacturer is greater than the minimum refuelling interval given in Table 10, then the manufacturer's declared value shall be verified when tested during the tests.		+
	Type of product	ELDUR EKO	
	fuel	wood	
	combustion process	intermittent	
	refuelling interval	0,80 hour	

Item No.	Requirement	Compliance with the requirement	
EN 13240 clause 6.7 - Space heating output			
71.	The space heating output declared by the manufacturer shall not exceed the space heating output measured in accordance with A.4.7.	+	
	Type of product		ELDUR EKO
	measured heating output at nominal output		5,82 kW
	primary air regulator setting		closed
	secondary air regulator setting		open to 75%
	heating power declared by producer		5,50 kW
EN 13240 clause 6.8 - Water heating output			
72.	The water heating output declared by the manufacturer shall not exceed that measured under the conditions described in A.4.7.	0	

Key: - does not meet requirement
+ meets requirement
0 requirement does not refer to the tested product

Test results - meets/does not meet requirements:

Basic characteristics	Technical specification	meet/ does not meet
MATERIALS, DESIGN AND CONSTRUCTION	EN 13240: 2001/A2:2004: cl.: 4.2.1, 4.2.3, 4.2.4, 4.2.5, 4.2.6, 4.2.7, 4.2.8.1, 4.2.8.2, 4.2.10, 4.2.12	+
SAFETY	EN 13240: 2001/A2:2004 cl.: 5.2, 5.4, 5.5; 5.6,	+
PERFORMANCE	EN 13240: 2001/A2:2004: cl.: 6.1; 6.2; 6.3; 6.4; 6.6; 6.7	+

Key: + meets
- does not meet

4. Used testing equipments and measures :

- weight Mettler Toledo, type ID plus 0÷1500 kg
- differential Manometer: Rosemont, type 3051
- differential manometer KIMO type CP302, +/- 100Pa with temperature sensor, range to 1000°C
- flue gas analyser HORIBA 661
- analyser THERMOFID "ES"
- dust analyser TCR TECORA
- analyser of fuel moisture KERN type MLB 50-3N
- temperature sensors set

The test report ends here.

Annex No.1

Pictures of fireplace stove ELDUR EKO during the tests



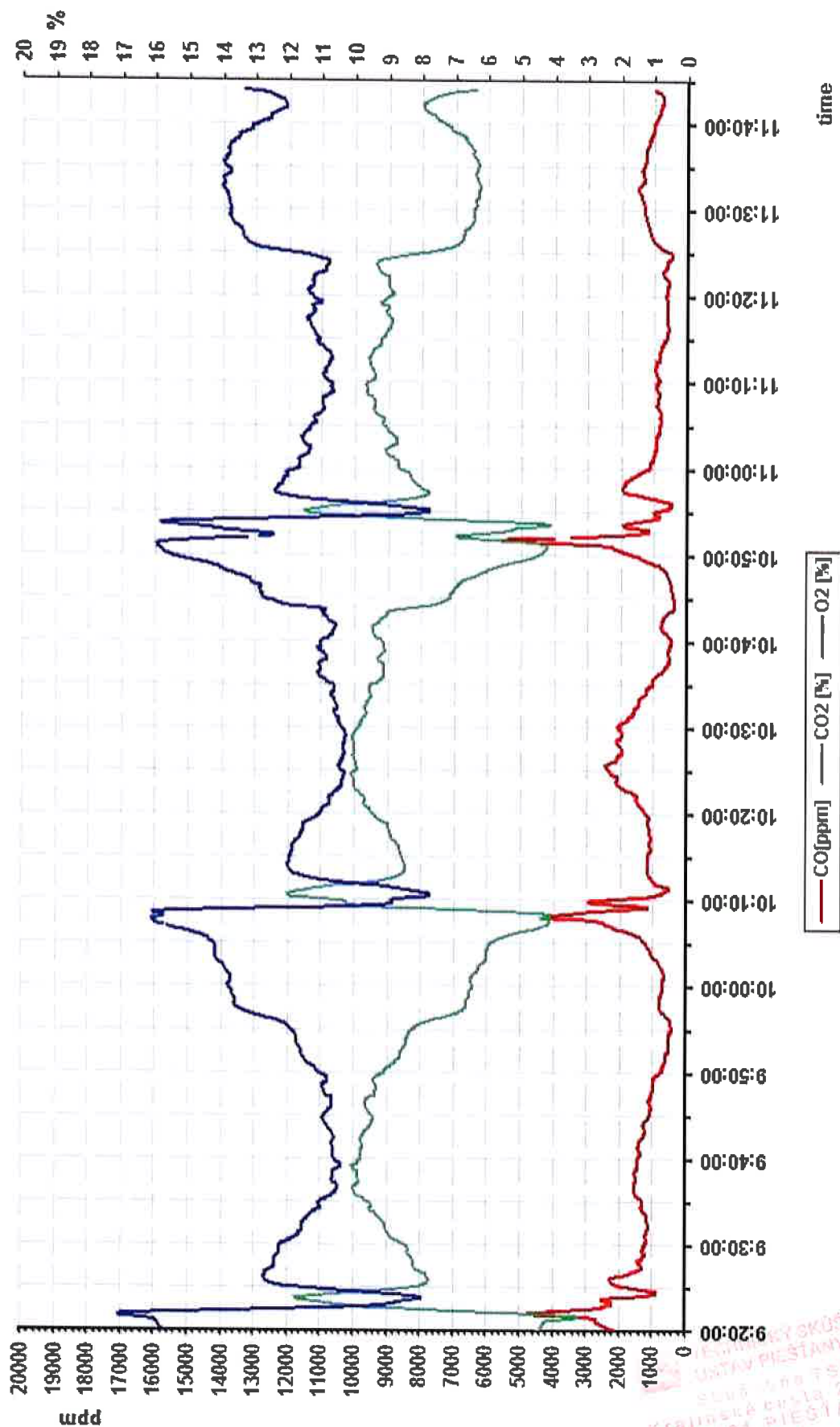
TESTOWY SKŁADNI
INSTYTUT PŁASTYK S.P.
SKŁADNI PŁO
KRAJINSKA 292919
92101 PIESTANY
-314-

Annex No.2

**Test results summarization of fireplace stove type ELDUR EKO
nominal power**

	measuring 1	measuring 2	measuring 3	average values	Unit
Fuel	beech wood			-	-
Fuel efficiency	15378			15378	kJ/kg
Fuel humidity	8,57			8,57	%
Date of test	05.02.2020			-	-
Amount of fuel	1,394	1,396	1,402	1,397	kg
Fuel consumption	1,780	1,861	1,618	1,753	kg/hod
Test duration	47	45	52	48	min
Average heat output	5,86	6,20	5,39	5,82	[kW]
Average efficiency	77,08	78,02	77,92	77,67	[%]
Average measured O ₂ concentration	12,02	11,53	12,07	11,87	[%]
Average measured CO ₂ concentration	8,26	8,67	8,14	8,35	[%]
Average measured CO concentration	1251	1381	1003	1212	[ppm]
Average CO concentration calculated to 13 % O ₂ , 101325Pa, 0°C	0,110	0,115	0,088	0,104	[%]
Average CO concentration calculated to 13 % O ₂ , 101325 Pa, 0°C	1369	1432	1103	1301	[mg/m ³]
Average CO concentration	917	960	739	872	[mg/MJ]
Average measured OGC concentration	37	71	20	43	[mg/m ³]
Average OGC concentration calculated to 13% O ₂ , 101325 Pa, 0°C	33	59	17	36	[mg/m ³]
Average measured OGC	22	40	11	24	[mg/MJ]
Average measured NO _x concentration	20	20	20	20	ppm
Average NO _x concentration calculated to 13 % O ₂ , 101325 Pa, 0°C	37	35	37	36	[mg/m ³]
Average NO _x concentration	25	23	25	24	[mg/MJ]
Average measured dust concentration	-	48	28	38	[mg/m ³]
Average dust concentration calculated to 13 % O ₂ , 101325 Pa, 0°C	-	40	25	33	[mg/m ³]
Average dust concentration	-	27	17	22	[mg/MJ]
Average flue gas mass flow	4,615	4,659	4,247	4,507	g/s
Average draught	12,8	12,6	13,2	12,9	[Pa]
Average combustion gas temperature	247,0	247,7	238,2	244,3	[°C]
Average ambient temperature	17,4	18,1	18,9	18,1	[°C]

Annex No.3

Emission O_2 , CO_2 and CO curves chart of fireplace stove type ELDUR EKO
measurements 1+3 at nominal power

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