STROJÍRENSKÝ ZKUŠEBNÍ ÚSTAV, s. p., notifikovaná osoba 1015
ENGINEERING TEST INSTITUTE, Public Enterprise, Notified Body 1015
Hudcova 56b, 621 00 Brno

REPORT
on Initial Type Testing
No. 30-9982

Product:	Fireplace stove burning wood
Type designation:	Avila
Versions:	Avila T, Getaria, Mangala, Tudela, Meru, Luanco, Lugo, Tala

Customer:	ROMOTOP spol.s.r.o. Komenského 325 742 01 Suchdol nad Odrou Czech Republic ID No.: 47678186
Manufacturer:	ROMOTOP spol.s.r.o. Komenského 325 742 01 Suchdol nad Odrou Czech Republic ID No.: 47678186
Responsible employees:	Ing. Jiří Dvořák Ing. Petr Buzek
Report issue date:	2008-10-31
Distribution list:	1 copy to the Engineering Test Institute 1 copy to the Customer

The initial product type testing was conducted pursuant to Council Directive 89/106/EEC, as amended (hereinafter referred to as Directive 89/106/EEC), on the approximation of laws, regulations and administrative provisions of the Member States relating to construction products (the Directive concerned is implemented by Government Regulation 190/2002 Coll., as amended by Government Regulation 251/2003 Coll., and Government Regulation 128/2004 Coll., laying down the technical requirements for construction products bearing the CE marking, hereinafter referred to as Government Regulation 190/2002 Coll.).

The Engineering Test Institute in Brno conducted this activity on the basis of the following documents:
- Order B-32118 of 2008-09-20
- Contract B-32118/30 of 2008-09-25

In relation to harmonized standard EN 13240:2001/A2:2004, Annex ZA, Table ZA.2 - conformity demonstration system, fireplace stoves are subject to Conformity Demonstration System 3 - see the second possibility (Item ii) of Section 2 of Annex III to Directive 89/106/EEC. The procedures for demonstrating conformity are specified in ČSN EN 13240:2002/A2:2005 (hereinafter referred to as ČSN EN 13240/A2:2005)

This system is in compliance with the conformity assessment procedure pursuant to Government Regulation 190/2002 Coll., Art. 5 (1) (b).

The customer requested that the conversion of emissions and the test of the temperature rise of combustible materials within a distance of 100 mm from the appliance, the design of which was modified by a screening plate inserted in the rear section of the stove, i.e. a formerly certified product - Avila fireplace stove burning wood and its versions.
Because the Avila fireplace stove burning wood and its versions were tested as part of Task 30-8878, the results of the previously completed tests were used for the assessment of a majority of the fundamental characteristics.
The production of formerly certified products was terminated, and the only fireplace stove currently produced is that specified above (with the above-mentioned modification).

Based on the technical assessment of all product versions and their documentation, the following product was selected for testing, in accordance with the provisions of Art. 9.2 of ČSN EN 13240/A2, i.e. Avila fireplace stove.
The identical design of the critical parts of all products was assessed.
The following product properties were assessed in particular:
-Materials used
-Control and regulating elements, regulating methods
-Size of heating surface depending on the output (specific output)
-Dimensions, design, and surface finish
-Emissions
-Calorific efficiency
-Identical manufacturing technological procedures
Based on the findings specified above it may be stated that the assessed versions do not have different characteristics, from the perspective of the nature of the hazard; therefore, the results of the tests performed with the selected representative may be used for evaluating the respective characteristics in Table ZA.1 for all product versions.
The types differ in the design only.

I. Product specification

See Report 30-8878

II. Sample tested

The representative sample of the production (types specified in the table below) was used for the inspection, testing and evaluation purposes:

(Table 1)

Type	Date	Sample Reg. No.
Avila	2008-02-28	0211.08.12592.000

Visual inspection and all tests and verifications were conducted at the boiler and industrial heating device testing station of the Engineering Test Institute in Brno in May – September 2008 by Mr Milan Holomek and Josef Duchan.

- The products fall within the group of products for which Commission Decision 1999/471/EC, as amended by Commission Decision 2002/592/EC, was issued.

III. List of submitted technical documentation

(Table 2)

Submitted documentation:
1. Technical assembly drawings: 12 off
2. Instructions for operation of AVILA fireplace stove
3. Draft label for fireplace stove of ROMOTOP spol. s r.o.
4. Report 30-8878 and background data regarding this Report

IV. Characteristics indicated in Table ZA.1, tested and evaluated by the Notified Body (Testing Laboratory).

(Table 3)

Characteristics of Table ZA.1		Standard or technical regulation applied	Results Report page	Evaluation*)
1.	**Fire safety**	see Clauses 1.1 ÷ 1.12		
1.1	General design requirements	ČSN EN 13240/A2:2005, Art. 4.2.1	30-8878	+
1.2	Cleaning of exchanging surfaces	ČSN EN 13240/A2:2005, Art. 4.2.3		+
1.3	Combustion product exhaust nozzle	ČSN EN 13240/A2:2005, Art. 4.2.4		+
1.4	Ash pan drawer and removal of ash	ČSN EN 13240/A2:2005, Art. 4.2.6		+
1.5	Grate	ČSN EN 13240/A2:2005, Art. 4.2.7		+
1.6	Combustion air supply	ČSN EN 13240/A2:2005, Art. 4.2.8		+
1.7	Loading door and closing door	ČSN EN 13240/A2:2005, Art. 4.2.10		+
1.8	Front partitions	ČSN EN 13240/A2:2005, Art. 4.2.12		+
1.9	Use with the loading door open	ČSN EN 13240/A2:2005, Art. 5.2	-	0
1.10	Temperature rise in the fuel compartment	ČSN EN 13240/A2:2005, Art. 5.4	30-8878	+
1.11	Temperature of adjacent flammable materials	ČSN EN 13240/A2:2005, Art. 5.6	8	+
1.12	Combustion product temperature	ČSN EN 13240/A2:2005, Art. 6.1	30-8878	+
2.	**Emission of combustion products**	See clauses 2.1-2.14		
2.1	General design requirements	ČSN EN 13240/A2:2005, Art. 4.2.1	30-8878	+
2.2	Built-in heater	ČSN EN 13240/A2:2005, Art. 4.2.2	-	0
2.3	Cleaning of exchanging surfaces	ČSN EN 13240/A2:2005, Art. 4.2.3	30-8878	+
2.4	Combustion product exhaust nozzle	ČSN EN 13240/A2:2005, Art. 4.2.4		+
2.5	Combustion product ducts	ČSN EN 13240/A2:2005, Art. 4.2.5		+
2.6	Ash pan drawer and removal of ash	ČSN EN 13240/A2:2005, Art. 4.2.6	30-8878	+
2.7	Grate	ČSN EN 13240/A2:2005, Art. 4.2.7		+
2.8	Combustion air supply	ČSN EN 13240/A2:2005, Art. 4.2.8		+
2.9	Combustion product flow regulation	ČSN EN 13240/A2:2005, Art. 4.2.9	-	0
2.10	Loading door and closing door	ČSN EN 13240/A2:2005, Art. 4.2.10	30-8878	+
2.11	Starting shutter	ČSN EN 13240/A2:2005, Art. 4.2.11		+
2.12	Natural air inlet	ČSN EN 13240/A2:2005, Art. 5.1	-	0

Characteristics of Table ZA.1		Standard or technical regulation applied	Results Report page	Evaluation*)
2.13	Use with the loading door open	ČSN EN 13240/A2:2005, Art. 5.2	-	0
2.14	Emission of carbon monoxide	ČSN EN 13240/A2:2005, Art. 6.2	6 and 7	+
3.	**Leakage of hazardous substances**	ČSN EN 13240/A2:2005, ZA 1	30-8878	+
4.	**Surface temperature**	See clauses 4.1-4.4		
4.1	General design requirements	ČSN EN 13240/A2:2005, Art. 4.2.1	30-8878	+
4.2	Temperature rise in the fuel compartment	ČSN EN 13240/A2:2005, Art. 5.4		+
4.3	Temperature of control elements	ČSN EN 13240/A2:2005, Art. 5.5		+
4.4	Temperature of adjacent flammable materials	ČSN EN 13240/A2:2005, Art. 5.6	8	+
5.	**Heat capacity / calorific efficiency**	See clauses 5.1-5.6		
5.1	Calorific efficiency at the rated thermal capacity	ČSN EN 13240/A2:2005, Art 6.3	6 and 7	+
5.2	Chimney draught	ČSN EN 13240/A2:2005, Art. 6.4	6, 7 and 8	+
5.3	Combustion process restoration	ČSN EN 13240/A2:2005, Art. 6.5	30-8878	+
5.4	Fuel loading intervals	ČSN EN 13240/A2:2005, Art. 6.2	6 and 7	+
5.5	Heat flow into the environment	ČSN EN 13240/A2:2005, Art. 6.7		+
5.6	Heat flow at the water end	ČSN EN 13240/A2:2005, Art. 6.8	-	0

*) Evaluation: + ... Requirement fulfilled. 0 .... Requirement does not apply to the product concerned.

V. Conclusion

It is possible to state on the basis of the tests and evaluation specified above that the following product:

Fireplace stove burning wood, AVILA type (versions: Avila T, Getaria, Mangala, Tudela, Meru, Luanco, Lugo, Tala)

meets the relevant characteristics of Table ZA.1, tested and evaluated by the Notified Body (Testing Laboratory).

Measuring and testing equipment:

No.	Description	Inventory number	Calibration (certification) until	Precision
1	Therm 2211 thermometer	02-1429	04/09	± 5%
2	Thermocouple	18-2337	06/09	± 2°C
3	Draught gauge	11-5487	11/08	± 1Pa
4	Chronometer - calculator	11-3572	07/08	± 0.01 s
5	Calliper	18-2872	04/09	± 0.05 mm
6	HP-30 K weighing machine	02-2151	06/09	± 1 %
7	Thermometer	355-97	02/09	± 0.5 °C
8	Therm 2285-2	02-1763	03/09	± 0.2 °C
9	SARTORIUS analytical balance	02-1458	08/09	± 0.0001 g
10	HORIBA ENDA – 680P combustion product analyzer	92-0004	Verified using calibration standards during measurement	... ± 5% of the values measured
11	PE 2400 CHNS elementary analyzer	02-2107 Z		

Measurement uncertainty

Parameter measured	Measurement uncertainty
Combustion product analysis	
CO	up to 6% of the value measured
CO_2	up to 2% of the value measured
Temperature	
of the combustion products	up to 5 K
of the ambient in the room	up to 1.5 K
of the surface	up to 2 K
of the parts making contact	up to 2 K
Weight	
of the fuel consumption	± 20 g
of the solid combustion residues	± 5 g
of the fuel supply ≤ 7.5 kg	± 5 g
> 7.5 kg	± 10 g

"The above-specified extended measurement uncertainties are calculated as a factor of the measurement uncertainty and the extension coefficient, k=2, corresponding to the coverage certainty of 95% for standard classification. The uncertainties do not reflect the impact of sample taking and lack of homogeneity. The standard uncertainty was determined in accordance with Document EA 4/02."

Accredited test number: 1029 **Test title: Heating output and calorific efficiency test**
1032 **Combustion efficiency test**

Testing method: ČSN EN 13240/A2:2005, Art. A.4.7, A.4.8, A.4.9

Sample tested: Avila fireplace stove burning wood

Measuring equipment used: No. 1 and 11 according to the Table of Measuring and Testing Equipment

Test results:

Date of testing:	2008-05-21		t_{ok} = see table °C		r.h. = 44 %		p_a = 98.28 kPa	
Place of testing:	at the Engineering Test Institute	x	at the manufacturer	☐	at the customer	☐	*other:*	

Variables measured and calculated: Rated capacity	**Unit**	**Value**			**Limit according to**		
		1st period	**2nd period**	**Average**	**EN 13229**	**DIN 18891/DIN plus**	**15a B-VG**
Fuel used: beech wood	mm	250					
Calorific value	MJ/kg	15.710					
All water	%	12.40					
CO_2 max.	%	20.31					
Primary/secondary air regulation setting	%	0/10					
Fuel consumption	kg/hour	2.598	2.534	2.566			
Achieved input	kW	11.34	11.06	11.20			
Room and combustion air temperature	°C	32.2	32.1	32.2			
Chimney draught	Pa	12	12	12			
Average combustion product temperature	°C	309.1	320.1	314.9			
CO_2	%	10.59	11.18	10.91			
CO – measured	%	0.10	0.17	0.14			
CO – at O2 = 13%	%	0.0685	0.1133	0.0916	` 1.0	` 0.4	
CO – at O2 = 0%	mg/MJ	591	977	790			` 1100
NOx – at O2 = 0%	mg/MJ	105	85	95			` 150
CxHy – at O2 = 0%	mg/MJ	38	57	48			` 80
Dust – at O2 = 0%	mg/MJ	19.5	16.5	17.9			` 60
CO – at O2 = 13%	mg/m3	894	1484	1189		` 1500	
NOx – at O2 = 13%	mg/m3	153	124	139		` 200	
CxHy – at O2 = 13%	mg/m3	55	83	69		` 120	
Dust – at O2 = 13%	mg/m3	28	24	26		` 75	
Chimney loss	%	20.52	20.29	20.37			
Loss of gas underburning	%	0.60	0.98	0.80			
Loss of solid underburning	%	0.50	0.50	0.50			

Variables measured and calculated: Rated capacity	Unit	Value			Limit		
		1st test	2nd test	Average	EN 13240	DIN 18891/DIN plus	15a B-VG
Calorific efficiency	%	78.38	78.23	78.33	`50	`70/72	`78
Heat capacity achieved	kW	8.89	8.65	8.77			
Total heat capacity uncertainty	kW	0.37	0.36	0.37			
Rated heat capacity	kW	8.0					
Mass flow rate of dry combustion products	g/s	7.3	6.7	7.0			
Average combustion product temperature after the branch	°C	417.3	428.6	423.5			

Fuel analysis

Fuel type	Beech wood			
Analytical indicator	Symbol	Unit	Value	Uncertainty
Heat of combustion	Q_s	[MJ/kg]	17.30	0.14
Calorific value	Q_j	[MJ/kg]	15.710	0.14
All water in original condition	W^r_t	[% by weight]	12.4 ± 0.02	
Ash	A	[% by weight]	0.52 ± 0.02	
Carbon	C	[% by weight]	43.62	0.25
Hydrogen	H	[% by weight]	5.91	0.10
Nitrogen	N	[% by weight]	0.23	0.10
Sulphur	S	[% by weight]	0.00	
Chlorine	Cl	[% by weight]	0.00	
Oxygen – calculation for 100%	O_2	[% by weight]	37.32	

Note: Sample in the original condition

Tested by: Milan Holomek Date: 2008-09-25 Signed:

Reviewed by: Ing. Stanislav Buchta Date: 2008-09-25 Signed:

Accredited test number: **1035** **Test title: Overload test - Temperature rise of the surrounding flammable materials**

Testing method: ČSN EN 13240/A2, Art. A.4.7 and A 4.9.1

Sample tested: Avila fireplace stove burning wood

Measuring equipment used: No. 1 ÷ 3, 8, 11 according to the Table of Measuring and Testing Equipment

Test results:

Date of testing:	2008-09-22		t_{ok} = see table	°C	r.h. = 26	%	p_a = 100.3	kPa
Place of testing:	at the Engineering Test Institute	x	at the manufacturer	☐	at the customer	☐	*other:*	

Rated capacity test (A.4.7)

Test No.	Ambient temperature	Draught in the chimney	Maximum temperature rise				Fuel quantity	Note
			Test corner		Floor	Limit		
			next to appliance	behind appliance				
-	°C	Pa	K				kg/hour	
1	19,7	12	46	59	12	65	2.6	

Thermal overload test (A.4.9.1)

Test No.	Ambient temperature	Draught in the chimney	Maximum temperature rise				Fuel quantity	Note
			Test corner		Floor	Limit		
			next to appliance	behind appliance				
-	°C	Pa	K				kg	
1	21	16	49.7	62.8	18	65	2.548	Appliance showing no permanent deformations or damage

NOTE **Test wall situated 100 mm next to the appliance.**
The highest values measured are indicated in the tables.
The rear wall of the stove is protected with an additional screening plate along the entire height of the combustion chamber.

Tested by: Josef Duchan Date: 2008-09-22 Signed:

Reviewed by: Ing. Stanislav Buchta Date: 2008-09-25 Signed:

VI. List of other referenced documents

- Order B-32118 of 2008-09-20
- Contract B-32118/30 of 2008-09-25
- Documents specified in Table 2 of this Report
- ČSN EN 13240:2002/A2:2005 – Appliances burning solid fuel designed for heating residential spaces – Requirements and testing methods
- Directive 89/106/EEC, as amended
- Government Regulation 190/2002 Coll., as amended

The persons stated below are accountable for the accuracy of the above-specified data:

NOTIFIED BODY 1015 STROJÍRENSKÝ ZKUŠEBNÍ ÚSTAV, s.p. CZ 1

Ing. Alois Randýsek
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Ing. Aleš Onderek
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