

Test reports

Nord

1. Prøvnings- / Skorstensfejerattest DK s. 1
2. Test report UK / DE s. 2



**Europæisk Prøvningsinstitut
Organisation 1015
Hudcova 424/56b, 621 00 Brno**

Erklæring til afprøvningsnr.: 30-12930

udstedt Testing Laboratory nej. 1.045.1, akkrediteret af CAI ops, nr. 447/2015 akkrediteringscertifikat

Produkt:

Brændeovne model Nord

Producent:

Jydepejsen A/S
Ahornsvinget 3-7 - Nr.Felding
DK7500 Holstebro

Procedure:

X	Prøvning efter DS/EN13240/A2:2004
	Prøvning efter NS3058-1 & -2 (partikelmåling)
X	Emissionsmåling efter CEN/TS 15883 (støv og OGC)

Prøvningsresultater

Akkrediteret prøvning af brændeovn iht. EN 13240 er foretaget med brænde der påfyres manuelt, og følgende resultater blev opnået:

Nominel ydelse:	4 kW
CO-emission:	0,0954 % - henført til 13 % O ₂
Virkningsgrad:	80 %
Røggastemperatur:	332 °C
Afstand til bagvæg:	100 mm.
Afstand til sidevæg:	100 mm.

Emissioner iht. NS 3058 og/eller CEN/TS 15883:

Partikler efter NS 3058:	g/kg (tørstof) middelværdi (krav 2015:5 / 2017:4)
Partikler efter NS 3058:	g/kg (tørstof) maksimalt (krav 2015:10 / 2017:8)
OGC efter CEN/TS 15883:	68 mgC/Nm ³ ved 13% O ₂ (krav 2015:150 / 2017:120)
Støv efter CEN/TS 15883:	15 mg/Nm ³ ved 13% O ₂ (krav 2015:40 / 2017:30)

Bemærk venligst, at de oplyste værdier er et uddrag af prøvningsrapporten. For yderligere oplysninger henvises til prøvningsrapporten, se nummer ovenfor.

STROJÍRENSKÝ ZKUŠEBNÍ ÚSTAV, s.p.

HUDCOVA 56b

621 00 BRNO

Milan Holomek
Leder af tjenesten
Brno, 2015-10-06

Skorstensfejerpåtegning

På baggrund af ovennævnte emissioner attesteres det hermed, at fyringsanlægget opfylder emissionskravene i bilag 1 til Bekendtgørelse nr. 46 af 22/01 – 2015 om regulering af luftforurening fra fyringsanlæg til fast brændsel under 1 MV, for så vidt:

Krav fra 2015 til januar 2017 opfyldt	x	Krav efter januar 2017 opfyldt	x
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Strojírenský zkušební ústav, s.p.
(Engineering Test Institute, Public Enterprise)
Testing Laboratory 1045.1, Workplace 1
Accredited by the Czech Accreditation Institute
Hudcova 424/56b, 621 00 Brno, Czech Republic

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TEST REPORT 30-12930-T

Product: Fireplace stove for wood

Commercial designation: Nord

Customer: Jydepejsen A/S
Ahornsvinget 3-7 - Nr.Felding
DK7500 Holstebro
Denmark

Manufacturer: Jydepejsen A/S
Ahornsvinget 3-7 - Nr.Felding
DK7500 Holstebro
Denmark

Employee responsible: Milan Holomek

Report issue date: 2015-10-01

Distribution list: 1 copy to the Customer
1 copy to the Engineering Test Institute

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The results of tests and verifications relate only to the products tested.

v. 4.0 Brno 2012



- Order B-53927 of 2015-09-15
- Contract B-53927/30

I. Product description

Nord fireplace stoves for wood are intended to be installed in various indoor spaces, such as flats, recreational buildings, restaurants etc. These fireplace stoves are made from high-quality structural materials – cast iron, CORTEN steel and high-quality structural and boiler steels. The parts under stress are made from HARDOX steel. The steel structure surfaces are protected with flat fire-proof varnish. The combustion chamber of the steel fireplace stoves is lined with removable chamot boards, and it is firmly closable with the door glazed with a special heat-resistant glass. The glazing prevents the sparks produced by burning wood from falling out and the smoke from penetrating into the room. The firebox bottom is fitted with a removable cast-iron bottomgrate, in front of which there is a barrier that prevents the fuel from falling out and from piling against the door (front glass). Under the bottomgrate is the space for ash pan. Flue spigot can be adjusted for the flue gas exhaust from the back or from the top (as needed). The fireplace stoves are made as a double-skin construction. Primary and secondary air is supplied into the firebox separately. Primary air is brought directly to the burning fuel. Secondary air is brought into the space above the burning fuel. The product is intended for intermittent operation.

Basic technical data of fireplace stove

(Table 1)

Commercial designation	Main dimensions (mm)			Weight (kg)	Nominal output (kW)	Fuel consumption (kg/h)	Flue gas connector diameter (mm)	Operating draught (Pa)
	Height	Width	Depth			Wood		
Nord	996	528	394	123	4.0	1.27	150	12

According to ČSN EN 13240/A2 Table 1 – Categorisation of appliances, these products are of category 1a.

II. Sample tested

Visual inspection and tests were carried out on the sample indicated in the table:

(Table 2)

Type	Date	Sample reg. no.
Nord	2014-01-20	0211.14.15470.000

The visual inspection and testing of the product were carried out by Mr. Josef Duchan, at the Manufacturer's test station, in 01/2014.



III. Methods, test results and verifications

Measuring and test equipment:

(Table 3)

No.	Description	Inventory number	Calibration valid until:	Accuracy
1.	Barometer	112541	01.2019	See Calibration Sheet 6013-KL-K001-14
2.	Thermometer – ambient (Testo 608-H)	117044	02.2018	See Calibration Sheet 1072F/13
3.	Hygrometer (Testo 608-H)	117044	02.2018	See Calibration Sheet 1072F/13
4.	Draught gauge	117274	03.2015	See Calibration Sheet 1769F/13
5.	Scale ,HP-30 K	022333	10.2015	See Calibration Sheet 6051-KL-H0172-13
6.	Stop watch	990806	10.2017	See Calibration Sheet 2953E-12
7.	THERM 5500-3	021990	02.2016	See Calibration Sheet 130015
8.	THERM 2285-2	021763	10.2015	See Calibration Sheet 120166
9.	SARTORIUS analytical scale	021458	07.2015	See 6051-KL-H0410-11
10.	Calliper	115884	09.2015	See Calibration Sheet KL-D-1617/05/11
11.	HORIBA ENDA – 680P combustion product analyser	022305	x	+
12.	PE 2400 CHNS elemental analyser	022107		
13.	Gravimat SHC 5 - TU	920002		

Note: x... Verified with use of calibration standards prior to measurement
+ ... ± 5 % of the measured values

Measurement uncertainty:

(Table 4)

Parameter measured	Uncertainty of measurement
Gas analysis CO CO ₂	$\leq 6\%$ of the measured value $\leq 2\%$ of the measured value
Temperature Flue gas Ambient room Surface Touchable areas	≤ 5 K ≤ 1.5 K ≤ 2 K ≤ 2 K
Mass Fuel consumption Residue Fuel load ≤ 7.5 kg > 7.5 kg	± 20 g ± 5 g ± 5 g ± 10 g

"The stated 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% as regards 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."



Evaluated requirement: **Structural safety**
Requirement specification: **ČSN EN 13240/A2:2005 Art. 4.2.4, 4.2.5, 4.2.9**
Sample evaluated: **Fireplace stove for wood, Nord**
Results of evaluation: **See the Table below**

Required product properties	Requirement specification	Test result	Note
ČSN EN 13240/A2:2005 Art.:			
Flue spigot or socket 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. For vertical flue connection, the fitting shall overlap by at least 25 mm. NOTE For inset appliances (made for fireplace recesses) with a vertical chimney flue connection and where the manufacturer's installation instructions specify, in addition to the flue gas connector, that an insulating mortar infill should be added around the connector to seal the appliance to the chimney flue, then in this case it is permissible for the flue spigot/socket overlap to be reduced to a minimum of 6 mm.	4.2.4	+	ø150 mm, at the top or at the back
Flueways The size of the flueway in its minimum dimension shall be not less than 30 mm 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. 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.	4.2.5	+	30 mm
Control of flue gas If a flue damper is fitted it shall be of a type, which does not block the flue totally. The damper shall be easy to operate and 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. 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.	4.2.9	0	

*) Test result:

+.... Requirement fulfilled
0.... Not applicable

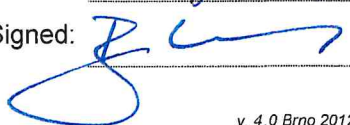
Tested by: Josef Duchan

Date: 2014-01-20

Signed: 

Reviewed by: Ing. Stanislav Buchta

Date: 2015-10-01

Signed: 



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

Test method: ČSN EN 13240:2002 Art. A. 4.4., A. 4.5, A. 4.6, A. 4.7

Sample tested: Fireplace stove for wood, Nord

Measuring equipment used: Nos. 1 + 13, see Table – Measuring and test equipment

Test result:

Date of testing:	2014-01-20		$t_{ok} = 22$		°C	r.v. = 40	%	$p_a = 99.5$	kPa
Place of testing:	At SZU	Yes	At the Manufacturer's premises		Yes	At the Customer's premises			Other:
Values measured and calculated: Nominal output		Unit	1	2	Average	Limit acc. to:			
						EN 13240	15a B-VG	DIN plus	I.BImSchV Stufe 2
Fuel used: Beech wood		mm	250						
Combustion air setup – primary/secondary		%	30/30						
Mass of the test fuel fired hourly		kg/h	1.27	1.27	1.27				
Input attained		kW	5.43	5.42	5.43				
Combustion air temperature		°C	22	22	22				
Flue draught		Pa	12	12	12				
Average flue gas temperature		°C	242	253	247				
CO ₂		%	9.34	9.84	9.59				
CO – measured		%	0.11	0.12	0.12				
CO – at O ₂ = 13 %		%	0.0945	0.0962	0.0954	≤ 1.0			
CO – at O ₂ = 13 %		mg/Nm ³	1182	1202	1192			≤ 1500	≤ 1250
CO – at O ₂ = 0 %		mg/MJ	822	837	830		≤ 1100		
NO _x – measured		ppm	65	66	65				
NO _x – at O ₂ = 13 %		mg/Nm ³	114	107	111			≤ 200	
NO _x – at O ₂ = 0 %		mg/MJ	79	75	77		≤ 150		
OGC – measured		ppm	64	37	50				
OGC (TOC) – at O ₂ = 13 %		mg/Nm ³	90	48	68			≤ 120	
OGC (TOC) – at O ₂ = 0 %		mg/MJ	63	34	48		≤ 50		
Dust – measured		mg/Nm ³	17	20	19				
Dust (TZL) – at O ₂ = 13 %		mg/Nm ³	15	16	15			≤ 75	≤ 40
Dust (TZL) – at O ₂ = 0 %		mg/MJ	10.2	11.1	10.6		≤ 35		
Chimney loss		%	18.13	18.24	18.19				
Proportion of losses through latent heat in flue gases		%	0.77	0.80	0.78				
Proportion of losses through combustible constituents in the residue		%	0.50	0.50	0.50				
Efficiency		%	80.60	80.46	80.53	≥ 30	≥ 80	≥ 75	≥ 75
Water heat output attained		kW	-	-	-				
Total heat output attained		kW	4.38	4.36	4.37				
Heat output uncertainty		kW	0.17	0.17	0.17				
Nominal heat output		kW	4.0						
Dry flue gases mass flow		g/s	4.1	3.9	4.0				



Fuel analysis:

Type of fuel	Beech wood			
Analytical indicator	Symbol	Unit	Value	Uncertainty
Gross calorific value	Q_s	[MJ/kg]	16.97	0.14
Net calorific value	Q_j	[MJ/kg]	15.40	0.14
Total water in original state	W_t^r	[% of mass]	12.04	0.02
Ash	A	[% of mass]	1.91	0.04
Carbon	C	[% of mass]	43.17	0.25
Hydrogen	H	[% of mass]	5.82	0.10
Nitrogen	N	[% of mass]	0.19	0.10
Sulphur	S	[% of mass]	0.022	0.002
Chlorine	Cl	[% of mass]	0.010	0.001
Oxygen – calculation for 100 %	O	[% of mass]	36.84	

Note: Sample in original state

Tested by: Josef Duchan

Date: 2014-01-20

Signed: 

Reviewed by: Ing. Stanislav Buchta

Date: 2015-10-01

Signed: 



Accredited test number: 1031 Test title: Adjustability test

Test method: ČSN EN 13240/A2:2005 Art. A. 4.8

Sample tested: Fireplace stove for wood, Nord

Measuring equipment used: Nos. 1 ÷ 7, see Table – Measuring and test equipment

Test results:

Date of testing:	2014-01-20		$t_{ok} = 22$	°C	r.v. = 40	%	$p_a = 99.5$	kPa
Place of testing:	At SZU	Yes	At the Manufacturer's premises	Yes	At the Customer's premises		Other:	
Measured and calculated values				Unit	Value	Limit	Note	
Fuel used: Hard firewood, 25 cm long				mm	Beech			
Mass of the test fuel fired hourly				kg/h	0.42			
Heat input attained				kW	1.81			
Ambient room temperature and combustion air temperature				°C	22			
Flue draught				Pa	6	6 ± 1 Pa		
Average flue gas temperature				°C	205			
Combustion period				min	53			
Recovery capability, after time				min	2			

Note: The appliance input is adjustable within the range of 33-100 % by a gradual adjustment of the primary combustion air inlet.

Tested by: Josef Duchan

Date: 2014-01-20

Signed: 

Reviewed by: Ing. Stanislav Buchta

Date: 2015-10-01

Signed: 



Accredited test number: 1028 Test title: Flue gas temperature and surface temperature test

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

Sample tested: Fireplace stove for wood, Nord

Measuring equipment used: Nos. 1 + 3, 7, 8, see Table – Measuring and test equipment

Test results:

Date of testing:	2014-01-20		$t_{ok} = 22$	°C	r.v. = 40	%	$p_a = 99.5$	kPa
Place of testing:	At SZU	Yes	At the Manufacturer's premises		Yes	At the Customer's premises		Other:

Measured point	Material	Temperature rise (K)	
		Measured	Limit acc. to ČSN EN
Lever of combustion air inlet	Metal	57*)	35
Door handle	Metal	53*)	35
Fuel storage container ceiling	Metal	60	65

Average flue gas temperature after spigot	°C	332	-
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NOTE: *)... Protective gloves are provided for manipulation with the door handle and with air grilles.
 The table shows the highest temperatures attained.

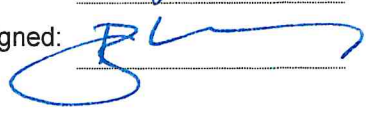
Tested by: Josef Duchan

Date: 2014-01-20

Signed: 

Reviewed by: Ing. Stanislav Buchta

Date: 2015-10-01

Signed: 



Accredited test number: 1035 Test title: Temperature safety test – Temperature rise of the surrounding flammable materials

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

Sample tested: Fireplace stove for wood, Nord

Measuring equipment used: Nos. 1 + 8, see Table – Measuring and test equipment

Test results:

Date of testing:	2014-01-20		$t_{ok} = 22$	°C	r.v. = 40	%	$p_a = 99.5$	kPa
Place of testing:	At SZU	Yes	At the Manufacturer's premises	Yes	At the Customer's premises		Other:	

During nominal output test (A.4.9.1)

Test no.	Ambient temp.	Flue draught	Maximum temperature rise						Quantity of fuel
			Trihedron – distance				Floor protector	Limit	
			mm						
			100	100	800	1200			
-	°C	Pa	K						kg/h
1	22	12	60	59	34	39	26	65	1.27

During thermal overload test (A.4.9.2)

Test no.	Ambient temp.	Flue draught	Maximum temperature rise						Quantity of fuel
			Trihedron – distance *)				Floor protector	Limit	
			mm						
			100	100	800	1200			
-	°C	Pa	K						kg
1	23	15	62	61	37	41	28	65	1.56

NOTE: Trihedron placed 100 mm away from the appliance rear wall.
Trihedron placed 100 mm away from the appliance side wall.
Trihedron placed 800 mm away from the appliance front wall.
Trihedron placed 1200 mm above the appliance.

The tables show the highest measured values

Tested by: Josef Duchan

Date: 2014-01-20

Signed:

Reviewed by: Ing. Stanislav Buchta

Date: 2015-10-01

Signed:



IV. List of referenced documentation

- Order B-53927 of 2015-09-15
- A letter of 9 September 2015
- Contract B-53927/30
- 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
- ČSN EN 13240:2002/A2:2005 – Roomheaters fired by solid fuel - Requirements and test methods
- A list of technical documentation:
 - Instructions for installation and operation of Nord fireplace stoves
 - Reports and source materials to Task 30-12704

Report compiled by: Ing. Jiří Dvořák

Person responsible for correctness of the Report:

Milan Holomek
Head of Heat and Environment-Friendly Equipment
Test Station

