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ČSN EN ISO/IEC 17025:2018

Strojírenský zkušební ústav, s.p. Zkušební laboratoř
(Engineering Test Institute, Public Enterprise, Testing Laboratory)
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INITIAL TYPE TEST REPORT 30-16826/T

Product: Fireplace stove for wood

Type designation: 1. Sirius 1.1
2. Sirius 3.1

Customer: Schiedel GmbH & Co. KG
Lerchenstraße 9
D-80995 München
GERMANY

Manufacturer: Schiedel GmbH & Co. KG
Lerchenstraße 9
D-80995 München
GERMANY

Employee responsible: Ing. Radek Machara

Report issue date: 2023-10-16

Distribution list: 1 copy to the Customer
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SP-2021-000011_1_7

I. Description of product tested

The Sirius 1.1 and Sirius 3.1 wood stoves are made of steel and vermiculite. The stove is equipped with primary, secondary and tertiary, centrally supplied combustion air, controlled by a lever located under the loading door.

The Sirius 1.1 type has a glazed front door,

The Sirius 3.1 type has a glazed front door and side walls

The fireplace stove is equipped with a concrete grate and an ashtray with an ashtray drawer.

The stove was connected from above (during the test).

The exhaust nozzle has a diameter of 149 mm. and is on the top or back of the stove.

Fireplace stoves are not intended for continuous operation.

According to ČSN EN 13240 / A2 table 1 - categorization of devices, the product belongs to category 1a.

A more detailed description is provided in the operating and installation manual, which is an integral part of the documents.

Basic technical specifications of fireplace stove for wood

(Table 1)

Type	Main dimensions (mm)			Nominal heat output (kW)	Fuel consumption – wood (kg/h)	Diameter of flue gas connector (mm)	Operating draught (Pa)
	Height	Width	Depth				
Sirius 1.1	1208	522	382	6.0	1.8	150	12
Sirius 3.1							

Note: The difference is in the glazing of the door:

type Sirius 1.1, has glazed front door,

type Sirius 3.1 has glazed front door and side walls.

II. Sample tested

(Table 2)

SZU reg. no.	Product name	Date of submission
0215.22.37631.001	Fireplace stove for wood Sirius 1.1 and Sirius 3.1	2022-12-08

The visual inspection, tests and verification were carried 12/2022-01/2023 out by Radim Řepka at the test station of SZU

The tests were performed using measuring and testing equipment with valid calibration.

IV. Measuring and test equipment:

Measuring and test equipment:

(Table 4)

No.	Name	Inventory number:	Calibration valid until:
1.	Barometer	MaR09_B	06/2023
2.	Thermometer – ambient	MaR10+11_V	06/2023
3.	Hygrometer	MaR10+11_V	06/2023
4.	Draught gauge	MaR08_Tah	07/2023
5.	Scale	022333	03/2024
6.	THERM	021763	03/2023
7.	Analytical scale	021458	04/2023
8.	Calliper	ME 543	07/2024
9.	Combustion product analyser	022317	x
10.	Elemental analyser	022305	
11.	Gravimat	ME 583	09/2023
12.	Kit of temperature measurement	022399-A_T	11/2023

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

Uncertainty of measurement

(Table 5)

Parameter measured	Uncertainty of measurement
Gas analysis	≤ 6 % of the limit values in Table 8
CO	
CO ₂	
O ₂	≤ 2 %
Temperature	≤ 2 %
Flue gas	
Ambient room	
Water	
Surface	
Touchable Area	≤ 2 K
Water flow	≤ 0.005 m ³ /h
Static pressure	≤ 2 Pa
Mass	± 10 g
- fuel consumption	
- residue	
- fuel load ≤ 7.5 kg	
> 7.5 kg	± 5 g

The following expanded measurement uncertainties have been calculated as the coefficient of measurement uncertainty and the expanded coefficient $k = 2$, which corresponds to a coverage probability of 95% for normal distribution.

If a statement of conformity is given, the decision rule pursuant to ILAC-G8: 09/2019 Art. 4.2.1 – binary statement for the simple acceptance rule shall be used.

Test title: Structural safety
Requirement specification: ČSN EN 13240/A2:2005 Art. 4.3, 4.5, 4.14
Sample tested: Fireplace stove for wood Sirius 1.1, Sirius 3.1
Measuring equipment used: No. 8, Table 3

Required product properties	Requirement specification	Test result	Note
ČSN EN 13240/A2:2005 Art.:			
Flue spigot or socket The flue spigot or socket where required for installation purposes shall be designed to enable a suitable gastight connection to be made between the flue gas connector and the appliance. The spigot or socket shall provide a good fit for the size of pipe recommended by the manufacturer. Where the flue gas connector fits over an outlet spigot the overlap shall be a length of at least 25 mm for a pipe diameter of 160 mm or less, and at least 40 mm for a pipe diameter greater than 160 mm. Where the flue gas connector fits into a socket, the insertion depth shall be a minimum of 25 mm. <i>NOTE It is recommended that provision is made for sealing internal connections with heat resistant sealing compound and/or sealing rope if required.</i>	4.3	+	150 mm diameter, up during tests
Flueways It shall be possible to clean the flueways of the appliance completely using commercially available tools or brushes, unless special cleaning tools or brushes are provided by the manufacturer. The size of the flueway in its minimum dimension shall be not less than 30 mm except that where fuels other than bituminous coal are burned it shall be permissible to reduce it to not less than 15 mm provided an access door(s) is provided for cleaning the flueway.	4.5	+	> 30 mm
Control of flue gas If a flue damper is fitted, it shall be a type which does not block the flue totally by accumulation of combustion residue. 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 recognisable to the user 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.	4.14	+	

*) Test result:

- +.... Requirement fulfilled
- 0.... Requirement not applicable to the product in question

Accredited test number: **T 004** **Tests of residential solid fuel burning appliances**
T 006 **Test of heat output**
Test of flue gas composition

Test method: ČSN EN 13240/A2:2005 Art. A1-A6, ČSN EN 16510-1, Annex A-I, FprEN 16510-2-1 Annex A-I

Sample tested: Fireplace stove for wood Sirius 1.1, Sirius 3.1

Measuring equipment used: Nos 1 ÷ 12 – see Measuring and Test Equipment

Test results: Sirius 1.1

Date of testing:	2022-12-15	t_{ok} = See Tab	°C	r.v. = 24	%	p_a = 97,9	kPa	
Place of testing:	At SZU <input checked="" type="checkbox"/>	At the Manufacturer's premises <input type="checkbox"/>	At the Customer's premises <input type="checkbox"/>	Other:				
Values measured and calculated:	Unit					Limit acc. to:		
Nominal output		1	2	3	Average	EN 13240	I. BlmSchV Stufe 2	EU 1185/2015
Fuel used:	mm	250						
Beech wood								
Combustion air setting primary/secondary-common	mm	15/100						
Mass of the test fuel fired hourly	kg/h	2,07	1,96	2,00	2,00			
Input attained	kW	8,6	8,1	8,3	8,4			
Combustion air temperature	°C	17	17	17	17			
Flue draught	Pa	12	12	12	12			
Average flue gas temperature	°C	283	271	273	276			
CO ₂	%	11,74	11,24	11,14	11,37			
CO – measured	%	0,0448	0,0652	0,0587	0,0562			
CO – at O ₂ = 13 %	%	0,0303	0,0456	0,0414	0,0391			
CO – at O ₂ = 13 %	mg/Nm ³	380	570	517	489		≤ 1250	≤1500
CO – at O ₂ = 0 %	mg/MJ	262	394	357	338			
NO _x – measured	ppm	93	92	99	95			
NO _x – at O ₂ = 13 %	mg/Nm ³	130	132	143	135			≤200
NO _x – at O ₂ = 0 %	mg/MJ	90	91	99	93			
OGC – measured	ppm	20	20	22	21			
OGC (TOC) – at O ₂ = 13 %	mg/Nm ³	25	26	28	26			≤120
OGC (TOC) – at O ₂ = 0 %	mg/MJ	18	18	19	18			
Chimney loss	%	18,5	18,2	18,5	18,4			
Proportion of losses through latent heat	%	0,3	0,4	0,4	0,3			
Proportion of losses through combustible constituents in the residue	%	0,5	0,5	0,5	0,5			
Efficiency	%	80,8	80,9	80,7	80,8		≥ 73	saisonal ≥65
Total heat output attained	kW	6,9	6,6	6,7	6,7			
Heat output – uncertainty	kW	0,2	0,2	0,2	0,2			
Water heat output attained	kW	-	-	-	-			
Nominal heat output	kW	6.0						
Dry flue gases mass flow	g/s	5,1	5,1	5,2	5,1			
CO ₂	%	12,62	11,72	12,00	12,12			
Dust – measured	mg/Nm ³	56	43	48	49			
Dust (TZL) – at O ₂ = 13 %	mg/Nm ³	36	29	32	32		≤40	≤40
Dust (TZL) – at O ₂ = 0 %	mg/MJ	26	21	23	23			
Dust – uncertainty	mg/Nm ³	4	4	4	4			

Test results: Sirius 1.1 - 50%

Date of testing:	2022-12-15	$t_{ok} =$ See Tab	°C	r.v. = 24	%	$p_a = 97,9$	kPa
Place of testing:	At SZU	<input checked="" type="checkbox"/>	At the Manufacturer's premises	<input type="checkbox"/>	At the Customer's premises	<input type="checkbox"/>	Other:
Values measured and calculated: Nominal output	Unit	1	2	3	Average	EN 13240	Limit acc. to: I. BlmSchV Stufe 2 EU 1185/2015
Fuel used: Beech wood	mm	250					
Combustion air setting – primary/secondary-common	mm	3,5/50					
Mass of the test fuel fired hourly	kg/h	1,03					
Input attained	kW	4,3					
Combustion air temperature	°C	17					
Flue draught	Pa	6					
Average flue gas temperature	°C	236					
CO ₂	%	9,38					
Chimney loss	%	18,3					
Proportion of losses through latent heat	%	0,3					
Proportion of losses through combustible constituents in the residue	%	0,5					
Efficiency	%	80,9					
Total heat output attained	kW	3,5					
Heat output – uncertainty	kW	0,2					
Water heat output attained	kW	-	-	-	-		
Nominal heat output	kW	6,0					
Dry flue gases mass flow	g/s	3,3					

Test results: Ssirius 3.1

Date of testing:	2022-12-15	$t_{ok} = \text{See Tab}$	°C		r.v. = 24	%	$p_a = 97,9$	kPa
Place of testing:	At SZU	<input checked="" type="checkbox"/>	At the Manufacturer's premises	<input type="checkbox"/>	At the Customer's premises	<input type="checkbox"/>	Other:	
Values measured and calculated: Nominal output	Unit	1	2	3	Average	EN 13240	Limit acc. to: I. BImSchV Stufe 2 EU 1185/2015	
Fuel used: Beech wood	mm	250						
Combustion air setting – primary/secondary-common	mm	15/100						
Mass of the test fuel fired hourly	kg/h	2,09	2,01	2,00	2,00			
Input attained	kW	8,7	8,3	8,4	8,5			
Combustion air temperature	°C	19	20	20	20			
Flue draught	Pa	12	11	12	12			
Average flue gas temperature	°C	261	258	257	259			
CO ₂	%	11,42	11,12	10,99	11,17			
CO – measured	%	0,0377	0,0381	0,0439	0,0399			
CO – at O ₂ = 13 %	%	0,0258	0,0266	0,0310	0,0278			
CO – at O ₂ = 13 %	mg/Nm ³	323	332	388	348		≤ 1250	≤ 1500
CO – at O ₂ = 0 %	mg/MJ	223	230	268	240			
NO _x – measured	ppm	97	88	87	91			
NO _x – at O ₂ = 13 %	mg/Nm ³	136	127	126	130			≤ 200
NO _x – at O ₂ = 0 %	mg/MJ	94	88	87	90			
OGC – measured	ppm	12	15	11	13			
OGC (TOC) – at O ₂ = 13 %	mg/Nm ³	16	19	14	16			≤ 120
OGC (TOC) – at O ₂ = 0 %	mg/MJ	11	13	10	11			
Chimney loss	%	17,2	17,2	17,3	17,2			
Proportion of losses through latent heat	%	0,2	0,2	0,3	0,2			
Proportion of losses through combustible constituents in the residue	%	0,5	0,5	0,5	0,5			
Efficiency	%	82,1	82,0	81,9	82,0		≥ 73	seasonal ≥ 65
Total heat output attained	kW	7,1	6,8	6,9	6,9			
Heat output – uncertainty	kW	0,2	0,2	0,2	0,2			
Water heat output attained	kW	-	-	-	-			
Nominal heat output	kW	6.0						
Dry flue gases mass flow	g/s	5,3	5,3	5,4	5,3			
CO ₂	%	12,09	11,94	11,48	11,84			
Dust – measured	mg/Nm ³	34	28	23	28			
Dust (TZL) – at O ₂ = 13 %	mg/Nm ³	22	18	16	19		≤ 40	≤ 40
Dust (TZL) – at O ₂ = 0 %	mg/MJ	16	14	11	14			
Dust – uncertainty	mg/Nm ³	3	3	2	3			

Test results: Sirius 3.1 - 50%

Date of testing:	2022-12-15	t_{bk} = See Tab	°C	r.v. = 24	%	p_a = 97,9	kPa	
Place of testing:	At SZU <input checked="" type="checkbox"/>	At the Manufacturer's premises <input type="checkbox"/>		At the Customer's premises <input type="checkbox"/>		Other:		
Values measured and calculated: Nominal output	Unit					Limit acc. to:		
		1	2	3	Average	EN 13240	I. BlmSchV Stufe 2	EU 1185/2015
Fuel used: Beech wood	mm	250						
Combustion air setting – primary/secondary-common	mm	3,5/50						
Mass of the test fuel fired hourly	kg/h	1,01						
Input attained	kW	4,3						
Combustion air temperature	°C	23						
Flue draught	Pa	7						
Average flue gas temperature	°C	213						
CO ₂	%	8,89						
Chimney loss	%	15,9						
Proportion of losses through latent heat	%	3,4						
Proportion of losses through combustible constituents in the residue	%	0,5						
Efficiency	%	80,3						
Total heat output attained	kW	3,5						
Heat output – uncertainty	kW	0,2						
Water heat output attained	kW	-	-	-	-			
Nominal heat output	kW	6.0						
Dry flue gases mass flow	g/s	3.3						

Fuel analysis:

Type of fuel	Beech wood		
	Symbol	Unit	Value
Analytical indicator			
Carbon	C	[% of mass]	43.60
Hydrogen	H	[% of mass]	6.17
Total water in original state	W _t	[% of mass]	12.03
Ash	A	[% of mass]	0.46
Net calorific value	Q _j	[kJ/kg]	15430

Note: Sample in original state

Test objective: T 004 Tests of residential solid fuel burning appliances
Exact name of the test procedure: T 005 Adjustability test
Test method: ČSN EN 13240/A2:2005 Art. A1-A6, EN 16510-1, Anhang A-I, FprEN 16510-2-1 Anhang A-I
Sample tested: Fireplace stove for wood Sirius 1.1, Sirius 3.1
Measuring equipment used: Nos 1 ÷ 7, 11 – see Measuring and Test Equipment

Test results: Sirius 1.1

Date of testing:	2023-02-01 a 2022-12-15	t_{ok} =see tab.	°C	r.v. = 31 and 24	%	p_a = 98,4 and 97,9	kPa
Place of testing:	At SZU	-	At the Manufacturer's premises	Yes	At the Customer's premises	Other:	

Values measured and calculated	Unit	Value	Limit	Note
Fuel used: 25 cm long hard firewood	mm	250		
Mass of the test fuel fired hourly	kg/h	0.66		
Heat input attained	kW	2.73		
Ambient room temperature and combustion air temperature	°C	21		
Flue draught	Pa	6	± 1 Pa	
Average flue gas temperature	°C	221		
Combustion period	min	46		
Recovery capability, after time	min	to 7.2	20	

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

Test results: Sirius 3.1

Date of testing:	2023-02-01 a 2022-12-15	t_{ok} =see tab.	°C	r.v. = 31 and 24	%	p_a = 98,4 and 97,9	kPa
Place of testing:	At SZU	-	At the Manufacturer's premises	Yes	At the Customer's premises	Other:	

Values measured and calculated	Unit	Value	Limit	Note
Fuel used: 25 cm long hard firewood	mm	250		
Mass of the test fuel fired hourly	kg/h	0.66		
Heat input attained	kW	2.73		
Ambient room temperature and combustion air temperature	°C	21		
Flue draught	Pa	6	± 1 Pa	
Average flue gas temperature	°C	201		
Combustion period	min	49		
Recovery capability, after time	min	to 7.9	20	

Note: The appliance input is adjustable within the range of 33-100 % by a gradual adjustment

of combustion air supply.

Accredited test number: T 004 Test of residential solid fuel burning appliances
 T 006 Flue gas temperature and surface temperature test

Test method: ČSN EN 13240/A2:2005 Art. A1-A6, ČSN EN 16510-1, Annex A-I, FprEN 16510-2-1 Annex A-I

Sample tested: Fireplace stove for wood Sirius 1.1, Sirius 3.1

Measuring equipment used: Nos 1 ÷ 2, 6, 7, 11, 12 – see Measuring and Test Equipment

Test results:

Date of testing:	2023-02-01 a 2022-12-15	t_{ok} =see tab.	°C	r.v. = 31 and 24	%	p_a = 98,4 and 97,9	kPa
Place of testing:	At SZU	<input checked="" type="checkbox"/>	At the Manufacturer's premises	<input type="checkbox"/>	At the Customer's premises	<input type="checkbox"/>	Other:

Measured point	Material	Temperature rise (K)	
		Measured	Limit acc. to ČSN EN
Regulation levers: prim./sec. air	Metal	38*)	35
Door handle		42*)	

Average flue gas temperature after spigot	°C	321	SIRIUS 1.1
Average flue gas temperature after spigot	°C	311	SIRIUS 3.1

*) Note: It is necessary to use the supplied glove to control the handle of the front door and control of total air. The table shows the highest temperatures.

Accredited test number: **T 004** **Test of residential solid fuel burning appliances**
T 006 **Temperature safety test – Temperature rise of the surrounding flammable materials**

Test method: ČSN EN 13240/A2:2005 Art. A1-A6, ČSN EN 16510-1, Annex A-I, FprEN 16510-2-1 Annex A-I

Sample tested: Fireplace stove for wood Sirius 1.1, Sirius 3.1

Measuring equipment used: Nos 1 ÷ 7, 11 – see Measuring and Test Equipment

Test results: Sirius 1.1, Sirius 3.1

Date of testing:	2023-02-01 a 2022-12-15	t_{ok} = see tab.	°C	r.v. = 31 and 24	%	p_a = 98,4 and 97,9	kPa
Place of testing:	At SZU	<input checked="" type="checkbox"/>	At the Manufacturer's premises	<input type="checkbox"/>	At the Customer's premises	<input type="checkbox"/>	Other:

During thermal overload test (A.4.7)

Test no.	Ambient temp.	Flue draught	Maximum temperature rise				Floor protector	Limit	Fuel quantity
			Trihedron – distance						
			mm						
			rear	side	front	above			
-	°C	Pa	K						kg
1	21	12	see page 13-16				30	65	2.0

During thermal overload test (A.4.9.2)

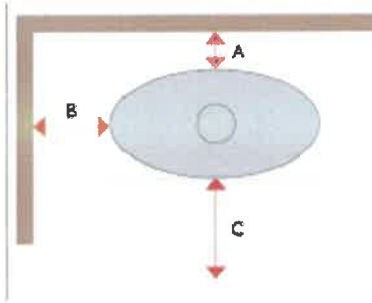
Test no.	Ambient temp.	Flue draught	Maximum temperature rise				Floor protector	Limit	Fuel quantity
			Trihedron – distance						
			mm						
			rear	side	front	above			
-	°C	Pa	K						kg
1	22	15	see page 13-16				32	65	2.1

After the thermal overload test, no permanent distortion or damage to the appliance was detected.

1) wooden wall, standard chimney

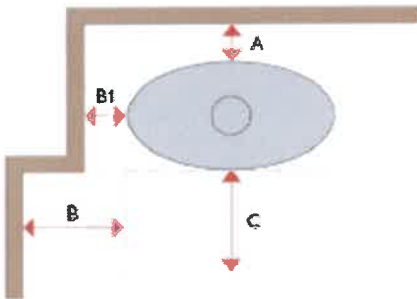
1a) Sirius 1.1

Product setting No. 1



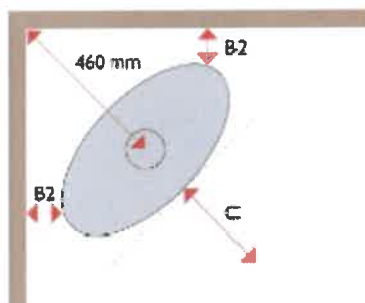
Position	Distance (mm)	T _{okolí} (°C)	T _{real} (°C)	dT (K)
A	120	19	59	40
B	250	19	83	64
C	950	19	78	59

Product setting No. 2



Position	Distance (mm)	T _{okolí} (°C)	T _{real} (°C)	dT (K)
A	120	19	57	38
B	250	19	83	64
B1	150	19	80	61
C	950	19	78	59

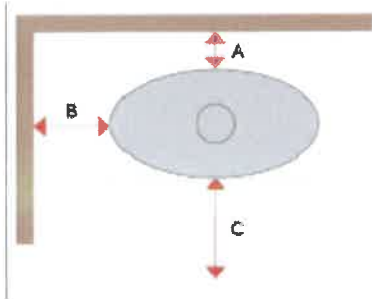
Product setting No. 3



Position	Distance (mm)	T _{okolí} (°C)	T _{real} (°C)	dT (K)
B2	120	19	81	62
C	950	19	78	59

1b) Sirius 3.1

Product setting No. 1

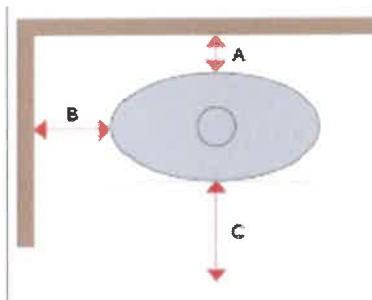


Position	Distance (mm)	T _{okoli} (°C)	T _{real} (°C)	dT (K)
A	100	19	82	63
B	350	19	83	64
C	800	19	79	60

2) wooden wall, concentric two-layer chimney system

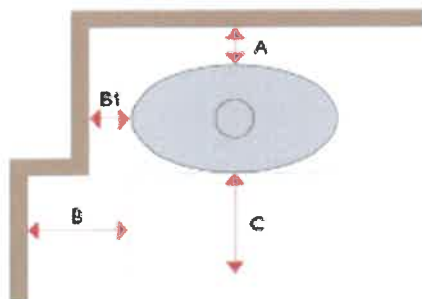
2a) Sirius 1.1

Product setting No. 1



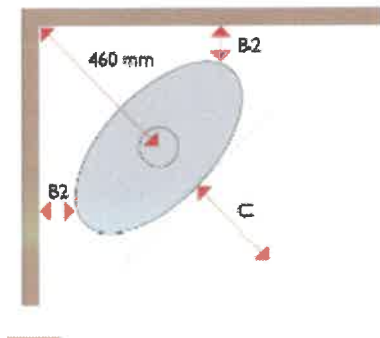
Position	Distance (mm)	T _{okoli} (°C)	T _{real} (°C)	dT (K)
A	50	19	84	63
B	250	19	83	64
C	950	19	78	59

Product setting No. 2



Position	Distance (mm)	T _{okoli} (°C)	T _{real} (°C)	dT (K)
A	50	19	82	61
B	250	19	83	64
B1	150	19	80	61
C	950	19	78	59

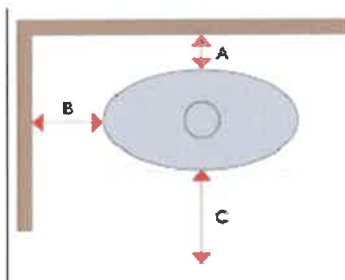
Product setting No. 3



Position	Distance (mm)	T _{okolí} (°C)	T _{real} (°C)	dT (K)
B2	120	19	81	62
C	950	19	78	59

2b) Sirius 3.1

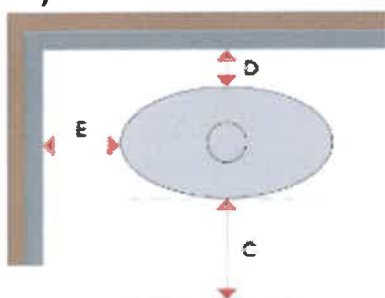
Product setting No. 1



Position	Distance (mm)	T _{okolí} (°C)	T _{real} (°C)	dT (K)
A	60	19	80	61
B	350	19	83	64
C	800	19	79	60

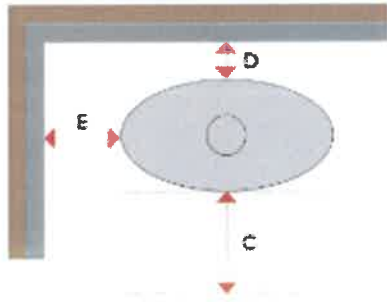
3) brick corner, standard chimney

3a) Sirius 3.1



Position	Distance (mm)	T _{okolí} (°C)	T _{real} (°C)	dT (K)
D	50	19	95	76
E	200	19	104	85
C	800	19	79	60

3b) Sirius 1.1



Position	Distance (mm)	T _{okolí} (°C)	T _{real} (°C)	dT (K)
D	50	19	107	88
E	100	19	104	85
C	800	19	79	60

Accredited test number: **T 004** **Test name: Leakage test in the delivered state and after mechanical and thermal loading**

Test method: ČSN EN 16510-1:2019, Art. A.4.11.2.2-4

Sample tested: Fireplace stove for wood Sirius 1.1, Sirius 3.1

Measuring equipment used: Nos 1 ÷ 13 – see Measuring and Test Equipment

Test results: Sirius 1.1

Date of testing:	2023-02-01 a 2022-12-15	t_{ok} = see tab.	°C	r.v. = 31 and 24	%	$p_a = 98,4$ and $97,9$	kPa
Place of testing:	At SZU	<input checked="" type="checkbox"/>	At the Manufacturer's premises	<input type="checkbox"/>	At the Customer's premises	<input type="checkbox"/>	Other:

Set overpressure	Unit	Test Overpressure		
		5	10	15
Leakage in delivered condition	m ³ /h	1,11	1,98	2,77
Leakage after cyclic stress	m ³ /h	0,96	1,74	2,42
Leakage after thermal tests	m ³ /h	1,12	1,94	2,74

Tested by: Radim Řepka

Date: 2023-04-21

Signed: 

Reviewed and approved by: Ing. Radek Machara

Date: 2023-04-21

Signed: 

V. A list of referenced documents

- Order B-80128 of 2023-08-21
- Contract B-80128/30
- ČSN EN 13240:2002 - Roomheaters fired by solid fuel - Requirements and test methods
- ČSN EN 16510-1:2019 - Residential solid fuel burning appliances - Part 1: General requirements and test methods
- FprEN 16510-2-1:2016 - Residential solid fuel burning appliances - Part 2-1: Roomheaters.

Test Report compiled by: Ing. Jiří Dvořák

Test Report approved by:



Milan Holomek
Heat and Environment-Friendly
Equipment Test Station



– End of Test Report –