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Report
on the initial type test of a residential space heating appliance fired by wood pellets according to DIN EN 14785

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9 pages and 36 enclosures

Test laboratory	TÜV SÜD Industrie Service GmbH Feuerungs- und Wärmetechnik Notified Body 0036 according to CPR
Subject of test	Roomheater according to DIN EN 14785
Type	**HP07** Intended use: space heating Fuel: wood pellets
Client	Schenger GmbH Austr. 92 74076 Heilbronn
Manufacturer	Ningbo Hongsheng Fireplace Co. Ltd Hudi, Linshan Town, Yuyao City, Zhejiang Province P. R. China
Scope of order	Initial type test in the process of assessment and verification of constancy of performance according to Regulation (EU) No. 305/2011 (CPR)
Expert	Dipl.-Ing. Dirk Weisgerber
Period of Test	February 2022 - June 2022
Basis of test	DIN EN 14785:2006-09 DIN EN 14785 Berichtigung 1:2007-10

The test results refer exclusively to the units under test.

DAkkS Deutsche Akkreditierungsstelle D-PL-14153-04-00

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1 Summary

Client	Schenger GmbH
Customer	Ningbo Hongsheng Fireplace Co. Ltd
Subject of test	Roomheater fired by wood pellets according to DIN EN 14785
Intended use	Space heating
Fuel	Wood Pellets
Type	**HP07**
General design	Body of the appliance: steel
	Cover of the appliance: steel cover
	Front fire door with glass inset
	Integrated fuel hopper
	Combustion in burner pot
	Combustion air supply: induced draught fan
	With convection air fan
	Cleaning spiral in the heat exchanger pipes
	Automatically fed with auger
	Automatic ignition
	Cleaning and deashing manual
	Grate integrated in the burner
	Ash drawer

Characteristics at nominal and partial heat output

		Nominal heat output	Partial heat output
Heat output	kW	8.0	3.9
Fuel rate	kg/h	1.8	0.9
CO-Emission (13% Vol. O_2)	Vol. %	0.004	0.016
CO-Emission (13% Vol. O_2)	mg/m³	50	195
NOx-Emission (13% Vol. O_2)	mg/m³	70	91
OGC-Emission (13% Vol. O_2)	mg/m³	1	7
Dust-Emission (13% Vol. O_2)	mg/m³	13	6
Efficiency	%	92.3	95.1
Flue-gas temperature	°C	109	59
Flue-gas temperature behind the stove in the spigot	°C	131	71
Flue draught	Pa	12	10
Flue gas mass flow	g/s	6.8	4.9
Electrical connection		~ 230 V, 50 Hz	
Distance to combustible	cm	15 (rear wall) / 18 (side wall) 100 (front) / 0 (floor, feet height 18 mm)	

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The essential characteristics according to appendix ZA.1 of DIN EN 14785 for room heaters fired by wood pellets were tested and the requirements are fulfilled, if the measures in clause 6 have been taken into account. This result is a prerequisite for performing the process of assessment and verification of constancy of performance and CE marking by the manufacturer.

Feuerungs- und Wärmetechnik

Norbert Hörmann
Head Appliances

Expert of Notified Body 0036
according to Regulation (EU)
No. 305/2011 (CPR)

Dirk Weisgerber

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2 Basis of test

2.1 DIN EN 14785:2006-09 Residential space heating appliances fired by wood pellets, Requirements and test methods

2.2 DIN EN 14785 Ber 1 : 2007-10; Amendment 1 to DIN EN 14785

2.3 EN 16510-1:2018-11 Residential solid fuel burning appliances - Part 1: General requirements and test methods“

2.4 Documents of the customer

3 List of enclosed documents and further applicable documents

A1 - A20	Results and analysis of the test, measuring and test equipment
B1 - B15	Drawings, parts list
C	Equipment

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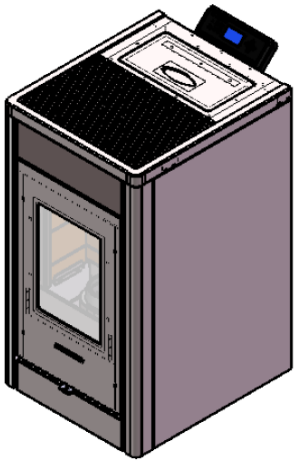
4 Description of the roomheater

4.1	Appliance	Roomheater fired by wood pellets
4.2	Intended use	Space heating appliance for domestic use
4.3	Type	**HP07**
4.4	Defined fuel	Wood pellets
4.5	Dimensions in cm (width x depth x height)	46 x 64 x 88
4.6	Weight	102 kg
4.7	Overview	
4.8	Firedoor	Front firedoor with glass inset (Glass inset width 22 cm x height 32 cm)
4.9	General construction	▪ Body of the appliance: steel ▪ Cover of the appliance: metal casing with convection openings in the top plate ▪ Integrated fuel hopper ▪ Burner pot (cast iron) ▪ Steel firebox with concrete plates (Vermiculite) ▪ Automatically fed up with auger ▪ Operation only with closed door ▪ Manual deashing ▪ Bottom grate is integrated in the burner pot ▪ Ash tray below the burner ▪ Combustion air supply with induced draught fan ▪ Convection air with fan ▪ Automatical electric ignition ▪ Combustion in the burner pot ▪ Cleaning spiral in the 4 heat exchanger pipes (manual operation) ▪ Radiation shield between firechamber and pellet hopper For more details see drawings in enclosure B.

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4.10	Operation method	not room sealed operation
4.11	Flue gas connector	flue gas spigot for rear connection (outer diameter 80 mm)
4.12	Combustion air supply	pipe connection in the back wall (outer diameter 48 mm) with maximum open reduction element, see photo below. Through this opening combustion air is supplied to the burner pot in the fire box. 
4.13	Equipment	
	Controller system (hard- and software)	see Annex C
	Ignition device	see Annex C
	Flue gas fan	see Annex C
	Convection air fan	see Annex C
	Auger motor	see Annex C
	Temperature sensor (flue gas)	see Annex C
	Temperature sensor (fuel hopper)	see Annex C
	Temperature sensor (room temperature)	no information available
	Hopper switch	see Annex C
	Pressure control device	see Annex C
	Wifi module	no information available
	Infrared remote control (operating range approx. 8 m)	no information available

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4.14	Control adjustments for		Nominal heat output	Partial heat output	
	runtime feeding screw break interval feeding screw	s s	3.4 2.6	1.5 4.4	
	flue gas fan (max. 230 V)	V	168	141	
	hot air blower (max. 230 V)	V	230	230	
	cleaning time		Time Span: 30 Min Cleantime: 6 Sec Voltage gas fan: 185V Every 30 minutes the pellet feeding screw stops for 12 seconds, the combustion burner can burn free. The interval time increase 6 seconds every hour.		
4.15	Minimum distance to combustible materials appliance to rear wall appliance to side wall appliance to floor appliance to front		 180 mm 150 mm 18 mm (bottom appliance - floor, height of feets) 1000 mm		
4.16	Marking	The final type plate has not been available for test. The type plate must contain as a minimum the following information: • CE-Symbol in order to directive 93/68/EWG [1)] • manufacturer's name • last two digits of the year in which the marking is affixed [1] • the standard number: EN 14785 • the type or the model • description of the product [1] • emission of CO in combustion products [1] • flue gas temperature °C [1] • efficiency at nominal heat output [1] • nominal heat output in kW or W [1] • the space heating output in kW or W • the water heating output in kW or W (where relevant) • the maximum water operating pressure, in bar (where relevant) • whether or not the appliance can be used in a shared flue • permissible fuels [1] • the minimum distance to adjacent combustible materials, in mm [1] • the words “use only recommended fuels” • advice: read and consider the instructions [1)] obligatory content according to DIN EN 14785, Annex ZA			

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5 Performance of the test

The initial type test in accordance to DIN EN 14785, Annex ZA included the following parameters

- fire safety
- emission of combustion products
- release of dangerous substance
- surface temperature
- thermal output
- energy efficiency
- flue gas temperature

The description of the test assembly, the test results and the list of measurement devices are documented in enclosure A of this test report.

A description of the test procedure is given in the European standard as well as in the enclosures A of this test report.

The measurement and evaluation of the emissions OGC, NOx and dust was carried out in accordance with DIN EN 16510-1:2018-11 "Residential solid fuel burning appliances - Part 1: General requirements and test methods".

The test of the electrical safety, the electromagnetic compatibility, the appliance instruction and the marking was not part of the test order.

The assessment regarding the release of dangerous substances was made on the basis of a visual inspection. During the test at nominal heat output and the safety test it was proven that in the combustion process no dangerous substances are released in critical amount in the surroundings.

For the test of the nominal heat output and partial heat output the control parameters were used as given in the table in section 4.14. The test of the requirements at lower or higher control parameters according to the table in section 4.14 was not part of the test order. The nominal heat output corresponds also to the maximum output. So the test of fire safety was performed together with the test of nominal heat output because the settings for nominal heat output and maximum possible heat output are identical.

The test of the requirements for safety was performed only in accordance with the test installation as free standing room heater described in Annex A16. The test of other installation situations was not part of the order.

The requirements in terms of temperatures in the fuel hopper in the safety test, in case of power failure and in case of convection fan failure were performed. To avoid back burning four devices (drop chute, two temperature sensors (outer surface of the pellet hopper and flue gas temperature), differential pressure flue outlet - combustion chamber) are provided according to the manufacturer. This fulfills the not quantified requirements of the standard EN 14785, chapter 5.5. Whether these safety devices cover all possible cases and foreseeable incidents / component failures and also signal failures in the controller (hardware and software), which may cause back burning in the fuel hopper, is not requested by EN 14785 and was not part of the test order.

Further tests were not part of the order.

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6 Summary

The	residential space heating appliance, fired by wood pellets according to DIN EN 14785
type	**HP07**
client	Schenger GmbH Austr. 92 74076 Heilbronn
manufactured by the company	Ningbo Hongsheng Fireplace Co. Ltd Yuyao City P.R. China

was tested according to the basis of test mentioned in clause 2.

The result of the examination is:

The essential requirements according to appendix ZA.1 of DIN EN 14785 for wood pellet stoves are fulfilled if the following amendments have been applied:

- The control parameters for nominal heat output and partial heat output according to the table in section 4.14 must be preset and must be secured. These parameters shall not be adjusted by the installer or operator
- The requirements specified in Annex A have to be fulfilled

Further tests of reliability, even in terms of safety against backburning into the fuel hopper were not part of the test order.

The results of this test report have to be considered in the documentation and the labelling of the manufacturer.

The further test results are documented in detail in enclosure A of this test report.

The initial type test by the Notified Body within the procedure of the system of assessment and verification of constancy of performance for CE marking has been carried out with positive result if the above mentioned amendments are fulfilled. All other tasks in accordance with DIN EN 14785 Annex ZA.2, such as the factory production control, the electrical safety (LVD), the electromagnetic compatibility (EMV), the requirements regarding the appliance instructions and the marking have to be fulfilled.

National rules for use and local applicable installation conditions must be met.

Feuerungs- und Wärmetechnik

Norbert Hörmann
Head Appliances

Expert of Notified Body 0036
according to Regulation (EU)
No. 305/2011 (CPR)

Dirk Weisgerber

Remark:
Notwithstanding from page 1 this test report may be used also without accompanying enclosures, otherwise, however, completely