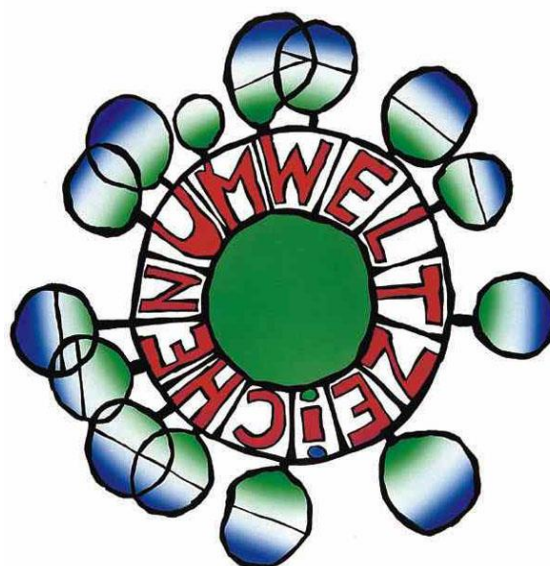


Austrian Eco-Label



Eco-Label Directive 37 **Wood-Fired Heating Systems**

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Introduction

Using wood in natural state, wood chips and compressed wood (briquettes, pellets) for room heating and hot water preparation was and still is an important contribution to sustainable management.

To achieve the most environmentally friendly utilisation possible of those sources of energy one has to choose low-emission furnaces with high energy efficiency.

However, environmental relief does not depend solely on the technical properties of a furnace, but also requires the use of high-quality fuels.

To ensure that the quality is maintained until the product reaches the consumer, reference is made to the requirements under Eco-Label Directive 38 which, in addition to the technical fuel properties, describes also the correct storage and the transportation of compressed wood.

Finally, high-quality system components (storage, insulation, pumps,...) as well as instructions on installation and start-up are to help achieve an efficient and environmentally compatible overall performance during the operation of the system.

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1 Product group definition

The present Directive applies to automatically or hand-fired room heaters as well as heating boilers.

They shall be suited for the combustion of the natural fuel wood, wood chips or compressed wood (briquettes, pellets) and can have a maximum rated fuel capacity not exceeding 500 kW.

2 Health and environmental criteria

2.1 Fuel

In order to achieve the lowest and the best balanced emissions possible during operation, only quality-certified fuels are to be used.

The applicant shall, depending on the respective furnace, provide information on the permissible fuel, its technical properties, as well as a reference to the below-mentioned regulations.

- Wood:
Indications on type of wood, size, water content
- Compressed wood (briquettes, pellets):
Quality and delivery according to the requirements of the Austrian Eco-Label Directive UZ 38 [1] or according to standard ÖNORM EN ISO 17225-1 [2] and ÖNORM EN ISO 17225-2 [3] in connection with ÖNORM M 7136 [4] resp. ÖNORM EN ISO 17225-3 [5]
- Chipped wood:
Requirements according to standard ÖNORM EN ISO 17225-4 [6]

2.2 Efficiency and heat radiation loss

The efficiency shall be determined for the applied heat generator in accordance with the applicable standard as mentioned below or pursuant to an equivalent standard. The determination may be carried out only by accredited or notified testing institutes.

- Heating boiler ÖNORM EN EN 303-5 [7]
- Roomheater, hand-fired ÖNORM EN 13240 [8]
- Residential space heating appliance fired by wood pellets, pellet stove ÖNORM EN 14785 [9]
- Tiled stove ÖNORM B 8303 [10]
- Residential cookers fired by solid fuels ÖNORM EN 12815 [11]
- Fireplace insert ÖNORM EN 13229 [12]
- Slow heat release appliances ÖNORM EN 15250 [13]

Depending on the product group the efficiency at nominal heat output shall reach at least the figures listed in table 1:

table 1: Efficiency η_K at nominal heat output

Type of firing	Boiler efficiency [%]	Room heater efficiency [%]
manual	$71.3 + 7.7 \log Q_N$	80
automatic	90	90

Q_N = nominal heat output

For heating boilers, heat radiation loss shall be minimised via the surface; the below-listed values shall not be exceeded.

table 2: Maximum heat radiation loss at nominal heat output

Boiler – nominal heat output [kW]	maximum heat radiation loss [%]
up to 100	2.5
100 to 500	1.5

2.3 Emissions of automatically fired furnaces

In the type test the below-listed emissions shall not be exceeded.¹

table 3: Automatically fired furnaces, emissions in [mg/MJ]

Parameter	Heating boiler	Room heating facility
CO nominal load Pellets Chipped wood	45 120	115
CO part load (30% of the nominal load or minimum capacity) Pellets Chipped wood	100 200	230
NO_x nominal load Pellets Chipped wood	100 100	100
C_{org} nominal load Pellets Chipped wood	3 4	5
C_{org} part load Pellets Chipped wood	3 6	9
Dust nominal load Pellets Chipped wood	15 20	15

2.4 Emissions of hand-fired furnaces

Gasifier-type firewood boilers shall be provided with a capacity and firing control system.

In the type test the below-listed emissions shall not be exceeded¹.

table 4: Hand-fired wood furnaces, emissions in [mg/MJ]

Parameter	Heating boiler	Room heating facility
CO nominal load	180	650
CO part load (50% of the nominal load) ²	500	---
NO _x nominal load	100	120
C _{org} nominal load	15	45
Dust nominal load	20	30

¹ If measured values relate to Nm³, they shall be converted traceably to mg/MJ (indication of the test conditions like test fuel, water content, oxygen content,...).

² Proof of compliance with the emission limit at part load does not have to be furnished if the firewood boiler is offered with buffer storage.

2.5 Electrical power input

In long-term operation the electrical power input shall not exceed the following figures:

Manual firing ≤ 30 kW	not to exceed 200 watt
Manual firing > 30 kW	$\leq 0.7\%$ of the nominal heat output
Automatic firing:	$\leq 1.5\%$ of the nominal heat output

2.6 Fire protection

The requested furnace system shall comply with the applicable fire protection provisions.

Any and all safety installations required for a type of system shall be evaluated by an inspection agency with respect to its design, control, combined effects, and functioning (excepted from this requirement are installations preventing burnback).

2.7 Buffer storage

If the heating system is equipped with buffer storage, the following information on the storage shall be provided:

- Recommended type of storage unit (e.g. stratified storage)
- Insulation of storage: a maximum heat loss coefficient of $U \leq 0.35$ W/m²K
- Minimum insulation thickness for pipes

Pipe dimension	Outer space [mm]	Interior [mm]
DN 15	30	20
DN 20, DN 25	40	30
DN 32	40	40
DN 40	50	40
DN 50	60	50

- Minimum dimensions according to ÖNORM M 7510-4 [14]
- Recommendation concerning the suitable pumps
- Possibility of bivalent operation: e.g. integration of a solar system

2.8 Raw materials

For insulating, no substances or materials shall be used that are produced with the use of halogenated organic compounds or that are “clearly identified as carcinogenic”³ under the Austrian Regulation on Occupational Exposure Limits (“Grenzwerteverordnung”) [15]. Halogated synthetics shall not be used ⁴.

2.9 Production

As production site shall be deemed the place where the major part of production takes place.

- Requirements imposed by the authorities and legal provisions, especially with regard to air, water, waste, environmental information, and employee protection, shall be complied with.

Domestic as well as foreign production sites shall comply with the respective national provisions.

To the extent that EU provisions are more stringent than national provisions, such EU provisions shall be complied with in any event.

The applicant shall confirm compliance with this requirement.

- A waste management concept shall be presented.
Such concept shall include the items specified in the BMUJF (now BMLFUW) Decree [16] dealing with the complete listing of company-level waste management concepts.

For production sites registered in accordance with the EMAS Regulation [17] the above-mentioned requirements shall be deemed as being complied with. If there is an environmental management system for the production site which is certified in accordance with the Austrian standard ÖNORM EN ISO 14001 [18], the audit results may be used to prove compliance with the above-mentioned requirements.

2.10 Packaging

Any synthetics used shall be free from halogenated organic compounds. Those putting packaging in circulation shall either take such packaging back themselves and recycle it or verifiably take part in a collection and recycling system. The provisions of the Austrian Packaging Ordinance shall apply [19].

³ Materials classification according to Annex III, categories A1 and A2

⁴ Exception: Technologically necessary materials with a lack of possibilities of substitution; the use of such substances shall be justified.

3 Serviceability

3.1 Standard testing

Proof shall be furnished that any and all requirements of the applicable standard as given below, or of an equivalent standard, are complied with.

- | | |
|--|----------------|
| ➤ Heating boiler | ÖNORM EN 303-5 |
| ➤ Roomheater, hand-fired | ÖNORM EN 13240 |
| ➤ Residential space heating appliance for wood pellets | ÖNORM EN 14785 |
| ➤ Tiled stove | ÖNORM B 8303 |
| ➤ Central heating cooker | ÖNORM EN 12815 |
| ➤ Fireplace insert | ÖNORM EN 13229 |

If several types of a line of products are tested, such testing shall be conducted in accordance with ÖNORM EN 303-5⁵.

The differences between the individual types shall be indicated in the expert opinion, likewise the evidence that all requirements set forth in the present Directive are complied with.

3.2 Services of the producer

The environmentally benign operation of a wood-fuelled heating system is for the most part determined by the behaviour of the operator.

To support this behaviour in a positive way the user of the label shall offer at least the below-mentioned services and information:

- Offer of the initial start-up of the heat generator by the user of the label and/or the installation company
Explanation of all parameters for an efficient, low-emission combustion and management (customer training)
- Offer of a maintenance service available at the usual customer service hours
- Offer of conducting the annual testing of the heater
- Offer of equipping the system with additional metering accessories (e.g. waste gas thermometer, operating-hours meter etc.)
- Availability of equivalent spare parts for at least 10 years

⁵ Definition in analogy to the agreement on protective measures concerning small units according to Art. 15a B-VG: An amount of serial products of technically equal construction, but with different heat output or different design (e.g. linings).

- Information with respect to all relevant regulations and standards concerning fuel quality, storage and transportation logistics
- Information that in the planning and design of a fuel storage for pellets the requirements of ÖNORM M 7137 [20] are to be taken into account
- Technical training for installation companies and vendors

3.3 Installation details

To avoid faulty installations the written and graphical documents for the fitter shall be designed in such a way that the entire information required is comprehensible and given in correct order.

Furthermore, the documents shall contain at least the following information, if they are of relevance for the requested heat generator:

- Technical information on the heat generator:
Boiler class, diameter of flue gas connection, flue gas temperatures during operation as well as required feed pressure, dimensions of filling space, water content, water-side resistance, required cold water pressure, minimum return temperature
Electric supply, fuse protection and circuits, additional sets
- On the fuel:
Type and piece size of fuel, maximum water content and heat output, filling ratios and corresponding combustion period
- Mounting instructions for step-by-step fitting and the necessary on-the-spot tests, assembly and alternatives; information concerning sources of mistakes and their avoidance, fitting position of all sensing devices for control and reading equipment, setting ranges of the sensing devices, correct settings for the start-up
- Control of the heat distribution:
Zone-wise control, timers, thermostatic valves, etc.

3.4 Maintenance

The operator shall receive information and instructions on how to check the perfect functioning of the system.

Such information shall be divided into owner maintenance and third-party maintenance and shall comprise at least the following points:

- Periodic maintenance during heating operation (interval, scope, ...)
- Weekly controls (e.g. visual control)
- Maintenance and controls of the conveying system
- Keeping maintenance records

- Maintenance by the installation company or by a suitable maintenance service (interval, scope of work, et.al.)

4 Declaration

4.1 Pre-selling information

Before purchasing, customers shall be informed about the below-listed items:

- Tailoring the dimensions of the system to the required energy service
- To ensure proper dimensioning of the system, an expert (producer, installation company, et.al.) shall be consulted.
- Efficient arrangement of boiler room and fuel storage as well as the optimum processing and storage of the fuels
- Provision of the sources of relevant technical standards or laws for the dimensioning of the system
- Most important technical data and all emission values
- Information that in the guidelines for subsidisation of the Federal Provinces different requirements are made on buffer storages

4.2 Operating instructions

The written information material for the user shall be designed in such a way that the parameters that are essential and required for the efficiency of the overall system are described in a comprehensible manner which takes into account also aspects of environmental protection.

To ensure that the high environmental standard of the biomass-fired system that was certified at the test stand can be maintained also in everyday operation, extensive operating instructions containing the below-mentioned points and indications shall be handed over to the user.

Environmental protection:

- Clear note that the user can make a vital contribution to the environmentally benign operation of the heat generator only if all requirements listed in the operating instructions are complied with.
- Use only admissible fuel
- No burning of waste
- Information about efficient and environmentally benign heating
- Information on ash disposal
- Information regarding the disposal of the individual components of the system

Information on the fuel:

- Admissible type of fuel (maximum humidity content, size, et.al.)
- Maximum filling height
- Combustion period at nominal heat output for each admissible type of fuel
- Energy content of one filling of the fuel
- Declaration of the test fuel

Start-up and operation:

- Proper firing, putting on, opening, and charging
- Functioning and operation of the control system for full- and part-load operation
- Information concerning the assessment of the quality of combustion and the operating status by means of visual observations (flame, deposits, ash, flue-gas temperature, et.al.)

Servicing and maintenance:

- Cleaning: Information on intervals and required equipment
- Fault: Correct behaviour, fault tracing and trouble-shooting
- Maintenance: Scope of owner and third-party maintenance, intervals
- Service phone numbers: Producer, maintenance service etc.

Additional information for boilers

- Information on the design of the required boiler return and/or boiler temperature control. Recommendation concerning the installation of a control device (e.g. thermometer)
- Suitability of the boiler control for part-load operation
- Information on system adjustment to changing fuels (above all in the case of wood-chip furnaces)

4.3 Type label

The type label fixed on the heater shall contain the following indications:

- Name and company headquarters of the manufacturer and manufacturer's mark, if any
Company name and address
Trade name or type designation under which the heater is marketed
Manufacturer number, type number and year of manufacture

Indications on the admissible type and size of fuel
Nominal heat output and capacity range in kW for the admissible type of fuel
Electric supply (V, Hz, A) and electrical power input in watt (if available)

For heating boilers, the below-mentioned information shall be provided in addition:

- On the type label:
 - Boiler class
 - Maximum admissible operating temperature in °C
 - Maximum admissible operating pressure in bar
 - Water content in litres

4.4 System documentation

To ensure that, in practice, efficiency, environmental compatibility and operativeness of the overall system can approximately be achieved with the optimised conditions of a test stand measurement, it is of great importance that the system documentation is properly designed.

The system documentation and the completion certificate, respectively, shall therefore comprise at least the following content and test certificates:

- Test report (acc. to the relevant standard) with the following attachments:
 - Drawing of the system with picture
 - Description and explanation of all indications provided on the type label
- Installation certificate with the following statement:
 - The installation company certifies that the system has been installed professionally and in compliance with the applicable provisions regarding fire protection.
 - If further confirms the conformity of the built-in technical safety devices by the attachment of the test certificates.
- The operator of the system has been familiarised with the operation of the system and has been instructed about the mode of action and the self-control of all safety devices.
 - In the course of the instruction the operating instructions have been handed over to the operator of the system.
- Handover of the operating instructions (requirements acc. to point 4.2)
- Handover of all technical documents
- Handover of all certificates of conformity
- Handover of the commissioning certificate
- Listing of all service numbers (manufacturer, fitter, maintenance, et.al.)
- In the case of industrial plants with a nominal heat output ≥ 50 kW mention shall be made of the recurrent test according to the Ordinance on Firing Systems [21]

5 Normative standards, acts and other regulations

The documents referred to hereinafter contain provisions which are part of this Eco-Label Directive. Legal provisions shall always be applied as amended. Where a date is specified, references to other documents shall not cover later changes or revisions of the publication. With regard to references where no date is specified, the most recent version of the document referred to shall be applied.

Austrian acts can be accessed at <http://www.ris.bka.gv.at/>⁶.

The current status of European Union regulations and directives is available at the following Internet address:

<http://eur-lex.europa.eu/de/index.htm>

- [1] Austrian Ecolabel Directive UZ 38, Solid Biofuels – Pellets, Briquettes, of 1 January 2014
- [2] ÖNORM EN ISO 17225-1, Solid biofuels - Fuel specifications and classes Part 1: General requirements, of 1 September 2014
- [3] ÖNORM EN ISO 17225-2, Solid biofuels - Fuel specifications and classes Part 2: Graded wood pellets, of 1 September 2014
- [4] ÖNORM M 7136 Wood pellets – Quality assurance in transport and storage logistic, of 1 June 2002
- [5] ÖNORM EN ISO 17225-3, Solid biofuels - Fuel specifications and classes Part 3, Graded wood briquettes, of 1 September 2014
- [6] ÖNORM EN ISO 17225-4, Solid biofuels - Fuel specifications and classes Part 4, Graded wood chips, of 15 January 2016
- [7] ÖNORM EN 303-5 Heating boilers Part 5: Heating boilers for solid fuels, manually and automatically stoked, nominal heat output of up to 500 kW Terminology, requirements, testing and marking, of 15. November 2012
- [8] ÖNORM EN 13240 Roomheaters fired by solid fuel - Requirements and test methods, of 1 January 2007
- [9] ÖNORM EN 14785 Residential space heating appliances fired by wood pellets - Requirements and test methods, of 1 August 2006

⁶ No liability shall be assumed for the accuracy and completeness of the Legal Information System. Solely the wording of the legal provisions announced in the Federal and Provincial Legal Gazettes or other publication bodies shall be definitive. The Federal Legal Gazettes are available at Print Media Austria AG (previously: Österreichische Staatsdruckerei AG, the Austrian State Printing House), and the Provincial Legal Gazettes are available at the Offices of the Provincial Governments.

- [10] ÖNORM B 8303 Dimensioning of tiled stoves - Testing, of 1 January 1999
- [11] ÖNORM EN 12815 Residential cookers fired by solid fuel - Requirements and test methods, of 1 January 2007
- [12] ÖNORM EN 13229 Fireplace inserts including open fireplaces for solid fuels – Requirements and testing, of 1 January 2007
- [13] ÖNORM EN 15250 Slow heat release appliances for solid fuels - Requirements and testing, of 1. August 2015
- [14] ÖNORM M 7510 Part 4 – Testing of heating installations for solid fuels with a nominal heat output of up to 300 kW, of 1 May 1997
- [15] Federal Law Gazette No 429/2011 Part II, Austrian Regulation on Occupational Exposure Limits 2001 (“Grenzwerteverordnung 2011 - GKV 2011”) - issued on 20 December 2011
- [16] Federal Ministry of Environment, Youth and Family:
(now: Federal Ministry of Agriculture, Forestry, Environment and Water Management)
Decree on the Waste Management Act and its ordinances of 16 July 2002 (file number 02Z034232 M)
Guideline for waste management concept:
<https://www.bmlfuw.gv.at/greentec/abfall-ressourcen/betriebliche-abfallwirtschaft/konzepte/awkleitfaden.html>
- [17] Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 allowing voluntary participation by organizations in a Community eco-management and audit scheme (EMAS)
- [18] ÖNORM EN ISO 14001; Environmental management systems – Specification with guidance for use (ISO 14001:2004), 15 November 2015
- [19] Austrian Federal Law Gazette No 648/1996, Packaging Ordinance, of 22 July 2014
- [20] ÖNORM M 7137, Compressed wood in natural state - Woodpellets - Requirements for storage of pellets at the ultimate consumer, of 1 October 2012
- [21] Austrian Federal Law Gazette No 331/1997, Ordinance on Firing Systems (“Feuerungsanlagenverordnung” – FAV), issued on 18 November 1997