

Nordic Ecolabelling for  
**Boilers for solid biofuel**



**Version 3.2 • 11 June 2014 - 31 March 2021**

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060 Boilers for solid biofuel, version 3.2, 19 December 2018

This document is a translation of an original in Danish. In case of dispute, the original document should be taken as authoritative.

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## Addresses

In 1989, the Nordic Council of Ministers decided to introduce a voluntary official ecolabel, the Nordic Swan Ecolabel. These organisations/companies operate The Nordic Swan Ecolabelling system on behalf of their own country's government. For more information, see the websites:

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It may be quoted from provided that Nordic Ecolabelling is stated as the source.

## What is a Nordic Swan Ecolabelled boiler?

Nordic Swan Ecolabelled boilers for solid biofuel are relatively simple combustion systems of up to 500 kW. The fuel may be added manually or automatically. Solid biofuel is firewood, wood pellets, briquettes, wood chips or straw. The boiler's function is to be the home's primary heating source by transporting heated water through the home's central heating system.

A Nordic Swan Ecolabelled boiler produces low emissions of particles, organic gaseous carbon/volatile hydrocarbons (OGC), carbon monoxide (CO) and NO<sub>x</sub> and has a high level of efficiency. Emissions have a negative effect on health, and the emission volumes vary considerably between the various types of boilers. The boilers must also comply with stringent electricity consumption regulations. The requirement for the boiler to be equipped with a sensor system also ensures optimum combustion.

The Nordic Swan Ecolabel makes requirements of a ban on the use of production chemicals with specific hazard classifications, and requires a five-year guarantee for the bearing structure.

The manufacturer must also clearly inform the customer about how the boiler is to be used and maintained in order to function optimally, and that the boiler must be installed by certified installation technicians, as well as the offer of annual service agreements, and the requirement of access to spare parts for ten years after the boiler is no longer manufactured.

## Why choose the Nordic Swan Ecolabel?

- The manufacturer may use The Nordic Swan Ecolabel trademark for marketing. The Nordic Swan Ecolabel is a very well-known and well-reputed trademark in the Nordic region.
- The Nordic Swan Ecolabel is a cost-effective and simple way of communicating environmental work and commitment to customers and suppliers.
- Reducing environmental impact often creates scope for lowering costs, such as by cutting the consumption of energy and reducing amounts of packaging and waste.
- Environmentally suitable operations prepare the manufacturer for future environmental legislation.
- Environmental issues are complex. It can take a long time and extensive resources to gain an understanding of a specific area. Nordic Ecolabelling can be seen as aid in this work.
- The Nordic Swan Ecolabel not only covers environmental issues but also quality requirements, since the environment and quality often go hand in hand. This means that a Nordic Ecolabel licence can also be seen as a mark of quality.

## What can carry The Nordic Ecolabel?

Boilers for solid biofuel with a nominal heat output of up to 500kW can achieve The Nordic Swan Ecolabel. The fuel may be added manually or automatically. Solid biofuel is:

- Firewood
- Briquettes
- Wood pellets
- Straw
- Woodchips

Solar collectors may be included in the heating system.

## How to apply

### Application and costs

For information about the application process and fees for this product group, please refer to the respective national web site. For addresses, see page 3.

### What is required?

The application must consist of an application form/web form and documentation showing that the requirements are fulfilled.

Each requirement is marked with the letter O (obligatory requirement) and a number. All requirements relevant for the product must be fulfilled to be awarded a licence.

The text describes how the applicant shall demonstrate fulfilment of each requirement. There are also icons in the text to make this clearer. These icons are:

☒ Enclose

📍 The requirement checked on site

All information submitted to Nordic Swan Ecolabelling is treated confidentially. Suppliers can send documentation directly to Nordic Swan Ecolabelling, and this will also be treated confidentially.

### Licence validity

The ecolabel licence is valid providing the criteria are fulfilled and until the criteria expire. The validity period of the criteria may be prolonged or adjusted, in which case the licence is automatically prolonged and the licensee informed.

Revised criteria shall be published at least one year prior to the expiry of the present criteria. The licensee is then offered the opportunity to renew their licence.

### On-site inspection

In connection with handling of the application, Nordic Swan Ecolabelling normally performs an on-site inspection to ensure adherence to the requirements.

For such an inspection, data used for calculations, original copies of submitted certificates, test records, purchase statistics, and similar documents that support the application must be available for examination.

## Queries

Please contact Nordic Swan Ecolabelling if you have any queries or require further information. See page 3 for addresses. Further information and assistance (such as calculation sheets or electronic application help) may be available. Visit the relevant national website for further information.

# 1 Production

## 1.1 Production requirements

### 01 Description of the production process

The production process for the Nordic Swan Ecolabelled boiler must be described.

The description must include the following:

- Name and contact details of:
  - production location(s) for final manufacture of boilers
  - sub-suppliers for surface treatment
  - sub-suppliers of other components subject to the requirements
- A description of the production process for the boiler stating the various process stages, including cleaning technique. Production technique and cleaning technique for surface finishing and metal coating must be stated.
- Copy of environmental licence/permit or inspection report from the environmental authority concerning final production, with details of emissions subject to the licence during the past year.

*Final production of the boiler does not concern the production of raw materials such as steel, cast iron, stone/ceramic, glass or plastic elements.*

- A description of the boiler's production process according to the requirement. Copy of the environmental licence/permit or inspection report from the environmental inspection authority concerning final production, with details of emissions subject to the licence during the past year.

### 02 Materials

The manufacturer must draw up a list of all of the elements included in the boiler, stating the type and material, as well as technical drawings with measurement dimensions.

Materials and construction must comply with relevant requirements in the current standard, EN 303-5:2012. The requirement includes, for example, quality, thickness of materials, durability and temperature control (safety) in the boiler and materials.

A guarantee for materials and construction faults of at least five years must be given for the bearing structure (excluding the interior of the combustion chamber) on normal use.

- A description of materials for all of the elements included in the boiler, as well as technical drawings with measurement dimensions approved by the test laboratories in connection with testing of the boiler.

- ☒ Declaration from the manufacturer that the requirements of the materials and construction have been fulfilled. Appendix 2 may be used.

### 03 Chemical products, classification

The manufacturer must draw up a list of the chemicals used in the final production (painting, installation and final inspection) of boilers and for surface treatment. Chemical products such as glue, sealant, cleaning/degreasing products, paints and varnishes used in the final production of the boiler and for surface finishing may not be classified according to the table below.

*Final production of boilers does not concern the production of raw materials such as steel, cast iron, glass or plastic elements.*

Table 1. List of non-permitted classification of the final chemical compound used in the product, in accordance with the CLP regulation 1272/2008, or later.

Signal word	Hazard phrase	Hazard description	Risk phrase
Warning, Aquatic acute 1 Warning, Aquatic chronic 1 Warning, Aquatic chronic 2 -, Aquatic chronic 3 -, Aquatic chronic 4 -, Ozone	H400 H410 H411 H412 H413 EUH059/H420	Environmentally hazardous N N N - - N	R50 R50/53 R51/53 R52/53 R53 R59
Hazardous, Carc. 1A or 1B Hazardous, Carc. 1A or 1B Warning, Carc. 2	H350 H350i H351	Carcinogenic T T Xn	R45 and/or R49 R40
Hazardous, Muta. 1A or 1B Warning, Muta. 2	H340 H341	Mutagenic, T Xn	R46 R68
Hazardous, Repr. 1A or 1B Hazardous, Repr. 1A or 1B Warning, Repr. 2 Warning, Repr. 2 - -	H360 H360 H361 H361 H362 H362	Reprotoxic T T Xn Xn - -	R60 R61 R62 and/or R63 R33 R64
Hazardous, Acute Tox. 1 or 2 Hazardous, Acute Tox. 1 Hazardous, Acute Tox. 2 Hazardous, STOT SE 1	H330 H310 H300 H370	Very toxic Tx Tx Tx Tx	R26 R27 R28 and/or R39
Hazardous, Acute Tox. 2 or 3 Hazardous, Acute Tox. 3 Hazardous, Acute Tox. 3 Hazardous, STOT SE 1 Hazardous, STOT SE 1	H330 or H331 H331 H301 H370 H372	Toxic, T T T T T	R23 R24 R25 R39 and/or R48
Hazardous, Resp. Sens. 1 Warning, Skin sens. 1	H334 H317	Sensitising Xn Xi	R42 R43

*The classification applies in accordance with the EU's dangerous substances directive 67/548/EC with subsequent amendments and adjustments, and/or CLP regulation 1272/2008 with subsequent amendments. During the transition period, i.e. up to 1 June 2015, classification in accordance with the EU's dangerous substances directive or the CLP regulation may be used. After the transition period, only classification in accordance with the CLP regulation will apply.*

Metal coating of parts is exempt from the requirement. On metal coating of parts, requirement O5 must be fulfilled.

- List of chemicals used in final production and for surface finishing.
- Safety datasheet issued within the last three years for the final chemical compound used in the Ecolabelled product, in accordance with Annex II of Reach (regulation 1907/2006/EC, with later amendments and additions).

#### **04 Component substances in chemical products**

The following substances may not be included in the chemical products (e.g. glue, sealant, cleaning/degreasing products, paint and varnish) used in the final production of the boiler and for surface treatment:

- lead (Pb), mercury (Hg), chromium IV (CrIV), cadmium (Cd) and compounds thereof
- halogenated organic compounds
- alkylphenols, alkylphenol ethoxylates or other substances that can build alkylphenols or alkylphenol ethoxylates
- phthalates
- substances on the EU's candidate list in accordance with REACH, 1907/2006/EC article 59, paragraph 10 on the website of the European Chemicals Agency (ECHA). In the background document there is a link to the list.
- nanoparticles (from nanomaterials\*)

The following are exempted from the requirement to nanoparticles:

- Pigments\*\*
- Naturally occurring inorganic fillers\*\*\*
- Synthetic amorphous silica\*\*\*\*
- Polymer dispersions

\* The definition of nanomaterials follows the European Commission's definition from 18 October 2011 (2011/696/EU): "A nanomaterial is a natural, incidental or purposely manufactured material containing particles, in an unbound state or as an aggregate or as an agglomerate and where, for at least 50% of the particles in the number size distribution, one or more external dimensions is in the size range 1-100 nm."

\*\* Nano-titanium dioxide (nano-TiO<sub>2</sub>) is not considered a pigment and is therefore covered by this requirement.

\*\*\* This applies to fillers covered by appendix V point 7 in REACH.

\*\*\*\* This applies to traditional synthetic amorphous silica. Chemically modified colloidal silica can be included in the products as long as the silica particles form aggregates in the final product. The surface treatment of surface-treated nanoparticles must fulfil requirement to component substances in chemical products.

There is exemption from the list for metal coating of parts. On metal coating of parts, requirement O5 must be fulfilled.

*The following definition must be used concerning "included" Unless otherwise stated, included substances are all substances in the product, including additives (such as preserving agents or stabilisers) in the raw materials, but not contaminants from raw materials production. Contaminants are residual substances from raw materials production that are included in the finished product in concentrations below 100 ppm (0.0100% by weight, 100 mg/kg), but not substances added deliberately to a raw material or product for a purpose, irrespective of the quantity. Known degradation products from constituent substances are also considered to be included.*

- Declaration or other equivalent documentation from the chemicals producer/supplier. Appendix 3 may be used.

#### **05 Metal coating of parts**

Parts of metal may not be coated with lead (Pb), mercury (Hg), cadmium (Cd), chromium VI (CrVI), nickel (Ni) or compounds thereof.



Exceptionally, parts may be coated with chromium III, nickel or compounds thereof in cases where this is necessary due to chemical or mechanical wear, or other documented special technical requirements.

Any chromium and nickel-plating processes must take place using cleaning techniques, ion-exchange techniques, membrane techniques or similar techniques, in order to be able to recover the metals to the greatest possible extent.

Residual products from coating must be used in recycling or waste handling schemes. The system must be without a drainage system.

- Declaration from the manufacturer that the requirement for metal coating is fulfilled. Appendix 2 may be used.
- Report on any need for metal coating (only chromium VI (CrVI), nickel (Ni) or compounds thereof) from the boiler's manufacturer. If metal coating is used report on which cleaning technique that have been used.

## **06 Labelling of plastic elements**

Plastic elements weighing more than 50 g must be labelled in accordance with ISO 11469.

Cables and plastic parts with a surface smaller than 200 mm<sup>2</sup> are not subject to the requirement.

- Declaration from the manufacturer of the boiler that the requirement is fulfilled. Appendix 4 may be used to document the requirement.

## **07 Product and transport packaging**

It must be possible to recycle or reuse materials in product and transport packaging. The manufacturer must submit a description of the packaging, as well as instructions for how the packaging is to be handled in the Nordic countries in which the Nordic Swan Ecolabelled boiler is sold.

Chlorine-based plastic and biocide-treated/impregnated wood may not be used in the product and transport packaging.

- A description of the product and transport packaging and instructions for handling in the individual Nordic countries can be found in the installation manual, see O16.

## **08 Waste**

The manufacturer must perform sorting at source of the various waste fractions occurring in the production of boilers, such as waste wood, waste glass, waste electronics, plastic and metal. A waste plan with a description of waste fractions and of how the waste is handled (such as reuse, depositing and incineration) must be submitted.

- A waste plan with a description of waste fractions and waste recipients for the company (who collects the individual waste fractions) from the manufacturer of the boiler.

# **1.2 Requirements of control of optimum combustion**

## **09 Electronic control**

The boiler must be equipped with a lambda probe or equivalent sensor system to ensure optimum combustion.

- Description of sensor system to ensure optimum combustion.

## 1.3 Supplementary components

### 010 Accumulation tank

Manually fired boilers must be equipped with an accumulation tank. The accumulation tank must be dimensioned to store heat from a fully loaded combustion chamber. This entails that the accumulation tank must be at least 15 times the boiler's combustion chamber volume.

The storage tank must be designed so that it can be connected to a solar heating system.

- ☒ The instruction manual must include the information that manually fired boilers must be installed with an accumulation tank that can be connected to a solar heating system, and that the size of the accumulation tank must be at least 15 times the boiler's combustion chamber volume.

### 011 Solar collector

If the heating system includes a solar collector, this must be type approved according to EN 12975.

- ☒ Declaration from the manufacturer of solar collectors, see Appendix 5.

### 012 Fuel pellet hopper

The manufacturer of the Nordic Swan Ecolabelled pellet stove must inform the customer of how a hopper for the wood pellets should be designed

- to ensure that the recommended fuel retains its quality when the fuel pellets are emptied into the customer's storage hopper;
- so that carbon monoxide that may occur when wood pellets are stored does not entail a health risk or mortal danger.

- ☒ Information must be provided in the instruction manual.

## 2 Operation of the Nordic Swan Ecolabelled boiler

### 013 Electricity consumption

The boiler's electricity consumption during operation with maximum heat output may not exceed the threshold values in the following table.

Table 2. Threshold values for the boiler's electricity consumption during operation at maximum heat output.

Manually fired boiler $\leq$ 20 kW	Max 125 Watt
Manually fired boiler $>$ 20 kW	$\leq$ 0.6% of nominal output
Automatically fired boiler $\leq$ 20 kW	Max 150 Watt
Automatically fired boiler $>$ 20 kW	$\leq$ 0.75% of nominal output

Test in accordance with EN 303-5:2012. The electrical consumption is determined according to EN 15456.

- ☒ Full test report in accordance with EN 303-5:2012 and EN 15456.

### 014 Emissions to air

The boiler may not exceed threshold values for carbon monoxide (CO), organic gaseous carbon (OGC), particles and NO<sub>x</sub> in the following table.

Manually fired boilers:

- CO, OGC, particles and NO<sub>x</sub> are only tested at nominal load

Automatically fired boilers:

- CO, OGC, particles and NO<sub>x</sub> are tested at nominal load and low load

*Boilers with a capacity of less than or equal to 20 kW, particles are only to be tested at nominal load.*

*Low load: 30% of nominal load*

Table 3. Threshold values for Nordic Swan Ecolabelled boilers tested at 10% O<sub>2</sub>.

	CO	OGC	Particles	NO <sub>x</sub>
	mg/m <sup>3</sup>	mg/m <sup>3</sup>	mg/m <sup>3</sup>	mg/m <sup>3</sup>
<b>Manually fired boiler</b>	350	15	40	200
<b>Automatically fired boiler</b>	250/250	10/10	30/40	200/200

Test instructions are stated in Appendix 1.

Test of CO, OGC and particles in accordance with EN 303-5:2012.

Test of NO<sub>x</sub> in accordance with EN 14792.

☒ Full test report in accordance with the standard.

### 015 Efficiency

Efficiency ( $\eta_k$ ) in percentage must be at least:

**Manually fired boiler up to 100 kW:**  $\eta_k = 87 + \log(\text{output})$

Where output is the stated output at nominal load of the boiler.

An output of more than 100 kW, the requirement ( $\eta_k$ ) is always 89%.

**Automatically fired boiler up to 100 kW:**  $\eta_k = 88 + \log(\text{output})$

Where output is the stated output at nominal load and low load of the boiler (30% of nominal load).

An output of more than 100 kW, the requirement ( $\eta_k$ ) is always 90%, both in nominal and low load.

Requirements of laboratories, testing of boilers and measurement of efficiency are stated in Appendix 1.

☒ Full test report in accordance with the standard EN 303-5:2012.

## 3 Customer information

### 016 Installation manual

There must be an installation manual for each boiler delivered. The installation manual must be written clearly in the national language in the Nordic country in which the boiler is sold and installed. The manual must also be available on the manufacturer and/or distributor's website(s). The manual must present recommendations and information on:

- the installation of the boiler in the designated way, and that the boiler must be installed by a certified installation technician, as well as reference to the present;
- technical information/specifications concerning the boiler;
- the boiler's electricity consumption;
- installation of accumulation tanks together with manually fired boilers;
- information on the size of the accumulation tank (O10);
- the required volume of air for combustion, air volume in m<sup>3</sup> per hour;
- distance to flammable material;

- recommendations for chimney height (in meters insulated chimney), from the boiler flue. Moreover, recommendation to the height of the chimney must be a minimum of 1 meter higher than the ridge/housing highest point;
- instructions for the type of smoke flue/chimney to which the boiler may be connected in terms of flue gas temperature, drawing, dimension, height and position of the smoke flue/chimney;
- instructions for the design of the wood pellet hopper, if this fuel type is used how the wood pellet hopper must be designed for the fuel to retain its quality on emptying and storage, and so that any carbon monoxide arising as a consequence of the storage of wood pellets does not present a health risk or mortal danger (O12)
- information on the heat cover that the heating system can achieve
- how the packaging is to be handled in the Nordic countries in which the boiler is sold.

☒ A copy of the operating and maintenance instructions, which must be included when the boiler is delivered to the installation technician and customer.

## **O17 Operating and maintenance instructions**

Operating and maintenance instructions must be included with each boiler delivered. The instructions must be written clearly in the national language in the Nordic country in which the boiler is sold and installed. The instructions must also be available on the manufacturer and/or distributor's website(s). The instructions must include details of:

- information on how various fuel types (types, materials, quality, moisture content) affect output and emissions;
- instructions to the wood's moisture content should not exceed 18%, and that you can buy moisture meter to continuously monitor the proper moisture content. Firewood with a diameter of more than 10 cm and should be split;
- information on which type of fuel the boiler has been tested with;
- fuel types suitable for the boiler, and that fossil fuels should not be used that Nordic Swan Ecolabelled wood pellets should be used in automatically fired boilers;
- recommendations for the handling and storage of firewood, wood pellets and any other solid biofuels;
- how the boiler is lit;
- instructions for filling and the volume and size of firewood on lighting/filling;
- adjustment of air intake how, by which measures, sufficient combustion air to the boiler is ensured;
- that low air intake can lead to poor combustion, high emissions and poor efficiency;
- instructions for cleaning, inspection and maintenance of the boiler;
- instructions describing the recommended maintenance;
- content of the guarantee and validity in number of years must be stated. The guarantee must fulfil the requirement in O2;

☒ A copy of the operating and maintenance instructions, which must be included when the boiler is delivered to the installation technician and customer.

## 4 Information to distributors and installation technicians

### 018 Competence requirements

The manufacturer of the boiler must inform the distributor/installation technician of the following:

- the boiler must be installed by a certified installation technician and approved by the chimney sweep before you use it
- recommendations for chimney height (in meters insulated chimney), from the boiler flue. The importance of the chimney is matched to the individual requirements for the boilers chimney draft. Moreover, recommendation to the height of the chimney must be a minimum of 1 meter higher than the ridge/housing highest point
- the importance of the customer/user being offered an annual service agreement
- the customer/user must have access to the installation manual and the operating and maintenance instructions.

Information provided to the distributor or installation technician.

### 019 Dimensioning and design of the heating system

The boiler's manufacturer must ensure that the installation technician has easy access to relevant information and technical data, so as to be able to perform correct dimensioning and design of the heating system. This also applies if the heating system is supplemented with a solar collector.

Declaration from the manufacturer of the boiler that the requirement is fulfilled.

### 020 Spare parts

Access to spare parts must be guaranteed for at least ten years after the manufacture of the boiler is discontinued.

Declaration from the manufacturer of the boiler that the requirement is fulfilled.

## 5 Quality and official requirements

To ensure that Nordic Ecolabel requirements are fulfilled, the following procedures must be implemented.

If the manufacturer's environmental management system is certified to ISO 14 001 or EMAS, and the following procedures implemented, it is sufficient for the accredited auditor to certify that the requirements are observed.

### 021 Nordic Ecolabel licence person

The company shall appoint a person responsible for ensuring the fulfilment of Nordic Ecolabel requirements, and a contact person for communications with Nordic Ecolabelling.

A chart of the company's organizational structure detailing who is responsible for the above.

### 022 Documentation

The licensee must be able to present a copy of the application, and factual and calculation data supporting the documents submitted on application (including test reports, documents from suppliers and suchlike).

Checked on site.

**023 Quality of the boiler**

The licensee must guarantee that the quality of the production of the Nordic Swan Ecolabelled boiler is maintained throughout the validity period of the licence.

- Procedures for collating and, where necessary, dealing with claims and complaints regarding the quality of the Nordic Swan Ecolabelled boiler.

**024 Planned changes**

Written notice must be given to Nordic Ecolabelling of planned changes in products and markets that have a bearing on Nordic Ecolabel requirements.

- Procedures detailing how planned changes in products and markets are handled.

**025 Unplanned nonconformities**

Unplanned nonconformities that have a bearing on Nordic Ecolabel requirements must be reported to Nordic Ecolabelling in writing and journaled.

- Procedures detailing how unplanned nonconformities are handled.

**026 Traceability**

The licensee must have a traceability system for the production of the Nordic Swan Ecolabelled boiler.

- Description of/procedures for the fulfilment of the requirement.

**027 Take-back system - removed**

The Nordic Swan Ecolabelling's Criteria Group decided on the 9 October 2017 to remove this requirement.

**028 Legislation and regulations**

The licensee must guarantee adherence to safety regulations, working environment legislation, environmental legislation and conditions/concessions specific to the operations at all sites where the Nordic Swan Ecolabelled product is manufactured.

**No documentation is required, but Nordic Ecolabelling may revoke the licence if the requirement is not fulfilled.**

**029 Marketing - removed**

The requirement is removed as decided by the Board of Directors 17 November 2014.

## Regulations for The Nordic Ecolabelling of products

When the Nordic Swan Ecolabel is used on products the licence number shall be included.

More information on graphical guidelines, regulations and fees can be found at [www.svanen.se/regulations/](http://www.svanen.se/regulations/) or at [www.nordic-ecolabel.org/regulations/](http://www.nordic-ecolabel.org/regulations/)

## Follow-up inspections

Nordic Ecolabelling may decide to check whether the boiler fulfils Nordic Ecolabel requirements during the licence period. This may involve a site visit, random sampling or similar test.

The licence may be revoked if it is evident that the boiler does not meet the requirements.

Random samples may also be taken in-store and analysed by an independent laboratory. If the requirements are not met, Nordic Ecolabelling may charge the analysis costs to the licensee.

## How long is a licence valid?

Nordic Ecolabelling adopted the criteria for boilers for solid biofuel on 11 June 2014. The criteria are valid until 30 June 2019. **Version 3.0**

On 17 November 2014 the Board of Directors decided to remove requirement O29 Marketing. This has been done as an editorial change the version has not been changed.

On the 9 October 2017 Nordic Ecolabelling's Criteria Group decided to remove O27 Take-back system. This has been done as an editorial change the version has not been changed.

Nordic Ecolabelling's Criteria Group decided on 7 February 2018 to prolong the criteria with 16 months to the 31 October 2020. **Version 3.1.**

Nordic Ecolabelling decided on 19 December 2018 to prolong the criteria with 5 months to the 31 March 2021. **Version 3.2.**

## New criteria

In any forthcoming new criteria it will be relevant to include the following items in the evaluation:

- Materials and chemicals requirements
- RPS concerning whether the boiler is easy to dismantle for recycling
- Levels of emissions and efficiency required It must be investigated whether requirements are to be made of emissions of Black Carbon (BC)
- New technologies to improve the boiler's combustion
- Relation to EU ecodesign and energy labelling
- Impact of particle size on health

## Terms and definitions

<b>Term</b>	<b>Explanation or definition</b>
BC	Black Carbon
CO	Carbon monoxide
OGC	Organically bound carbon/volatile hydrocarbons
PAH	Polycyclic aromatic hydrocarbons
NO <sub>x</sub>	Nitrogen oxides
VOC	Volatile organic compounds
RPS	Relevance, Potential and Controllability: Tool to analyse whether environmental problems are relevant, whether there is potential for improvement, and whether a licence holder has the control measures in place to achieve these environmental improvements.
PVC	Poly vinyl chloride
CMR substances	CMR substances are <a href="#">carcinogenic</a> , <a href="#">mutagenic</a> and reprotoxic substances
PM <sub>2,5</sub>	Threshold value for fine particles (PM <sub>2.5</sub> )



## Appendix 1 Test

### **Test:**

The boiler must be tested to determine the content of flue gas emissions in the form of carbon monoxide (CO), hydrocarbons expressed as organic gaseous carbon (OGC), particles and efficiency. The test must take place in accordance with EN 303-5:2012.

NO<sub>x</sub> must be tested according to EN 14792.

The boiler's electrical consumption is determined according to EN 15456.

The test laboratory must draw up a complete test report with details of:

1. choice of testing method
2. results from all measurements
3. clear definition of the boiler
4. performance of testing according to the stated method, with the exception of the stated exemptions
5. specification of test fuels
6. the laboratory's fulfilment of the requirements stated and proof that the test is performed on an impartial and competent basis

Products to be tested are selected randomly from the manufacturer's stock or from the open market.

Nordic Ecolabelling is entitled to require supplementary documentation of the fulfilment of requirements and test reports.

### **Test laboratory:**

Test of emissions and efficiency must be performed by laboratories that are accredited to the current standard and which fulfil the general requirements in standard EN ISO/IEC 17025. A non-accredited laboratory may perform tests if the laboratory has applied for accreditation according to the current testing method, but has not yet been granted approval, or if accreditation is not available for the technical specification or proposed standard. In such case, the laboratory must prove that it is an independent, competent laboratory.

If there is no accredited test laboratory, another laboratory may be used, subject to approval by Nordic Ecolabelling.

Noise can be tested by the manufacturer of the boiler if the manufacturer has been inspected by the notified authorising body in accordance with Directive 2002/14/EC relating to noise emission.

## Appendix 2 Declaration concerning materials requirements (O2) and metal coating of parts (O5)

### Manufacture of the boiler (to be completed by the manufacturer of the boiler)

Name of boiler:
Manufacturer:

### Materials requirements (O2)

The following requirements are fulfilled:  Yes  No

- Materials and construction must comply with relevant requirements in the current standard, EN 303-5:2012. The requirement includes, for example, quality, thickness of materials, durability and temperature control (safety) in the boiler and materials.

We hereby declare that

- A guarantee for materials and construction faults of at least five years is given for the bearing structure (excluding the interior of the combustion chamber) on normal use.

### Metal coating of parts (O5)

The following requirements are fulfilled:  Yes  No

- Metal parts not coated with lead (Pb), mercury (Hg), cadmium (Cd), chromium VI (CrVI), nickel (Ni) or compounds thereof.
- Exceptionally, parts may be coated with chromium III, nickel or compounds thereof in cases where this is necessary due to chemical or mechanical wear, or other documented special technical requirements.

Any chromium and nickel-plating processes must take place using cleaning techniques, ion-exchange techniques, membrane techniques or similar techniques, in order to be able to recover the metals to the greatest possible extent. Residual products from coating must be used in recycling or waste handling schemes. The system must be without a drainage system.

A report on any need for metal coating and which cleaning technique may be used by the boiler's manufacturer must be submitted separately.

The declaration has been drawn up on the basis of adequate information from the subsupplier.

**Manufacturer of the boiler, signature:**

Date	Name of company
Contact person	Telephone
Contact person (name in capitals)	E-mail

## Appendix 3 Declaration concerning component substances in chemicals

### Production of chemicals (to be completed by the chemicals producer/supplier)

Name of chemical product:

### Component substances in chemical products (O4)

The following requirements are fulfilled:

Yes  No

The following substances may not be included in the chemical product (e.g. glue, sealant, cleaning/degreasing products, paint and varnish) that are used in the final production of boilers, as well as for external coating:

- lead (Pb), mercury (Hg), chromium IV (CrIV), cadmium (Cd) and compounds thereof
- halogenated organic compounds
- alkylphenols, alkylphenol ethoxylates or other substances that can build alkylphenols or alkylphenol ethoxylates
- phthalates
- substances on the EU's candidate list in accordance with REACH, 1907/2006/EC article 59, paragraph 10 on the website of the European Chemicals Agency (ECHA). In the background document there is a link to the list.
- nanoparticles (from nanomaterials\*)

The following are exempted from the requirement to nanoparticles:

- Pigments\*\*
- Naturally occurring inorganic fillers\*\*\*
- Synthetic amorphous silica\*\*\*\*
- Polymer dispersions

\* The definition of nanomaterials follows the European Commission's definition from 18 October 2011 (2011/696/EU): "A nanomaterial is a natural, incidental or purposely manufactured material containing particles, in an unbound state or as an aggregate or as an agglomerate and where, for at least 50% of the particles in the number size distribution, one or more external dimensions is in the size range 1-100 nm."

\*\* Nano-titanium dioxide (nano-TiO<sub>2</sub>) is not considered a pigment and is therefore covered by this requirement.

\*\*\* This applies to fillers covered by appendix V point 7 in REACH.

\*\*\*\* This applies to traditional synthetic amorphous silica. Chemically modified colloidal silica can be included in the products as long as the silica particles form aggregates in the final product. The surface treatment of surface-treated nanoparticles must fulfil requirement to component substances in chemical products.

There is exemption from the list for metal coating of parts. On metal coating of parts, requirement O5 must be fulfilled.

*The following definition must be used concerning "included" Unless otherwise stated, included substances are all substances in the product, including additives (such as preserving agents or stabilisers) in the raw materials, but not contaminants from raw materials production. Contaminants are residual substances from raw materials production that are included in the finished product in concentrations below 100 ppm (0.0100% by weight, 100 mg/kg), but not substances added deliberately to a raw material or product for a purpose, irrespective of the quantity. Known degradation products from constituent substances are also considered to be included.*

**Producer/supplier of the chemical:**

Date	Name of company
Contact person	Telephone
Contact person (name in capitals)	E-mail

## Appendix 4 Declaration concerning labelling of plastic elements

### Manufacture of the boiler (to be completed by the manufacturer of the fireplace)

Name of boiler:
Manufacturer:

### Labelling of plastic elements (O6)

The following requirements are fulfilled:

 Yes

 No

Plastic elements weighing more than 50 g must be labelled in accordance with ISO 11469.

Cables and plastic parts with a surface smaller than 200 mm<sup>2</sup> are not subject to the requirement.

### Manufacturer of the boiler, signature:

Date	Name of company
Contact person	Telephone
Contact person (name in capitals)	E-mail

## Appendix 5 Declaration concerning supplementary solar collectors

### Supplementary solar collectors (to be completed by the producer/supplier of the solar collector)

Name of solar collector:
Producer/supplier:

### Solar collector (O11)

The following requirements are fulfilled:

Yes  No

- Supplementary solar collectors for the Nordic Swan Ecolabelled boiler are type-approved in accordance with EN 12975.

### Producer/supplier of the solar collector, signature:

Date	Name of company
Contact person	Telephone
Contact person (name in capitals)	E-mail

## **Appendix 6 Marketing of Nordic Swan Ecolabelled boilers for solid biofuel - removed**

The appendix is removed as decided by the Board of Directors 17 November 2014.