



Certification reference standard NF 009
“Domestic Appliances using Liquid or Solid Fuels”

TECHNICAL APPENDIX A
Additional specifications for heating and cooking appliances

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Identification No.: NF 009
Revision No.: 6
Date of application: 11/01/2019

A-1. Definition of families and ranges

Definition of families and ranges

The product definitions for appliances other than biomass boilers are given in the respective applicable product standards. See technical reference standard, § 2.1.

The definition of systems and ranges only applies to biomass boilers.

A product family is made up of boilers fired by identical fuels. The families are thus defined as follows by fuel family:

- Log family
- Pellet family
- Wood chip family
- Other biomass family

Within the same family, a product range is made up of the following elements:

- The same type of heating unit
- The same heat exchange principle
- The same type of combustion
- The same control principle for automatic boilers

Only the size and power vary.

A-2. Technical specifications and test methods

This appendix to reference standard NF - 009 Heating appliances covers all of the appliances defined in § 2.1 of the technical standard. It describes the additional specifications mentioned in the technical reference standard § 2.1.2.

A-2.1. The certified characteristics:

See § 1.2 of the technical reference standard

A-2.2. The performance thresholds

In addition to the list of certified characteristics specified in § 1.2 of the technical reference standard, the performance threshold that shall be expected in order to be eligible for the mark NF 009 heating are described below for each family of heating appliances.

For liquid fuel stoves:

- Output: $\geq 75\%$
- CO emissions: ≤ 0.4 g/MJ

- Soiling index: ≥ 3 when fuel oil is used
 ≥ 2 when kerosene is used

In accordance with the European Ecodesign Directive 2015/1888, the performance thresholds for heating appliances other than biomass boilers and liquid fuel stoves are defined as follows:

For closed fires, output: $\geq 72\%$ at nominal power applicable on 01/01/2018

%CO emissions: $\leq 0.3\%$ at nominal power and 13% O₂

NO_x 130 mg/kWh at inlet

For biomass boilers:

Class 5 for output and emissions at nominal power

Class 5 for output and emissions at intermediate power for boilers that operate within a power range

For wood stoves, inset appliances, boilers, and cookers, Regulation 2015/1185 applies on 01/01/2022 for appliances with nominal power ≤ 50 kW.

The season efficiency:

Open fire place $\geq 30\%$

Closed fire place $\geq 79\%$ for pellets and 65% for others

The requirements on emissions of the European Erp Directive, applicable from 01/01/2022

Particles

Open fire places: 50 mg/m³ at 13% O₂ or 6 g/kg dry matter

Closed fire places: 40 mg/m³ at 13% O₂ or 2.5 (1.2 according to method) g/kg dry matter (pellets) and 40 mg/m³ at 13% O₂ or 5 (2.4) g/kg dry matter (others).

Cookers: 40 mg/m³ at 13% O₂ or 5 (2.4) g/kg dry matter

COG

Open fire places: 120 mgC/m³ at 13% O₂

Closed fire places: 60 mgC/m³ at 13% O₂ (pellets) and 120 mgC/m³ at 13% O₂ (others)

Cookers: 120 mgC/m³ at 13% O₂

CO

Open fire places: 2,000 mg/m³ at 13% O₂

Closed fire places: 300 mg/m³ at 13% O₂ (pellets) and 1,500 mg/m³ at 13% O₂ (others)

Cookers: 1,500 mg/m³ at 13% O₂

NO_x

Open fire places: 200 mg/m³ at 13% O₂

Closed fire places: 200 mg/m³ at 13% O₂ (biomass) and 300 mg/m³ at 13% O₂ (fossil)

Cookers: 200 mg/m³ at 13% O₂ (biomass) and 300 mg/m³ at 13% O₂ (fossil)

The requirements regarding indications: from 01/01/2022, the following information shall be provided to installers and users:

The installation manual for installers and users, and free website access by the manufacturer or their representative, or importer, and shall contain the following information:

The technical information indicated in Table 1 of the regulation page L193/10 to L193/12

Any precautions specific to the assembly, installation and regarding maintenance. Information concerning the dismantling, recycling or final end-of-life disposal.

A-2.3. Characterisation methods and tests

A-2.3.1 Admission audit and tests:

The admission audit is obligatory in accordance with the requirements set out in § 2.3 of the technical reference standard for quality management and A-3 for production plant inspections.

For boilers for which final assembly takes place in France, but the main component of which (for example the heating unit) is assembled by a subcontractor, the admission audit can only be performed at a final assembly plant if the inspection provisions are deemed adequate at the final assembly plant.

The admission tests on the certified characteristics are performed in accordance with the standards applicable to the products by the mark laboratories set out in the technical reference standard.

NF 009-certified products shall comply with all of the applicable European and French regulations and directives in force.

Tests performed at other laboratories may be taken into account under the following conditions:

- The laboratory is ISO 17025-accredited by COFRAC or equivalent, or by an EA agreement signatory accreditation body, for the relevant tests.
- The test report is no more than 10 years old.
- If applicable, additional tests on the characteristics deemed necessary by Eurovent Certita Certification, performed by the mark laboratories, if the previous tests were performed with the previous version of the standard.

Eurovent Certita Certification checks the laboratory's accreditation and the scope of its accreditation when the admission application is examined.

For biomass boilers, the standby loss test is performed in accordance with test protocol EN 15502-1, with a Delta T = 50 K.

A-2.3.2 Follow-up audit and tests:

Follow-up audit: see technical reference § 3.2.1.1

The follow-up tests are performed solely at the mark laboratories on the samples taken during the annual follow-up audit, for all of the certified characteristics. The sampling procedure is defined in § 3.2.1.2 of the technical reference standard. In addition, the sampling procedure for the following biomass boilers applies:

For biomass boilers:

For boilers for which final assembly takes place in France, but the main component of which (for example the heating unit) is assembled by a subcontractor, the follow-up audit can only be performed at a final assembly plant if the inspection provisions are deemed adequate at the final assembly plant by Eurovent Certita Certification.

The frequency of the follow-up audit can be reduced to once every two years, if the admission audit and previous follow-up audit do not reveal any major nonconformities and the follow-up tests are compliant.

The tests are carried out in accordance with the applicable product standards.

The number of samples taken is defined as specified in § 3.2.1.2. of the technical reference standard, however:

- if the number of certified ranges ≤ 5 , 1 appliance sampled every 2 years from one range
- if the number of certified ranges ≥ 6 , 2 appliances sampled every 3 years from two different ranges

Where possible, the samples should be different from one follow-up year to the next.

A-2.3.3 Authorised tolerances in relation to performances during annual inspection tests

The tolerances permitted on the values measured during the follow-up tests comply with § 3.2.1.2.2 of the technical reference standard, and the model is considered to be compliant with the applicable requirements specified in § 2.1 and § 2.2 of the technical standard, if:

- a) the declared values comply with the requirements stated in § A-2.2 taking into account the acceptance criteria in § 3 of the technical reference standard;
- b) seasonal energy efficiency for space heating η_s is not more than 5% less than the declared value;
- c) the emissions comply with the following requirements: stated in § A-2.

A-3. Quality control and inspections at the production plant

The manufacturer shall set up a documented quality system in accordance with the applicable provisions of § 2.3. The sampling frequency is left to the manufacturer's initiative; however, it shall be representative of production.

In accordance with the requirements specified in the § 2.3 of the technical reference standard, the manufacturer shall have the means necessary to perform the inspections during and after manufacture defined below.

The inspection results shall be recorded in logbooks or other materials provided for this purpose and kept in accordance with documented procedures.

The inspection plan in place shall include at least the inspections and tests described below depending on the type of appliance. The inspection sampling frequency on the production line and on the final product is left to the manufacturer's initiative; however, it shall be representative of production.

Liquid fuel stoves

The following factory inspections and tests are to be performed:

A / Components to be inspected by sampling before assembly or using another evaluation method.

- ◆ Pot burner
- ◆ Combustion air limiter
- ◆ Constant level tank
- ◆ Reservoir

B / Inspections to be performed on appliances during the production cycle or on the final product.

All of the inspections are to be performed during the production cycle (self-inspection, flow-process grid, procedure, etc.).

Records are kept by sampling during the production cycle or on the final product.

◆ **Heating unit, window/cover(s):**

- Seal, by visual inspection

◆ **Pot burner:**

- Presence of washers or rings
- Seal with heating unit, if removable
- Operation of cleaning device

- ◆ **Combustion air limiter - draught limiter:**
 - Flap operation (free)
- ◆ **Baffle:**
 - Presence
- ◆ **Constant level tank:**
 - Position
- ◆ **Tubing:**
 - Tightening
- ◆ **Reservoir:**
 - Internal appearance
 - Presence of filter, plug, etc.
 - Tap operation (dry)
- ◆ **Protective shield:**
 - Presence
- ◆ **Drip pan:**
 - Presence (if removable)
- ◆ **Overall:**
 - General finish
 - Operation of removable and adjustment elements (door, cover(s), window, etc.)
- ◆ **Marking and manual:**
 - Nameplate
 - NF marking on certified products
 - Manual(s)

Automatically stocked wood pellet and wood chip stoves

The following factory inspections and tests are to be performed:

A / Components to be inspected by sampling before assembly or using another evaluation method.

Raw materials and components

Type - composition/specifications:

- Thickness
- Dimensions
- Finish

◆ **Pipe or sleeve:**

- Diameter \leq 160 mm, length \geq 25 mm

◆ **Ash pan and ash removal:**

- Collects residue efficiently under the grate
- Enables safe removal of residue without excess overflow during heating

◆ **Smoke register**

- This flue damper shall have a continuous opening \geq 20 mm² or 3% of the damper cross-section.

◆ **Insulation material**

- Insulation material specifications
- Density — thermal conductivity

◆ **Seals and sealing materials**

- Type, including identification or composition in the absence of a certificate of conformity
- Dimensions

B / Inspections to be performed on appliances during the production cycle or on the final product.

All of the inspections are to be performed during the production cycle (self-inspection, flow-process grid, procedure, etc.). Records are kept by sampling during the production cycle or on the final products

◆ **Ash pan**

◆ **Bottom grate**

◆ **Air supply:**

Thermostat, manual control, intake device dimensions, etc.

◆ **Combustion air register:**

- Flue damper

◆ **Combustion air bypass**

◆ **Ember grate**

◆ **Combustion chamber construction**

◆ **Convection system**

◆ **Supply system**

◆ **Fire doors/stoking doors**

◆ **Component sealing to prevent leaks**

◆ **Positioning of movable/interconnecting elements**

◆ **Marking and manual:**

- Nameplate
- NF marking on certified products
- Manual(s)

C / Cold checking of products fitted with electrical equipment.

The checks listed below shall be carried out on all products (complete inspection).

- Dielectric strength check
- Earth bonding check
- Leakage current check
- Inspection of marking

Note: These checks and inspections shall be performed after assembly and wiring of all of the elements forming the electrical equipment.

A-3.3. Open fires and inset appliances

The following factory inspections and tests are to be performed:

A / Components to be inspected by sampling before assembly or using another evaluation method.

- ◆ Automatic air regulation devices
- ◆ Draught dampers built in to the appliance

B / Inspections to be performed during the production cycle or on the final product.

All of the inspections are to be performed during the production cycle (self-inspection, flow-process grid, procedure, etc.).

Records are kept by sampling during the production cycle or on the final product.

- ◆ **Flue collar**
- ◆ **Door:**
 - Operation
 - Seal if required by product design

Note: the seal is checked according to the techniques and specifications of each manufacturer
- ◆ **Ignition vent:**
 - Operation
 - Compliance of control marking
- ◆ **Damper**
 - Model compliance (reference or other means of checking)
 - Operation
 - Compliance of control marking
- ◆ **Fixed air intake**
- ◆ **Ash removal device**
- ◆ **Removable elements of the heating unit:**

Note: these include the ash pan, grate, log holders, fire-dogs, baffles, etc.
- ◆ **Heating unit:**
 - Visual inspection and inspection of general appearance (material or assembly defects)
 - Inspection of heating unit seal using the appropriate method (visual and other inspection, etc.)
- ◆ **Protective shields (surrounding of heating unit where this exists)**
- ◆ **Identification plate**
- ◆ **Advisory text relating to installation and various warnings**
- ◆ **NF marking on certified products**
- ◆ **Manual: Fitness of manual for appliance**
- ◆ **Accessories and packages (for appliances in parts)**
- ◆ **Appearance and general finish**

C / Cold checking of products fitted with electrical equipment

The checks listed below shall be carried out on all products (complete inspection).

- ◆ **Dielectric strength check**
- ◆ **Earth bonding check**
- ◆ **Leakage current check**
- ◆ **Inspection of marking**

Note: These checks and inspections shall be performed after assembly and wiring of all of the elements forming the electrical equipment.

Metal cookers and stoves fired by solid fuels**A / Components to be inspected by sampling before assembly or using another evaluation method.**

- ◆ Automatic air regulation devices
- ◆ Draught damper built in to the appliance
- ◆ Insulators

B / Inspections to be performed during the production cycle or on the final product.

All of the inspections are to be performed during the production cycle (self-inspection, flow-process grid, procedure, etc.).

Records are kept by sampling during the production cycle or on the final product.

- ◆ **Flue collar**
- ◆ **Doors:**
 - Operation.
 - Closing/Seal.

Note: the seal is checked according to the techniques and specifications of each manufacturer.

- ◆ **Ignition vent:**
 - Model compliance (reference or other means of checking).
 - Compliance of control marking.
 - Operation.
- ◆ **Choke flap**
 - Model compliance (reference or other means of checking).
 - Compliance of control marking.
 - Operation.
- ◆ **Ash removal device: Operation.**
- ◆ **Fixed air intake or thermostat presetting**
- ◆ **Ash pan:**
 - Presence.
 - Compliance.
- ◆ **Removable elements of the heating unit:**
 - Presence.
 - Compliance of parts.

Note: these include the ash pan, grate, log holders, fire-dogs, baffles, etc.
- ◆ **Heating unit:**
 - Visual inspection and inspection of general appearance (material or assembly defects).
 - Inspection of heating unit seal using the appropriate method (visual and other inspection, etc.).
- ◆ **Marking on the appliance:**
 - Presence and position.
 - Compliance of information (if this has not been checked before assembly).
 - Presence of NF marking for certified products.
- ◆ **Manual:**
 - Fitness of manual for appliance.

◆ Accessories and packages (for appliances in parts):

- Appearance and general finish.

C / Cold checking of products fitted with electrical equipment.

The checks listed below shall be carried out on all products (complete inspection).

- Dielectric strength check,
- Earth bonding check,
- Leakage current check,
- Inspection of marking.

Manually and automatically stoked biomass boilers

The manufacturer shall produce an inspection plan covering the inspections and tests necessary during the production process and specifying the following:

- 1) the inspection system,
- 2) the person responsible for Quality Assurance,
- 3) the inspections and tests necessary, together with the corresponding limit values and
- 4) the measuring and test equipment required and the inspection thereof
- 5) inspection records shall be retained for at least 5 years.

A / Components to be inspected by sampling before assembly or using another evaluation method**◆ Compliance of construction materials and welds used**

The manufacturer shall ensure that the construction materials are compliant. The materials specification shall be certified in accordance with EN 10204. These certificates shall be obtained by the boiler manufacturer.

The welders shall be qualified for the material to be used.

Welds shall be systematically and regularly inspected by experienced inspection personnel.

The thickness of the walls under pressure shall comply with the standard.

B / Tests during standard production:**◆ Pressure test:****For steel or non-ferrous sheet metal boilers:**

- Each boiler shall be tested during production and the pressure test shall be at least 1.43 x OP. The result shall be recorded in a test report.

For non-ferrous cast metal elements:

- Each boiler element shall undergo a cold hydraulic test with a pressure of 2 X OP (minimum of 8 bar). The maximum test pressure is 10 bar.
- The thickness of the walls of the boiler elements shall be inspected during production in accordance with the requirements established.
- The limit value of the wall thickness at each measurement point shall be determined by subtracting the permitted tolerance from the nominal thickness.

- The boiler elements and parts under pressure shall bear the following information:

- manufacturer or manufacturer's logo,
- type of material,
- date cast,
- model number,
- mark of conformity if this exists.

Boiler shell:

- Each boiler shall undergo a hydraulic pressure test at 1.3 times OP (at least 4 bar) before the insulation is fitted on the manufacturer's premises. For boilers that are assembled on site by the installer, the manufacturer shall provide information about the conditions for performing this pressure test. During these hydraulic tests, no sealing defects shall appear.

◆ **Marking and manual:**

- Nameplate
- NF marking on certified products
- Manual(s)

C / Cold checking of products fitted with electrical equipment.

◆ **Electrical safety: (complete inspection).**

- Dielectric strength check,
- Earth bonding check,
- Leakage current check,
- Inspection of marking.