



PEP ecopassport® PROGRAM

PSR

SPECIFIC RULES FOR DIRECT, VISIBLE, FIXED ELECTRIC HEATING APPLIANCES

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According to PSR-model-ed1.1-EN-2015 05 26

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1. Introduction

This reference document complements and explains the Product Environmental Profile (PEP) Drafting Rules defined by the PEP ecopassport® program (PEP-PCR ed3-EN-2015 04 02), available at <http://www.pep-ecopassport.org>.

It defines the additional requirements applicable to direct, visible, fixed electric heating appliances. Compliance with these requirements is necessary to:

- Qualify the environmental performance of these products on an objective and consistent basis,
- Publish PEPs compliant with the PEP ecopassport® program and international reference standards.¹

This reference document was drawn up in compliance with the open, transparent rules of the PEP ecopassport® program with the support of stakeholders and professionals in the direct, visible, fixed electric heating appliances market professionals and stakeholders.

	www.pep-ecopassport.org
PSR reference	PSR-0002-ed2.0 -EN-2017 10 17
Critical review	The third-party Critical review was carried out by B4green consulting™, member of the Swiss cooperative society Neonomia. The declaration of conformity published on 09/10/2017 can be found in the Appendices.
Availability	The Critical review report is available on request from the P.E.P. Association contact@pep-ecopassport.org
Scope of validity	The critical review report and the declaration of conformity remain valid within 5 years or until the PEP Drafting Rules, or the normative reference texts to which they refer, are modified.

With the publication of the PCR edition 3 (PEP-PCR-ed3-EN-2015 04 02), this PSR was the object of an impact study which led to an editorial revision. This PSR also integrates modifications to facilitate the use of PEP for building LCA in accordance with EN 15978.

¹ISO 14025, ISO 14040 and ISO 14044 standards

2. Scope

In accordance with the general instructions of the PEP ecopassport® program and additional to the PCR, "Product Category Rules", of the PEP ecopassport® eco-declaration program, this document sets out the specific rules for direct, visible, fixed electric heating appliances and defines the product specifications to be adopted by manufacturers in the development of their Product Environmental Profiles (PEPs) particularly with regard to:

- the technology and its type of application,
- the conventional reference lifetime taken into account for the Life Cycle Assessment (LCA),
- the conventional use scenarios to be adopted during the product use stage.

These specific rules only apply to direct, visible, fixed electric heating appliances fitted with electronic regulators, as described below. These specific rules do not cover other radiant panel electric floor-standing type, radiant plaster ceiling type or modular radiant ceiling type appliances, and in general appliances incorporated into the built structure, since their installation, use and end of life stages, as well as their lifespans are different from those of direct, visible, fixed electric heating appliances.

These specific rules may cover the direct, visible, fixed electric heating appliances governed by particular rules, such as those described in paragraph 6.3 - Bibliography of prescriptive rules - of these specific rules.

2.1. Families of products

The NF ELECTRICITE PERFORMANCE in force on the date these specific rules 6.5 References are validated is used as reference in defining each type of direct, visible, fixed electric heating appliance.

2.1.1. Convector type direct, visible, fixed electric heating appliance

A convector type direct, visible, fixed electric heating appliance may be:

"An appliance in which heating of at least one concealed part still in contact with the air in the room, exceeds 75K in normal use. The air is evacuated by natural convection through one or more exhaust openings.

Note: "Concealed part" means that the part cannot be seen from a point 2m in front of the appliance and 1.2m above the ground when the appliance is installed. ". (cf paragraph 6.3.3.1.1 NF Electricité of this document).

2.1.2. Radiant panel type direct, visible, fixed electric heating appliance

A radiant panel type direct, visible, fixed electric heating appliance may be:

"an appliance in which the heating of at least 80% of the visible surface of the heating element is over 75K in normal use, and for which the ratio between the visible surface area of the heating element and that of the total surface area of the front panel is at least 40%. A metal grille, perforated over at least 50% of its surface will be considered as being transparent to radiation.

Note: "visible surface" is considered to be the surface area of the heating element seen without the grille in place. The visible surface may be seen through a solid material transparent to heat radiation. Materials such as quartz are considered to be transparent to this radiation, but not ordinary glass. "Concealed part" means that the part cannot be seen from a point 2m in front of the appliance and 1.2m above the ground when the appliance is installed." (cf paragraph 6.3.3.1.1 NF Electricité of this document)

2.1.3. Electric radiator type direct, visible, fixed electric heating appliance

An electric radiator type direct, visible, fixed electric heating appliance may be:

"An appliance in which temperature dispersion is controlled, and that complies with the following particular conditions:

- a permanent hot point: temperature variations on the frontage shall not exceed 15K at rated power over an operating period of 2 hours,
- a limited surface temperature: the heating of the external surfaces shall not exceed 70K at nominal output power,
- homogeneous heat emission: maximum surface temperature dispersion of 30K. "

(cf paragraph 6.3.3.1.1 NF Electricité of this document)

2.1.4. Direct, visible, fixed electric heating appliance, with towel dryer secondary function

A direct, visible, fixed electric heating appliance, with towel dryer secondary function (such as towel-dryer radiator) may be:

"Appliance which may be furnished with one or more additional functions, as long as these comply with the following requirements:

- Air output heating: maximum 100K / average 70K
- External surfaces heating: average 70K at P_n (nominal output power),
- Timer duration (if function not controlled) 2 hours maximum,
- Bare wire resistance permitted only for a blower function".

(cf paragraph 6.3.3.1.1 NF Electricité of this document)

2.2. Consideration of innovative functions, not included in this document

The specific rules in the PCR for direct, visible, fixed electric heating appliances will take account of any technological development, as long as it:

- complies with the legal and regulatory requirements; this must be demonstrated in the accompanying report,
- is the subject of a request for inclusion in the rules specific to DIRECT, VISIBLE, FIXED ELECTRIC HEATING APPLIANCES made to the PEP association, which will give its decision based on the description of the new technology and the evidence for the performances claimed.

3. Life cycle assessment of the reference product

3.1. Functional unit and reference flow description

These specific rules are additional to section 2.1 "Functional unit and reference flow description" of the PCR in force.

The life cycle assessment analysis carried out and the resulting PEP applies to the devices whose functions and composition are as defined below.

3.1.1. Functional unit

The functional unit is defined below:

« To produce a 1 kW heating power for a 17 years reference life time. »

The study is carried out in a 10m² room (volume 25 m³ – 2,5 meters of ceiling height).

The expression of the energy consumption is specified in kWh of final energy produced to deliver 1 kW of heat, according to the use scenario in paragraph 3.5.4.2 Energy consumption of active components (family 2) in these specific rules.

The whole study shall be performed for a 17 year reference lifespan of the appliance (cf paragraph 6.5 References of this document).

3.1.2. Reference flow description

The reference flow (energies and materials accounts meeting the UF requirements) is determined in the conditions determined by the UF defined in the paragraph 3.1.1. Functional unit Functional unit of present specific rules.

A "direct, visible, fixed electric heating appliance" (defined in paragraph 2 Scope) is understood as being a product with the following elements:

- a casing,
- one or more heating bodies,
- one or more control units,
- one or more sensor components built-in,
- a wall bracket (if required)

Two component families from these elements are identified in the appliance:

	Family 1	Family 2
Products family	Passive components	Active components Any direct, visible, fixed electric heating appliance, attached to the built structure with integrated control.
Definition	Components not consuming energy during the use stage	Components consuming energy during the use stage
Examples of components	Wall bracket	Casing, heating element, control units and sensor components of convectors, radiant panel heaters, electric radiators, radiators with a towel dryer secondary function

Table 1 – Product families covered by the PSR

3.1.3. Specific exclusions

This PSR does not require additional exclusions to section 2.2.8 “Exclusions from system boundaries” of the current PCR.

3.2. System boundaries

These specific rules are additional to section 2.2 “System boundaries” of the PCR in force.

All components delivered with the product and ensuring its proper working have to be included in the study scope.

3.3. Specific cut off criteria

This PSR does not require more conservative cut off than criteria defined in section 2.3 « Cut off criteria » of the current PCR.

3.4. Specific allocation rule

This PSR is additional to the paragraph 2.4 “Rules for allocation between co-products” of current PCR.

When a manufacturing process produces several co-products, the flows mass allocation rule must be applied on the basis of the study output mass.

3.5. Development of scenarios (default scenarios)

These specific rules are additional to the paragraph 2.5 Development of scenarios (default scenario) of PCR.

3.5.1. Manufacturing stage

The manufacturing stage of these specific rules supplements paragraph 2.2 – System boundaries – of PCR.

A direct, visible, fixed electric heating appliance consists of components:

- manufactured by the manufacturer itself,
- or ready to assemble.

3.5.1.1. Waste generated during the manufacturing stage

Manufacturers may remove manufacturing wastes themselves or be responsible for having it removed. The accompanying report will specify how the manufacturer, or anyone working on its behalf or account, should follow these stages identifying hazardous manufacturing waste from non-hazardous manufacturing waste.

When known, removal procedures (energy exploitation, landfill, incineration without exploitation) must be submitted and justified in the accompanying report, and associated environmental impacts taken into account.

Justification of removal procedures must therefore be supported in the accompanying report by the following evidence:

- a) for hazardous waste:** Documentation from the removal/exploitation channels used for each type of waste,
- b) for non-hazardous waste:** Documentation from the removal/exploitation channels used for each type of waste.

When the producer does not provide evidence of procedures for removing waste generated during the manufacturing stage of the appliance implemented, the default calculation for the removal is as follows:

30% of mass of raw product = 50% of incinerated waste and 50% of landfilled waste.

3.5.2. Distribution stage

The distribution stage of these specific rules supplements paragraph 2.2 – System boundaries – of PCR.

The producer's logistics flows up to the use location, including intermediate stages (logistics and/or distribution platforms) must be integrated into the life cycle analysis in the distribution stage.

3.5.2.1. Waste generated during distribution stage

During distribution stage, no additional rule than paragraph 2.2 – System boundaries – from PCR is required.

3.5.3. Installation stage

The installation stage of these specific rules supplements paragraph 2.2 – System boundaries – of PCR.

These installation conditions do not include use of particular consumables and/or products, to be listed if there is a wall support used as pattern for installation, already covered by the manufacturing stage LCA.

If there is no wall support pattern, the LCA report specifies all the components used to install direct, visible, fixed electric heating appliances. These elements must be described and listed in the installation stage of the LCA report.

3.5.3.1. Waste generated during installation stage

Packaging waste from direct, visible, fixed electric heating appliances produced during the installation stage comes under the category of non-hazardous waste and is removed, in principle, by the installer, once the direct, visible, fixed electric heating appliance has been installed.

Its removal is calculated as follows, by default*:

On the mass of the packaging	Cardboard, wood, cornstarch, cellulose	Plastic and other products
Share of packaging recycled	89%	21%
Share of packaging exploited for energy production	8%	32%
Share of waste incinerated (50%) or buried (50%)	3%	47%

Table 2 – Treatment scenarios by default of waste from installation stage

* Refer to sources of paragraph 6.5 References of present specific rules.

The impact from the plastic film, strapping, packing notes, labels or any other paper present on or in the packaging of the direct, visible, fixed electric heating appliance waste management is considered as negligible.

- Those wastes management is then included in the cut off rule and their quantity must be evaluated and documented in the LCA report to ensure that rules described in PCR paragraph 2.3 – Cut-off criteria are respected.
- Their transport toward treatment centers must be taken into account assuming a transport hypothesis of 100 km by lorry.

3.5.4. Use stage

The use stage of these specific rules supplements paragraph 2.2 – System boundaries – of PCR.

Once the appliance is installed, the use stage for direct, visible, fixed electric heating appliances includes:

- the electricity consumption,
- the transformation of electrical energy into heat, with a yield of 100%,
- the functions for optimizing energy consumption.

The local energy model is adopted as the production model for the electricity to be used to characterize environmental impacts from the use stage (or from use).

Energy consumption of a direct, visible, fixed electric heating appliance is expressed in kWh of final energy to deliver 1kW of heat, as specified for the reference product study specifications, described in paragraph 3.1 Functional unit and reference flow description Functional unit and reference flow description of these specific rules, using the component families identified below.

	Family 1	Family 2
Products family	Passive components	Active components Any direct, visible, fixed electric heating appliance, attached to the built structure with integrated control.
Rules for calculating consumption	Use rate: 100 %	Use rate: 14% per year* (or 28% for 6 months of heating)
Duration of use	Reference lifespan: 17 years	

Table 3 – Specificities of the energetic consumption by products' family

* The method for calculating the rate of use at 14 % per year is described in paragraph 6.1 Average annual working rate justification of a direct, visible, fixed electric heater of these specific rules.

3.5.4.1. Energy consumption of passive components (family 1)

There is no energy consumption during the use stage for this component family

3.5.4.2. Energy consumption of active components (family 2)

The consumption of a direct, visible, fixed electric heating appliance is expressed in kWh of final energy, in accordance with the functional unit, described in paragraph 3.1 Functional unit and reference flow description of these specific rules.

The following formula is used to calculate final energy consumption needed for a direct, visible, fixed electric heating appliance, during its reference lifespan:

$$C = RLT * n * (1 - (A + 0.5 B))$$

Where:

- **C:** Final energy consumption to heat for 17 years, expressed in kWh,
- **RLT:** Number of annual periods defined by the reference lifespan of the reference product,
- **n = 8760 * P * R * 0,14 :** 1-year consumption by a direct, visible, fixed electric heating appliance as described in the following table expressed in kWh /an,
- **A: Bonus related to type "A" energy saving functions** not requiring a predetermined action by the consumer, as described below, expressed in %,
- **B: Bonus related to type "B" energy saving functions** requiring a predetermined action by the consumer, as described below, expressed in %,

C	kWh	Final energy consumption expressed for the RLT	
RLT	years	17	Reference lifespan (constant)
n	kWh/year, calculated from:	8760	hours per year (365 days X 24 hours)
		P	Power of reference product expressed in kW
		R	Yield rate (performance) of the reference product in %
		14%*	Average annual working rate (constant)*
For example, consumption of a 1kW, without type A or B energy saving functions, is equal to: n = 1 226 kWh/year (or 8760hr * 1kW * 100% performance * 14% operating rate)			
A	Percentage of energy saving achieved by type "A" functions	Value of bonus from energy saving functions without predetermined action by the consumer, expressed as % (see table below).	

B	Percentage of energy saving achieved by type "B" functions	Value of bonus from energy saving functions with predetermined action by the consumer, expressed as % (see table below).
0,5	Coefficient applicable to type "B" functions:	A weighting coefficient of 0.5 is applied to the bonus percentage for type "B" functions. This energy saving functions necessarily imply a specific behavior from the end user. - Coefficient assumed by convention, while awaiting further studies

Table 4 – Energy consumption calculation description

* Average annual working rate of 14 % (independent from the device power): constant value of this rate justified in paragraph 6.1 Average annual working rate justification of a direct, visible, fixed electric heater of current specific rules.

The use of functionalities A and/or B in calculating the energy consumption of active products (family 2) for direct, visible, fixed electric heating appliances must be justified in the accompanying report.

The values for bonuses associated with type A and B energy saving functions are conventionally based on hypotheses shown in paragraph 6.2 Justification of bonus values for type « A » and « B » functions - of these specific rules. These working hypotheses are suggested for use while awaiting further studies.

Type "A" and "B" energy saving functions:

Type "A" functions: Energy saving functions without pre-determined action by the consumer		
	Description of function	Bonus (in %)
A1	Certified on-board absence detection function	17%
A2	Appliance with two-way communication with energy manager	17%
A3	On-board auto-programming system	17%
A4	Certified on-board window opening/closing detection system	6%
A5	Electric radiator with 2 heating bodies	9%
A6	Electric radiator with 1 heating body	5%
A7	Radiant panel	4%
A8	Convactor	0%
A9	Variation over time certified between 1 and 0.50	0%
A10	Variation over time certified between 0.50 and 0.30	2%
A11	Variation over time certified between 0.29 et 0	4%

Type "B" functions: Energy saving functions requiring a pre-determined action by the consumer		
	Description of function	Bonus (in %)
B1	On-board consumption indicator	9%
B2	Function for reset to recommended temperature settings	9%
B3	Programming function	13%

Table 5 – Type « A » and « B » energy saving functions

A1: Definition of an on-board absence detector system certified by an independent laboratory, related to the category of products covered by this PSR.

System built into the direct, visible, fixed electric heating appliance to detect the presence of people in a room. This detection system means that the appliance can automatically adapt its mode and/or setting temperature.

A2: Definition of a two-way communication appliance with an energy controller

Communication system between a direct, visible, fixed electric heating appliance and an energy controller for sending and receiving information to assist in particular in making energy savings.

A3: Definition of an on-board auto-programming system

System for defining automatic programming rules, independent of the user's action.

A4: Definition of an on-board window opening/closing detector system certified by an independent laboratory, related to the category of products covered by this PSR.

On-board system for automatically detecting opening and closing of a window and adjusting its operation accordingly.

A5 to A8: Definition of the type of direct, visible, fixed electric heating appliance

The type of direct, visible, fixed electric heating appliance is linked to a performance level of the appliance's technology, whose performance in terms of comfort and distribution of heat lead the user to alter the various temperature settings.

A9 to A11: Definition of Over-time variation (VT)

Certified value defining the over-time variation of an electronic controller, taken into account in heat control values of the French Thermal Regulations RT2012².

A value of VT may be chosen once:

- 1) it has been certified by an independent laboratory, related to the category of products covered by this PSR,
- 2) it is determined according to the following formula: $VT = ((0.5 \times DM + AM) / 2) \times 1.44$.

Where:

- MD (Mean deviation) = mean deviation values calculated from individual results obtained from certification tests for all products in a homogeneous family declared and defined by the applicant.

² JORF (1 January 2013) Order of 28 December 2012 relating to the thermal characteristics and energy performance requirements of new buildings and new parts of buildings other than those covered by Article 2 of the Decree of 26 October 2010 relating to the thermal and the energy performance of buildings

- MA (Mean amplitude) = mean amplitude values calculated from individual results obtained from certification tests for all products in a homogeneous family declared and defined by the applicant.

B1: Definition of an on-board consumption indicator

On-board indicator intended to encourage users of direct, visible, fixed electric heating appliances to set these appliances at a Comfort temperature of 19.0°C or an Eco temperature of 15.5°C.

B2: Definition of a reset function for recommended temperature settings

Automatic system for simultaneous reset of temperature settings to the recommended values (Comfort temperature at 19.0°C or Eco temperature setting at 15.5°C).

B3: Definition of a programming system

System for defining timer setting rules for the heating mode by the user or using pre-defined factory settings.

Any request for altering values noted in the specific rules applied to direct, visible, fixed electric heating appliances, made to the PEP association, must be accompanied by a technical dossier justifying the modification. The PEP association pronounces these requests according to the organisation's rules.

3.5.4.3. Maintenance

Direct, visible, fixed electric heating appliances do not involve maintenance or servicing during the use stage. Mean time between failures is not considered for this type of appliance.

If a new product on the market requires frequent maintenance or consumables, these elements will be incorporated in the study.

3.5.4.4. Waste generated during the use stage

No waste is considered here.

3.5.5. End of life stage

The end of life stage of these specific rules supplements paragraph 2.2 – System boundaries – of PCR.

Once at the end of its life, the direct, visible, fixed electric heating appliance enters the category of hazardous waste.

The end user is the final holder of the product.

The waste removal channel for this hazardous waste must comply with international, regional and local legislation.

At international level, the following prohibitions are in place:

- The Basel Convention ((scope: OECD countries³): prohibition on transfer of hazardous waste produced by OECD member countries to non-OECD countries, and restrictions on the shipment of other waste.
- Lomé Accords (scope: countries of the European Union and ACP⁴ (African, Caribbean and Pacific) countries): prohibition on transfer of hazardous waste produced by European Union member countries to ACP countries, and restrictions on the shipment of other waste.

Within the European Union, direct, visible, fixed electric heating appliance waste comes into the WEEE category (Waste from Electrical and Electronic Equipment) and obeys a restrictive, specific regulation noted in paragraph 6.3 Bibliography of prescriptive rules of present specific rules.

Regarding waste repurposing procedures, the study will include all stages of the process, up to intermediate storage before re-use.

Their transport stage must be taken into account assuming a journey by lorry of 100 km.

When the producer provides evidence of waste repurposing of its direct, visible, fixed electric heating appliance, the following documentary evidence will be attached to the accompanying report:

- Demonstration of membership of an eco-organisation authorised by the public authorities is equivalent to justification,
- Percentage of WEEE recovered with respect to the total EEE placed on the market (last known financial year),

³ <http://www.oecd.org/fr/apropos/membresetpartenaires/liste-des-pays-de-l-ocde.htm> (consulted on October 9th 2017)

⁴ <http://www.acp.int/fr/content/faq> (consulted on October 9th 2017)

In the case of a lack of precise and justified information, following the recommendation of the paragraph 4.3.6 – End of life of PCR ed.3, the specified values below are used:

On the raw product mass:	1st case: exploitation up to at least 80% (75% of which is recycling/reuse)	2nd case: exploitation below 80% (of which 75% is recycling/reuse)	3rd case: No evidence of exploitation
Proportion of product recycled	75%	40%	0%
Proportion of product exploited for energy production	5%	0%	0%
Share or product incinerated or buried	20%	60%	100%

Table 6 – Default end of life stage waste treatment scenario

3.6. Rules for extrapolation to a homogeneous environmental family

These rules are additional to section 2.6 "Rule(s) for extrapolation to a homogeneous environmental family" of the PCR.

When developing a PEP valid for a homogeneous family of direct, visible, fixed electric heating appliances, a weighting coefficient for environmental impact is applied to all power levels in one product homogeneous family, according to paragraph 3.1 - Functional unit and reference flow description - in these specific rules.

3.6.1. Rule(s) for extrapolation applied on manufacturing, distribution, installation and end of life stage

For all stages except for the use stage, a mass homothetic transformation coefficient is calculated for any power level of a homogeneous family, as following:

Coefficient at functional unit scale	$\left(\frac{\text{total mass of considered product (kg)}}{\text{total mass of reference product (kg)}} \right) \times \left(\frac{\text{Power of the reference product (kW)}}{\text{Power of the considered product (kW)}} \right)$
Coefficient at declared unit scale (additional information)	$\left(\frac{\text{total mass of considered product (kg)}}{\text{total mass of reference product (kg)}} \right)$

The mass of the product is considered as its total mass with or without its packaging, expressed in kilogram (kg). For each stage, total mass is expressed below:

- Manufacturing : total mass of the product including packaging
- Distribution : total mass of the product including packaging

- Installation : product packaging mass
- End of life : product mass without packaging

For example a homogeneous family of direct, visible, fixed electric heating appliances consisting of the following power levels would use the following mass homothetic transformation coefficients for the manufacturing and distribution stages:

Power of direct, visible, fixed electric heating appliances	Packaged weight, in kg	Mass homothetic transformation coefficient (uf), calculated from the weight of the reference product, being 5.50 KG
750 W	4.30	1.04
1000 W	5.50	1.00
2000 W	10.00	0.91

Table 7 – Example of manufacturing, distribution, installation and end of life extrapolation rule

3.6.2. Extrapolation rule applied in use stage

Environmental impacts generated in use stage are directly correlated to the product power.

For the use stage, the energy extrapolation coefficient to use for any other power of the same family is as follow:

Coefficient at functional unit scale	$\left(\frac{\text{Final energetic consumption of the considered product (kWh)}}{\text{Final energetic consumption of the reference product (kWh)}} \right) \times \left(\frac{\text{Power of the reference product (kW)}}{\text{Power of the considered product (kW)}} \right)$
Coefficient at declared unit scale (additional information)	$\left(\frac{\text{Final energetic consumption of the considered product (kWh)}}{\text{Final energetic consumption of the reference product (kWh)}} \right)$

For example a homogeneous family of direct, visible, fixed electric heating appliances consisting of the following power levels would use the following mass extrapolation coefficients during their use stage for a R yield of 100%, without “A” or “B” energy saving functions:

Power of direct, visible, fixed electric heating appliances	Final energy consumption (kwh)	Energetic extrapolation's coefficient (UF)
750 W	15636.6	1.00
1000 W	20848.8	1.00
2000 W	41697.6	1.00

Table 8 – Example of extrapolation rule in use stage

3.7. Rule(s) applying to joint environmental declarations

This PSR is complementary to section 2.7 “Rules applying to joint environmental declarations of the current PCR.

For joint environmental declarations, the study shall be conducted on a typical product, that shall be a 1000 W model, or the product closest to this level.

3.8. Requirements in primary and secondary data collection

These present rules complete paragraphs 2.9 « Primary data collection requirements » et 2.10 « Secondary data requirements » of PCR.

As far as possible, primary data (that is the data relative to the manufacturing stage of the reference product, belonging to an organisation) are given preference and must be justified within the LCA report, identifying:

- 1) primary data from a supplier, for single-sourcing,
- 2) in case of multi-sourcing, the primary data to take in to account are from the most significant suppliers, providing at least 50% of the supply (regarding the total quantity purchased). For example if 10 suppliers providing each 10 % of my supply, we shall consider at least 5 suppliers in order to have a comprehensive vision of the primary data supply. Any other rule has to be mentioned in the LCA report and the PEP.

This information is not always available for manufacturers of direct, visible, fixed electric heating appliances: in the absence of primary data, secondary standard data, i.e. taken from the database of the software used for the life cycle analysis, shall be used. The PCR details how to select LCI modules. If transport information is not available, that from the PCR, paragraph 2.5.3 – Transport scenarios, will be used.

The proportion (in %) of primary and secondary data used in the life cycle analysis for direct, visible, fixed electric heating appliances must be indicated in the LCA report, and can included in the PEP under the section describing environmental impact, to supplement the information required in paragraph 2.12 – Environmental impact calculation– of the PCR. This proportion is assessed in relation to the mass of the product.

3.9. Data quality evaluation

Rules specified in paragraph 2.11 « Data quality evaluation » of the current PCR apply.

3.10. Environmental impact calculation at FU scale

If the reference product has a different power than 1000W, and in order to match the functional unit as defined in paragraph 3.1.1 Functional unit of the present specific rules, environmental impacts of manufacturing, distribution, installation, use and end of life stages must be calculated at the FU scale as following:

$$\text{Environmental impacts of the PEP sheet} = \frac{\text{Environmental impacts of reference product}}{\text{Power of reference product (kW)}}$$

4. Drawing up the Product Environmental Profile

4.1. General information

Rules specified in paragraph 4.1 « General information » of current PCR apply.

The PEP must include:

- The subcategory and characteristics to declare according to paragraph 3.1.2
- The list of function assumed by the product(s) and option(s) proposed
- The use profile considered in use stage following paragraph 3.5.4
- Any other scenario different from the default scenario

4.2. Constituent materials

Rules specified in paragraph 4.2 « Constituent materials » of the current PCR apply.

4.3. Additional environmental information

The following specific rules supplement paragraph 4.3 « Additional environmental information » of PCR.

In the context of production of building scale Life Cycle assessments, environmental impacts of equipment must be taken at the product scale, and impacts due to energy consumption in use stage must be treated separately.

To facilitate the use of the PEP for the production of building LCA, the PEP may include:

- The environmental impacts table of the reference product, expressed at product scale (or declared unit) in complement to the environmental impact values declared at FU scale (see paragraph 3.10 Environmental impact calculation at FU scale for these specific rules). Values must be indicated in numerical values, expressed in their appropriate units with 3 significant digits (and optionally in percent) for each stage of the life cycle, and the total for each indicator of the complete life cycle assessment.

The following clarifications must be indicated in the PEP document, before each indicators table, in order to ensure the clarity and transparency for the user:

- For environmental impacts expressed at FU scale, the mention: «per kW of heat corresponding to the functional unit» must be indicated.
 - For environmental impacts expressed per declared unit, the mention: «per equipment corresponding to the reference product» must be indicated.
- Environmental impacts results in use stage treated as per module B decomposition (B1 to B7) in accordance with EN 15978 and EN 15804 standards. This decomposition is optional for direct, visible, fixed electric heating appliances because module B6 is representing 100% of the use stage, so B=B6.

PEP ecopassport®	Manufacturing stage (§ 3.5.1)			Distribution stage (§ 3.5.2)	Installation stage (§ 3.5.3)	Use stage (§ 3.5.4)							End of life stage (§ 3.5.5)				Benefits
	Product stage			Construction process stage		Use stage							End of life stage				Benefits
	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
EN 15978 / 15804	raw material supply	Transport	Manufacturing	Transport	Construction-installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction / Demolition	Transport	Waste processing	Disposal	Benefits and loads beyond the system boundary

Table 9 – Correlation table between decomposition of the life cycle by stage or by module

4.4. Environmental impacts

The present specific rules complete the paragraph 4.4 “Environmental impacts” of the current PCR.

The table of environmental impacts represents the environmental impact at UF scale as defined in paragraph 3.10 Environmental impact calculation at FU scale of the present specific rules.

So the total impact of the product in a real situation must be calculated by PEP user knowing the power of the device by multiplying the considered impact by the power associated to the study reference flow by the total number of kW of the device. This calculation is relevant only if the PEP does not include in the additional environmental information the table of impact indicators at product scale.

The following statement must be completed and presented in the PEP, before the impact indicator table at functional unit scale, in order to ensure clarity and transparency for the user:

The present declaration was developed considering the supply of 1 kW of heat. The real impact of the life cycle stages of the product installed in a real situation must be calculated by the declaration user by multiplying the considered impact by the total heating power of the device, in kW.

In the case of using extrapolation rules, following statement must be mentioned:

Extrapolation coefficients are given for the functional unit impact that is emission of 1 kW of heat. For each stage of the life cycle, impacts of the product are calculated by multiplying impacts of the declaration corresponding to the reference product by the coefficient of extrapolation. The column « Sum » must be calculated by adding the environmental impacts of each stage of the life cycle.

5. PEP update rules

Any PEP document recorded by the PEP association must be updated and re-registered when the direct, visible, fixed electric heating appliance to which it refers is modified, by an increase or reduction of more than 5% in:

- mass,
- new subcomponents,
- its environmental indicators considered as important,
- any other element considered as important.

6. Annexes

6.1. Average annual working rate justification of a direct, visible, fixed electric heater

See paragraph 3.5.4.2 Energy consumption of active components (family 2).

Justification of mean annual working rate of a direct, fixed electric heater intended for residential and similar uses

Number of months with heating	6	(Source: legal heating period - 15 October to 15 April))
, that is	26 weeks	
, that is	4368 hours	
Average number in FF mode	0 weeks	
Mean temperature in Comfort mode	19 degrees	
Mean temperature in Eco mode	15,5 degrees	
Mean temperature in FF mode	8 degrees	
Mean outdoor temperature for the period	7,3 degrees	(source: analysis of normal seasonal temperatures in France))

No. of hours/week in Comfort mode	168
No. of hours/week in Eco mode	0

		0h	1h	2h	3h	4h	5h	6h	7h	8h	9h	10h	11h	12h	13h	14h	15h	16h	17h	18h	19h	20h	21h	22h	23h
Monday	Comfort	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Eco	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tuesday	Comfort	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Eco	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wednesday	Comfort	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Eco	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thursday	Comfort	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Eco	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Friday	Comfort	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Eco	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saturday	Comfort	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Eco	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sunday	Comfort	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Eco	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

No. of hours in Comfort mode	4 368	hours, or	82 992	degrees / hour
No. of hours in Eco mode	0	hours, or	0	degrees / hour
No. of hours in Frost Free mode	0	hours, or	0	degrees / hour
	4 368	hours, or	82 992	degrees / hour

A mean domestic temperature of	19,0 degrees, throughout the entire heating period
Or a mean temperature difference to overcome of	11,7 degrees

Calculation of losses to overcome (calculation rule G x V x Delta T from Bleu Ciel technical reference package)

G: Weighting coefficient	0,97	Source: Analysis of weighting coefficients by type of dwelling / year dwelling built / climate zone with detailed report on mod
delta T: Delta temperature	11,7	degrees to achieve
V: Height to ceiling	2,50	metres
giving "average losses" of	28,4	W / m ² to achieve (energy to be produced to heat my room to the required temperature setting)
Electricity performance	100%	

Average installation	100	W / m ² (=rules from the Bleu Ciel technical reference package)
A working rate of about	28,4%	or heating period concerned (= average rate of use of the appliance)
Mean about working rate of	14,0%	, or 1226,4 hour / year

Table 10 - Table of justification of mean annual working rate

6.2. Justification of bonus values for type « A » and « B » functions

(Refer to paragraph 3.5.4.2 Energy consumption of active components (family 2) of the present specific rules)

The values of type A and type B functions were calculated from a standardized use context.

All chosen scenarios try to be as representative as possible of the use observed in households.

6.2.1. Type « A » functions

Type "A" functions are all those energy saving functions that do not need the consumer to take any predetermined

action. Consumption by direct, visible, fixed electric heating appliances with these functions will be deducted from this bonus, using the calculation rule in paragraph 3.5.4.2. Energy consumption of active components (family 2) – of these specific rules.

A1: on-board absence detector system certified by an independent laboratory, related to the category of products covered by this PSR

The savings produced by an on-board absence detector system certified by an independent laboratory, related to the category of products covered by this PSR are associated with two phenomena:

Energy savings generated by a programming system (cf function B3),

		0h	1h	2h	3h	4h	5h	6h	7h	8h	9h	10h	11h	12h	13h	14h	15h	16h	17h	18h	19h	20h	21h	22h	23h
Prog 1	Comfort	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
	Eco	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Prog 2	Comfort	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0
	Eco	1	1	1	1	1	1	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	1
Prog 3	Comfort	0	0	0	0	0	0	1	1	1	0	0	0	1	1	0	0	0	1	1	1	1	1	1	0
	Eco	1	1	1	1	1	1	0	0	0	1	1	1	0	0	1	1	1	0	0	0	0	0	0	1

	M	Tu	W	Th	F	Sa	Su
Prog 1						1	1
Prog 2	1	1		1	1		
Prog 3			1				

Table 18 – Table of programming system devices control

Energy savings generated by the average room occupancy ratio, as described below.

	Private house	Apartment block
Average number of rooms	4,8	3,0
Average number of residents	2,6	2,1
Average room occupancy of	54%	70%
Distribution by type of dwelling	57%	43%
Average presence ratio per room of	61%	

Regulation per dwelling:

Comfort	48%
Eco	52%

Régulation par pièce:

Comfort	29%
Eco	71%

Source: "De plus en plus de maisons individuelles"
- Alain Jacquot, division Logement, Insee - mars 2003

Eco	3,5 °C difference between Comfort and Eco
	2,5 °C mean difference between Comfort and Eco
	7% savings by each degree reduction
	17% energy saving with programming system

Table 12 – Table of energy savings generated by mean presence rate by room

The bonus associated with this function cannot be cumulated with the bonuses related to an appliance having two-way communication with the energy controller (A2), an auto-programming system (A3) or a programming system (B3).

A2: appliance with two-way communication with an energy controller

The energy savings associated with communication of information with an energy controller are calculated on the basis of energy savings produced by an absence detection system certified by an independent laboratory linked to the category of products covered by this PSR (A1). The bonus associated with this function is therefore the same as the A1 type.

The bonus associated with this function cannot be cumulated with the bonuses linked to an on-board absence detection system certified by an independent laboratory linked to the category of products covered by this PSR (A1), an auto-programming system (A3) or a programming system (B3).

A3: on-board auto-programming system

An auto-programming system for saving energy adapts operation of the appliance to the user's life style, adjusting for contingencies. These savings correspond to the difference in settings between an unprogrammed appliance (temperature 19°C in Comfort mode) compared to one with programming to suit the users' ordinary life styles, as described below (Comfort mode homogeneous family at 19°C and Eco mode homogeneous family at 15.5°C).

	Private house	Apartment block
Average number of rooms	4,8	3,0
Average number of residents	2,6	2,1
Average room occupancy of	54%	70%
Distribution by type of dwelling	57%	43%
Average presence ratio per room of	61%	

Regulation per dwelling:

Comfort	48%
Eco	52%

Régulation par pièce:

Comfort	29%
Eco	71%

Source: "De plus en plus de maisons individuelles"
- Alain Jacquot, division Logement, Insee - mars 2003

Eco	3,5 °C difference between Comfort and Eco
	2,5 °C mean difference between Comfort and Eco
	7% savings by each degree reduction
	17% energy saving with programming system

Table 13 – Table of users average pace of life

The bonus associated with this function cannot be cumulated with the bonuses linked to an on-board absence detection system certified by an independent laboratory linked to the category of products covered by this PSR (A1), an energy controller (A2) or a programming system (B3).

A4: on-board window opening/closing detector system certified by an independent laboratory, related to the category of products covered by this PSR.

The energy savings generated by a window opening/ closing detection system, certified by an independent laboratory relating to the category of products covered by this PSR are calculated on the difference in consumption between an appliance fitted with this system (low operating rate, because room ventilation is detected) and an appliance without this function (very high operating rate, because ventilation of the room is not detected, with no settings made), based on an average time of 50 minutes with open windows throughout the heating season.

152	hrs ventilation during heating season	
4380	hrs of heating season	
3,5%	time not heated	
60%	working rate, if operating during ventilation without ventilation function, giving an annual working rate of:	14,7%
10%	working rate if operating during ventilation with ventilation function, or an annual average working rate at:	13,8%
6%	savings	

Table 14 – Energy savings generated by an on-board window opening/closing detector system

A5 to A8: types of direct, visible, fixed electric heating appliances

The sensation of comfort produced by the direct, visible, fixed electric heating appliance depends on its technology and the spatial distribution of heat in the room (vertical uniformity), encouraging the user to alter the setting as a result, in order to achieve the desired level of comfort. The setting therefore varies according to the technology concerned, and corresponds to:

- Electric radiator with 2 heating bodies = 19°C (set t°)

- Electric radiator with 1 heating element = 19.5°C (set t° +0.5°C)
- Radiant panel heater = 19.75°C (set t° + 0.75°C)
- Convector = 20.25°C (set t° + 1.25°C)

Gradient head - foot (delta between 0,15 and 1,7m height from the ground, in centre of the room)

Source: CERT: Centre d'essais et de recherche thermique

	Temp (°C)
Convector	2,25
Radiating	1,75
Radiator 1 heating	1,5
Radiator 2 heating	0,8

19 °C, being recommended comfort temperature, corresponding to user's feelings

Source: Code de la construction et a

1 °C, being the temperature difference perceptible by the human body

7% savings for each degree reduction

Source: Ademe - Guide N°3670

19 °C: temperature setting used for radiators with 2 heating bodies

19,5 °C: temperature setting used for radiators with 1 heating body

19,75 °C: temperature settings used for radiating heaters

20,25 °C: temperature setting used for convectors

8,8% bonus versus convectors

5,3% bonus versus convectors

3,5% bonus versus convectors

Table 15 - Table of set point temperature for different category of device

Example: the different of 1.25°C between a convector and a 2-panel electric radiator is in favor of the radiator, which has a bonus of:

Bonus A5 = 7% x 1.25°C = 8.75% bonus rounded to 9%.

Note: 7% is the reference value for energy saving for heating, obtained by reducing the temperature setting by 1°C.

Source: ADEME guide N°3670: "Living better at home".

A9 to A11: Over-time variation (VT):

Energy savings from the Over-time variation value are linked to the accuracy of the appliance's control, based on the commonly accepted value of 7% energy savings per degree Celsius at least.

7% savings per degree reduction

VT certified between 1,0 et 0,5

VT certified between 0,5 et 0,3 , or:

VT certified between 0,3 et 0,0 , or:

2,5% kWh bonus versus VT certified between 0,5 et 1

4,2% kWh bonus versus VT certified between 0,5 et 1

Table 16 - Table of energy savings by temporal variation

6.2.2. Type « B » functions

Type "B" functions are considered as all the energy saving functions that need the consumer to take a pre-determined action. Consumption by direct, visible, fixed electric heating appliances with these functions will be deducted from this bonus, using the calculation rule in paragraph 3.5.4.2 - Energy consumption of active components (family 2) of these specific rules.

B1 to B2: on-board consumption indicator and reset function for recommended temperature settings

The on-board consumption indicator and recommended temperature reset function are both linked to widely observed behaviors relating to heating by users of direct, visible, fixed electric heating appliances, according to the following scenarios.

Ideal comfort temperature	household %
17	2%
18	7%
19	16%
20	41%
21	14%
22	12%
23	4%
24	2%
25	2%

20,32 °C, as average temperature setting required by consumers

19 °C, as recommended comfort setting

7% savings per degree reduction

9% savings

Source: Ademe - Guide N°3670

Source: "La température du logement ne dépend pas de la sensibilité écologique" - consommations et mode de vie - Credoc - mars 2010

Table 17 - Table household behavior and savings

B3: programming system

Energy savings generated by a programmer timer system for the heating mode, correspond to the difference in setting between an unprogrammed appliance (temperature 19°C in Comfort mode) compared to an appliance with traditional average programming, as described below (Comfort mode homogeneous families at 19°C and Eco mode homogeneous families at 15.5°C). This type of programming reflects the type of programming most often offered by manufacturers (cf. sources used).

		0h	1h	2h	3h	4h	5h	6h	7h	8h	9h	10h	11h	12h	13h	14h	15h	16h	17h	18h	19h	20h	21h	22h	23h
Prog 1	Comfort	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
	Eco	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Prog 2	Comfort	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0
	Eco	1	1	1	1	1	1	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	1
Prog 3	Comfort	0	0	0	0	0	0	1	1	1	0	0	0	1	1	0	0	0	1	1	1	1	1	1	0
	Eco	1	1	1	1	1	1	0	0	0	1	1	1	0	0	1	1	1	0	0	0	0	0	0	1

	M	Tu	W	Th	F	Sa	Su
Prog 1						1	1
Prog 2	1	1		1	1		
Prog 3			1				

Table 18 - Table settings of devices with programming system

The bonus associated with this function cannot be totaled to the bonuses linked to an on-board absence detection system certified by an independent laboratory linked to the category of products covered by this PSR (A1), an appliance with two-way communication with an energy controller (A2) or an auto-programming system (A3).

6.3. Bibliography of prescriptive rules

These specific rules cover direct, visible, fixed electric heating appliances governed by particular international, European or local regulations, specified below.

The application of this document outside France may be the subject of an introduction to specific regulations that can be used in the country of sale, as given in paragraph 6.3.3 - Local standards of these specific rules.

This is not a complete list of the standards concerned. Their current versions must be used.

6.3.1. International Standards

Standards relating to domestic electrical equipment and similar, as specified by the French Union Technique de l'Électricité (UTE), member of CENELEC (European Committee for Electro-technical standardisation) and the International Electro-technical Commission (IEC), may be applied. The IEC versions of these standards described below also apply within Europe and France in their NF EN versions (see paragraph 6.3.2 European standard and 6.3.3 - Local standards - of these specific rules.

- IEC 61000-3-2:2014 Electromagnetic compatibility (EMC) – Part 3-2: Limits - Limits on harmonic current emissions (current used by equipment not more than 16A per stage)
- IEC 61000-3-3:2013 Electromagnetic compatibility (EMC) – Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per stage and not subject to conditional connection,
- CEI 61000-6-3:2006 Compatibilité électromagnétique (CEM) - Partie 6-3: Normes génériques - Norme sur l'émission pour les environnements résidentiels, commerciaux et de l'industrie légère, IEC 61000-6-3: Electromagnetic compatibility (EMC) – Part 6-3: Generic standards - standard on emissions in residential, commercial and light industry environments
- IEC 62233:2005 Household appliances and similar - Electromagnetic fields - evaluation methods.

6.3.2. European directives

The current version of the following European directives must be used:

- Directive on restriction of use of certain hazardous substances in electrical and electronic equipment (ROHS) (directive 2011/65/EU, OJ L174 of the 01/07/2011),
- Directive on waste from electrical and electronic equipment (WEEE) (directive 2012/19/EU, OJ L197 du 24/07/2012),
- Directive on general product safety (directive 2001/95/EC, OJ L011 du 15/01/2002),
- Directive on radio and terminal telecommunications equipment, and mutual recognition of their conformity (R&TTE - Radio and Terminal Telecommunication Equipment) (directive 1999/5/EC, OJ L091 du 07/04/1999)

6.3.2.1. CE marking

Directive 93/68 of July 22th 1993 (JOCE L220 of 30/8/93) regulates the use and appliance of CE marking, by setting out essential requirements relating to safety, health, the environment and consumer protection, in particular:

- Emission of interference: opening and closing dry contacts must not cause electromagnetic interference in the appliance's environment,
- Protection against interference: when operational, the appliance must not be sensitive to any electromagnetic interference (induced or radiated),
- Protection against lightning, induced currents, electro-static discharge and voltage fluctuations.

6.3.2.2. Electro-Magnetic Compatibility

- NF EN 55014-1:2007 Electromagnetic compatibility for household appliances: Emission standard
- NF EN 55014-2:2005 Electromagnetic compatibility for household appliances: Immunity standard,
- NF EN 61000-3-2:2006 Electromagnetic compatibility for household appliances: Emission of harmonic --currents,
- NF EN 61000-3-3:2014 Electromagnetic compatibility for household appliances: Voltage fluctuation,
- NF EN 62233:2013 Exposure to magnetic fields,
- Directive 2004/108, on harmonisation of member States' legislation on electromagnetic compatibility.

6.3.2.3. Low voltage

- Directive 2014/35/EU of February 26th 2014 (JOCE L096 of 29/03/2014): on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits

6.3.3. Local standards

6.3.3.1. Local standards / France

6.3.3.1.1. NF Electricity mark

Direct, visible, fixed electric heating appliances may be covered by NF Electricity marking requirements, as described in NF089 - Rules for certification of NF Electricity and NF Electricity Performance marks.

The NF Electricity mark is applied to appliances that comply with regulation safety standards.

6.3.3.1.2. NF Electricity Performance mark

Direct, visible, fixed electric heating appliances may be covered by NF Electricity Performance marking requirements, as described by the specification N° LCIE 103-13.

The certification granted by AFNOR and checked by LCIE is used to certify conformity:

- Of suitability for the function
- With the requirements of the NF Electricity Performance marking specifications.

6.4. Glossary

Acronym	Definition
LCA	Life Cycle Assessment
ACP	Africa Caribbean Pacific
ADEME	French Environment and Energy Management Agency
AFNOR	Association Française de NORmalisation [French Standards Agency]
C	Final energy consumption
EC	European Community
CEF	Comité Electrotechnique Français (French Electrotechnical Committee)
IEC	International Electrotechnical Commission
EMC	Directive 2004/108/CE, "ELECTROMAGNETIC COMPATIBILITY"
CENELEC	Comité Européen de la Normalisation Electrotechnique (European Committee for Electrotechnical Standardization)
WEEE	Waste Electrical and Electronic Equipment
UTD	Unified technical documents
EEE	Electrical and Electronic Equipment
Final energy	Final or available energy is the energy supplied to the consumer for consumption (petrol at the pump, electricity to the home, etc.)
LCI	Life cycle inventory
K	Degrees Kelvin: degrees of heating
kWh	Kilowatt hour
LCIE	Laboratoire Central des Industries Electriques (French Electricity Industries Central Laboratory)
NF	Norme Française
OECD	Organisation for Economic Cooperation and Development
PCR	Product Category Rules
PEP	Product Environmental Profile
P _n	Nominal output power of appliance: electrical power an electrical appliance receives when subject to its nominal voltage (1000W as regards the reference product for these specific rules).
RoO	Rate of operation

T°	Temperature in Celsius degrees
UTE	Union Technique de l'Electricité (French Technical Electricity Union)
VT	Over-time variation
W	Watt

6.5. References

Ref paragraph PSR	Description	Sources used
2.1	Definition of convector, radiant panel heater, electric radiator, towel dryer	NF 089 Certification rules of the NF electricity marks and NF electricity performance in force on the date these specific rules were registered
3.1	Unit quantifying the function studied	Article R*131-20 of the French construction and residential property code – P249
		NF Electricity Performance in force on the date these specific rules were registered
		Typical life study duration: CEE, Operation n° BAR-TH-158
3.1	Reference Product	Standard EN 60675:2015 Household electric direct-acting room heaters - Methods for measuring performance
3.5.3.1	Re-use of packaging waste from direct, visible, fixed electric heating appliances	ADEME (2008) " <i>Emballages industriels, commerciaux et ménagers</i> " (Industrial, commercial and household packaging) ADEME (2010) " <i>Bilan du recyclage 1999-2008: matériaux et recyclage détaillés par filière</i> " (Recycling report 1999-2008: materials and recycling in detail by channel), 102; 113
6.1	Justification of design rule, 100 W/m ²	Bleu Ciel (2010) " <i>Travaux Habitat et locaux professionnels</i> " technical reference package - Residential and professional premises works NF EN 12831-1:2017 Energy performance of buildings - Method for calculation of the design heat load 6 months heating, taken from legal heating period (15 October to 15 April) Weighting coefficient (G = 0.97) from Bleu Ciel Technical Reference package coefficients by type of accommodation / year of construction / climate zone and accommodation data taken from the itemised report modelling energy performance of the whole ANAH accommodation portfolio (2008).

6.2	Justification of Comfort and Eco temperatures in accommodation	Article R*131-20 of the French construction and residential property code – P249, repealed on January 1 st 2016
6.2	Justification of on-board programming system (A1/A2/A3/B3)	Benchmark for programming systems leaving the factory
6.2	Justification of temperature setting values to be considered in calculation of energy consumption	ADEME (November 2005) " <i>Une maison pour vivre mieux</i> " (Living better at home), Guide N°3670 19°C in living rooms, 16°C in bedrooms, is right for your health, your purse and your environment. One degree less, from 20°C to 19°C, perhaps means an extra woolly, but above all means a 7% drop in consumption.
6.2	Justification of certified absence detection system (A1)	Alain Jacquot, Insee, Accommodation division (2003) " <i>De plus en plus de maisons individuelles</i> " (More and more one-person dwellings)
6.2	Justification for bonus for window opening/closing detection system (A4)	EDF - electricity applications in buildings department - study into management of energy using rebate contacts EN 15232-1:2017 Energy Performance of Buildings - Energy performance of buildings - Part 1: Impact of Building Automation, Controls and Building Management CERT: " <i>Centre d'Essais et de Recherche thermique</i> " French heat testing and research centre
6.2	Justification of bonus according to the type of appliance (A5 to A8)	CERT: French heat testing and research centre
6.2	Justification of on-board consumption indicator and reset function for recommended temperature settings (B1 to B2)	Credoc (March 2010) " <i>La temperature du logement ne depend pas de la sensibilite ecologique</i> " (Temperature of the home does not depend on environmental awareness) - Consommations et mode de vie n°227
6.3.1	International Standards	www.ute-fr.com
6.3.2	European standards	www.eur-lex.europa.eu
6.3.3	Local standards	NF 089 - Certification rules for NF Electricity and NF Electricity Performance marks

6.6. Declaration of conformity



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IMPULSION FOR PRODUCT SUSTAINABILITY

Critical review certificate of PEP ecopassport® program technical rules

Document title: PSR 0002 – HEATING APPARATUS WITH DIRECT ELECTRICAL ENERGY WITH VISIBLE FIXED POST

Version: PSR-0002-ed2.0-EN-2017 10 17

Coordinator: ATLANTIC Group

Critical Review period: from September 5th to October 12th 2017

I. REFERENCES

The purpose of the critical review is to verify the document's compliance with the following references:

- ISO 14025:2006 Environmental labels and declarations - Type III environmental declarations - Principles and procedures
- ISO 14040:2006 Environmental management - Life cycle assessment - Principles and framework
- ISO 14044:2006 Environmental management - Life cycle assessment - Requirements and guidelines
- PCR-ed3-EN-2015 04 02 Product Category Rules for Electrical, Electronic and HVAC-R Products of the PEP ecopassport® program

This critical review was conducted in accordance with the recommendations of the following references:

- ISO/TS 14071:2014 Environmental management - Life cycle assessment - Critical review processes and reviewer competencies: Additional requirements and guidelines to ISO 14044:2006
- PEP-AP0017-ed2-EN-2015 02 13 Procedure for the development and adoption of PSRs – Product Specific Rules of the PEP ecopassport® program

II. CONCLUSIONS

The document on which the critical review was conducted does not contain any non-compliance with the references. Therefore, the technical rules of the PEP ecopassport® program established under reference PSR-0002-ed2.0-EN-2017 10 17 HEATING APPARATUS WITH DIRECT ELECTRICAL ENERGY WITH VISIBLE FIXED POST are deemed to comply.

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