

**PRODUCT CATEGORY RULES**  
**INCLINED ROOF COVERINGS**



VERSION 1.2/2022 EDITION JUNE 2022



Version 1.2.

Aveiro, June 2022

#### Developed versions

Version	Comments	Edition date
1.0	First version of the Product Category Rules document for the DAPHabitat System	10.02.2014 – February 2014
1.1	Extension of the document's validity period	18.11.2020 – November 2020
1.2	Update of the PCR document when updating the Standard EN 15804:2012+A2:2019	01.06.2022 – June 2022

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## GENERAL INTRODUCTION

### 1.1. DAPHabitat System

The DAPHabitat System is a Portuguese registration program of Type III Environmental Product Declarations (EDP) for product from habitat field. The Habitat field includes all the products and services involved in building and construction works.

This national registration program allows any company or interested entity to development or approval of Product Category Rules (PCR) and the registration of EDP, independent from its home country.

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### 1.2. Program Operator

The administration of the DAPHabitat system is a function of the Platform for Sustainable Construction. In this EDP registration system, the administrator is called the Program Operator.

Identification	Associação Plataforma para a Construção Sustentável
NIF	509 037 321
Localization	<u>Delegação:</u> Departamento de Engenharia Civil Universidade de Aveiro 3810-193 Aveiro Portugal
Contact	deptecnico@centrohabitat.net
website	www.centrohabitat.net






### 1.3. Product Category Rules

PCR are documents that contain the set of rules, requirements, and specific guidelines for the development of EDP, such as the parameters and categories of impact to declare, functional unit, system boundary, the life cycle stages to consider in the processes to be included, the biogenic carbon content, rules for the preparation of scenarios, rules for calculating the life cycle inventory and impact assessment, rules regarding additional environmental information, the conditions of comparability between construction products based on the information declared in the EDP, other information to declare, issues related to the verification and registration of the EDP in the database of the registration program.

## 1.4. PCR- basic module specific for construction products and services

This document was developed based on the PCR-model base document specifically for construction products and services. This document was prepared according to EN 15804:2012+A2:2019 and represents a supplement to the standard and any specific PCR document.



This document, specific PCR for inclined roof covering, within the scope of construction products and services, must define, at least, the reference service life and the relevant functional unit for the set of products it represents. This document was carried out following the procedure described in the General Instructions for the System, as well as with national and international standardization:

-  NP ISO 14025:2009 – “Rótulos e declarações ambientais – Declarações ambientais Tipo III – Princípios e procedimentos”<sup>1</sup>;
-  ISO 21930:2007 – “Building Construction – Sustainability in building construction”;
-  EN 15804:2012+A2:2019 – “Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products”;
-  NP EN ISO 14044:2010 – “Gestão ambiental – Avaliação do ciclo de vida – Requisitos e linhas de orientação”<sup>2</sup>;
-  NP EN ISO 14040:2008 – “Gestão ambiental - Avaliação do ciclo de vida - Princípios e enquadramento”<sup>3</sup>.

## 2. GENERAL INFORMATION

### 2.1. Scope and objective

This document establishes the framework that allows organizations to develop the following studies/documents:

-  Life Cycle Assessment (LCA) of the product(s) or service(s) object of the study and respective communication, for the inclined roof covering category;
-  EDP for products that serve as inclined roof covering.

The main objective of this PCR document is to ensure that the set of rules for the development of reliable and verifiable information in a EDP is described for products belonging to the category of “inclined roof coverings”, based on the LCA. This document is intended for all manufacturers (and other interested parties) of inclined roof coverings.

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#### Note

<sup>1</sup> ISO 14025:2009 – “Environmental labels and declarations – Type III environmental declarations – Principles and procedures”

<sup>2</sup> ISO 14044:2006 – “Environmental management – Life cycle assessment – Requirements and guidelines”

<sup>3</sup> ISO 14040:2009 - “Environmental management – life cycle assessment – Principles and framework”

## 2.2. PCR document identification

The identification data referring to the preparation of this version of the PCR document for inclined roof covering products are shown in **Table 1**.

**Table 1:** PCR document identification

NAME	PCR – Inclined Roof Coverings – V.1.2 (2015)	
REGISTER DATE AND NUMBER	10/02/2014   PCR003	
VERSION	<b>New</b> <input type="checkbox"/>	<b>Update x</b>
PCR COORDINATORS	Ricardo Mateus   ricardomateus@civil.uminho.pt Marisa Almeida   marisa@ctcv.pt	
AUTHOR(S):	Marisa Almeida   <a href="mailto:marisa@ctcv.pt">marisa@ctcv.pt</a> Karina Lopes   <a href="mailto:deptecnico@centrohabitat.net">deptecnico@centrohabitat.net</a>	
SECTOR PANEL	Some entities were contacted but there was no adhesion to the constitution of the Sector Panel.	
CONSULTATION PERIOD	12/08/2013 to 30/11/2013	
VALID UNTIL	June 2027	

Comments on this document can be sent to the Construção Sustentável Platform or to the document's coordinators.




To establish a document that allows international comparison, the DAPHabitat System needed to harmonize the document PCR - Inclined roof Coverings with other European registration programs. In this way, a study of other similar PCR documents was carried out.

**Table 2** shows the PCR documents consulted and adopted for the realization of the PCR document for inclined roof covering.

**Table 2:** Consultation of existing PCR documents in other EDP registration programs

International registration programs	PCR
<b>DAPHabitat System</b>	PCR- basic module to construction products and services. Version 2.2.
<b>The Norwegian EPD Foundation epd-norge.no</b>	Product – Category Rules (PCR) For preparing an environmental declaration (EPD) for Product Group <b>Roof waterproofing</b> . Draft Version – July 2012
<b>The International EPD System - Environdec</b>	Product Category Rules (PCR) for preparing an Environmental Product Declaration (EPD) for <b>Concrete roof coverings – concrete roof tiles and concrete complementary of the roof system</b> . Version 1.0 – 2008/06/16
<b>IBU environmental product declarations (Alemanha)</b>	PCR Guidance-Texts for Building-Related Products and Services. <b>Part B: Requirements on the EPD Roof Tiles</b> . Version 1.0 - 2012/07/16.
	PCR Guidance-Texts for Building-Related Products and Services. <b>Part B: Requirements on the EPD Aluminium roofing and cladding systems</b> . Version 1.1 - 2012/10/29.
	PCR Guidance-Texts for Building-Related Products and Services. <b>Part B: Requirements on the EPD Concrete roofing tiles</b> . Version 1.1 - 2012/10/29.
	PCR Guidance-Texts for Building-Related Products and Services. <b>Part B: Requirements on the EPD ETFE construction element</b> . Version 1.1 - 2012/10/29.
	PCR Guidance-Texts for Building-Related Products and Services. <b>Part B: Requirements on the EPD Fibre cement/Fibre concrete</b> . Version 1.1 - 2012/10/29.
	PCR Guidance-Texts for Building-Related Products and Services. <b>Part B: Requirements on the EPD Double skin metal faced sandwich panels</b> . Version 1.1 - 2012/10/29.
	PCR Guidance-Texts for Building-Related Products and Services. <b>Part B: Requirements on the EPD Corrugated bitumen materials for roofing and external wall cladding</b> . Version 1.1 - 2012/10/29.

After analysing the documents in **Table 2**, the need to prepare the PCR document for inclined roof coverings was concluded for the following reasons:

-  Some of the PCR documents are not yet in line with the principles of Standard EN 15804, which includes the basic rules for developing PCR for all construction products and services.
-  The PCR documents analysed are made for specific products within the category of inclined roof coverings, not including all products for inclined roof coverings considered in this document;
-  The PCR documents analysed include different specifications that may compromise the comparison between the EDP of similar products within the scope of inclined roof coverings according to point 6.7.2. of NP EN 14025: 2009.














### 3. PRODUCT GROUP DEFINITION

The product category “inclined roof coverings” includes different types of products designed to protect buildings against atmospheric actions (rain, wind, snow, etc.). There are several construction systems for inclined roofs, however, all strata that are in contact with the exterior are common, the final finish, usually called roof covering. Products for inclined roof coverings must guarantee the following functional requirements: non-permeability; sufficient strength to withstand stresses and impacts; have the lightness and be durable.

The type of products included in this category is usually simple and waterproof pieces, with a range of metallic materials, natural stones, artificial stones, bituminous, polymeric, mixed, etc.

In accordance with the harmonized European standards within the scope of CE Marking for Construction<sup>4</sup>, products, the products for covering sloped roofs can be:

-  Ceramic tiles;
-  Concrete tiles;
-  Aluminum tiles;
-  Plastic tiles;
-  Glass tiles;
-  Polycarbonate tiles;
-  Fiber cement tiles;
-  Slate tiles or other stone;
-  Galvanized steel sheets;
-  Bituminous corrugated boards;
-  Among others.

The DAPHabitat System allows similar products to be included in the same EDP, provided that the difference between the respective environmental impacts is less than 10% for each impact category and the same declared unit. This registration program also allows different types of EDP, as described in Chapter IV.3 of the document “General Instructions for the DAPHabitat System”.

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<sup>4</sup> The updated list can be consulted at the following: [http://www.Inec.pt/qpe/marcacao/mandatos/mandato\\_122.pdf](http://www.Inec.pt/qpe/marcacao/mandatos/mandato_122.pdf).

### 3.1. Main types of products for inclined roof coverings

The main types of coverings for inclined roofs are classified according to their continuity and dimension, as to their shape and as to their opacity. Thus, the coverings can be tiles, sheets, panels, or shells, with a flat, curved, wavy or pyramidal configuration. Additionally, the coatings can still be opaque, translucent, or transparent. The product description in EDP must contain the applicable product standard, national or European.

In Table A. 1 and Table A. 2 of ANNEX A, there are some standards for product relating to tiles. For undated references, the latest edition of the referenced document applies.

The product description to be included in the specific EDP should be detailed according to the example presented below.

*As **Ceramic tiles** are “products for discontinuous placement on sloping roofs and for wall coverings, which are manufactured by forming (extrusion and/or pressing), drying and firing of the prepared clay, with or without additives, they can be coated on all or part of their surface, with an engobe or an enamel”.*

In the EDP, the product group and the respective NACE codes (Statistical Nomenclature of Economic Activities of the European Community) must be specified following Decree-Law nº.381 / 2007 of 14 November, according to the following classification examples:

To ceramic tiles

- **NACE code:** C23 - Manufacture of other non-metallic mineral products; C2332 - Manufacture of bricks, tiles and other ceramic products for construction; C23322 - Manufacture of tiles;

To concrete tiles:

- **NACE code:** C23 - Manufacture of other non-metallic mineral products; C2361 - Manufacture of concrete products for construction;

To aluminium tiles and galvanized steel sheets:

- **NACE code:** C25 – Manufacture of metal products, except machinery and equipment; C2511 - Manufacture of metal construction structures.

## PCR – Inclined roof coverings

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For slate tiles or other stone types:









- **NACE code:** C23 – Manufacture of other non-metallic mineral products; C2370 - Sawdust, cutting and finishing of ornamental stones and other construction stones.

For fibercement tiles :

- **NACE code:** C23 – Manufacture of other non-metallic mineral products; C236 - Manufacture of concrete, plaster and cement products; C2365 - Manufacture of fibercement products.

### 3.1.1. Application

The products belonging to the category of wall coverings have a wide field of application in building and among other construction works, and can be applied in:

-  industrial buildings;
-  agricultural buildings;
-  accessory buildings and annexes and provisional facilities;
-  sports pavilions;
-  airports;
-  special large-span structures;
-  dwellings;
-  administrative and school buildings.

## 4. LCA CALCULATION RULES

### 4.1. Functional unit

The functional unit provides a reference for the quantification of the environmental performance of the product, being required for a cradle-to-grave EPD.

*“1t in (specify product and material) for wall covering with a reference service life (x years) and with the conversion factor of x (kg/m<sup>3</sup>)” - (packaging included)*

The specification of the product and material referred to above must be precise and objective so that the product is identified unambiguously, according **Table 3**.

The reference service life must be determined according to the indications in point 5.4.1. of the PCR document - basic model specific for construction products and services.

**Table 3:** Example units and their application

Examples
1 m <sup>2</sup> ceramic tile for roof covering for a 50-year reference life.
1 m <sup>2</sup> of galvanized steel sheet for roof cladding for a reference life of 50 years.

### 4.2. Declared unit

Declared unit can be:

*“1m<sup>2</sup> inclined roof covering produced in (specify product and material)” or “1 t inclined roof covering produced in (specify product and material)” (packaging included)*

However, another declared unit can be used provided the conversion factor(s) are provided for units of 1m<sup>2</sup> or 1 t.

**Table 4:** Example units and their application

Examples	Declared unit
1 piece	1 Portuguese ceramic tile produced for covering an inclined roof (45 x 25 cm) 1 sheet metal produced (dimensions to be declared)
Mass	1 t of inclined roof cladding produced in sheet metal (45 x 25 cm)

### 4.3. System boundaries

The system boundaries determine which information modules and unit processes that should be include in the LCA that underlies EDP.

Examples of unitary processes to consider in module A3 of the product stage, in a cradle-to-gate EDP:

 Ceramic roof tile:

- Preparation of paste;
- Moulding;
- Drying;
- Engobing;
- Cooking;
- Choice, packaging and storage.

 Cement Tile:

- Pre-extrusion;
- Injection;
- Application of resins;
- Natural drying;
- Selection;
- Packaging and storage.

As part of the definition of the system boundaries, a description must be made for each module included in the product's life cycle stages, as well as the establishment of a flow chart.

#### 4.3.1. Product Stage (mandatory)

The product stage is composed by information modules related to the extraction and processing of raw materials, its transport until the production site and the product production. The document PCR- base model describes some of the processes that should be considered in each sub-module A1, A2 and A3.

#### 4.3.2. Construction Process Stage

The construction stage is an optional stage and includes the information modules about the transport of products to the construction site and its installation in the building or in other construction works, including all materials supply and energy, as well the waste processing by the end of waste status or their final disposal. The document PCR- base model describes some of the processes that should be considered in each sub-module A4 and A5.

#### 4.3.3. Use Stage

The use stage is an optional step and is constituted by information modules covering the period from the delivery of the building or construction works as completed to its deconstruction or demolition. The duration of the use stage relative to the product may be different from the required lifetime of the building or construction work (for which the construction was designed).

The document PCR- base model describes some of the processes that should be considered in each sub-module B1-B7. However, in this document some characteristic examples of the product category “inclined roof coverings” are described.

#### **4.3.3.1. Modules step of using information for the construction of the components (B1-B5)**

##### **B1) Use of the installed product:**

Example: Release of substances from the roof covering (indoor or outdoor) into the air, soil or water.

##### **B2) Maintenance:**

Example: Accounting for the use of resources and respective impacts associated with the planned maintenance actions for cleaning and eliminating debris that accumulates in roof covering products.

##### **B3) Repair:**

Example: For a damaged roof covering, its repair includes the impacts associated with the production and transport of the materials necessary for the respective repair process (sealants, cleaning water, etc.), as well as the end of life of the resulting residues the repair process, including packaging.

#### **4.3.3.2. Information modules of use stage concerning the exploitation of construction (B6-B7)**

##### **B6) Energy consumption by the integrated technical systems in the building operational stage:**

If the inclined roof covering is not part of the technical systems integrated into the building (as usual), module B6 should not be considered.

##### **B7) Water consumption by the integrated technical systems in the building operational stage:**

If the inclined roof covering is not part of the technical systems integrated into the building (as usual), module B7 should not be considered.

#### **4.3.4. End of life stage**













The “end of life” stage of the inclined roof covering begins when it is replaced, disassembled, or deconstructed from the building or other construction works and has no other functionality. This can also start at the end of the building's life, depending on the choice of the product's end-of-life scenario. The document PCR- basic model describes some of the processes that must be considered in each sub-module C1, C2, C3, and C4.

#### **4.3.5. Benefits and environmental loads beyond the system boundaries – D module**

The information module “D” regard to the benefits or to the loads for environmental created by reused products, recycled materials and/or energy transfer to the outside of the product system (as secondary materials or fuels). The document PCR- basic model describes some of the processes that must be considered in this module.

## 5. EDP CONTENT

The DAPHabitat System requires an EDP to include certain general information regarding the registration program and the applicant organization. For the preparation of the EDP, at least the following content should be considered:

-  Name and address of the manufacturer(s);
-  Description of the use of the construction product/ product class and the functional unit or declared to which the data relates;
-  Identification of the construction product/product class by its name (including any product code) and a simple visual representation of the construction product/product class to which the data relates;
-  Description of the main components and/or product materials;
-  Name of the program used as well the name and address of the program operator and, when relevant, the logo and web page;
-  Issue date of the declaration and validity period up to 5 years;
-  information indicating the stages are not considered, if the statement is not based on an LCA covering all stages of the life cycle;
-  mention indicating that the construction product EPD may not be comparable if they are not in accordance with EN 15804 and this PCR document;
-  in the case where an EDP is declared as an average environmental performance for a number of products, a mention of this must be included in the declaration, accompanied by a description of the range/variability of the results of the LCIA, if this is significant;
-  the location(s), the producer or group of producers or their representatives for whom EDP is representative;
-  declaration of the content in materials of the product should at least enumerate the substances contained in the product that are in the " List of substances of very high concern candidates for authorization" (under REACH) when the content exceeds the limits for registration by the European Chemicals Agency;
-  Information indicating where the explanatory elements can be obtained.

This information should be declared according to the requirements indicated in the General Instruction for DAPHabitat System and with the EPD **template** at [www.daphabitat.pt](http://www.daphabitat.pt) for formatting and presentation of content in the EPD.

More specific information about the content of an EDP is presented in the document PCR- basic model, with no specificity for the category of “inclined roof coverings”.






## 6. PROJECT REPORT

The project report should be systematic and complete to support the verification procedure of an EPD. The project report must register the LCA and additional information, as stated in the EPD, according to EN 15804. This must be made available to the certification body recognized by DAPHabitat System respecting the confidentiality requirements specified in EN ISO 14025.

















The elements of the Project Report should follow the requirements of the EN 15804 as well as the indications described in the document General Instructions of DAPHabitat System, available at [www.daphabitat.pt](http://www.daphabitat.pt).

## 7. UNITS

The SI units should be used. The basic units to be used are: meter (m), kilogram (kg), molecular weight (mole). All resources must be expressed in kg with the exception:

-  of energy resources must be used kWh or MJ;
-  the temperature should be expressed in Celsius degrees;
-  time should be expressed as a rating scale: minutes, hours, days, or years.

## 8. REFERENCES

-  NP ISO 14025:2009 – “Rótulos e declarações ambientais – Declarações ambientais Tipo III – Princípios e procedimentos”;
-  ISO 21930:2007 – “*Building Construction – Sustainability in building construction*”;
-  EN 15804:2012+A2:2019 – “*Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products*”;
-  NP EN ISO 14044:2010 – “Gestão ambiental – Avaliação do ciclo de vida – Requisitos e linhas de orientação”;
-  NP EN ISO 14040:2008 – “Gestão ambiental - Avaliação do ciclo de vida - Princípios e enquadramento”;
-  General Instructions for the DAPHabitat System. Version 2.0, June 2022;
-  PCR – Product Category Rules. Basic module construction products and services. Sistema DAPHabitat. Version 2.2 June 2022;
-  Product Category Rules for preparing an EPD for Product Group **Roof waterproofing** – The Norwegian EPD Foundation, NPCR, draft version, July 2012;
-  Product Category Rules for preparing an EPD for **Concrete roof coverings – concrete roof tiles and concrete complementary of the roof system** The International EPD System. Version 1.0 – 2008/06/16.
-  Product Category Rules Guidance-Texts for Building-Related Products and Services. Part B: Requirements on the EPD Roof Tiles. Institut Bauen und Umwelt e.V. (IBU). Version 1.0 - 2012/07/16.
-  PCR Guidance-Texts for Building-Related Products and Services. Part B: Requirements on the EPD Aluminium roofing and cladding systems. Institut Bauen und Umwelt e.V. (IBU). Version 1.1 - 2012/10/29.
-  PCR Guidance-Texts for Building-Related Products and Services. Part B: Requirements on the EPD Concrete roofing tiles. Institut Bauen und Umwelt e.V. (IBU). Version 1.1 - 2012/10/29.
-  PCR Guidance-Texts for Building-Related Products and Services. Part B: Requirements on the EPD ETFE construction element. Institut Bauen und Umwelt e.V. (IBU). Version 1.1 - 2012/10/29.
-  PCR Guidance-Texts for Building-Related Products and Services. Part B: Requirements on the EPD Fibre cement/Fibre concrete. Institut Bauen und Umwelt e.V. (IBU). Version 1.1 - 2012/10/29.
-  PCR Guidance-Texts for Building-Related Products and Services. Part B: Requirements on the EPD Double skin metal faced sandwich panels. Institut Bauen und Umwelt e.V. (IBU). Version 1.1 - 2012/10/29.
-  PCR Guidance-Texts for Building-Related Products and Services. Part B: Requirements on the EPD Corrugated bitumen materials for roofing and external wall cladding. Institut Bauen und Umwelt e.V. (IBU). Version 1.1 - 2012/10/29.

## ANNEX A

Table A. 1 – Examples of products for wall coverings and product standards

Material type	Product standard
Ceramic tile	– <b>NP EN 1304:2007</b> : Telhas cerâmicas e acessórios. Definições e especificações dos produtos (EN 1304:2005).
Cement tile	– <b>EN 490:2011</b> : Concrete roofing tiles and fittings for roof covering and wall cladding. Product specifications.
Metal tiles - Plates	<ul style="list-style-type: none"> <li>– <b>EN 501:1994</b>: Roofing products from metal sheet - Specification for fully supported roofing products of zinc sheet.</li> <li>– <b>EN 502:1999</b>: Roofing products from metal sheet - Specification for fully supported roofing products of stainless steel sheet.</li> <li>– <b>EN 504:1999</b>: Roofing products from metal sheet - Specification for fully supported roofing products of copper sheet.</li> <li>– <b>EN 505:1999</b>: Roofing products from metal sheet - Specification for fully supported roofing products of steel sheet.</li> <li>– <b>EN 506:2008</b>: Roofing products of metal sheet - Specification for self-supporting products of copper or zinc sheet.</li> <li>– <b>EN 507:1999</b>: Roofing products from metal sheet - Specification for fully supported roofing products of aluminium sheet.</li> <li>– <b>EN 508-1:2008</b>: Roofing products from metal sheet - Specification for self-supporting products of steel, aluminium or stainless steel sheet - Part 1: Steel.</li> <li>– <b>EN 508-2:2008</b>: Roofing products from metal sheet - Specification for self-supporting products of steel, aluminium or stainless steel sheet - Part 2: Aluminium.</li> <li>– <b>EN 508-3:2008</b>: Roofing products from metal sheet - Specification for self-supporting products of steel, aluminium or stainless steel sheet - Part 3: Stainless steel.</li> <li>– <b>NP EN 14782:2008</b>: Chapas metálicas autoportantes para coberturas, revestimentos exteriores e divisórias interiores. Especificação de produto e requisitos (EN 14782:2006).</li> <li>– <b>NP EN 14783:2009</b>: Chapas e bandas metálicas totalmente apoiadas para cobertura, revestimentos exteriores e interiores. Especificação de produto e requisitos (EN 14783:2006).</li> </ul>

**Table A. 2** - Examples of products for wall coverings and product standards

Product name	Product standard
<p><b>Plastic tiles - Plates</b></p>	<ul style="list-style-type: none"> <li>– <b>EN 1013-1:1997:</b> Light transmitting profiled plastic sheeting for single skin roofing - Part 1: General requirements and test methods.</li> <li>– <b>NP EN 1013-2:2000:</b> Chapas perfiladas de plástico translúcido para cobertura simples. Parte 2: Requisitos específicos e métodos de ensaio para chapas em resina de poliéster com reforço de fibra de vidro (PRFV) (EN 1013-2:1998).</li> <li>– <b>EN 1013-2:1998:</b> Light transmitting profiled plastic sheeting for single skin roofing. Part 2: Specific requirements and test methods for sheets of glass fibre reinforced polyester resin (GRP).</li> <li>– <b>NP EN 1013-3:2000:</b> Chapas perfiladas de plástico translúcido para cobertura simples. Parte 3: Requisitos específicos e métodos de ensaio para chapas de policloreto de vinilo (PVC) (EN 1013-3:1997 ).</li> <li>– <b>EN 1013-4:2000:</b> Light transmitting profiled plastic sheeting for single skin roofing - Part 4: Specific requirements, test methods and performance of polycarbonate (PC) sheets.</li> <li>– <b>EN 1013-5:2000:</b> Light transmitting profiled plastic sheeting for single skin roofing - Part 5: Specific requirements, test methods and performance of polymethylmethacrylate (PMMA) sheets.</li> </ul>
<p><b>Fiber cement roof tile</b></p>	<ul style="list-style-type: none"> <li>– <b>NP EN 494-:2004+A3:2008:</b> Placas perfiladas e acessórios de fibrocimento. Especificação de produto e métodos de ensaio (EN 494-:2004+A3:2007).</li> <li>– <b>EN 12467:2004:</b> Fibre-cement flat sheets. Product specification and test methods.</li> </ul>
<p><b>Other tiles</b></p>	<ul style="list-style-type: none"> <li>– <b>NP EN 12326-1:2005:</b> Ardósias e produtos em pedra para coberturas descontínuas e revestimentos de paredes. Parte 1: Especificações dos produtos (EN 12326-1:2004).</li> <li>– <b>EN 14509:2006:</b> Self-supporting double skin metal faced insulating panels – Factory made products – Specifications.</li> <li>– <b>EN 534:2006+A1:2010:</b> Corrugated bitumen sheets. Product specification and test methods.</li> <li>– <b>EN 544:2011:</b> Bitumen shingles with mineral and/or synthetic reinforcements. Product specification and test methods.</li> </ul>