ANNEX 1

Of DT-ECO-02/2008

COVERINGS

EU ECO-LABEL AWARD SCHEME

REVISION AND DEVELOPMENT

WORK PACKAGE 2

AND WORK PACKAGE 3

2nd BACKGROUND DOCUMENT for the III° AHWG Meeting

(Rome, 10 September 2008)

VERSION June 2008

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SUMMARY

1. Introduction and summary

This report describes the work carried out and the results obtained for the project entitled **"Study for the HFC (Hard Floor Coverings) revision and SFC (Soft Floor Coverings) criteria development"** during the period from December 2007-up to date.

The project was commissioned by the European Commission to APAT (*Italian Agency for the Protection of the Environment and Technical Services*) in March 2007; for this project, APAT, is supported for technical aspects by *Life Cycle Engineering* (LCE – Turin, Italy).

This Background Document will be illustrated during the third Ad Hoc Working Group (AHWG) meeting that will take place in Rome on the 10th September 2008. All the documents concerning the various steps of the project are available at the following web site:

http://ec.europa.eu/environment/ecolabel/product/pg_hardfloor_en.htm

As indicated in the previous background document the new **COVERINGS** product group will be formed by hard coverings, wood and plant based floor coverings and textile floor coverings (see Figure 1.1).

AIMS AND OBJECTIVES

The overall aim of the project is to update the Hard Floor Covering (HFC) criteria, and to develop a new set of criteria for the so called "Soft Floor Coverings (SFC)" product group, that is regarded fully compatible with the European Union Eco-Label Award Scheme (European Regulation N. 1980/2000 on a revised Community Eco-label Award Scheme) as indicated below:.

"*The Eco-label may be awarded to a product possessing characteristics which enable it to contribute significantly to improvements in relation to key environmental aspects……the key environmental aspects shall be determined by identifying the categories of environmental impact where the product under examination provides the most significant contribution from a life cycle perspective, and among such aspects the ones for which a significant potential for improvement exists…"* [1].

This approach requires the use of an appropriate methodology capable of comparing, in a systematic and scientific way, the potential environmental impacts of different products belonging to the same product group. Life Cycle Assessment (LCA) is the methodology identified for this purpose. The definition of Eco-label criteria is therefore supported by different LCA studies performed on each family of the new product group.

[1] Regulation (EC) No 1980/2000, Article 3.

The purpose of this report is to draw up all the background information necessary for the preparation of the Third Draft Proposal Criteria.

ACTIVITIES FRAMEWORK

The project is composed of 3 Work Packages (WPs) with different tasks:

WP1. Development of a Preliminary Report for the revision of the criteria focused on the revision of the existing hard coverings criteria (the word "floor" has been deleted for the inclusion of both floor and wall coverings – see later) and the development of new criteria for the so called former "SFC" product group that is now composed of wood and plant based floor coverings and textile floor coverings.

Work Package 1 was concluded with the achievement of the WP1 Final Report (January 2008) after the EUEB meeting of 12-13 December 2007.

The EU Commission decided, on the basis of WP1 results, to implement **WP2** for the revision of the existing HFC criteria (now called hard coverings) and **WP3** for the development of two new product groups not previously included in the HFC group (originally defined as SFC, now called wood and plant based floor coverings and textile floor coverings).

WP2. Revision of criteria for HARD COVERINGS

Work Package 2 is composed by 2 tasks

Task1

The aim of this activity is the revision of the Commission Decision 2002/272/CE criteria for the HFC product group. All the comments and proposals emerged from the WP1 Final Report have been included in the 1st Background Document, that is used as technical support to the First Draft Criteria Proposal.

The 2nd Background Document and 2nd Draft Criteria Proposal contain the results which were raised during the 2nd AHWG meeting (11 March 2008).

Task 2

The 2nd Draft Criteria Proposal with the relative background document will be discussed during the 3rd AHWG meeting (10/09/08 Rome). The Final Report, containing the information and the conclusions of the whole WP2, and the Final Draft Criteria Proposal, including the revision of the criteria for the HC product group, will be the main outcome of this task.

The Final Draft Criteria Proposal will be then presented to the EUEB (second EUEB meeting). After the approval of the criteria proposal by the EUEB the Eco-label User's manual for the applicant will be prepared (see table 1.1.& 1.2).

Table 1.1 - Timetable for WP2 activities (up to date 20/06/2008).

WP2 Task	Month												
	Jan. 2008	Feb. 2008	March 2008	April 2008	May 2008	June 2008	July 2008	Aug. 2008	Sept. 2008	Oct. 2008	Nov. 2008	Dec. 2008	Jan. 2009
Task 1			II AHWG meeting										
Task 2									III AHWG meeting and EUEB meeting				Eco-label User's manual

Table 1.2 - WP2 Hard coverings actions and timetable (June 2008)

ACTION	WHO	DEADLINE	DOCUMENTS REQUIRED
1st Background documents and 1st Draft criteria proposal	LCE/APAT	15 Feb. 2008	▪ 1st Background Document ▪ 1st Draft criteria proposal
Preparation of the 2° AHWG Meeting	LCE/APAT	15 Feb. 2008	▪ Updating mailing list ▪ Meeting Invitation and Agenda
1st Background documents and 1st Draft criteria proposal diffusion to EC	APAT/LCE	18 Feb. 2008	▪ 1st Background Document ▪ 1st Draft criteria proposal
Comments from EC	CE	25 Feb. 2008	-
Documents for the 2° AHWG Meeting:	LCE	26 Feb. 2008	▪ 1st Background Document and 1st Draft criteria proposal (updated)
2° AHWG Meeting Presentation of the 1st Background documents and1st Draft criteria proposal	LCE/APAT	11 March 2008	▪ 1st Background document ▪ 1st Draft criteria proposal
Minutes of the 1st AHWG meeting	LCE	28 March 2008	▪ Minutes of the 2° AHWG meeting
Management of the AHWG comments	LCE	April/May 2008	-
Updated 1st Draft criteria proposal draft criteria and distribution to coverings mailing list	LCE/APAT	first week of April 2008	▪ Feedback and comments - deadline (29-04-08) ▪ Agenda 3° AHWG meeting
2nd Background documents and 2nd Draft criteria proposal	LCE/APAT	20-06-08	▪ 2nd Background document ▪ 2nd Draft criteria proposal
Comments from EC	CE	30-06-08	
2nd Background documents and 2nd Draft criteria proposal distribution to coverings mailing list	LCE/APAT	7-07-08	▪ 2nd Background document ▪ 2nd Draft criteria proposal ▪ Agenda 3° AHWG meeting
Comments Updated 2nd Background document and 2nd Draft criteria proposal	LCE/APAT	10-08-08	▪ Feedback and comments - deadline (10-08-08)
Preparation of the 3° AHWG Meeting	LCE/APAT	end of August. 2008	▪ 2nd Background document and 2nd Draft criteria proposal
Documents for the 3° AHWG Meeting:	LCE	10 Sept.2008 Rome	▪ 2nd Background document ▪ 2nd Draft criteria proposal ▪ Agenda 3° AHWG meeting

ACTION	WHO	DEADLINE	DOCUMENTS REQUIRED
Minutes of the 3° AHWG meeting	LCE	20 Sept.2008	▪ Minutes of the AHWG meeting
Preparation presentation at EUEB Meeting	LCE/APAT	24 or 25 Sept. 2008	▪ 2nd Background document ▪ 2nd Draft criteria proposal
Management of the AHWG comments and EUEB meeting	LCE	Oct./November 2008	-
3rd Background documents and 3rd Draft criteria proposal diffusion to EC	APAT/LCE	Nov. 2008	▪ 3rd Background document ▪ 3rd Draft criteria proposal
Comments from EC	CE	Nov. 2008	
3rd Background documents and 3rd Draft criteria proposal distribution to coverings mailing list	LCE/APAT	Nov. 2008	▪ 3rd Background document ▪ 3rd Draft criteria proposal
Preparation presentation at EUEB Meeting	LCE/APAT	3 or 4 Dec. 2008	▪ 3rd Background documents ▪ Final draft criteria
Final Report	LCE	31 Dec. 2008	▪ Final Report
Preparation of the User manual “coverings: hard coverings”	LCE	Dec. 2008/ Jan. 2009	▪ User manual “coverings: hard coverings”

note: (LCE is Life Cycle Engineering).

WP3. Development of new criteria for WOOD AND PLANT BASED AND TEXTILE floor coverings

Work Package 3 is composed of 2 tasks

Task1

The aim of this activity is the development of the ecological criteria for new sub-products group, as established during WP1 and not already included in the Decision 2002/272/CE for HFC.

The first Background Document (March 2008) includes the preliminary identification and assessment of the energetic and environmental aspects of the production systems concerning the new sub-products group systems.

The 2nd Background Document and the 2nd Draft Criteria Proposal contains the results which emerged during the 2nd AHWG meeting (11/03/2008).

Task 2

The 2nd Background Document and the 2nd Draft Criteria Proposal will be discussed during the 3rd AHWG meeting. The Final Report, containing the information and the conclusions of the whole WP3, the Final Draft Criteria Proposal, including the development of the new criteria for the new sub-products group will be the outcome of this task. The Final Draft Criteria Proposal will be presented to the EUEB (second EUEB meeting). After the approval of the criteria proposal by the EUEB the Eco-label User's manual for the applicant will be prepared (see table 1.3 &1.4)

Table 1.3 - Timetable for WP3 activities (up to date June 2008).

WP3 Task	Month												
	Jan. 2008	Feb. 2008	March 2008	April 2008	May 2008	June 2008	July 2008	Aug. 2008	Sept. 2008	Oct. 2008	Nov. 2008	Dec. 2008	Jan. 2009
Task 1			II AHWG meeting										
Task 2									III AHWG meeting and EUEB meeting				Eco-label User's manual

Table 1.4 - WP 3 Wood and plant based and textile floor coverings actions and timetable (June 2008)

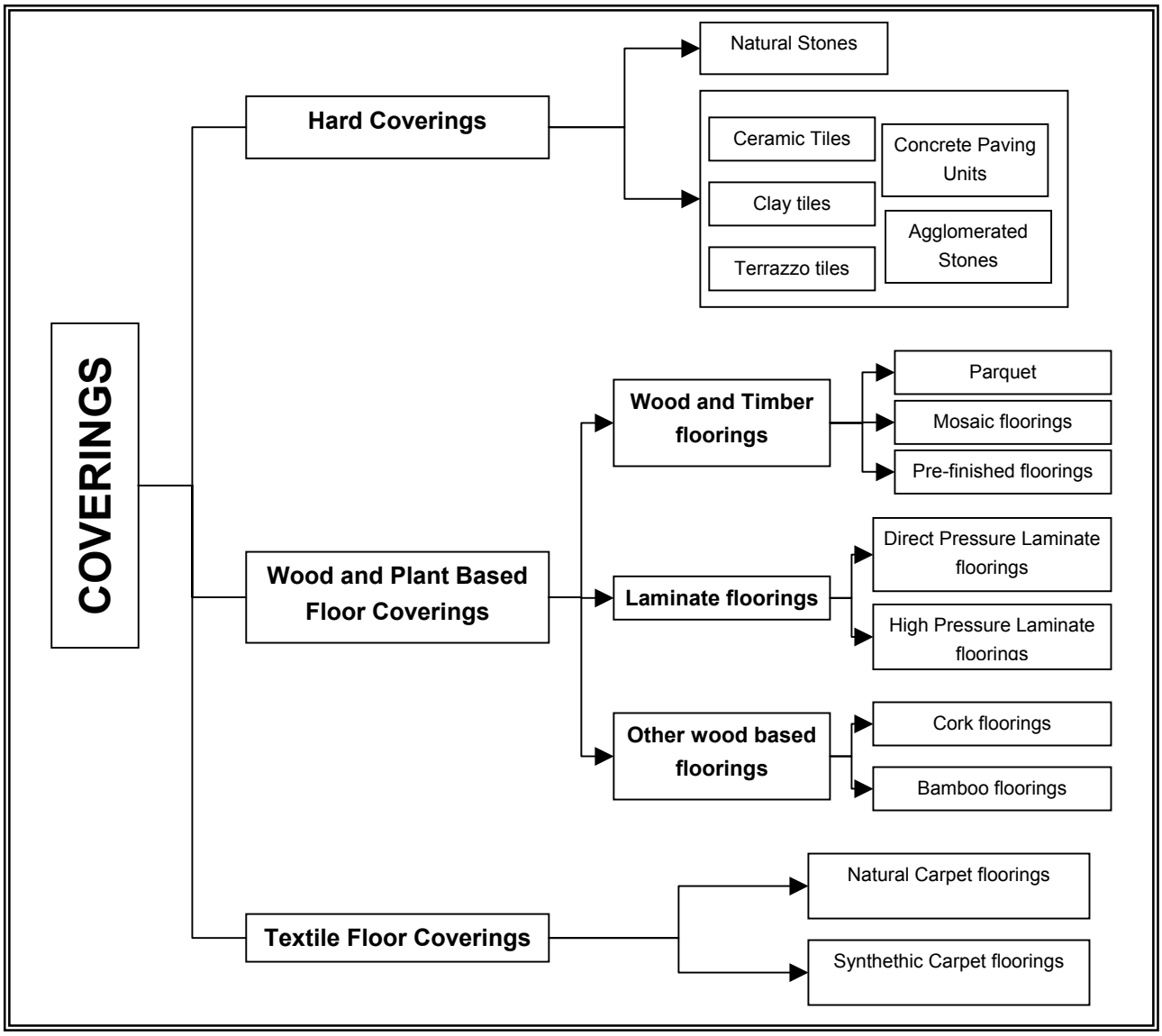
ACTION	WHO	DEADLINE	DOCUMENTS REQUIRED
1st Background documents and 1st Draft criteria proposal	LCE/APAT	15 Feb. 2008	▪ 1st Background Document ▪ 1st Draft criteria proposal
Preparation of the 2° AHWG Meeting	LCE/APAT	15 Feb. 2008	▪ Updating mailing list ▪ Meeting Invitation and Agenda
1st Background documents and 1st Draft criteria proposal diffusion to EC	APAT/LCE	18 Feb. 2008	▪ 1st Background Document ▪ 1st Draft criteria proposal
Comments from EC	CE	25 Feb. 2008	-
Documents for the 2° AHWG Meeting:	LCE	26 Feb. 2008	▪ 1st Background Document and 1st Draft criteria proposal (updated)
2° AHWG Meeting Presentation of the 1st Background documents and1st Draft criteria proposal	LCE/APAT	11 March 2008	▪ 1st Background document ▪ 1st Draft criteria proposal
Minutes of the 1st AHWG meeting	LCE	28 March 2008	▪ Minutes of the 2° AHWG meeting
Management of the AHWG comments	LCE	April/May 2008	-
Updated 1st Draft criteria proposal draft criteria and distribution to coverings mailing list	LCE/APAT	first week of April 2008	▪ Feedback and comments - deadline (29-04-08) ▪ Agenda 3° AHWG meeting
2nd Background documents and 2nd Draft criteria proposal	LCE/APAT	20-06-08	▪ 2nd Background document ▪ 2nd Draft criteria proposal
Comments from EC	CE	30-06-08	
2nd Background documents and 2nd Draft criteria proposal distribution to coverings mailing list	LCE/APAT	7-07-08	▪ 2nd Background document ▪ 2nd Draft criteria proposal ▪ Agenda 3° AHWG meeting
Comments Updated 2nd Background document and 2nd Draft criteria proposal	LCE/APAT	10-08-08	▪ Feedback and comments - deadline (10-08-08)
Preparation of the 3° AHWG Meeting	LCE/APAT	end of August. 2008	▪ 2nd Background document and 2nd Draft criteria proposal
Documents for the 3° AHWG Meeting:	LCE	10 Sept.2008 Rome	▪ 2nd Background document ▪ 2nd Draft criteria proposal ▪ Agenda 3° AHWG meeting

ACTION	WHO	DEADLINE	DOCUMENTS REQUIRED
Minutes of the 3° AHWG meeting	LCE	20 Sept.2008	▪ Minutes of the AHWG meeting
Preparation presentation at EUEB Meeting	LCE/APAT	24 or 25 Sept. 2008	▪ 2nd Background document ▪ 2nd Draft criteria proposal
Management of the AHWG comments and EUEB meeting	LCE	Oct./November 2008	-
3rd Background documents and 3rd Draft criteria proposal diffusion to EC	APAT/LCE	Nov. 2008	▪ 3rd Background document ▪ 3rd Draft criteria proposal
Comments from EC	CE	Nov. 2008	
3rd Background documents and 3rd Draft criteria proposal distribution to coverings mailing list	LCE/APAT	Nov. 2008	▪ 3rd Background document ▪ 3rd Draft criteria proposal
Preparation presentation at EUEB Meeting	LCE/APAT	3 or 4 Dec. 2008	▪ 3rd Background documents ▪ Final draft criteria
Final Report	LCE	31 Dec. 2008	▪ Final Report
Preparation of the User manual ""coverings: Wood and plant based and textile floor coverings"	LCE	Dec. 2008/ Jan. 2009	▪ User manual "coverings: Wood and plant based and textile floor coverings"

note: (LCE is Life Cycle Engineering).

STRUCTURE OF THE DRAFT CRITERIA

According to the EUEB meeting (12-13 December 2007) and WP1 outcomes, the new Criteria proposal will be structured in the following way (Figure 1.1):



It is important to highlight that only one Commission Decision will be established for all the three coverings sub-groups. The main product group will be simply called “Coverings” including the following the sub-products group:

- “**Hard Coverings**", with the extension of “Hard Floor Coverings” group to “Wall Coverings”. This extension is intended, for the different product families, that the production processes must remain the same, using the same materials and the same manufacturing methods.

- "**Wood and Plant Based Floor Coverings**[2]" new sub-products group, that includes products properly made of wood (i.e.: "Wood and Timber floorings"), products derived from fibrous material originated from wood (i.e.: "Laminate floorings"), and particular coverings made of vegetal material not properly defined as wood (i.e.: Cork and Bamboo floorings).
- "**Textile Floor Coverings**" new sub-products group, that includes natural and synthetic carpets floorings.

ISSUES RELATED TO THE NEW FLOOR COVERINGS SUB-PRODUCTS GROUP DEFINITION

The European Regulation 1980/2000 article 2 states that *"product group must fulfil the following conditions:*

(a) it shall represent a significant volume of sales and trade in the internal market;

(b) it shall involve, at one or more stages of the product's life, a significant environmental impact on a global or regional scale and/or of a general nature;

(c) it shall present a significant potential for effecting environmental improvements through consumer choice as well as an incentive to manufacturers or service providers to seek a competitive advantage by offering products which qualify for the Ecolabel; and

(d) a significant part of its sales volume shall be sold for final consumption or use"

The inclusion in the EU Ecolabel scheme, of the new sub-products group, has been based on the following aspects:

- European market share;
- Environmental aspects involved in the product life cycle and possibility of environmental improvement;
- Subsistence and sharing of National labels for the product group.

The candidate categories of the new sub-products group for which a specific set of criteria for the Ecolabel Scheme will be proposed are shown in Table 1.5.

[2] After Federlegno and EBIA disagreement (see the 2nd AHWG meeting Minutes) the previous name "Wood Based Floor Coverings" has been changed, with the aim of not confusing the properly called "wood based" products with *laminate, cork* and *bamboo flooring*.

The categories indicated are the most relevant in terms of production sold in the European markets (see Figure 5.1 – WP1 Final Report). In the last decade, for these products, there has been a strong sales trend increase (see Figure 5.2– WP1 Final Report). Furthermore, as indicated previously, the production processes for these products have opportunities for improvement by reducing environmental impacts during their lifecycle.

Table 1.5 - Proposal of Product Group definition categories.

Category	Description
Wood and Plant based Floor Coverings	Wood and timber floorings, laminate floorings and other wood and plant based floorings, which are made as main constituent material, from wood, wood powder and/or wood-based material or plant origin materials. These kinds of floor coverings can be unfinished, and once installed sanded, then finished on site or, more modernly, pre-finished in a factory.
Textiles floorings (carpets)	Floor covering, usually of woven, knotted, or needle-tufted fabric, commonly installed with tacks or staples, or by adhesives.

However, it should be stressed that the inclusion of these new floor coverings **are only intended for floor coverings and not wall coverings products and for internal use only.**

Other National Ecological Labels experiences

For this project, the existing approaches have been considered, in particular: the **Nordic Swan** labelling, the **Blue Angel** label, the Austrian environmental protection label **UZ 56,** the **GUT** (that is a European specific label for carpets), and the **Oeko-Tex 100** standard (testing harmful substances for textile products).These schemes are briefly illustrated in this paragraph.

The Nordic Swan labelling (**Swan regulation**) scheme for the floor-coverings sector certificates the following products types:

- *solid wood;*
- *parquet;*
- *laminate;*
- *linoleum;*
- *carpets.*

The German **Blue Angel** awards products made of wood and/or wood-based material (RAL-UZ 38), including also those for flooring purposes.

The approach adopted by Germany's Blue Angel label, identifies three different groups of criteria for products belonging to the Floor Coverings family, only one of which can be used for the Ecolabel aims:

- *Floor coverings made of wood*: these criteria apply to ready to use final products for indoor use (e.g. furniture, interior doors, panels, floorings with painted surfaces, laminate floorings, prefabricated parquet/linoleum) which are mainly made, i.e. for more than 50%, from wood/flower, wood powder or wood-based materials (chipboards, core boards, fibreboards, veneer panels, each non-coated or coated). Window frames and semi-finished products do not fall within the scope of these criteria.

  This family of products is included in widest Basic Criteria for *Low-Emission Wood Products and Wood-Base Products*, that comprises also furniture, panels, prefabricated parquet and similar (**RAL-UZ 38**).

Another Basic Criteria has been established for the Textile floor coverings, under the label of *Low-Emission Textile Floor Coverings* - **RAL-UZ 128.**

- *These Criteria apply to textile floor coverings according to DIN ISO 2424:* the requirements for award of the Blue Angel eco-label refer not only to the materials and substances used during manufacture but also to the period of actual use and the disposal of the products.

The Austrian environmental label "**UZ 56**" for the floor coverings recognizes the following typology of products useful for Ecolabel aims:

1. *Textile floor coverings*, with the exception of loose mats and adjusted carpets;
2. *Parquet and timber floorings*, in accordance with standard EN 14342.

Flooring criteria for the **Austrian Eco Label** do not include laminates.

The European Carpet Industry has created the **GUT label** for carpets to test products against the highest standards, to promote environmentally friendly solutions for carpet installation as well as recycling projects and, in general terms, during the whole life cycle of the product.

"Confidence in textiles": this has been the motto of the independent test institutes of the *International Oeko-Tex Association* since 1992, with their tests for harmful substances according to **Oeko-Tex Standard 100** for textile products of all types which pose no risk whatsoever to health.

REPORT ORGANIZATION

To comply with the aims of the project, the present report is structured into three main sections :

- **Hard Coverings;**
- **Wood and Plant Based Floor Coverings;**
- **Textile Floor Coverings.**

This report mainly deals with the development of the Second Draft Criteria Proposal. The documents that will be distributed on the occasion of the third AHWG Meeting will be:

- the 2ndt Background Document;
- the 2ndt Draft Criteria Proposal.

2. LCA RESULTS INTERPRETATION

In accordance with the Regulation 1980/2000, "*the voluntary Community Eco-label award scheme is intended to promote products with a reduced environmental impact during their entire life cycle and to provide consumers with accurate, non-deceptive and scientifically based information on the environmental impact of products themselves*". As stated in the Annex II of the same Regulation, these key environmental aspects are to be investigated with life cycle considerations methods and standards internationally recognized, such as the EN ISO 14040 and the EN ISO 14024 series.

The attention for this section has been particularly focused on the **Eco-profile** of the new products that are now part of the Coverings PG and the LCA describes the energetic and environmental loads from the raw material extraction until the end of the manufacturing process ("*from cradle to gate*"). The installation and use phase is not considered, in accordance with the aims of this study.

The Life Cycle Assessment has been referred to the quantity required to cover **1 m^2 of trampling surface**, as the *purpose for any Coverings product is to be used for 1 m^2 flooring*.

Taking into account data availability, goal and scopes of the project, the processes included in the LCA framework describe a typical and averaged situation.

The data used in this LCA study can be organised into primary data and secondary data:

- **primary data** are data directly collected in the production sites and refer to the sequence of unit operations included into the system;
- **secondary data** come from databases or previous studies. In general, these data are concerned with energy production, the production of basic materials and transports operations.

In this study, only secondary data from selected sources have been used. The calculation model utilized for the analysis is the Boustead Model V5.

Normally, Life Cycle Inventory results are organised in terms of energy requirements and environmental consequences of the considered processes by means of a selected set of parameters. In this report, for simplicity, the results will be grouped in two principal categories:

- **Energy Results**, which correspond to energy consumption. The data reported in this study correspond to the sum of direct and indirect energy related to the inputs/processes; the ***Feedstock energy* is excluded**;
- **Global Warming Potential (GWP)**, which deal with the GHG emissions, related to the functional unit.

RESULTS OVERVIEW

The main inventory results are hereafter presented in graphical way to highlight those steps that are particularly significant for the energetic and environmental aspects taken into consideration. The presentation of the results has the particular goal to lead to an immediate definition of the Eco-label criteria. It is important to stress that according to the Community Eco-label award scheme Regulation, key environmental aspects shall be defined through the use of life cycle considerations in order to highlight the interactions of products with environmental issues, like the use of energy and of natural resources.

A. Wood and Plant based Floor Coverings

Wood and Timber floorings

Solid Wood floor coverings

Hardwood flooring is a type of flooring made from the timber of different kinds of trees. Usually, logs are boiled in water at a certain temperature or they are kept at a low humidity level and dried slowly. Then the wood is peeled by a blade from the outside of the log, and it works its way around the log toward the centre, creating a wood veneer. This veneer is then pressed flat with high pressure to make the veneer flat.

In this study, two different kinds of products have been considered: a “multilayer floor covering”, made of wood slabs matched with pressure and glue, and a “block floor covering”, made of a one-piece layer of solid wood.

Figure 2.1 reports the flow chart of a wooden flooring production process; the system boundaries used are indicated: the fixing phase is not considered in this study.

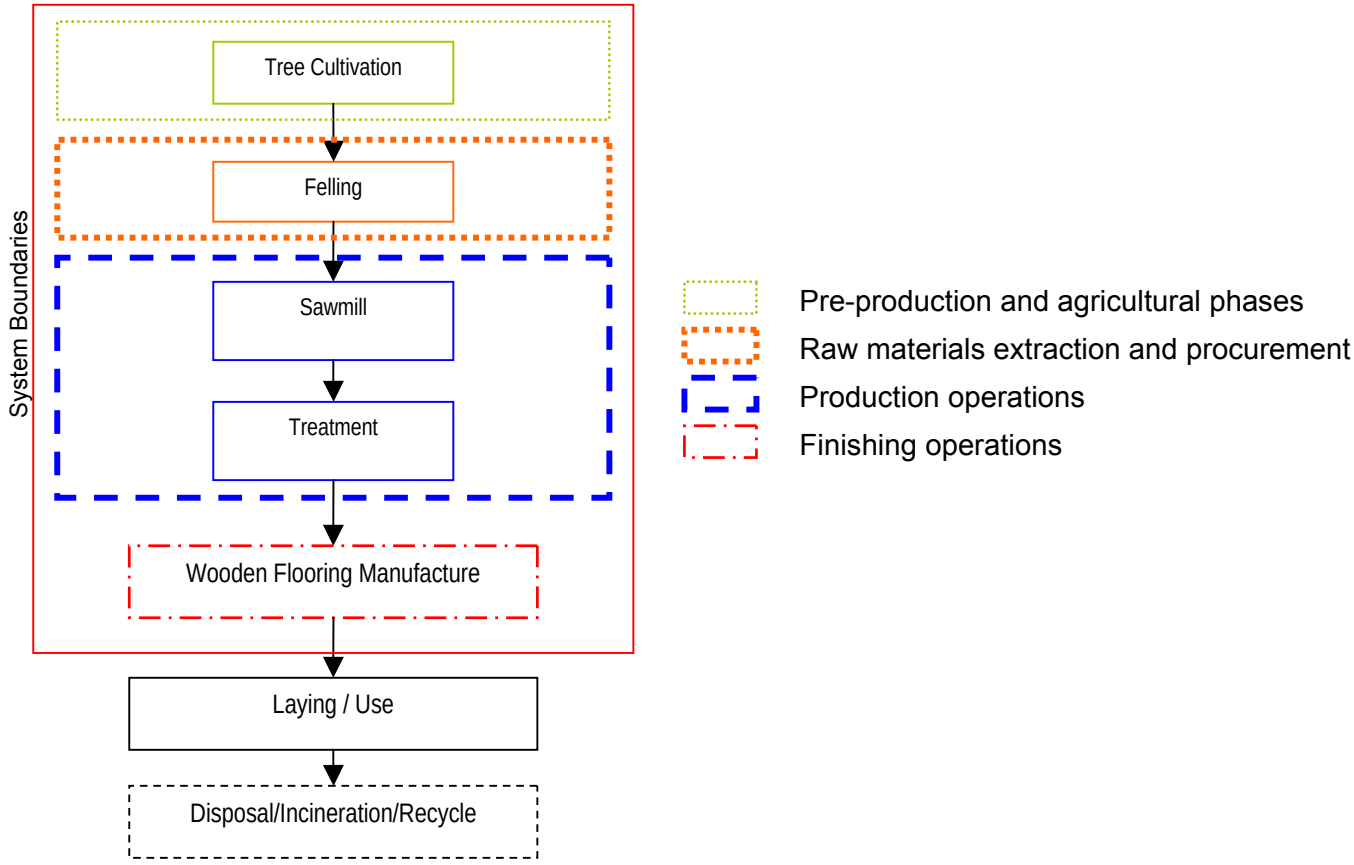


Figure 2.1 - A flow chart of a wooden flooring manufacture

According to Gunther and Langowsky[3], wood floorings (multilayer) are usually made for 95% of wood slabs and 5% of adhesive. A material consumption of 12,6 kg/m^2 has been considered.

Figures 2.2 and 2.3 report the interpretation results concerning the GER for solid woods floorings with and without glue production.
As it can be noticed, the use of glue has a great importance in the evaluation of the energy requirements for solid wood flooring production. Furthermore, the energy used is an important factor , mostly when glue is absent (Figure 2.3).

[3] Gunther, Langowsky, Life Cycle Assessment Study on Resilient Floor coverings, The Int. Journal of LCA, 2 (2) 1997, 73-80

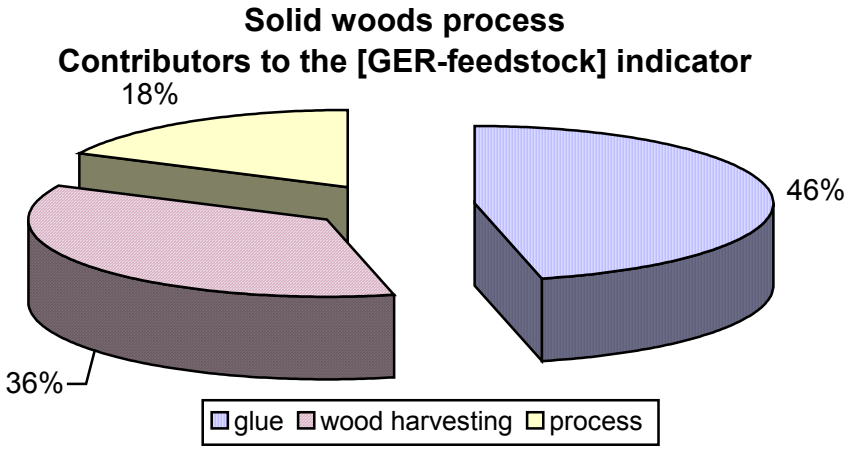


Figure 2.2 - Contributors to [GER-feedstock] of the main inputs of solid woods process.

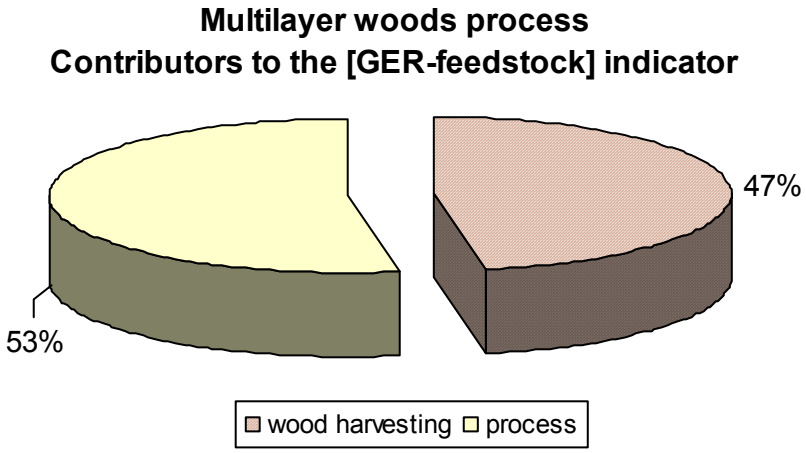


Figure 2.3 - Contributors to [GER-feedstock] of the main inputs of multilayer woods process without cold glue.

Figures 2.4 and 2.5 show the interpretation results concerning the Global Warming Potential (GWP-100) associated to the principal inputs for solid woods floorings with and without glue production.

The effects connected to the emissions of GHGs and the CO_2 credit associated to the biological sequestration from the trees growth are reported separately for a more clear interpretation.

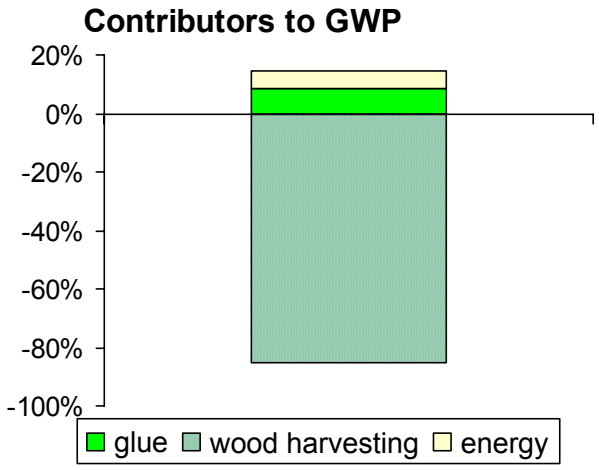


Figure 2.4 - Contributors to GWP of the main inputs of solid woods process.

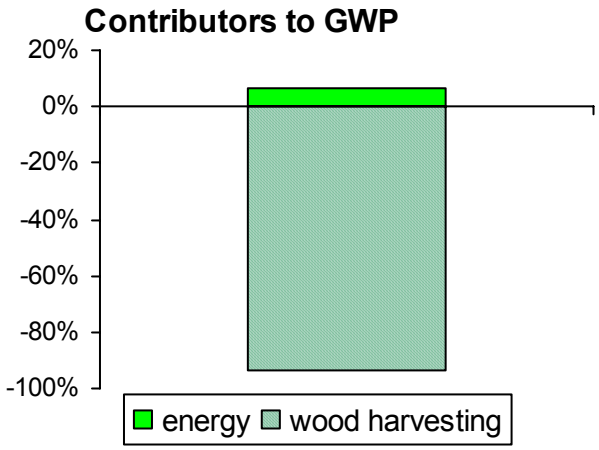
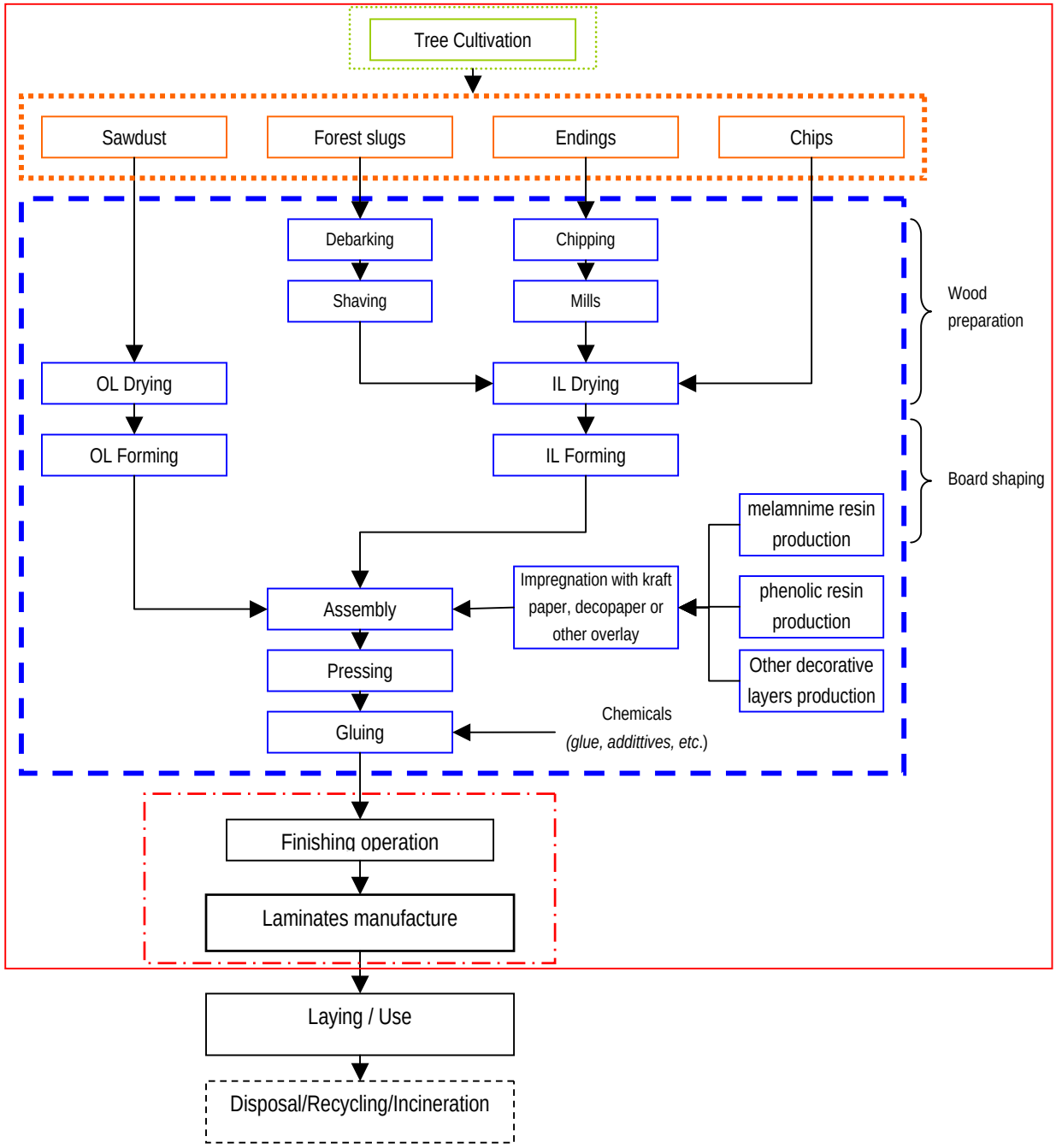


Figure 2.5 - Contributors to GWP of the main inputs of solid woods process without glue.

Laminates floor coverings

Laminate flooring is a rigid floor covering consisting of one or more thin sheets of a fibrous material (or “particleboard”), impregnated with aminoplastic thermosetting resins (usually melamine) to host a surface layer. A particleboard is a panel made from small discrete wood elements, mainly wood processing waste, with a water-resistant adhesive binder mainly for indoor uses.
There are two main sources of raw wood material: forest thinning and sawmill residues such as slab wood, hacked or pulp chip, dockings, planer shavings and sawdust (Rivera, 2006).

A scheme of the process chain for particleboard manufacture is reported in Figure 2.6.



The board shaping inventory has been determined according to some LCA studies[4]. The average thickness considered for the particleboard is 10 mm. Wood has been considered recycled for 97%.

[4] Rivela, Hospido, Moreira, Feijo, Life Cycle Inventory of Particleboard: a case study in the wood sector, The int.Journal of LCA, 11 (2) 2006, 106-113

An amount of 0,10 kg/m^2 of Melamine Resin has been estimated as laminated coating.
Table 2.1 shows the inventory hypothesis used for the LCA analysis.

Table 2.1 - Board shaping inventory for particleboard processing

Laminates components	kg/m^3	kg/m^2
Chips & shaving	444,09	4,44
Sawdust	222,04	2,22
UF-Resin	67,94	0,68
Paraffin	2,13	0,02
Ammonium Sulphate	0,74	0,007
TOTAL MASS	**-**	**6,61**

In Figure 2.7 the contributors to the Gross Energy Requirements (GER) indicator [GER-feedstock] of raw materials and energy inputs in particleboard processing are reported. The energy consumption associated to the reprocessing of recycled wood is included in the quota of "electricity" reported in the graph.

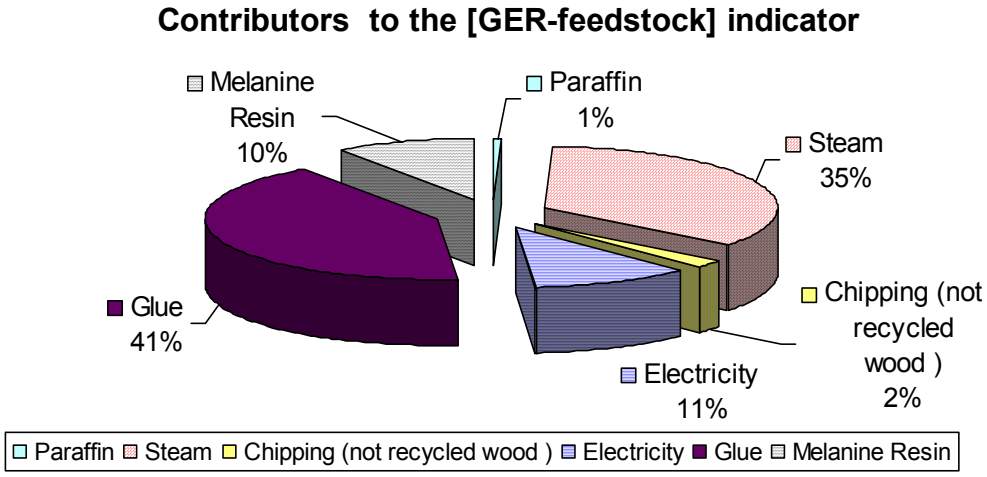


Figure 2.7 - Contributors to the indicator "GER-feedstock" of raw materials and energy.

In Figure 2.8 the contribution to Global Warming Potential (GWP) of the different process phases are reported. The CO_2 credit related to biological tree growth is also included.

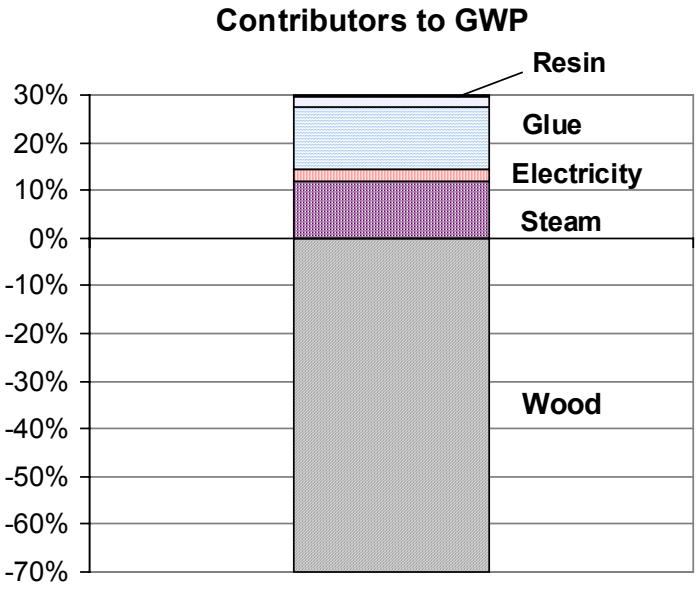


Figure 2.8 - Contributors to GWP of the main raw materials and energy.

Other wood-based floorings

Cork floorings

The Natural Cork floor tile products use a cork sheet made from a combination of recycled cork waste and urethane binder. The binder for Natural Cork flooring is a moisture-cured urethane, produced from a reaction between polyisocyanate and moisture present in the atmosphere. Cork waste is ground and blended with the urethane binder, then cured.[5]

Electricity and an on-site boiler are used to blend and cure both products. The boiler uses cork powder generated during the production process to produce steam and electricity.

[5] AMORIM, 2006 – Sustainability Report.

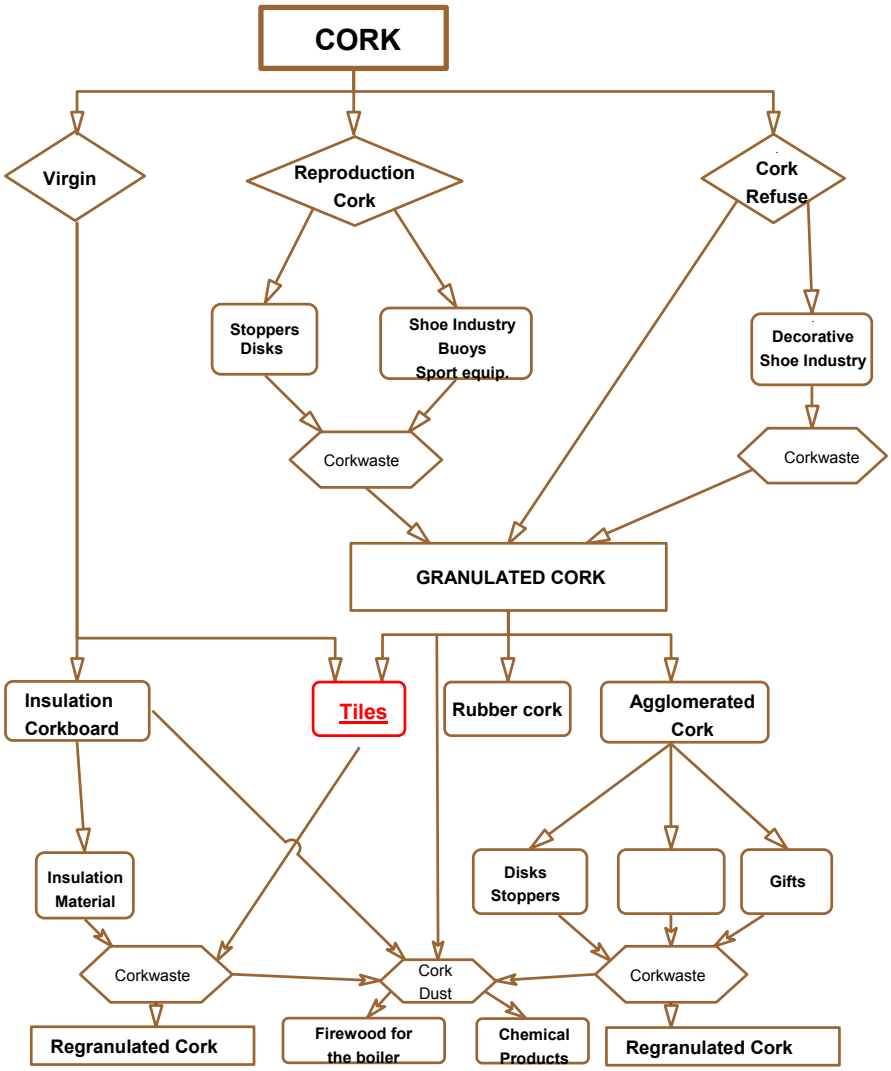


Figure 2.9 - System boundary and process chain of cork products manufacture (AMORIN, 2006).

Data are referred to m^2 of cork flooring. Considering that no information for Urethane Binder was available on the Boustead Model, data for non-vinylic adhesive production was used.

The system boundaries includes the entire cork production chain , from the plant grazing to the manufacturing process; the cogeneration for the production of electricity and steam has also been considered.

Figure 2.10 represents the contribution to GER of the main inputs of cork flooring production: the production of cork (feedstock excluded) requires the greatest energy of the whole process.

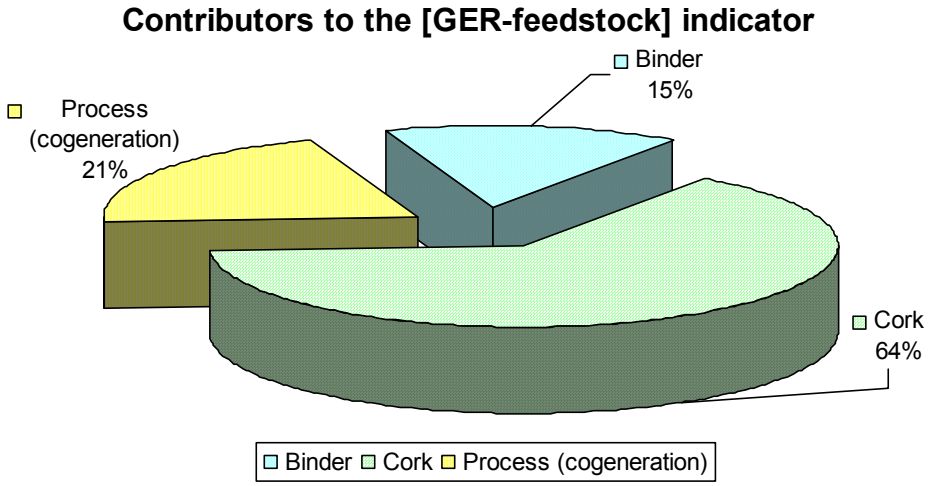


Figure 2.10 - Contributors to [GER-feedstock] of the main inputs of cork flooring production.

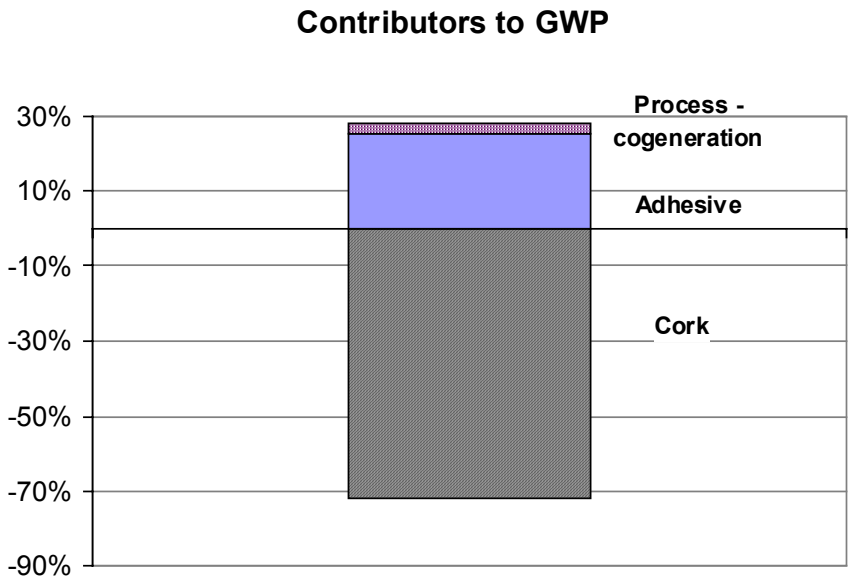


Figure 2.11 - Contributors to GWP of the main inputs of cork flooring production.

B. Textile Floor Coverings

Carpets

Carpets are composed of a facing and a backing, which are attached during manufacture. Before assembly, most carpet fibres are dyed. Adhesives are typically used for commercial installations.

Carpet manufacture consists of a number of steps, including fibres formation; fibres dyeing construction, treatment, and finishing of the carpet.

Synthetic Carpets

In this study, we considered the manufacturing process of a generic carpet made by nylon fibres, as described in the BEES Technical Manual[6].
The description of the system evaluated is presented in Figure 2.12.

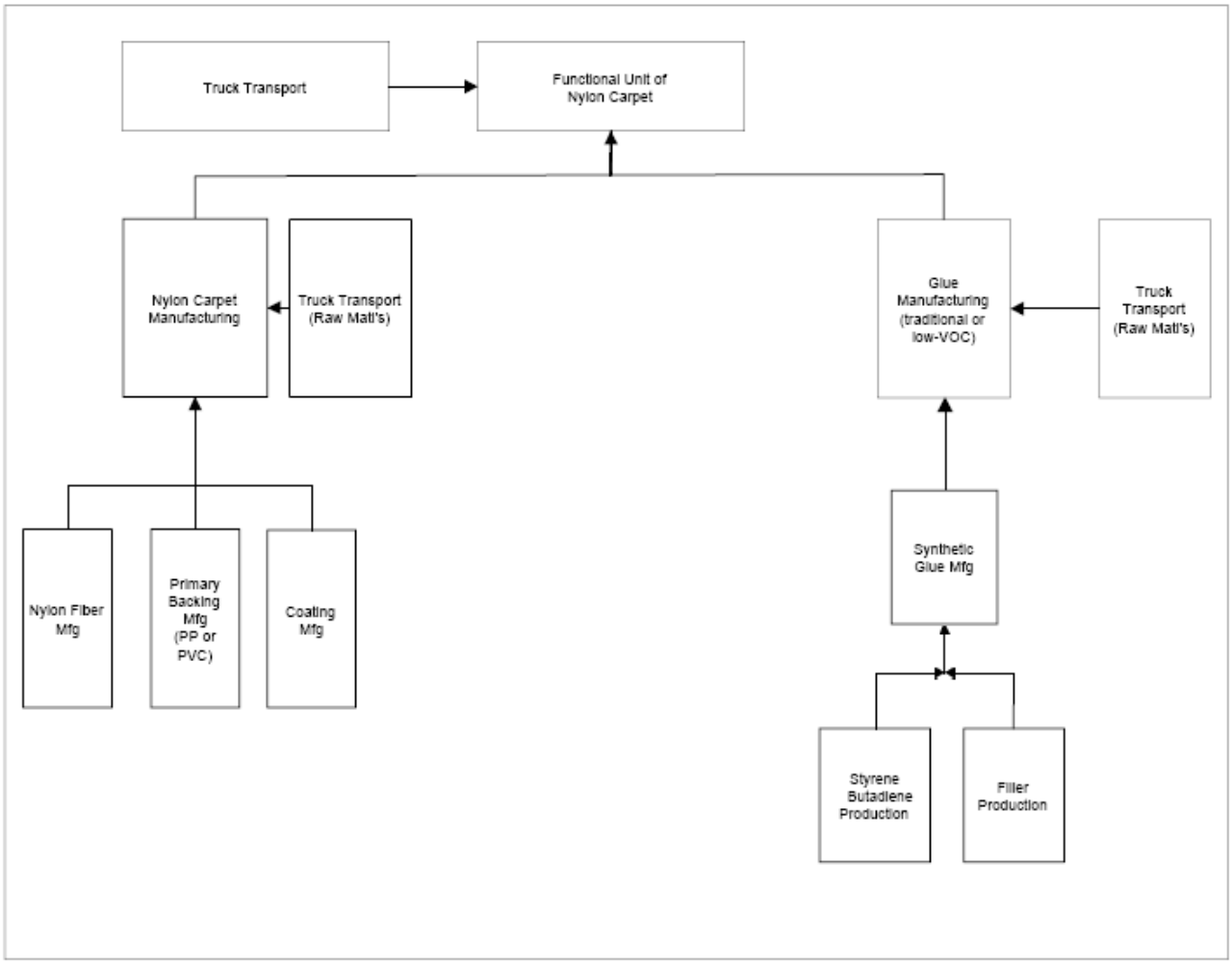


Figure 2.12 - System boundary and process chain of nylon carpet production(BEES, 2002).

The inventory for nylon carpet production has been made according to the BEES document. Conversions from kg of nylon yarn to m^2 of carpet were done considering an average nylon requirement of 0,81 kg/m^2.
Considering that no LCA information for SBL (Styrene Butadiene Latex) is publicly available, data for Styrene Butadiene Rubber production was used and the model adapted to it.

[6] Building for Environmental and Economic Sustainability Technical Manual and User Guide, 2002.

The following figures show the contribution to the GER (Figure 2.13) and the GWP (Figure 2.14) related to the different inputs.

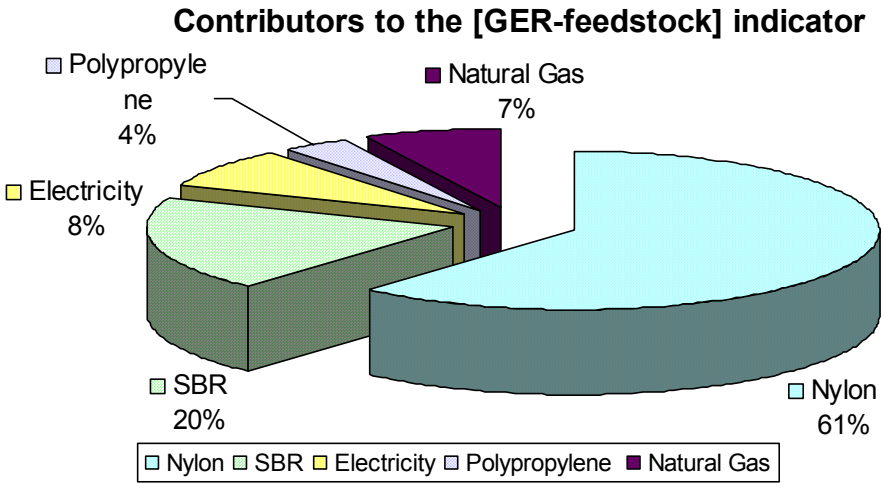


Figure 2.13 - Contributors to [GER-feedstock] of the main inputs of nylon carpet production.

The synthetic fibre (nylon) production has the most significant impact in terms of energetic requirements, while the contribution of the energetic vectors (natural gas and electricity) is kept down.

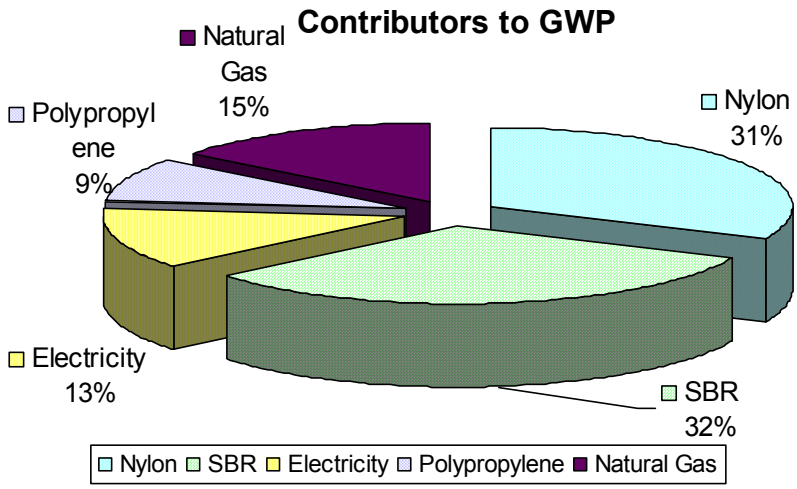


Figure 2.14 - Contributors to GWP of the main inputs of nylon carpet production.

Figure 2.14 shows that the most GHGs emissions are attributed to the use of synthetic fibres and SBR. It must be pointed out that the use of SBL (Styrene Butadiene Latex) instead of SBR (Styrene Butadiene Rubber) could lead to different results:. This scenario has however still to be investigated due to lack of publicly available data.

Woollen Carpets

For this study the manufacturing process of a generic carpet made of wool, with reference to the BEES Technical Manual[7] has been considered.

The description of the system evaluated is presented in Figure 2.15.

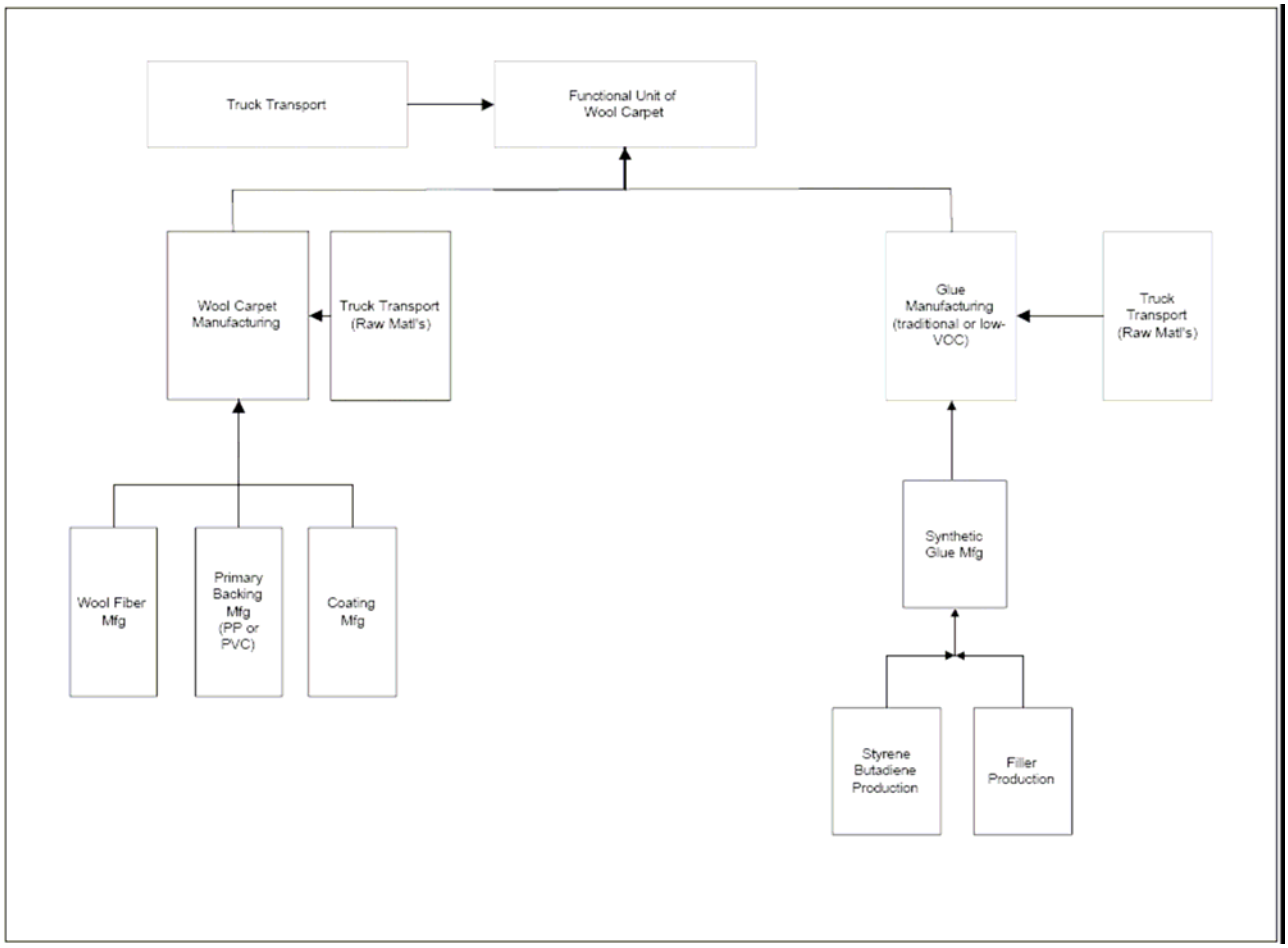


Figure 2.15 - System boundary and process chain of wool carpet production (BEES, 2002).

The inventory for woollen carpet production has been realized according to the BEES study. The conversions from kg of raw wool to m^2 of carpet were done considering a wool requirement of 1,4 kg/m^2.

[7] Building for Environmental and Economic Sustainability Technical Manual and User Guide

Considering that no information for SBL data was available on the Boustead Model, Styrene Butadiene Rubber production data was used instead.
Furthermore, the wool has not been considered as a material in the inputs, but the substances and the additives used for the fibre production and treatments have been considered.
Figure 2.16 shows that the main contributors to the GER is the SBR, but also the energetic vectors (in this case: natural gas and electricity) must be managed because they represent a considerable percentage of the energy requirement for the production process.

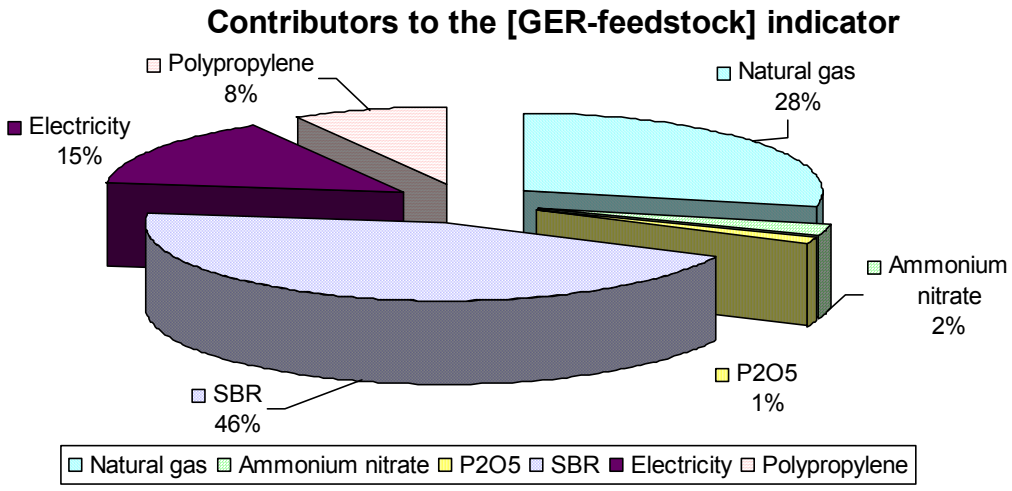


Figure 2.16 - Contributors to [GER-feedstock] of the main inputs of wool carpet production.

For the GWP indicator (Figure 2.17) it also emerges that the main impacts are related to the use of polymers (51%) and that an important contribution is also attributed to the energetic sources.

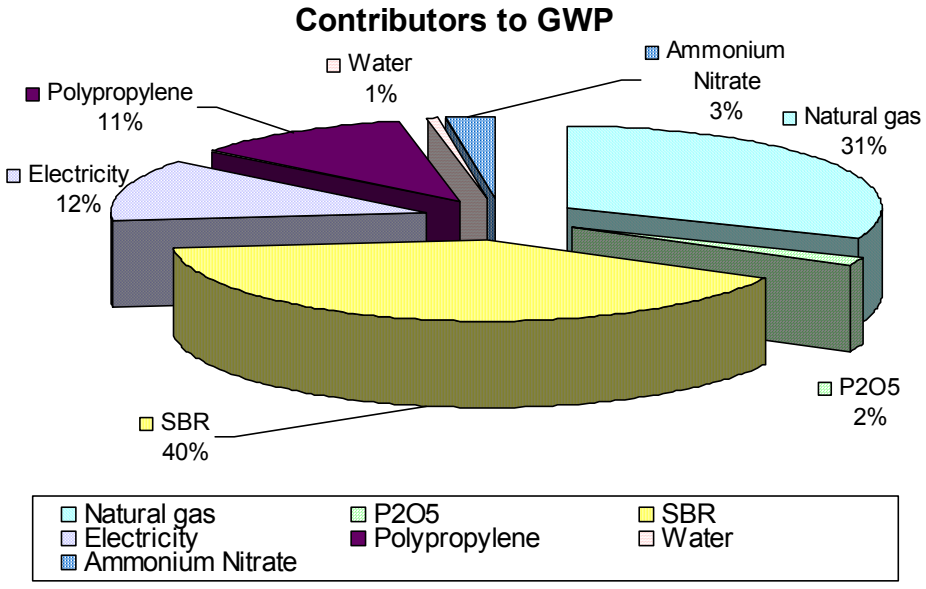


Figure 2.17 - Contributors to GWP of the main inputs of wool carpet production.

HARD COVERINGS

This section deals with the revision of the former Criteria on the Hard Floor Coverings product group included in the Commission Decision 2002/272/CE.

The main change has been the extension of the "Hard Floor Coverings" group to "Wall Coverings" that will now change in the new sub-products group called "**Hard Coverings**" (hereafter **HC**). However, the definition is intended both for floor and wall coverings where the production processes must remain the same, using the same materials and the same manufacturing methods.

In the following chapters all the changes to the existing criteria are analyzed.

3. The 2nd Draft Criteria Revision framework

The Criteria revision has been structured on the basis of the available information and that received during WP1.For each criterion a detailed proposal will be illustrated in order to have a definitive picture of what can or should be changed.

The existing Ecolabel criteria structure has been slightly changed, with some additional criterion, but it is still composed of 7 main phases as shown in Figure 3.1. Every criteria describes a specific stage of the productive chain of HC products. For each stage, a set of criteria is proposed to describe the environmental impacts both at general and at specific level.

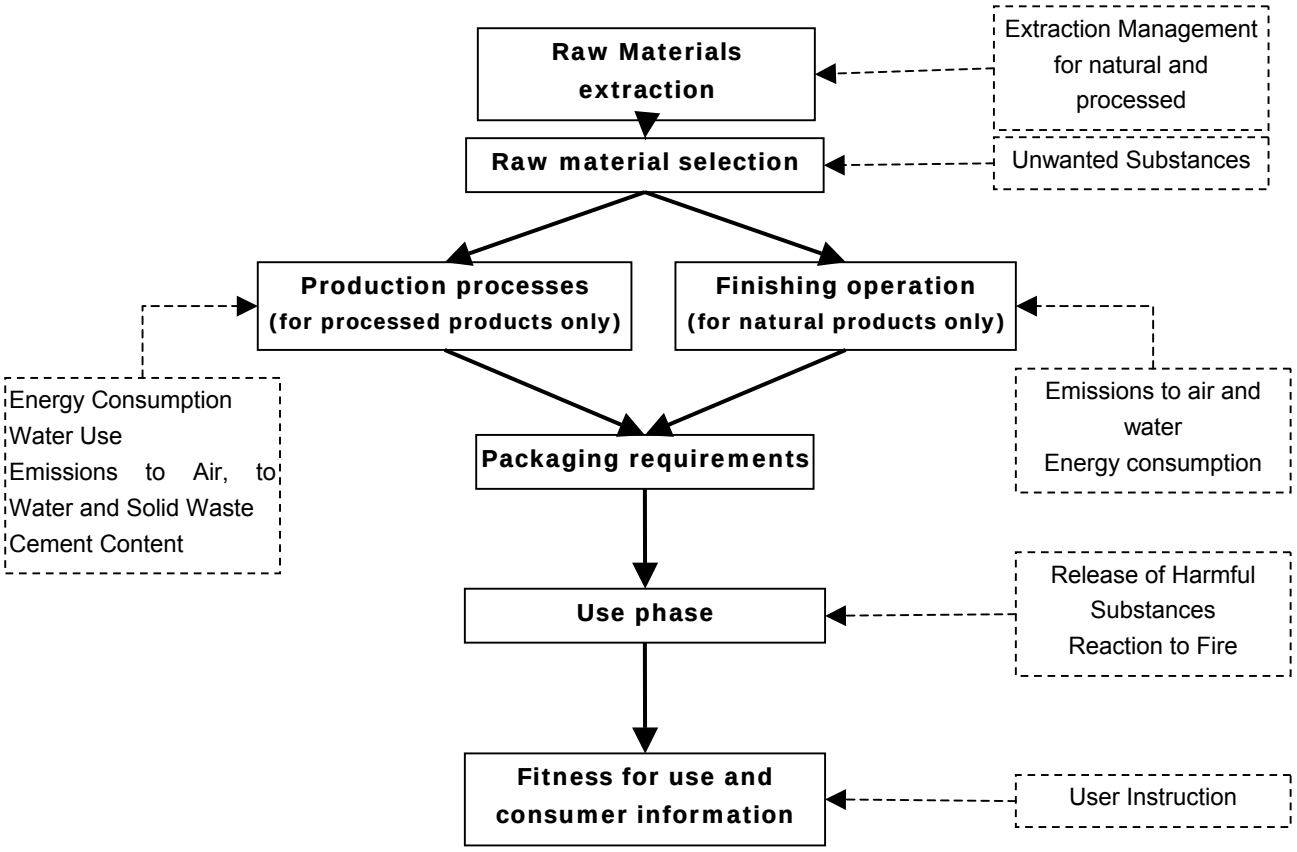


Figure 3.1 - The HC Ecolabel Criteria structure .

In Table 3.1, the applicability of each HC criteria to the different product families is shown.

Table 3.1 - Applicability of each HC criteria to the different product families.

Criteria	Point - Theme	Fired Products		Hardened products			Natural Stones
		Ceramic Tiles (CEN/TC 67)	Clay Tiles (CEN/TC 178)	Agglomerated stones (JWG 229/246)	Concrete Paving Units (CEN/TC 178)	Terrazzo Tiles (CEN/TC 229)	CEN/TC 246
1.1	Raw materials extraction management						☑
1.2	Raw materials extraction managemet	☑	☑	☑	☑	☑	
2	Raw materials selection	☑	☑	☑	☑	☑	☑
3	Finishing operations						☑
4.1	Energy requirement for firing (ERF) limit	☑	☑	☑	☑	☑	
4.2	Water use	☑	☑	☑	☑	☑	
4.3	Emissions to air	☑	☑	☑	☑	☑	
4.4	Emissions to water	☑	☑	☑	☑	☑	
4.5	Cement			☑	☑	☑	
5	Waste management	☑	☑	☑	☑	☑	☑
5.1	Recovery of waste	☑	☑	☑	☑	☑	
6.1	Use phase	☑					
7	Fitness for use	☑	☑	☑	☑	☑	☑
8	Consumer information	☑	☑	☑	☑	☑	☑
9	Information appearing on the ECO-label	☑	☑	☑	☑	☑	☑

Definition of the product group *(Commission decision, Article 2)*

The former article defines the composition of the product group that can obtain the Ecolabel.

New definition:

"The sub-product group 'hard coverings' shall comprise the following hard products for internal/external covering use, without any relevant structural function: natural stones, agglomerated stones, concrete paving units, terrazzo tiles, ceramic tiles and clay tiles."

It has to be pointed out that the CEN definitions for the different product families have not been changed.

All the interested parties agree that the division between wall and floor covering is irrelevant. Some technical documents, as, i.e., the BREF for Ceramic sector, demonstrated that in many cases, the productive processes are the same and the same tiles are used for both flooring and wall coverings. No technological and economic differences between wall and floor coverings production processes exist anymore. In fact, in the BREF document with regard to the ceramic industry it deals with "wall and floor tiles" as a single product group, because there is the substantial equivalence among the different production methods. This consideration can be applied also for the other sectors.

The labelling of wall coverings is, however, possible only in the case that *wall* and *floor* are similar coverings, i.e. where the production processes remain the same, using the same materials and the same manufacturing methods.

Considering also the commercial and market issues, it has to be noticed that the use of tiles indifferently for wall or flooring purposes is now common. Furthermore, the possibility of extending the product scope without having to change the criteria could give the possibility to many other producers to apply for the Ecolabel award with the positive effects on the number of products awarded.

New proposal: The name of the product group has been changed to "**Hard Coverings"**.

Framework *(Assessment and verification requirements)*

This section of the document has the objective to present the structure of the "Coverings" product group and its subdivision. The definition, the CEN code identification (when existing) and some specific characteristics for each sub-products group are included.

Previously the former group of HFC was divided only in the two families of *Natural* and *Processed Products*.

Taking into account the new structure of the "Coverings" product group (see the chapter "Structure of the Draft Criteria" and Figure 1.1) this chapter has been updated to consider possible changes in the CEN TC codes and to include the new sub-products group of the *Wood and Plant based Floor Coverings* and *Textile Floor Coverings*.

Furthermore, it is also stated that *"The competent bodies are recommended to take into account the implementation of recognised environmental management schemes, such as EMAS or ISO14001, when assessing applications and monitoring compliance with the criteria (note: it is not required to implement such management schemes)."*

The inclusion of the **EPD System** in the list of the schemes that should be taken into account by the competent bodies has been deleted compared to the previous Background document.

STAKEHOLDERS COMMENTS:
After the 2nd AHWG meeting the position adopted by some stakeholders, in favour of the inclusion of EPD System in the list of schemes, has changed. Now the general orientation is the exclusion of the EPD system from the list of schemes.

1. RAW MATERIALS EXTRACTION

1.1 Extraction management *(for natural products only)*

Extraction activities determine several kinds of environmental impacts that need to be well managed.

One of the major problems which occurred during the criteria application process is the Indicator I.1 of the scoring table “Water recycling ratio” and the associated Technical Appendix – A3.

The term *waste water* used in the calculation formula, should be clearly defined in the Appendix – A3 as “*the water used in processing plants*”. The refinement of stone products is, in fact, the first stage of the production line, where water is actually used: normally a small amount of water is used in natural stone quarrying and this is not possible to recycle.

In this way, it should consider also the cases of quarries in which sawing is not applied or in which the exploitation level is situated under the water table. In this case most of the water passing through originates from rain and subsoil water, and is conveyed out of the quarry. Thus, a great quantity of the water leaving the quarry is not *waste water* but *fresh water*.

In the updating of the scoring table it should also be considered that most of the quarries can not today recycle more than the 80% of the waste water (Source: The Swedish Stone Industries Federation). The range limit has, thus, to be lowered from 80% to 65%.

No further comments have been received, up to date, to support the above change.

The parameter I.3 “Block recovery” has been identified has critical, because the dealing of commercial blocks on the total amount of material extracted. In fact, the extractor does not actually control the percentage of "good blocks" (i.e. blocks ready to be sold) that are put on the market and used for flooring manufacture. Thus, paradoxically, extractors working on quarries with good quality material, but using poor techniques could be favoured instead of extractors adopting the best techniques, with poor quality quarries. The criterion could be changed taking into account the amount of the total saleable material quarried for coverings purposes instead of only the entire blocks. The modified criteria has been named “Material Recovery”, where the term “material” includes: *the block, the shapeless pieces, the rock and everything that is sold by the quarry and is not designated to landfills*. The calculation formula has been changed as follows:

$$\frac{\text{m}^3 \text{ commercial } \textbf{material}}{\text{m}^3 \text{ extracted recovery material}} \quad [\%]$$

The percentage values for the scoring calculation have been increased of 20%, permitting, in this way, to consider in the calculation of the requirement[8] a larger amount of material.

[8] Data provided by IMM Carrara (personal communication)

Indicator	Notes		Score				
			5 (excellent)	3 (good)	1 (sufficient)	Exclusion Hurdle	Relative weights
I3) Material recovery	**m^3 commercial materials / m^3 extracted material [%]**	MARBLES	**> 60**	**60 – 50**	**49 – 40**	**< 40**	-
		GRANITES	**> 70**	**70 – 60**	**59 – 50**	**< 50**	
		OTHERS	**> 40**	**40 – 35**	**34 – 30**	**< 30**	

In order to give more importance to the impacts generated by the quarrying activity, a new requirement called: *"Extraction activity project and environmental recovery"* has been included for the supply of the following documentation:

- *the authorization for the extraction activity;*
- *the environmental recovery plan and/or Environmental impact assessment report;*
- *the map indicating the location of the quarry;*
- *the declaration of conformity to the Directive 92/43/CEE and Directive 79/409/CEE.*
- *the declaration of compliance with the UN conservation on Biological Diversity (1992) and knowledge of the national biodiversity strategy and action plan if available.*

With regard to point W1 "Nature Conservation" a link to official "Natura 2000 net" web sites has been added. This is a useful tool for verifying the compliance with the Decision requirements. The http://ec.europa.eu/environment/nature/index_en.htm is the official site of the EU where to find information about:

- the normative requirements imposed by the *Directive 92/43/CEE (Habitats Directory) and Directive 79/409/CEE (Birds Directory)*;
- the areas and the sites included in the Birds Directive;
- the areas and the sites included in the Habitats Directive.

STAKEHOLDERS COMMENTS:

From the discussion undertaken during the 2nd AHWG meeting two opposite positions emerged on the I9 "Visual Impact" indicator:

- BEUC and EEB: requires a lowering of the hurdle percentage for the visual impact from the current 30% requirement to 20%. The proposal is not supported by any data or documentation.

- ASCER[9], AICE[10], CCB[11], UEAPME[12] ,U.K. C.B. and the European Commission DG Environment: support the elimination of the requirement, because it is considered too ambiguous and controversial. The calculation system is scientifically correct, but not strictly related to real environmental impacts of a quarry. With the current system, a quarry partially or totally under the ground level (e.g.: a limestone quarry) is favoured, despite its real impacts on the environment, compared to a marble excavation site. A common position is that, in order to evaluate the impact on the landscape, the correct way is to consider its environmental rehabilitation degree during the quarrying operation or at the end of its life.

The current value could not to be lowered, as already specified in the WP1 Final Report and also as highlighted by APAT's data (i.e.: companies awarded with EU Ecolabel)."Visual impact" parameter inclusion or exclusion shall be discussed during the 3°AHWG.

Following a proposal for the new arrangement of the scoring table at the criterion 1.1 of the criteria (GUCE L 94/15). Table 3.2 shows how the current “9 indicators” system works. Taking into account all the possible scoring combinations among the different parameters, the minimum achievable score is 4 points, while the maximum is 40,7 points. The medium value between these two values is 18 points, 7 points below the Ecolabel hurdle of 25 points.

Table 3.2 - – The current “9 indicators” system for the scoring calculation for the *criterion 1.1 – Raw materials extraction*.

9 indicators												
table			***weights***									
indicator	Score		W1		W2		W3		W4		WEIGHTED SCORE	
	min	Max	min	Max	min	Max	min	Max	min	Max	min	Max
I1	1	5	-	-	-	-	-	-	0,5	1	0,5	5
I2	1	5	0,3	1	0,3	0,8	0,5	0,9	-	-	0,045	3,6
I3	1	5	-	-	-	-	-	-	-	-	1	5
I4	1	5	-	-	-	-	-	-	-	-	1	5
I5	1	5	-	-	-	-	-	-	-	-	1	5
I6	1	5	0,3	1	-	-	0,5	0,9	-	-	0,15	4,5
I7	1	5	0,3	1	0,3	0,8	0,5	0,9	0,5	1	0,0225	3,6
I8	1	5	0,3	1	-	-	0,5	0,9	-	-	0,15	4,5
I9	1	5	0,3	1	-	-	0,5	0,9	-	-	0,15	4,5
										Totals	**4,02**	**40,7**

[9] Association of Ceramic Tile Manufacturers of Spain
[10] Instituto de Tecnlología Cerámica – AICE, Spain
[11] Centro Ceramico di Bologna- Italy
[12] European Association of Craft, Small and Medium-sized Enterprises

The following Table 3.3 shows a possible modification of the scoring system of 8 indicators, with the deletion of the "I9 – Visual impact" parameter.

Table 3.3- The "8 indicators" system for the scoring calculation for the *criterion 1.1 – Raw materials extraction*.

8 indicators												
table			***weights***									
indicator	Score		W1		W2		W3		W4		WEIGHTED SCORE	
	min	Max	min	Max	min	Max	min	Max	min	Max	min	Max
I1	1	5	-	-	-	-	-	-	0,5	1	0,5	5
I2	1	5	0,3	1	0,3	0,8	0,5	0,9	-	-	0,045	3,6
I3	1	5	-	-	-	-	-	-	-	-	1	5
I4	1	5	-	-	-	-	-	-	-	-	1	5
I5	1	5	-	-	-	-	-	-	-	-	1	5
I6	1	5	0,3	1	-	-	0,5	0,9	-	-	0,15	4,5
I7	1	5	0,3	1	0,3	0,8	0,5	0,9	0,5	1	0,0225	3,6
I8	1	5	0,3	1	-	-	0,5	0,9	-	-	0,15	4,5
									Totals		**3,9**	**36,2**

In this way, the minimum score will be 3,9 points, while the maximum will be 36 points, with a lowering of 16 points of the medium value: 2 points less with respect to the previous system (Table 3.2).

To maintain the same approach used to establish the former criteria, it is proposed to adopt the new "8 indicator" system explained above (Table 3.3), with a new weighted score hurdle of ***at least 23 points*****.**

The new hurdle value is justified by the lowering of the medium weighted scoring value of 2 points.

The Test Methods indicated in the Decision have been checked. No further updating is requested since the Test Methods have not changed.

1.2 Extraction management *(for processed products only)*

Many producers notified some difficulties in collecting all the necessary information requested for the extraction activity. This is due to the fact that they frequently have a direct contact with commercial suppliers rather than with the extractor and the quarries are not under their direct control. Thus, the necessity to modify the "*Extraction activity project and environmental recovery*" parameter emerged.

The manufacturer will always provide a technical report including the following mandatory list of documents (the same as for the natural stones):

- *the authorization for the extractive activity;*
- *the environmental recovery plan and/or Environmental impact assessment report;*
- *the map indicating the location of the quarry;*
- *the declaration of conformity to the Directive 92/43/CEE and Directive 79/409/CEE.*
- *the declaration of compliance with the UN conservation on Biological Diversity (1992) and knowledge of the national biodiversity strategy and action plan if available.*

It has been specified that, if the extraction activity is not directly managed by the producers, the documentation shall always be requested to the extractor/s.

A link to “Natura 2000 net“ official web sites has been added to find information about the mentioned Directives 92/43/CEE and 79/409/CEE. This is useful tool for verifying the compliance with the Decision requirements.

As previously indicated, http://ec.europa.eu/environment/nature/index_en.htm is the official site of the EU where to find the needed information.

For "visual impact" parameter see comments criteria 1.1. "Visual impact" parameter inclusion or exclusion shall be discussed during the 3°AHWG.

2. RAW MATERIALS SELECTION

Raw materials selection is strictly related to the mandatory regulations, especially for the criteria referring to the use of hazardous substances and chemicals in the production process.

For a more clear interpretation and for simplifying the applicant's task of meeting the requirements, the criterion has been divided in three parts as follows:

2.1 *Absence of risk phrases in raw materials;*

2.2 *Limitation of the presence of some substances in the additives (for glazed tiles only);*

2.3 *Limitation of the presence of asbestos and polyester resins in raw materials.*

With regard to the first point (see 2.1), the indication of the *“Council Directive 67/548/EEC” (Dangerous Substances Directive)* has been integrated with the “*Council Directive 1999/45/EC” (Dangerous Preparations Directive) on the approximation of the laws, regulations and administrative provisions of the Member States relating to the classification, packaging and labelling of dangerous preparations, and relevant amendments*, containing additional rules concerning preparations.

The use of recovered materials (scraps) arising from the same process (closed-loop recycling) or from other processes (open-loop recycling), and the possible use of secondary materials in

addition or in substitution of the raw materials, has been be taken into consideration. However, these have to comply with all the normative requirements recognized for raw materials.
"closed loop recycled materials" shall mean all the secondary materials deriving from the same productive process, also if produced in a different productive site.

Finally, a more generic issue stating that "*the use of any dangerous substances prohibited at EU level is banned"* has been added.

If manufacturers buy externally semi-processed products (mixtures), their supplier has to comply with the normative indicated in this requirement.
Semi-processed products are balanced mixtures of different raw materials ready to be introduced in the production process.

Furthermore, since 2005, the EU Directive 1999/77/EC bans the use of asbestos. It has been decided to leave the sentence that forbids its use.

STAKEHOLDERS COMMENTS:

Accordingly to the BEUC and EEB proposal (see Minutes of the 2nd AHWG of 11/03/2008) it has been suggested to extend the list of risk phrases that have to be banned from substances or preparations that may be added to the raw materials. The following new list is proposed:

R40 (limited evidence of a carcinogenic effect)

R46 (may cause heritable genetic damage)

R49 (may cause cancer by inhalation)

R50 (very toxic to aquatic organisms)

R51 (toxic to aquatic organisms)

R52 (harmful to aquatic organisms)

R53 (may cause long-term adverse effects in the aquatic environment)

R54 (Toxic to flora)

R55 (Toxic to fauna)

R56 (Toxic to soil organisms)

R57 (Toxic to bees)

R58 (May cause long-term adverse effects in the environment)

R59 (Dangerous for the ozone layer)

R60 (may impair fertility)

R61 (may cause harm to the unborn child)

R62 (possible risk of impaired fertility)

R63 (Possible risk of harm to the unborn child)

R68 (Possible risk of irreversible effects)

(*) Note: the new risk phrases proposed are indicated in red.

CEFIC proposed to eliminate every reference to the risk phrases promising to provide the relevant information. CEFIC stated that “risk” and “hazard” have different meanings and Ecolabel criteria should prevent the hazard and not the risk. At present, due to lack of information, the risk phrases have only been updated.

With regard to the content of **lead**, as already cited in the WP1 - Final Report (pg. 49), it is very difficult to propose a lowering of the limit, because most of the ceramic tiles used for wall coverings are treated with glazes containing traces of lead.
For **cadmium**, the hurdle cannot be reduced, as suggested by some stakeholders, since it is technically impossible. Test methods can not measure lower than 0,1% (ref: WP1 - Final Report, pg. 49).
Moreover it should be taken into account that the cited substances are used for the glaze in the additives, which represent not more than 1 kg of the whole tile weight 20 kg (see the 2nd AHWG-Minutes -UEAPME comment, pg. 8).

3. FINISHING OPERATIONS (for natural products only)

The criterion imposes that finishing operations shall be made according to certain requirements and limits for some parameters, specified in the Commission Decision document.

From WP1 the necessity to regulate waste management for the natural stones production process emerged. The finishing activity generates different types of wastes, most of all waste water and sewage mud from sawing operations.

It is not possible to establish, due to the differences of raw materials extracted, a mandatory requirement for the reuse of a certain percentage of slabs from quarrying or finishing operations. Marble slabs can be easy recovered, i.e., for rehabilitation purposes, while granite waste is not recyclable because it contains metal residues due to the excavation techniques.

The Test Methods indicated in the Decision have been checked. No further updating is requested since the Test Methods have not changed.

4. PRODUCTION PROCESSES (for processed products only)

4.1 ENERGY CONSUMPTION IN THE FIRING STAGE AND CO_2 EMISSIONS

With reference to the modification of Table A1 of Annex A4 (Energy consumption calculation) the criteria has been changed in “*Energy consumption in the firing stage and CO_2 emissions*” using CO_2 emissions data related to the use of non-renewable resources.

With the aim of not penalizing the present tendency of producing larger format tiles, as requested by market, the hurdle measure unit for PER and ERF has been modified, introducing a

consumption parameter linked to the unit of weight of the cooked/hardened products. The energy consumption has been expressed in **MJ/kg** instead of MJ/m^2.

With this new requirement, without distinction between different limits of specific weight, the distortions in the results due to esthetical differences between different products will be avoided.

New Proposal:

The phrase "*all the hurdles are expressed in MJ per square metre of final product ready to be sold*" has been modified in "*all the hurdles are expressed in **MJ per kg** of final product ready to be sold."*

In particular, the modification is based on the following assumptions:

A. <u>Process energy requirement (PER) limit</u>

Since the criterion MJ/m^2 measure unit was related to the firing process, it is not obligatory to change the parameter also for the hardened products. In any case, a proposal for the conversion of the current criterion unit to MJ/kg is reported below:

Agglomerated stones

With reference to the LCA on HFC carried out by LCE, the following data have been used:

- Process energy consumption = 114 MJ/m^2;
- Slab thickness used as reference for calculation = 0,3 dm;
- Slab area used as reference for calculation = 100 dm^2 (1 m^2);
- Specific weight = 2,42 kg/dm^3.
- Existing EU eco-label hurdle value = 100 MJ/m^2

$$\frac{100\ \mathrm{MJ/m^2}}{(100\ \mathrm{dm^3} * 0{,}3\mathrm{dm}) * 2{,}42\ \mathrm{kg/dm^3}} = 1{,}57\ MJ/kg$$

The value **1,6 MJ/kg** can be considered for agglomerated stones.

Terrazzo tiles

With reference to the LCA on HFC carried out by LCE, the following data have been used:

- Slab thickness used as reference for calculation = 0,3 dm;
- Slab area used as reference for calculation = 100 dm^2 (1 m^2);
- Specific weight = 1,54 kg/dm^3.

- Existing EU eco-label hurdle value = 60 MJ/m^2

$$\frac{60\ \mathrm{MJ/m^2}}{(100\ \mathrm{dm^3} * 0{,}3\mathrm{dm}) * 1{,}54\ \mathrm{kg/dm^3}} = 1{,}30\ MJ\ /\ kg$$

The value **1,3 MJ/kg** can be considered for terrazzo tiles.

B. Energy requirement for the firing (ERF) limit

The existing criterion states that:

"The energy requirement for firing (ERF) stages for ceramic tiles and clay tiles shall not exceed:

	Hurdle (MJ/m^2)
Ceramic tiles (specific weight ≤ 19 kg/m^2)	50
Ceramic tiles (specific weight > 19 kg/m^2)	70
Clay tiles (specific weight ≤ 40 kg/m^2)	60

Assessment and verification: the applicant shall calculate the ERF according to the Technical Appendix — A4 instructions and provide the related results and supporting documentation".

Ceramic tiles

In the National Italian Guidelines[13] for the ceramic sector[14]characterization an energetic consumption range from 1,9 – 4,8 MJ/kg for the firing stage is indicated for the BAT. A **3,5 MJ/kg** limit for the ceramic tiles could be established, without reference to specific weight classes .

Clay tiles

With regard to clay tiles, considering that the specific weight is almost the same as for he ceramic tiles and with a similar production processes, the value **3,5 MJ/kg** used for the ceramic tile sector can be applied also to clay tiles. The value has been confirmed also by the LCA results.

[13] Decreto Ministero Ambiente 29 gennaio 2007 recante "Emanazione di linee guida per l'individuazione e l'utilizzo delle migliori tecniche disponibili, in materia di fabbricazione di vetro, fritte vetrose e prodotti ceramici" - Supplemento Ordinario alla Gazzetta Ufficiale n. 125 del 31/5/2007

[14] "Rapporto Integrato - Ambiente Energia Sicurezza-Salute Qualità, L'industria italiana delle piastrelle di ceramica e dei materiali refrattari verso uno sviluppo sostenibile, ASSOPIASTRELLE- SNAM, 1998"

New Proposal:

The new criteria could be the following:

"The energy requirement for firing (ERF) stages for ceramic tiles and clay tiles shall not exceed:

	Hurdle (MJ/kg)
Ceramic and Clay tiles	**3,5 MJ/kg**

STAKEHOLDERS COMMENTS:

The suggestion, emerged during the II° AHWG, of extending energy consumption calculation to the whole life cycle of the product seems to be excessive for the following reasons:

- it should to be highlighted that the Ecolabel is not an LCA: since it is required to analyze only for the most significant environmental impacts sources, imposing limitations.
- It is not possible to cover all the impacts occurring during the whole life cycle of a product (example: transport, quarry etc) since such process will require more time and the same approach should be applied to all the EU Ecolabel product groups.

Technical Appendix – A4

To qualify the processes/products from a greenhouse gases emissions point of view, the information that could be supplied at this stage refers to the **CO_2 emissions** generated during the firing activities from non renewable fuels or electric energy use. This data should be reported as further information, and not as mandatory criteria, in the dossier elaborated for the Ecolabel requirements as well as additional information for the final consumer.

Table 3.3 shows how the ERF value table defined for the old criteria could be modified to insert CO_2 emissions data. It has to be specified that the emission values are referred only to the firing stage.

Table 3.3 – Modification of the PER/ERF table in the Appendix A4 of the Commission Decision 2002/272/EC with CO_2 emissions inclusion

Production period	**Days**	**From**	**To**			
***Production (kg)**						
Fuel	**Quantity**	**Units**	**Conversion factor**	**Energy (MJ)**	**Emission factor (g CO_2/ MJ)**	**CO_2 emissions**
Natural gas		kg	54,1		56,1	
Natural gas		Nm^3	38,8		56,1	
Butane		kg	49,3		76	
Kerosene		kg	46,5		71,9	
Gasoline		kg	52,7		69,3	
Diesel		kg	44,6		74,1	
Gas oil		kg	45,2		84	
Heavy Fuel oil		kg	42,7		87	
Dry Steam Coal		kg	30,6		95	
Anthracite		kg	29,7		98,3	
Charcoal		kg	33,7		94,6	
Industrial Coke		kg	27,9		108,2	
Electricity (from net)		kWh	3,6		400	
Total energy						
Specific energy consumption (MJ/*kg of product)						
Total CO_2 emissions (g)						
Specific CO_2 emissions (CO_2/*kg of product)						

The emission factors reported in Table 3.3 are those reported in the *Commission Decision of 29 January 2004 establishing guidelines for the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC*.

The results of the energy consumption calculation in the Table A1 – Annex A4 has to be reported in MJ/kg.

It could be discussed if further reference for emission factors should be used. For example the use of specific national emission factors (also defined within the EU ETS regulation) could be taken into consideration.

However, it is important to note that a specific project on “EU Ecolabel – the carbon footprint measurement toolkit” has been recently sponsored by the EC.

Considering that a final version of the abovementioned tool, which will comprehend the CO_2 equivalent emissions from the whole life cycle of the product, will not be disposable in short time, the proposal of modification of the PER/ERF table (Table 3.3) could be temporarily approved, also if limited to the production processes. The future application of the complete "carbon footprint measurement toolkit" will be undertaken in the next revision criteria.

4.2 WATER CONSUMPTION AND USE

The existing criterion for water use states that:

"The waste water produced by the processes included in the production chain shall reach a recycling ratio of at least 90%. The recycling ratio shall be calculated as the ratio between the waste water recycled, internally or externally at the plant, and the total water that leaves the process, as defined in the Technical Appendix — A5.

Assessment and verification: the applicant shall provide the calculation of the recycling ratio including raw data on total waste water produced, water recycled and the quantity and source of virgin water used in the process."

The practice of water recycling is, at present, common in almost all the Industrial tiles sector.

New Proposal:

For a better clarification of the recycling concept, the criteria text has been modified as follows:

"The waste water produced by the processes included in the production chain shall reach a recycling ratio of at least 90%. The recycling ratio shall be calculated as the ratio between the waste water recycled or recovered *by applying a combination of process optimisation measures and process waste water treatment systems*, internally or externally at the plant, and the total water that leaves the process, as defined in the Technical Appendix — A3. *The percentage of recovery refers only to processed waste water and the amount of "drainage water" has not to be considered.*

To fulfil the request of inserting "water consumption" parameter, before the processing phase, it could be established that a certain percentage of the water, used in the manufacturing process, derives from internal recycling. In this case, it has to be considered that such a proposal does not really limit the use of water, but can only contribute to restrict the use of potable water from the public water system. Furthermore, the use of recycled water is not acceptable in the production of some kinds of products due to the impurities contained in the recycled water.

STAKEHOLDERS COMMENTS:

The Centro Ceramico di Bologna (CCB) proposed the introduction of the following hurdle value that should not be exceeded: a **Fresh Water Specific Consumption (Cw)** new parameter that could be calculated as **litre of Fresh Water consumed/kg of final product (l[F]/kg)**. Fresh Water [F], as specified, is only referred to *groundwater*, *shallow water* or *water from the net*. The source that inspired this parameter is the documentation that must be provided for the EIA annual report of the "Modena and Sassuolo Ceramic Division".

The following formula must be used for the calculation:

$$CW_{p-a}=(W_p+W_a)/P_t$$

Where:

Cw_{p-a} = Fresh Water Specific Consumption. The results are expressed in **m^3/tonnes**, equivalent to **l/kg**;

P_t = total stored production in **tonnes**;

W_p = water from wells and intended for exclusive use industrial (excluding water form wells for domestic use, irrigation and any other non-industrial use), in **m^3**;

W_a = water from aqueduct and intended for exclusive use industrial (excluding water form wells for domestic use, irrigation and any other non-industrial use) in **m^3**;

After consultations, the following limit is proposed for the ceramic tiles:

	Hurdle (Litre/kg of product)
Fired products	**1**

STAKEHOLDERS COMMENTS:

During the 2nd AHWG meeting it emerged the proposal (BEUC and EEB) of adopting a percentage reduction parameter for this requirement.

The calculation of the hurdle in literes is referred to the document "EIA annual report of the Modena and Sassuolo Ceramic Division" created to comply with the IPPC directive. Up to date no comments or proposal have been produced for changing the hurdle parameter in percentage.

Since the proposal and the data provided are applicable only to the ceramic and clay tiles, the requirements shall be applied to the *fired products* only.

4.3 EMISSIONS TO AIR

Existing criteria set out threshold values for some air emissions such as emissions of particulate, phosphor (F), nitrous oxides (NO_X) and sulphur dioxides (SO_2) occurring in the manufacturing process of processed HFCs as indicated in the Decision.

According to the Final Report for HFC and SFC (see chapter 2: "EU legislation analysis: regulatory improvements for the floor coverings sector") results, no modifications have been introduced to the current EU Ecolabel limits, since they still comply with the new law limits (applied in some EU countries) and the indications of the existing BREF and BAT.

NEW PROPOSAL:

To harmonise the methods and the functional units with those used in criteria 4.1, the conversion of the existing hurdles to mg/kg (instead of mg/m^2) is proposed[15].

The following table shows the conversion of the current values for the different product families and for each parameter, together with the assumption made for the calculation. The same table reports the updated test methods for the assessment and verification (see WP1 Final Report: chapter 3, pg. 32).

Table 3.4 – The converted emission values and the updated set of test methods for criteria 4.3 (air emissions).

Product group	Parameters	Existing Hurdles (mg/m2)	Thickness (m)	Specific Weight (kg/m2)	New Hurdles (mg/kg)	Updated Test Method proposal CEN/ISO
Ceramic Tiles	**Particulate matter** *(Dust)*	200	0,01	20	10	**EN 13284-1**
	Fluorides *(as HF)*	200			10	**ISO 15713**
	Nitrogen oxides (as NOx)	2.500			125	**EN 14792**
	Sulphur dioxides *(SO_2)*	1.500			75	**EN 14791**
Clay Tiles	**Particulate matter** *(Dust)*	250	0,01	20	12,5	**EN 13284-1**
	Fluorides *(as HF)*	200			10	**ISO 15713**
	Nitrogen oxides (as NOx)	3.000			150	**EN 14792**
	Sulphur dioxides *(SO_2)*	2.000			100	**EN 14791**
Agglomerated stones	**Particulate matter** *(Dust)*	300	0,01	24,2	12	**EN 13284-1**
	Nitrogen oxides (as NOx)	1.200			50	**EN 14792**
	Sulphur dioxides *(SO_2)*	850			35	**EN 14791**
	Styrene	2.000			83	-

[15] ANDIL, Comments on the First Draft Criteria Proposal (communicated to APAT)

Terrazzo and Concrete	**Particulate matter** *(Dust)*	300	0,01	20	15	**EN 13284-1**
	Nitrogen oxides (as NOx)	2.000			100	**EN 14792**
	Sulphur dioxides *(SO_2)*	1.500			75	**EN 14791**

Note: for *Fluorides* parameter **ISO** standard **15713** is the only existing method, since no CEN methods are yet available.

STAKEHOLDERS COMMENTS:

During the 2nd AHWG meeting, BEUC and EEB suggested the inclusion of limits for HCl and CO and the lowering of HF limits. It should be highlighted that in the BAT document , values for HCl and CO are not present and in the BREF only the value for HCl is reported. Furthermore, the LCA analysis prepared by LCE for the first criteria development and now updated shows that the parameter "HCl emission" is not so relevant for the production process of the HC products. With regard to this issue, the following table (Table 3.5) provides the primary emissions to air data relative to the production of 1 kg of glazes. It must be pointed out that the glaze represents a minimal part of a tile, i.e. about the 1% in weight.

Table 3.5 - Primary output data relative to the production of **1 kg of glazes**.

Air emissions (mg)	*Quantity*
CO_2	4.000.000
NO_x	1500
SO_x	500
B	150
Dust	100
HCl	60
HF	30
Pb	30

With regard to the proposal of lowering the HF emissions, no justified data to support this proposal have been found. However, it shall be noticed that the Ecolabel limits for these parameters are still lower than both the BAT and the European law limits, as explained in the WP1 Final Report (Table 3.4, pg. 36).

4.4 EMISSIONS TO WATER

The existing criterion for water use states that:

After waste water treatment, whether on-site or off-site, the following parameters shall not exceed the following limits:

Parameter	Current Hurdle	Test methods
Suspended solid emission to water	40 mg/l	ISO 5667-17
Cd emission to water	0,015 mg/l	ISO 8288
Cr(VI) emission to water	0,15 mg/l	ISO 11083
Fe emission to water	1,5 mg/l	ISO 6332
Pb emission to water	0,15 mg/l	ISO 8288

The law limits are still the same as those used in 2001-2002, as reference for the existing values, so the hurdles do not need to be changed.

STAKEHOLDERS COMMENTS:
ASCER (during the 1st and 2nd AHWG meeting) suggested that the measurement for Fe parameter is not applied for the ceramic tiles since, from experience, this has never been a critical value and tests methods could be expensive for the applicant. However, at present no evidence data has still been provided.

The Test Methods indicated in the Decision have been checked. No further updating is requested since the Test Methods have not changed.

4.5 CEMENT

A survey on existing Environmental Product Declarations (EPDs) on cement shows that the existing hurdle is still restrictive, and also from the analysis of the "Reference Document on Best Available Techniques in the Cement and Lime Manufacturing Industries" (European Commission, Dec. 2001) it emerged that no modification in the parameter limits are needed.

Parameter	Current Hurdle (g/t)	Test methods
Dust	65	**EN 13284-1**
SO_2	350	**EN 14791**
NOx	900	**EN 14792**

The Test Methods indicated in the Decision have been checked and updated.

5. WASTE MANAGEMENT

In order to make the criteria application more clear, it has been specified that the first part of the requirement is valid for "all Hard Covering products", including also natural stones.

5.1 WASTE MANAGEMENT *(for natural products only)*

For natural stones only, the request to provide appropriate documentation about waste management deriving from quarrying and from finishing operation, has been added. Waste management and the re-use of by-products (sawing included) have to be declared.

Assessment and verification: the applicant shall provide a declaration of conformity with the requirement, in accordance with the Directive 2006/21/CEE of 15/03/2006.

5.2 RECOVERY OF WASTE *(for processed products only)*

In order to give more emphasis to the procedures adopted to re-use by-products originated from the process, a requirement for producing appropriate documentation has been introduced as indicated below:

- kind and quantity of waste recovered;
- kind of disposal;
- information (internally or externally to the production process) about the reuse of waste and secondary materials in the production of new products.

At least 85% (by weight) of the total waste generated by the process or the processes shall be recovered according to the general terms and definitions established by Council Directive 91/156/EEC of 18 March 1991 amending Directive 75/442/EEC on waste[16].

For a more clear interpretation of the requirement it could be better specified, that "process wastes" does not include maintenance wastes, organic wastes, etc

STAKEHOLDERS COMMENTS:

The documentation provided by APAT and ASCER demonstrates that the minimum percentage of waste recovery can be raised up to 85%.

[16] OJ L 78, 26.3.1991, p. 32.

6. USE PHASE

6.1 RADIOACTIVITY

The following request is valid for all the product families and not only to glazed tiles.

It is a necessity, shared by most of the interested parties, to include a requirement to control and limit radioactive emissions.

Although some proposals were for the introduction of the parameter in the "raw material selection" criterion, it has been decided to insert the control of possible release of radioactive material on the finished product destined to the consumer.

To understand if in the final products the use of materials with some **radioactivity** effects (e.g. presence of zirconium), have implications in terms of radioactivity emissions, an investigation on the measurement methods and on the imposable limits has been carried out.

For the radioactivity value measurement, the European Union has adopted the standard regulation known as **RP 112**[17] ("Radiological protection principles concerning the Natural Radioactivity of Building Materials"), currently used by the most important industrial building sectors.

A working section of the "Group of Experts" established under the terms of Article 31 of the Euratom Treaty has examined the issue of regulatory control of building materials. Taking into account the content of natural radionuclides occurring in building materials and developing a guidance, based on a study, that provides natural radioactivity information in building materials and the relevant regulations in the EU Member States.

This guidance was adopted on 8 June 1999 and is now published with the intent to harmonise controls carried out by Member States, in particular in order to allow movement of building products within the European Union.

The RP 112 guidance is defined as "a useful reference document for the European Commission when considering possible regulatory initiatives at Community level."

It emerged from the analysis of the document that a hurdle value on the following parameter can be imposed:

"Iγ": emerges from the relationship between the concentrations of radionuclides in materials with the external dose.

Another parameter, known as **"Iα",** is adopted only in some Nordic countries (i.e. Norway and Sweden) and emerges from the relationship between the concentrations of radio-226 in materials with the internal dose.

[17] Radiation Protection 112, 1999.

Taking into account the previous argumentation, the best reference document is the European Commission technical norm “Radiation Protection 112”, since its use is widespread among all the EU member Countries and because it is directly applicable to the building materials sector.

The following limits provided by the abovementioned technical norm could be:

Parameter	EU Hurdle	Reference document
I_γ	2	**RP 112**

Assessment and verification: the applicant shall provide a declaration of conformity with the requirement, in accordance with the “Radiation protection 112” technical norm.

STAKEHOLDERS COMMENTS:

ASCER and CET comments are strongly against the introduction of a radioactivity parameter since they state that radioactivity is totally irrelevant for ceramic final products and the introduction of this parameter could will give "*a wrong massage to the market*" and consumers .

6.2 RELEASE OF DANGEROUS SUBSTANCES *(for glazed tiles only)*

Since the current limits for the release of dangerous substances (Pb and Cd) and the relative test methods are those established for the ceramic products destined to the alimentary sector, the hurdles currently individuated for this criterion do not need a revision as the limit is already very stringent.

Parameter	Current Hurdle (mg/m^2)	Test methods
Pb	80	ISO 10545-15
Cd	7	

STAKEHOLDERS COMMENTS:

Some comments, which emerged during the 1st AHWG meeting, proposed the introduction of a new requirement "Cr_6 limitation" for the finished product. It should be considered that the presence of this element is very low in the products and that the additional test methods, different from that adopted for the other two parameters, could be very expensive for the applicant. It has been decided, as indicated by other stakeholders, not to include this parameter.

Furthermore, since the current limits for the release of dangerous substances (Pb and Cd) and the relative test methods are those established for the “**ceramic products destined to the alimentary sector”**, the criterion does not need a revision, as the limit is already very stringent.

The modification of the measure unit toward the mg/kg would not have sense, because the glaze is applied at m^2 and the mg/m^2 is the unit used also in the ISO reference indicated for the test methods.

In addition, it should be highlighted that the criterion can not be deleted, as proposed during the 2nd AHWG meeting (DK CB), since there are no technologies, up to date, that allow the total elimination of heavy metals from the raw materials upstream.

The Test Methods indicated in the Decision have been checked. No further updating is requested since the Test Methods have not changed.

7. PACKAGING

This new criterion has been introduced, due to many requests received from the stakeholders for regulating the environmental impacts reduction related to the packaging production.

The following requirement will be mentioned in the Decision:

"Packaging used should be multi use systems or be made out of 100% recycled materials with a take back opportunity for recycling".

STAKEHOLDERS COMMENTS:

Despite some unfavourable positions related to 100% of recycled material due to its supposed scarce mechanical resistance, no data has been received, up to date, and it has not been possible to collect information from producers. From our investigation on this issue the following information is provided:

The *100% Recycled Paperboard Alliance (RPA-100%)* is an independent trade alliance headquartered in USA representing the leading manufacturers in the recycled paperboard industry. Information provided by the association site[18] states that some kinds of 100% recycled paperboard are "*functionally equivalent to virgin grades of paperboard and, in some cases, also to SBS/CUK in the areas of strength, graphics, cleanliness and overall quality and consistency*".

With regard to the use of plastic materials for packaging purposes, PlasticsEurope and ECVM has provided to APAT and LCE appropriate documentation to support the use of plastic packaging. From the consultations it emerged a proposal for polymers and plastics management use in packaging.

[18] www.rpa100.com

The use of plastics for products packaging has to be regulated by the REACH Regulation as well as a mandatory request of 100% recyclable materials (an informative declaration about the correct disposal of the packaging shall be included). Furthermore it has to be specified also that the plastic materials shall be in compliance with the Directive 2005/84/CE, relating to *"restrictions on the marketing and use of certain dangerous substances and preparations (phthalates in toys and childcare articles)"*.

In this way the use of the six following phthalates would be regulated:

- bis (2-ethylhexyl) phthalate (DEHP) [CAS No 117-81-7; Einecs No 204-211-0]

- dibutyl phthalate (DBP) [CAS No 84-74-2; Einecs No 201-557-4]

- benzyl butyl phthalate (BBP) [CAS No 85-68-7; Einecs No 201-622-7]

- di-"isononyl" phthalate (DINP) [CAS No 28553-12-0 and 68515-48-0;Einecs No 249-079-5 and 271-090-9]

- di-"isodecyl" phthalate (DIDP) [CAS No 26761-40-0 and 68515-49-1;Einecs No 247-977-1 and 271-091-4]

- di-n-octyl phthalate (DNOP) [CAS No 117-84-0; Einecs No 204-214-7]

8. FITNESS FOR USE

The criterion cites that:

The product shall be fit for use. This evidence may include data from appropriate ISO, CEN or equivalent test methods, such as national or in-house test procedures.

Since the extension of the sub-product group to the wall coverings has occurred, a clear indication of the different use for which the product is suitable has to be indicated. The following phrase has to be added in the criterion:

"*An indication of the kind of use for which the product is suitable has to be clearly indicated: wall, floor or wall/floor*".

The Normative References indicated has been checked. No further updating is requested since the Directive is still in force.

The criterion number has been modified.

9. CONSUMER INFORMATION

The criterion states that the product has to be sold with information about the EU Ecolabel award, with the recommendations for its use and maintenance, with an indication of the route of recycling or disposal and with information on the EU Ecolabel and its related product groups.

The criterion does not change.

The criterion number has been modified.

10. INFORMATION APPEARING ON THE ECOLABEL

The criterion states that:

Box 2 of the Ecolabel shall contain the following text:

Natural products:

- *reduced impact of extraction on habitats and natural resources,*
- *limited emission from finishing operations,*
- *improved consumer information and waste management.*

Processed products:

- *reduced energy consumption of production processes,*
- *reduced emissions to air and water,*
- *improved consumer information and waste management.*

The criterion does not change.

The criterion number has been modified.

WOOD AND PLANT BASED FLOOR COVERINGS

4. The 2nd Draft Criteria Development framework

TOWARD THE CRITERIA FOR WOOD AND PLANT BASED FLOOR COVERINGS

From different documents provided in the WP1 Final Report and from the LCA analysis made by LCA (see Chapter 2 for a synthesis of the results), it emerges that the main aspects that must be managed, for each life cycle stage, are the following:

Table 4.1 – Main environmental aspects involved in the manufacture of a wooden covering.

Life Cycle phase	Sub-phase	Aspect
Raw materials	*Purchasing*	• Origin of the wood and forest management
Production	*Treatments*	• Use of chemical in the wood treatment; • Use of chemicals for gluing and coating • Other additives and colorants
	Sawmill	• Energy consumption (electric and fuel) • Air emissions • Water emissions
	Wastes	• Recycling of by-products
Use phase	*Activities*	• Release of dangerous substances • Fitness for use
	Product requirements	• Durability

The case of laminate floorings

From different documents provided in the WP1 Final Report and from the LCA analysis made by LCE (see Chapter 2 for a synthesis of the results), it emerges that the main aspects that must be managed, for each life cycle stage for laminate floorings, in addiction to Table 4.1, are the following:

Table 4.2 - Additional environmental aspects involved in the manufacture of a Laminate covering.

Life Cycle phase	Sub-phase	Aspect
Raw materials	*Purchasing*	• Percentage of recycled materials used in the manufacturing
Production	*Treatments*	• Absence of dangerous substances in the coating surfaces; • Use of glue and other additives in the assembly phase;
Use phase	*Activities*	• Release of dangerous substances • Fitness for use
	Product requirements	• Durability

The case of cork floorings

The LCA analysis (see Chapter 2), highlights the main critical impacts attributed to the manufacturing process of a generic cork flooring. It emerged that the production of the virgin cork involves the most significant energy requirement: therefore, a quota of recycled material could be imposed to limit the energy consumption associated to the primary raw material.

CRITERIA DEVELOPMENT FOR WOOD AND PLANT BASED FLOOR COVERINGS SUB-PRODUCTS GROUP

Taking into account the considerations highlighted within the 1st Background report , the literature studies already cited in the WP1 Final Report and the LCA analysis, carried out by LCE, the following criteria proposal has been developed.

Hereafter, some requirements that have to be the basis and the starting point for the new criteria for the sub-product group are suggested.

As recommended both from the EU Commission and from different stakeholders during the 1st AHWG meeting (Brussels, 28/09/2007), in order to harmonize as much as possible the European methods and standards related to products/processes, the following proposals are based on the already existing National labels for this product group (where existing) or refer to current Ecolabel criteria for similar products (i.e.: Draft criteria for wooden furniture).

With regard to EU Ecolabel Draft criteria for wooden furniture included in this document it has to be emphasised that criteria will be updated taking into account the outcome of the EU Ecolabel Final criteria for wooden furniture (September 2008).

All references are indicated in the text.

Definition of the product group *(Commission decision, Article 2)*

This article defines the composition of the product group that can obtain the Ecolabel award.

"The product group 'Coverings' shall comprise the following sub-products group for internal/external use, without any relevant structural function:

- *Hard Coverings: [omitted…];*
- ***Wood and Plant based floor coverings:** including wood and timber floorings, laminate floorings cork and bamboo floorings which are made, for more than 90% in mass (in the final product), from wood, wood powder and/or wood/plant based material. It does not apply to wall coverings or that for external use;*
- *Textile floor coverings: [omitted…]."*

The percentage (i.e.: 90% in mass) derives from some LCA studies conduced on laminates, demonstrating that the medium German composition of a laminate flooring is 90% wood based (see WP1 Final Report - Table 5.7, page 93).

Framework *(Assessment and verification requirements)*

The objective of this section of the document is to present the structure of the "Coverings" product group and its subdivision. For each product a definition and some specific characteristics are included.

Taking into account the new structure of the "Coverings" product group (see the chapter “Structure of the Draft Criteria” and Figure 1.1) this chapter has been updated to include the new sub-products group of “Wood *and Plant based Floor Coverings*" and "*Textile Floor Coverings"*.

The definition proposed for the "*Wood and Timber floorings" sub-products* group is:

“wood floors made by one solid piece of wood that have tongue and groove sides or constructed from several wood plies that are glued together in a multilayer panel. A wood floor can be unfinished, and once installed sanded, then finished on site or pre-finished in a factory. The products that can be awarded are the following: parquet, mosaic floorings, pre-finished floorings”.

The *European* "*Wood and Timber floorings" covering industry* determines its technical position in the European commission of normalisation **CEN/TC 112**.

The definition[19] proposed for the *Laminate flooring* product group is:

“*rigid floor covering with a surface layer consisting of one or more thin sheets of a fibrous material (usually paper), impregnated with aminoplastic thermosetting resins (usually melamine), pressed or bonded on a substrate, normally finished with a backer[20] The products that can be awarded are the following: direct pressure laminate floorings and high pressure laminate floorings”.*

The *European laminate floor covering industry* determines its technical position in the European commission of normalisation **CEN/TC134**.

The “Cork coverings” can be defined as: *floor coverings made of cork that is the outer bark of the cork oak tree, removing of that protection is fundamental for the sustainability of the cork oak forest[21].* In alternative the EN 12246 define the cork covering as “*floor covering the main component of which is agglomerated composition cork, intended to be used with a finish.*"

The “Bamboo coverings” are floor covering made of Bamboo.

"The products that can be awarded are: cork floorings and bamboo floorings"

The *European* "*cork" floor covering industry* determines its technical position in the European commission of normalisation **CEN/TC134**.

The functional unit, to which inputs and outputs should be related, is 1 m^2 of finished product.

[19] NALFA Standards (2003)

[20] “Baker”: a material bonded to the back of the substrate.

[21] AMORIM, 2007.

1. RAW MATERIALS

Specific material requirements

All virgin solid wood and plant based flooring must originate from forests that are managed so as to implement the principles and measures aimed at certifying sustainable forest management.

In Europe, the principles and measures referred to above shall at least correspond to the definition of SFM that was adopted in Resolution 1 of the 2nd Ministerial Conference on the Protection of Forests in Europe (Helsinki, 16-17 June 1993), the Pan-European Operational Level Guidelines for Sustainable Forest Management, as endorsed by the 3rd Ministerial Conference on the Protection of Forests in Europe (Lisbon, 2-4 June 1998) and the Improved Pan-European Indicators for SFM, adopted at the MCPFE Expert Level Meeting of 7-8 October 2002 that were approved at 4th Ministerial Conference on the Protection of Forests in Europe (Vienna, 28-30 April 2003).

Outside Europe, they shall at least correspond to the UNCED Forest Principles (Rio de Janeiro, June 1992) and, where applicable, to the criteria or guidelines for sustainable forest management as adopted under the respective international and regional initiatives (ITTO, Montreal Process, Toronto Process, UNEP/FAO Dry-Zone Africa Initiative).

1.1 Sustainable forest management (for all the products)

STAKEHOLDERS COMMENTS:

After the 2nd AHWG meeting consultation and thanks to some comments received, the previous scheme, which foresaw different proposals for the various kinds of products, has been changed, unifying the requirements to a single criterion.

The value regarding the quota of certified material will be discussed during the 3rd AHWG meeting.

Following a synthesis presenting the state of art of the Forestry Certifications based on the most recent official data.

SUSTAINABLE FOREST MANAGEMENT OVERVIEW

Hereafter are reported some hotspots available in the *UNECE/FAO Forest Products Annual Market Review, 2005-2006:*

- Certified forest area increased by 12% from 2005, reaching 270 million hectares by mid-2006, which is **7%** of the global forest area.
- Certification remains largely confined to the northern hemisphere's temperate and boreal forests, and to developed countries: 87% of certified forest is in the UNECE region (58% in North America and 29% in western Europe).
- Roundwood production from certified forests represents approximately 25% of global production but only a tiny amount of this is labelled as being of certified origin.

- Chain-of-custody certificates increased by approximately 20%, reaching 7,200 certificates worldwide, which still covers only a fraction of overall trade.
- In Asia, markets for certified forest products (CFPs) are rising in Japan, but China is producing CFPs mainly for export to North America and Europe.
- Public procurement policies for wood and paper products are increasingly specifying CFPs for assurance of sustainable forest management.
- Except in the Netherlands, **there is a lack of demand from final consumers for CFPs.**
- By May 2006, Canada accounted for over half of PEFC and almost one quarter of FSC worldwide certifications: the PEFC umbrella now covers more than two thirds of the total certified forest area worldwide, with FSC accounting for another 28%.
- Certification of non-wood forest products is gaining importance in developing countries as well as in the developed world.

It appears from the report that the most important certification schemes used worldwide are:

	**FSC**	**Forest Stewardship Council** FSC is a worldwide independent, non-governmental, not for profit organization established to promote the responsible management of the world's forests.
	**PEFC**	**Programme for the Endorsement of Forest Certification schemes** The PEFC is a worldwide committed to promoting sustainable forest management through independent third party forest certification, based on environmentally, socially beneficial and economically viable management of forests for present and future generations.
	**SFI**	**Sustainable Forestry Initiative** SFI program promotes the sustainable forestry on all the lands they manage. The program participants also influence millions of additional acres through the training of loggers and foresters in best management practices and landowner outreach programs.
	**CSA**	**Canada's National Standard for Sustainable Forest Management** The CAN/CSA-Z809 SFM Standard, developed according to an internationally recognized and accredited standards development process, is based on the international Helsinki and Montréal processes. It incorporates Canada's own national SFM criteria, which were developed by the Canadian Council of Forest Ministers.

Table 4.3 shows, related to scheme and region, the certified area worldwide For this analysis the "FSC" (Forest Stewardship Council), the "PEFC" (Programme for the Endorsement of Forest Certification) and "Other schemes" which refer to specific regional scheme (as reported in the note

below the table), have been considered. In Europe, the certified forest area is 87 million hectares, which represents 30% of the worldwide total certified forests (294, 9 million hectares).

Table 4.3 - Certified forest area by scheme and region (Source: www.forestrycertification.info, 2006)

(million hectares)	**North America**	**South &Central America**	**Europe**	**Asia**	**Oceania**	**Africa**	**Russia**	**Total**
FSC	27,3	9,6	29,6	1,6	1,3	2,5	12,3	84,2
PEFC	128, 3	2,3	57,4	-	5,7	-	-	193,7
Other*	11,0	-	-	4,8	-	1,2	-	17,0
Total	166,6	11,9	87,0	6,4	7,0	3,7	12,3	294,9

* Other in North America refers to American Tree Farm System, in Asia refers to the Malaysian Timber Certification Council, in Africa refers to areas in Gabon recognised under the Dutch Keurhout system.

The following table (Table 4.4) shows a picture of the situation of the Certified forest areas in the EU 27 updated to February 2007. It can be noticed that in the EU 46,6% of the average of forests are certified.

Table 4.4 - Certified Forest areas in EU 27 (APAT elaboration, 2007)

Country	Forest area[22] (ha)	Certified area (ha)[23]	% of forest certified
Austria	3.862.000	3.378.966	87,5
Belgium	667.000	258.425	38,7
Bulgaria	3.625.000	21.609	0,6
Czech Republic	2.648.000	1.987.765	75,1
Denmark	500.000	27.975	5,6
Estonia	2.284.000	1.063.913	46,6
Finland	22.577.834	22.577.834	100,0
France	15.554.000	4.272.065	27,5
Germany	11.076.000	7.768.111	70,1
Greece	3.752.000	31.526	0,8
Hungary	1.976.000	193.166	9,8
Ireland	669.000	438.360	65,5
Italy	9.979.000	657.180	6,6
Latvia	2.941.000	97.335	3,3
Lithuania	2.099.000	1.108.281	52,8
Luxembourg	87.000	21.630	24,9
Netherlands	365.000	140.324	38,4
Poland	9.192.000	6.579.417	71,6
Portugal	3.783.000	123.624	3,3
Romania	6.370.000	1.124.412	17,7
Slovakia	1.929.000	539.273	28,0
Slovenia	1.264.000	270.840	21.4
Spain	17.915.000	697.887	3,9
Sweden	27.528.000	17.387.744	63,2
United Kingdom	2.845.000	1.692.709	59,5
TOTAL	**155.487.834**	**72.460.371**	**46,6**

Considering, instead, the 30 EU and EFTA[24] countries, the percentage of the Certified Forest areas grows to **50%.**

It is proposed to refer to FSC and PEFC, as suitable scheme for fulfilment of the EU Ecolabel requirement, as also indicated in the UNECE/FAO document (ref. pag.103): "*FSC and PEFC remain the only schemes on the market, offering full CoCs for CFPs*". Furthermore, it appears that the two schemes are mostly used as indicated in Table 4.3.

[22] Global Forest Resources Assessement 2005 - F.A.O. http://www.fao.org/forestry/site/fra2005/en/

[23] FSC database and PEFC database (update 22/02/2007)

[24] European Free Trade Association

Proposal for criteria:

At least 50% (to be defined during the course of the next AHWG meeting) of the cork, bamboo and virgin solid wood from forests must originate from sustainable managed forests, certified by independent third party forest certification schemes, fulfilling the criteria listed in paragraph 15 of the Council Resolution of 15 December 1998 on the Forestry Strategy for the EU and further development.

It is proposed to require the control of the chain of custody as proof of supply of sustainable forestry resources. The manufacturer shall provide evidence of commitment to a certificate of chain of custody (PEFC, FSC or equivalent): traceability procedure, letter of application for membership at one of the systems, letter of control chain request.

In addiction, if the cork, bamboo and wood originate from forests not certified as being sustainably managed forests, it shall at least not originate from:

- disputed land-rights or primary old growth forests
- Illegally harvested wood: wood that is harvested, traded or transported in a way that is in breach with applicable national regulations and international treaties (such regulations can for example address CITES species, money laundering, corruption and bribery[25], and other relevant national regulations).
- Genetically modified trees
  Wood from genetically modified trees: which have been induced by various means to consist of genetic structural changes (for a definition of genetically modified, please refer to Directive 2001/18/EC on the deliberate release of genetically modified organisms in the environment). Please note that this does not exclude traditional tree breeding programmes, since these are not considered to be part of the techniques of genetic modification.
- Uncertified high conservation value forests
  High Conservation Value Forests are forests that possess one or more of the following attributes:
  a. forest areas containing globally, regionally or nationally significant: concentrations of biodiversity values (e.g. endemism, endangered species, refugia); and/or large landscape level forests, contained within, or containing the management unit, where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance
  b. forest areas that are in or contain rare, threatened or endangered ecosystems

[25] These are the topics addressed in the Commission communication on an EU Action plan on FLEGT.

c. forest areas that provide basic services of nature in critical situations (e.g. watershed protection, erosion control)

d. forest areas fundamental to meeting basic needs of local communities (e.g. subsistence, health) and/or critical to local communities' traditional cultural identity (areas of cultural, ecological, economic or religious significance identified in cooperation with such local communities).

Assessment and verification: the applicant shall indicate types, quantities and origins of the wood used in the eco-labelled product. The origin of virgin solid wood shall be indicated with sufficient precision to allow checks, where appropriate.

For cork, bamboo and wood from certified sustainably managed forests the applicant shall provide the appropriate certificate(s) together with supporting documentation showing that the certification scheme correctly fulfils the principles and measures of sustainable forest management.

For cork, bamboo and wood from uncertified sustainably managed forests, the applicant and/or his supplier shall provide the appropriate declarations, charter, code of conduct or statement, verifying that the requirements of criterion 1.1 are met.

STAKEHOLDERS COMMENTS:

During the 2nd AHWG meeting the necessity to include a requirement to prohibit the use of wood originating form controversial sources emerged.
UK CB and others would prefer to see the percentage levels of sustainability/certification the same for solid wood as for wood-based materials for consistency and for these percentages to be increased to 70% to be inline with some national timber procurement policy.

1.2 Recycled wood and plant materials *(only for laminate flooring)*

The use of recycled woodchip has to be implemented. The document used as reference is the 'EPF Standard for delivery conditions of recycled wood' of 24 October 2002.

Woodchip is defined as "*processed post-consumer wood pieces formed by shredding, crushing, hammering or chopping*" originating, most of all, from sawmills and other similar factories. Hereafter, "woodchip" will mean "recycled material".

It has to be highlighted that woodchip delivered to the panel board manufacturer is considered waste, subject to the normal regulatory controls, and it should be treated appropriately until it is incorporated into a new wood-based panel. Once processed into panel board, the material is no longer waste, so that regulatory control would no longer apply.

The recycled material shall comply with the provisions in the EPF Industry standard, as reported in paragraph 5 of the previous cited document .

The reference standard table is shown below:

Table 4.5 - Contamination limits allowed in recycled wood for the production of wood based products, according to the criteria 1.2

Elements and compounds	**Limit values** (mg/kg of total dry panel)
Arsenic	25
Cadmium	50
Chromium	25
Copper	40
Lead	90
Mercury	25
Fluorine	100
Chlorine	1000
Pentachlorophenol (PCP)	5
Tar oils (benzo(a)pyrene)	0,5

At least 80% of total weight of dry raw materials used for the panel board production shall be woodchip or recycled wood and plant secondary material.

Assessment and verification: A declaration shall be provided that recycled wood or plant material is used in the production of laminates materials. In addition, test results shall be provided to verify compliance with limit values as laid down in table 4.5.

STAKEHOLDER COMMENTS:

Some CBs asked to consider a different kind of proof, not only test methods, for the compliance of substances limits indicted in the table. For example, if the applicant can prove that the substances, indicated in the Draft criteria proposal for this criterion, have not been used the applicant should be excluded to produce test results for complying with this requirement. To be discussed during the 3° AHWG.

1.3 Recycled cork *(only for cork floorings)*

As a result of the LCA analysis, the use of recycled cork has to be recommended, as specified at the beginning of this chapter. “Recycled cork” means only the secondary material coming from other uses: the manufacturing scraps are not considered as recycled material.

By technical and market information provided by the biggest world cork producer[26], an accessible minimum percentage of recycled material imposable in the criteria could be the 25%

Recycled cork comes from a production process as waste material or from outside as secondary recovered material. The material that is not suitable for some manufactures (e.g.: for cork stoppers) but needs to be removed from the three is considered "virgin" material.

2. USE OF DANGEROUS SUBSTANCES *(for all the products)*

Chemical products and substances are used at different stages of a wood flooring life cycle. Three main phases can be identified:

- Raw wood and plant treatments (impregnating substances and preservatives);
- Wood and plant transformation processes (use of toxic and eco-toxic substances and additives);
- Coating and surface treatments (decorative papers, fillers, varnishes, etc…).

These criteria have been developed with the aim to harmonize the requirement with the Draft Criteria for the EU Ecolabel wooden furniture product group. Furthermore, it also refers to the Floor coverings Nordic Ecolabelling, which is very comprehensive with regard to chemical products requirement..

2.1 Dangerous substances in the raw wood and plant treatments

Additives and preservatives are used in the logging stage for the conservation of raw wood and plant material, before processing. In Europe, the use of these substances shall comply with the Directive 91/414/ECC on plant care products.

Proposal for criterion:

The applicant shall comply the following requirement:

*"Substances used for preserving timber shall comply with **Directive 94/414/CE** of 15 July 1991, concerning the marketing of plant protection products."*

Assessment and verification: the applicant shall provide a declaration showing compliance to the EU Directive 94/414/CE, showing that the substances used are listed in the list established in the directive.

[26] CORTICEIRA AMORIM, S.G.P.S., S.A.

STAKEHOLDER COMMENTS:

AMORIM representatives suggest to limit this criterion only to wood and timber floorings, but no scientific or valid reason for this has been provided.

2.2 Dangerous substances in the transformation processes

There are different types of chemical substances and preparations used in the manufacturing process.

First of all, in many cases the use of **biocides** has to be controlled. In Europe, the use of these substances shall comply with the ***Directive 98/8/CE*** of 16/02/1998 (Biocide Directive).

Biocides can be used for the preservation of wood, since it is harvested and worked, or of the wood products for the control of the organisms that destroy or alter the natural condition of wood. Such products include substances acting both with preventive and curative scope.

Proposal for criterion:

The applicant shall comply with the following requirement:

"Substances used for wood and plant preservation in the production process should comply with the directive ***Directive 98/8/CE*** *(16 February 1998) concerning the placing of biocide products on the market."*

With regard to the use of other chemicals, generically used in the treatment of solid wood and wood based products, the European norms of reference are the *"Council Directive 67/548/EEC" (Dangerous Substances Directive)*, the "*Council Directive 1999/45/EC" (Dangerous Preparations Directive);*

At present, the REACH regulation has not changed the abovementioned Directives, even though a proposal for their modification has been presented to the EU parliament[27].

Any changes that will occur before trhe end of the present criteria revision will be included.

[27] On 27th of June 2007, the European Commission adopted the "Proposal for a Regulation of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures, and amending Directive 67/548/EEC and Regulation (EC) No 1907/2006" (COM(2007) 355 final). For further information relating to the overlap between the existing system and GHS refer to Annexe VII in Volume III of the proposal that has been adopted:
http://ec.europa.eu/enterprise/reach/docs/ghs/ghs_prop_vol_iii_en.pdf

It is proposed that:

(b) Cork, Bamboo and Wood used in wood and plant based materials shall not be treated with substances or preparation that are classified as carcinogenic (R40, R45, R49), harmful to the reproductive system (R60, R61, R62, R63), mutagenic (R46, R68), toxic (R23, 24 , R25, R26, R27, R28), allergenic (R42, R43) or harmful to the environment (R50, R50/R53, R51/R53, R52, R52/R53, R53), as laid down in Directives 67/548/EEC, 1999/45/EC and their amendments.

(c) Chlorinated/brominated paraffins, halogenated organic flame retardants, organic tin compounds, phthalates and fluorinated compounds must not be actively added to the floor covering.

Cadmium (Cd), lead (Pb), chrome(VI) and mercury (Hg) must not be applied to the floor covering materials.

Furthermore, another aspect to be managed, as indicated for the wooden furniture, is the formaldehyde presence in the substances used for the raw materials treatments. Since the products are quite similar both in terms of materials and production processes, the requirement proposal can be the same as indicated below:

(d) "The content of free formaldehyde in products or preparations used in the panels shall not exceed 0.3% by weight.

The content of free formaldehyde in binding agents, adhesives, and glues for plywood panels or laminated wood panels shall not exceed 0.5% by weight."

Assessment and verification: the applicant shall provide appropriate declarations verifying that the above requirements are met and test reports. For the chemical products used in the production of wood-based materials a MSDS or equivalent documentation shall be presented containing information on health hazard classification.

STAKEHOLDERS COMMENTS:

CEFIC proposed to eliminate every reference to the risk phrases promising to provide relevant information. CEFIC stated, that "risk" and "hazard" have different meanings and Ecolabel criteria should prevent the hazard and not the risk. At present, due to lack of information, the risk phrases have only been updated.

2.3 Dangerous substances in the coating and surface treatments

Generic requirements

All the materials and the coatings, substances, additives and binding agents used in this phase must comply with the requirements defined in the previous criterion (2.2).

It could be reasonable to use, for wood floorings, the more specific requirements identified for wooden furniture, due to the similarity in the process and treatments, especially for the laminates, which are:

"Chemical substances classified as harmful for the environment by the chemical manufacturer/supplier in accordance with EU classification system (28th Amendment to Directive 67/548/EEC) shall comply with the 2 following limits :

***1.** Chemical substances classified as harmful for the environment in accordance with the Directive 1999/45/EG must not be added to substances and preparations for surface treatment. Nevertheless the products may contain up to 5 % volatile organic compounds (VOC) as defined in the Directive 1999/13/EC[28]. If the product requires dilution, the contents of the diluted product must not exceed the aforementioned threshold values.*

***2**. The applied quantity (wet paint/varnish) of environmentally harmful substances shall not exceed 14 g/m^2 surface area and applied quantity (wet paint/varnish) of VOC shall not exceed 35 g/m^2.*

Assessment and verification: The applicant shall provide a declaration of compliance with this criterion, together with documents to support this declaration, including:

· a complete recipe with designation of quantities and CAS numbers for constituent substances

· the test method and test results for all substances present in the product, according to the Directive 67/548/EEC

· a declaration stating that all constituent substances have been disclosed

· number of coats and quantity applied per coat per square meter of surface

Method of application:

The following standard degrees of effectiveness are used for the purpose of calculating the consumption of surface treatment product: Spraying device without recycling 50%, spraying device with recycling 70%, electrostatic spraying 65%, spraying, bell/disk 80%, roller varnishing 95%, blanket varnishing 95%, vacuum varnishing 95%, dipping 95%, rinsing 95%."[29]

[28] VOC means any organic compound having at 293,15 K a vapour pressure of 0,01 kPa or more, or having a corresponding volatility under the particular conditions of use.

[29] Final Draft Eco-label Wooden Furniture of 27 February 2007

Adhesives (VOC)

"The VOC content of adhesives used in the assembly of the product shall not exceed 10% by weight", as indicated in the Austrian label.

Assessment and verification: a declaration shall be provided by the applicant indicating all adhesives used in the assembly of wood and plant based flooring , as well as the compliance with this criterion.

Formaldehyde

Formaldehyde emissions from substances and preparations for surface treatment liberating formaldehyde shall be less than 0.1 ppm.

Assessment and verification: the applicant and/or its supplier shall provide a declaration that the above requirement is met, together with information on the formulation of the surface treatment.

3. PRODUCTION PROCESS

3.1 Energy Consumption

A calculation formula taking into account the proportion of raw material coming from certificated forests and, eventually, from recycled material, and the energy consumption is proposed The calculation formula refers to the Nordic Swan Ecolabelling, that is the only label that proposes a specific calculation tool for the limitation of the energy consumption at the manufacturing stage for "solid wood and laminate floor coverings".

Energy consumption is referred only to the manufacturing stage, as for all the EU Ecolabel product groups (i.e.: hard coverings, footwear, coping paper, etc.)

The method of measurement and control has been developed for the EU Ecolabel and tested with the inventory data used also for the LCA analysis provided at the beginning of this document and in compliance with the criteria requirements.

The requirements are organized in two parts: the calculation of a point score and the application of limits to the total score for wood, laminate and other flooring as indicated below:

Energy consumption is calculated as an annual average of the energy consumed during the production process (excluding premises heating) from the raw material in bulk to the finished floor covering. This means, for example, that the energy calculation for wood and plant based products shall be measured from the input of raw material into the factory until the finishing operations, packaging included.

The calculation shall not include the energy content of the raw material (nda: feedstock energy).

The energy required to manufacture adhesives and varnish or coatings shall not be included in the calculations.

The unit chosen for the calculations is the **MJ/m^2**.

The energy contents of various fuels are given in the technical appendix A2.

Electricity consumption refers to electricity purchased from an external supplier.

If the producer has an energy surplus that is sold as electricity, steam or heat, the sold quantity can be deducted from the fuel consumption. Only the fuel that is actually used in floor covering production shall be included in the calculations.

Solid Wood

Environmental parameter
A = Wood from certified, sustainable forest (%)
C = Proportion of renewable fuels (%)
D = Electricity consumption (MJ/m^2)
E = Fuel consumption (MJ/m^2)

$$P = \frac{A}{25} + \frac{B}{25} + (4 - 0{,}72 \times C) + (4 - 0{,}3 \times D)$$

Several tests that have been carried out using different data sources and mixes and the outcome lead to the following proposal: a limit of **6,5 points** for **solid wood coverings**.

It is shown , below, an example that has been done using the LCA data:

Environmental parameter	Data
A = Wood from certified, sustainable forest (%)	50
B = Proportion of renewable fuels (%)	4,0[30]
C = Electricity consumption (MJ/m^2)	2,6
D = Fuel consumption (MJ/m^2)	6,9

Result	**P = 6,3**

Laminates and Others

Environmental parameter
A = Cork, Bamboo or Wood from certified, sustainable forest (%)
B = Proportion of recycled wood raw materials (%)
C = Proportion of renewable fuels (%)
D = Electricity consumption (MJ/m^2)
E = Fuel consumption (MJ/m^2)

$$P = \frac{A}{25} + \frac{B}{25} + \frac{C}{25} + (4 - 0{,}72 \times D) + (4 - 0{,}3 \times E)$$

Several tests that have been carried out using different data sources and mixes and the outcome lead to the following proposal: a limit of **10 points** for **laminates coverings**.

It is shown , below, an example that has been done using the LCA data:

Environmental parameter	Requirement
A = Wood from certified, sustainable forest (%)	50
B = Proportion of recycled wood raw materials (%)	80
C = Proportion of renewable fuels (%)	4,0[31]
D = Electricity consumption (MJ/m^2)	2,3
E = Fuel consumption (MJ/m^2)	7,4

Result	**P = 9,5**

The same approach has been applied to the cork production leading to the following proposal: **10 points** for **Cork and Bamboo coverings**.

[30] Data source: “Renewable Fuels Association”

[31] Data source: “Renewable Fuels Association”

It is shown, below, an example that has been done using the LCA data:

Environmental parameter	Requirement
A = Wood from certified, sustainable forest (%)	50
B = Proportion of recycled wood raw materials (%)	25
C = Proportion of renewable fuels (%)	70[32]
D = Electricity consumption (MJ/m^2)	4
E = Fuel consumption ($MJ/m^{2)}$	4

Result	**P = 9,7**

Assessment and verification: the applicant shall calculate the Energy consumption of the production process according to the Technical Appendix — A2 instructions and provide the related results and supporting documentation.

The European Commission - DG Environment is currently carrying out a project for the development of a Calculation Toolkit for the CO_2 measurement. This toolkit could possibly be applied for the calculation of the GHGs impacts deriving from the use of non renewable resources in the production phase or from the whole life cycle of the product.

Thus, a sort of “climate declaration” could be produced and delivered to the consumer in the packaging information.

3.2 Emission to air

The main air pollutants associated to the production process are VOC emissions from coating and varnishes and dust emissions from mechanical transformation processes.

Specific indications on some of these issues derive from the Austrian labelling “UZ 56” for wood dust.

[32] Hypothesis: cogeneration using 70% biomass as fuel.

Proposal for criterion:

Wood and Plant based products dust

"The wood-dust emissions present in the exhaust air released by wood-machining equipment shall be less than or equal to 10 mg/m^3 and less than or equal to 50 mg/m^3 in the exhaust air released by splints or fibre dryers."

STAKEHOLDERS COMMENTS:

EU Commission suggests to delete this criterion since it is not strictly related to the environmental impacts even if some CBs have expressed their interest to maintain this requirement.

With regard to the Formaldehyde and VOC emissions, these requirements are already managed in the criteria concerning the raw materials and the substances used for their treatments and, in the next chapter, in the "use phase" requirements. Considering also that no limits are imposed by the other Ecological labels and that a limitation associated to this specific phase ("manufacturing process") would be related more specifically to the working conditions in the manufacturing sector rather than to environmental impacts, no requirements are proposed at this stage.

GHG emissions

An additional criterion concerning the introduction of a limit to the GHG emissions from the productive process is under investigation: in a few months, there will be the possibility of using a "CO_2 measurement toolkit" currently under development by the European Community.

3.3 Waste management

Information should be given to the consumer on the different ways to dispose of the product, ranking them according to their impact on the environment, for example: reuse, recycling, energy production.

In order to give more emphasis to the procedures adopted to re-use the by-products from process, a requirement for producing appropriate documentation has been introduced as follows:

- kind and quantity of waste recovered;
- kind of disposal;
- information (internally or externally to the production process) about the reuse of waste and secondary materials in the production of new products.

STAKEHOLDERS COMMENTS

UK C.B. asks for further information, such as a report documenting the quantity of waste recovered and the kind of disposal used, without any limits (i.e. on percentage recovered or recycled). A guidance to CBs about what kind of acceptable disposal waste should be provided.

4. USE PHASE

4.1 RELEASE OF DANGEROUS SUBSTANCES

In order to control the potential release of dangerous substances in the use phase and at the end of the wood and plant based floor coverings life, the following parameters on the finished products shall be verified:

Formaldehyde release

Some references about the possible criteria and test methods applicable derive from the Nordic Swan Ecolabelling. It distinguishes that the products and the relative requirements have to comply with: "normal floor coverings" (hurdle: 0,13 mg/m^3 air; test method: EN 717-1) and with coverings "containing chipboard and fireboard" (single test hurdle: 8 mg/100 g dry test; single test hurdle: 6,5 mg/100 g dry test; test method: EN 120).

The Blue Angel imposes a limit of 0,05 ppm (approximately correspondent to 0,6 mg/m^3 air).

The limit proposed for the Ecolabel criteria is **0,05 ppm**, i.e. half of the value imposed by the German ETB Directive (0,1 ppm) and commonly accepted by the ACGIH[33] and by the European countries, for the living spaces.

Table 4.6 shows the limits to Formaldehyde concentration in air for living spaces and for the working environments in various EU and non EU Countries.

Table 4.6 - Limits to Formaldehyde concentration in air (Source: CATAS, 2008)[34]

Country	Living space	Work space	
		TWA	MAX
Australia	0,1 ppm (guideline)	1,0 ppm	2,0 ppm
Austria	0,1 ppm	0,5 ppm	1,0 ppm
Belgium	No regulation	1,0 ppm	-
Canada	0,05 ppm (Target) 0,1 ppm (Action)	1,0 ppm	2,0 ppm
Denmark	0,12 ppm	0,3 ppm	-
Finland	0,12 ppm	0,5 ppm	1,0 ppm
France	No regulation	2,0 ppm	3,0 ppm
Germany	0,1 ppm	0,5 ppm	1,0 ppm
Italy	0,1 ppm	-	0,3 ppm
Norway	0,1 ppm	0,5 ppm	1,0 ppm
Sweden	0,2 ppm	0,5 ppm	1,0 ppm

[33] American Conference of Governmental Industrial Hygienists

[34] Available at www.catas.com

Switzerland	0,1 ppm	0,5 ppm	1,0 ppm
Netherland	No regulation	2,0 ppm	-
UK	No regulation	2,0 ppm	2,0 ppm
USA	0,1 ppm (EPA, CPSC)	1,0 ppm	2,0 ppm

According to the most recent outcomes of the CEN/TC 112 on "Wood-based panels" – WG5 (Formaldehyde emission), the compliance proof of the product to the abovementioned limits should be based on the test method EN 717-1 (Chamber method).

The following table reports the limits to Formaldehyde release according respectively to the DIBt (*Deutsches Institut für Bautechnik*)[35] and to the European norm EN 13986 - *Wood-based panels for use in construction* for the panel class E1[36].

Table 4.7 – Formaldehyde release limits (elaboration by LCE, 2008).

Source	***Test method***	***Requirement***
DIBt	EN 717-1 (chamber)	≤ 1 ppm (0,124 mg/m^3 air)
	EN 717-2 (gas analysis)	≤ 2,5 mg/m^{2}h (average) ≤ 3,5 mg/ m^{2}h (single)
	EN 120 (perforator)	≤ 6,5 mg/100g (average) ≤ 8 mg/100g (single)
EN 13986	EN 717-1 (chamber)	≤ 1 ppm (0,124 mg/m^3 air)
	EN 120 (perforator)	≤ 6,5 mg/100g (average) ≤ 8 mg/100g (single)
Ecolabel proposal	**EN 717-1 (chamber)**	**≤ 0,5 ppm**

[35] Directive DIBt 100, G.U. BGA n.10/91

[36] Panels can be divided in E1, E2 and E3 class on the base of the Formaldehyde emission. Since the last revision of the ETB Directive, Germany consent only the E1 class because generating the less Formaldhyde emissions.

VOC emissions

The Nordic Swan criteria does not apply to floor coverings that comprises more than 75% wood weight and for which adhesives and surface treatment products contain a maximum of 1% by weight of organic solvents. Using a similar approach, a requirement on VOCs emission would not be necessary because, as specified in the Article 2 of the new decision (in case of acceptance), the Wood and Plant based floor coverings: "i*ncludes wood and timber floorings, laminate floorings and other wood and Plant based floorings which are made, for more than 90% in mass (in the final product), from wood, wood powder and/or plant material*".

STAKEHOLDERS COMMENTS:

In order to harmonize the requirements with those indicated in other Ecolabel criteria, the values indicated for "Indoor paints and varnishes"[37] have been proposed as a reference. In particular, it is specified[38] a hurdle limit for the "trim and cladding paints for wood and metal including undercoats: " "*the **VOC** content for Interior/exterior trim and cladding paints for wood and metal including undercoats" shall not exceed the 90 g/l, including water".*

Due to the different context in which this criterion is applied, the different unit used and the incomparability of the productive process and of the product groups, the application of a similar approach is not recommended in this case ..
Some stakeholders suggested also to make reference to the German Blue Angel. The following proposal is made, according to the RAL UZ38.

Finished products, specified in the Article 2 of the Criteria proposal, must not exceed the following emission values:

Substance		**Requirement** (28th day after loading)
Volatile Organic Compounds (VOC)	Boiling point 50-250 °C	0,3 mg/m³ air
	Boiling point > 250 ° C	0,1 mg/m³ air

To demonstrate compliance with this requirement, the applicant shall present a test certificate according to the emission tests ENV 13419[39] or prEN 15052[40] or DIN ISO 16006-6[41].

[37] Final draft criteria indoor paints and varnishes 26/02/2008
[38] According to the Product Classification of the Directive 2004/42/CE
[39] Air quality - Building Products - Determination of the emission of volatile organic compounds
[40] Evaluation and requirements of volatile organic compounds (VOC) emissions for resilient, textile and laminate floor coverings.
[41] Determination of volatile organic compounds in indoor and test chamber air by active sampling on Tenax TAÃ‚Â® sorbent, thermal desorption and gas chromatography using MS/FID.

5. PACKAGING

Please, see the comments at § 7 of the HC, pg. 56.

6. FITNESS FOR USE

Details of the test procedures and results shall be provided, together with a declaration that the product is fit for use based on all other information about the best application by the end-user.

The EC conformity mark 'CE' for construction products, for example, provides producers with an attestation of conformity easily recognisable and may be considered as sufficient in this context.

The norms of reference are the **Directive 89/106/EEC** of 21/12/1988 for construction products and its modification, the **Directive 93/68/CEE** of 22/07/1993.

7. DURABILITY AND SAFETY

The product shall fulfil the requirements on durability, strength, safety and stability in applicable EN or ISO standards. If no EN or ISO standard exists, specific standards for the products can be used or, in alternative, an evaluation of the product's durability, strength, safety and stability on the basis of the design and choice of materials shall be performed by an independent test institution.

The user manual will provide the list of norms and standards which shall be used for the durability assessment.
A list of the acceptable norms and standards will be provided in the user manual.

Assessment and verification: The producer shall provide a declaration completed with documentation on the test methods performed by the accredited institution and the test results. A clear indication of the product's durability shall be provided to the final consumer.

8. CONSUMER INFORMATION

The criterion states that the product has to be sold with information about the EU Ecolabel award, with the recommendations for its use and maintenance, with an indication of the route of recycling or disposal and with information on the EU Ecolabel and its related product groups.

The standard life duration of the product should be indicated in the packaging for consumers information.

9. INFORMATION APPEARING ON THE ECOLABEL

The criterion cites that:

Box 2 of the Ecolabel shall contain the following text:

- *sustainable managed forests and reduced impact on habitats;*
- *hazardous substance restricted;*
- *production process energy saving*
- ~~*limited pollutant emissions to air;NO*~~
- *no risk to health in the living environment;*
- ~~*reduced pollutant hazards in the wastes; NO*~~
- ~~*Durability, safety and fitness for use. NO*~~

TEXTILE FLOOR COVERINGS

5. The 2nd Draft Criteria Development framework

TOWARD THE CRITERIA FOR TEXTILE FLOOR COVERINGS

From the productive process (ref. 1 st background report) it emerges, between the manufacture of synthetic and of woollen carpets, that the main difference is in the raw materials production phase. In fact, the raw materials used in the production are different such as: for synthetic carpets materials as polyamide or nylon are used, while for the woollen products natural resources (i.e.: wool) are also utilized.

In the following table (Table 5.1), a summary of the major sources of environmental impacts are shown, according also to the LCA analysis developed by LCE (see chapter 2).

Table 5.1 – Main environmental aspects involved in the manufacture of a textile floor covering**.**

Life Cycle phase	Sub phase	Aspect
Raw materials	*Purchasing*	• Dangerous an toxic substances • Dangerous substances in baking materials
Production	*Treatments*	• Chemicals and auxiliaries
	Processes	• Energy consumption
	Wastes	• Emissions to water
Use phase	*Activity*	• Release of dangerous substances
	Product requirements	• Fitness for use.

CRITERIA DEVELOPMENT FOR THE TEXTILE FLOOR COVERINGS PRODUCT GROUP

Taking into account different documents provided in the WP1 Final Report and from the LCA analysis completed, the following criteria proposal has been developed.

Hereafter, some requirements that have to be the basis and the starting point for the new criteria for the sub-product group are suggested.

As recommended both from the EU Commission and from different stakeholders during the 1st AHWG meeting (Brussels, 28/09/2007), in order to harmonize as much as possible the European methods and standards related to products/processes, the following proposals are based on the already existing National labels for this product group (where existing) or refer to current Ecolabel criteria for similar products (i.e.: Draft criteria for textiles).

With regard to EU Ecolabel Draft criteria for textiles included in this document it has to be emphasised that criteria will be updated taking into account the outcome of the EU Ecolabel Draft criteria for textile final version (September 2008)

All references are indicated in the text.

References to the National Ecolabels

The Blue Angel label RAL-UZ 128 applies to textile floor coverings according to ISO 2424[42].

The Swan labelling for floor coverings requirements are applied to textile fibres that constitute more than 15% by weight of the floor covering (normally carpets).

The Austrian label “UZ-56” apply to “the textile floor coverings, with the exception of loose mats and adjusted carpets”.

Furthermore it has been highlighted that the present draft criteria aim is to the harmonize with the revision of the *EU Ecolabel criteria for textile products*[43], even though it does not apply to floor coverings.

From a comparative analysis, it emerges a fairly full harmonization in terms of the environmental aspects identified, the limits imposed and, often, in the methods recognized between the previous mentioned labels. The aim of these new criteria is to merge the different requirements to obtain an instrument that would permit to manage, as much as possible, from an environmental point of view, the whole life cycle of the product, where the single national labels are poor.

The Blue Angel label RAL-UZ 128 and the EU Ecolabel criteria for textile products are the most suitable labels with regard to the materials and chemicals criteria, while only the Nordic Swan imposes hurdles for the energy consumption.

[42] ISO 2424 Textile floor coverings - Vocabulary (ISO 2424:1992), 1999-01

[43] Final Draft Textile criteria

In some cases the GUT labelling has also been used, most of all for the pollutant and the emissions to air requirement proposals.

Definition of the product group *(Commission decision, Article 2)*

This article defines the composition of the product group that can obtain the Ecolabel award.

"The product group 'Coverings' shall comprise the following products for internal/external use, without any relevant structural function:

- *Hard Coverings: [omitted…];*
- *Wood and Plant based floor coverings: [omitted…]*
- ***Textile floor coverings**: the group includes the family of carpets, defined as ~~heavy, durable~~ floor covering, usually of woven, knitted, or needle-tufted fabric; commonly installed with tacks or staples, or by adhesives. It does not apply to wall coverings or that for external use. Loose mats and adjusted carpets are excluded from the application.*

Framework *(Assessment and verification requirements)*

The objective of this section of the document is to present the structure of the Coverings product group and its subdivision. For each product, a definition and some specific characteristics are included.

Taking into account the new structure of the Coverings product group (see the chapter "Structure of the Draft Criteria" and Figure 1.1) this chapter has been updated to include the new sub-products group *of "Wood and Plant based Floor Coverings*" and "*Textile Floor Coverings"*.

The definition proposed for the *Textile Floor Coverings* group is:

"The sub-group includes the family of carpets, defined as ~~heavy, durable~~ floor covering, usually of woven, knitted, or needle-tufted fabric; commonly installed with tacks or staples, or by adhesives. The products that can be awarded are the following: natural and synthetic carpets. Loos mats and adjusted carpets are excluded".

The reference **ISO 2424:2007 - Textile floor coverings – Vocabulary** could be used**,** if it is suggested a more comprehensive definition of the group by including not only carpets but also other textile floor coverings,

The *European Textile Floor Coverings industry* determines its technical position in the European commission of normalisation **CEN/TC 134**.

The functional unit, to which inputs and outputs should be related, is 1 m^2 of finished product.

The criteria are divided into three main categories, using a life cycle approach: raw textile fibres, backing materials (general requirements and chemicals), processes, use phase and fitness for use.

1. RAW MATERIALS

Generic materials requirements

With regard to the presence in the materials used for the manufacturing of the products, the European norms of reference are the *"Council Directive 67/548/EEC" (Dangerous Substances Directive)*, the "*Council Directive 1999/45/EC" (Dangerous Preparations Directive);*

As already pointed out for the wood and plant based floor coverings, it will be necessary to take into account also the modification made by the CE Regulation n.1907/2006 – REACH.

It should be requested that: "*The materials shall not contain substances or preparation that are assigned, or may be assigned at the time of application, any of the following risk phrases (or combinations thereof):*

***R40** (limited evidence of a carcinogenic effect);*

***R45** (may cause cancer);*

***R46** (may cause heritable genetic damage);*

***R49** (may cause cancer by inhalation);*

***R50** (very toxic to aquatic organisms);*

***R51** (toxic to aquatic organisms);*

***R52** (harmful to aquatic organisms);*

***R53** (may cause long-term adverse effects in the aquatic environment);*

***R54** (Toxic to flora);*

***R55** (Toxic to fauna);*

***R56** (Toxic to soil organisms);*

***R57** (Toxic to bees);*

***R58** (May cause long-term adverse effects in the environment);*

***R59** (Dangerous for the ozone layer);*

***R60** (may impair fertility);*

R61 *(may cause harm to the unborn child);*

R62 *(possible risk of impaired fertility);*

R63 *(Possible risk of harm to the unborn child);*

R68 (Possible risk of irreversible effects);

as laid down in Directives 67/548/EEC, 1999/45/EC and their amendments."

STAKEHOLDERS COMMENTS:

CEFIC proposed to eliminate every reference to the risk phrases promising to provide the relevant information. CEFIC stated that "risk" and "hazard" have different meanings and Ecolabel criteria should prevent the hazard and not the risk. At present, due to lack of information, the risk phrases have not been changed.

1.1 Textile fibres - composition

Aiming to reduce non-renewable resources, a minimum percentage of renewable materials use could be imposed, i.e.:

"At least 20% by weight of the floor covering must be composed of renewable raw materials".

Renewable raw materials are defined as those materials "*that are derived from biological materials that are continually reproduced in nature."*

In this case, a detailed description of the product and the materials which the floor covering is composed, with the specification of their proportions (% by weight) shall be requested.

However, it should also to be underlined that this requirement could exclude some products (i.e.: polyamide carpets) to be awarded with the Ecolabel scheme.

Similarly, a prescription on the percentage of recycled material could be provided, i.e.:

"At least 10% by weight of the floor covering must be composed of recycled raw material".

Recycled fibres are defined as "*fibres originating only from cuttings from textile and clothing manufacturers or from post-consumer waste (textile or otherwise)*"

STAKEHOLDERS COMMENTS:

From many CBs comments which emerged during the 2nd AHWG meeting it seems appropriate to eliminate the whole requirement because it is not clear and of its interpretation is difficult.

Furthermore, from the LCA results the necessity of implementing the use of recycled materials in the synthetic carpets production emerges. The second part of the requirement could be modified as follows:

*"At least 10% by weight of the **synthetic textile floor coverings** must be composed of recycled raw material".*

1.2 Textile fibres – chemical substances

With regard to the presence of dangerous substances, the "**generic material requirements"** described at the beginning of this criteria (**1. Raw materials**) must be applied..

If the origin of the fibres are recycled the criteria set in this section does not apply.

With reference to the productive processes for carpets, only some textile fibres can be considered to fulfil this criterion.

Specific -fibre criteria are set in this section for wool, polyamide, polyester, polypropylene.

Wool treatments (reference: Criterion 5, Final Draft Textile criteria; R5 Nordic Swan)

(a) The total sum content of the following substances shall not exceed **0,5 ppm**:

Substances	**CAS no**
γ-hexachlorocyclohexane (lindane)	319-84-6
α-hexachlorocyclohexane	319-85-7
β-hexachlorocyclohexane	58-89-9
δ-hexachlorocyclohexane	319-86-8
aldrin	309-00-2
dieldrin	60-57-1
endrin	72-20-8
p,p'-DDT	50-29-3
p,p'-DDD	72-54-8

(b) The total sum content of the following substances shall not exceed **2 ppm**:

Substances	**CAS no**
Propetamphos	31218-83-4
Diazinon	333-41-5

Dichlofenthion	97-17-6
Fenchlorphos	299-84-3
Chlorpyriphos	2921-88-2
Chlorfenvinphos	470-90-6

(c) The total sum content of the following substances shall not exceed **0,5 ppm**:

Substances	**CAS no**
Cyhalothrin	68085-85-8
Cybermethrin	52315-07-8
Deltamethrin	52918-63-5
Fenvalerate	51630-58-1
Flumethrin	69770-45-2

(d) The total sum content of the following substances shall not exceed **2 ppm**:

Substances	**CAS no**
Diflubenzuron	35367-38-5
Triflumuron	64628-44-0
Dicyclanil	112636-83-6
Cyromazine	66215-27-8

These requirements (as detailed in (a), (b), (c) and (d) and taken separately) do not apply if documentary evidence can be presented that establishes the identity of the farmers producing at least 75% of the wool or keratin fibres in question, together with a declaration from these farmers that the substances listed above have not been applied to the fields or animals concerned.

Assessment and verification: the applicant shall either provide the documentation indicated above or provide a test report, using the following test method: IWTO Draft Test Method 59. If the textile materials used are awarded with the Ecolabel scheme for the textile products, the requirements are satisfied. The applicant shall provide only the appropriate documentation.

STAKEHOLDERS COMMENTS:

During the 2nd AHWG meeting, the EEB asked for the exclusion of any pesticide or biocide. Such a requirement is not contemplated neither in the Ecolabel Textile Criteria or in the GUT label.

In this context it does not seems logical to apply a more restrictive criteria for carpets rather than those, already included, for textile products.

Polyamide fibre (reference: Criterion 7, Final Draft Textile criteria; R9 Nordic Swan)

The emissions to air of N_2O during monomer production, expressed as an annual average, shall not exceed 10 g/kg of finished polyamide 6 fibres produced or 50 g/kg of polyamide 6,6 produced.

Assessment and verification: the applicant shall provide detailed documentation and/or test reports showing compliance with this criterion, together with a declaration of compliance. If the textile materials used are awarded with the Ecolabel scheme for the textile products, the requirements are satisfied. The applicant shall provide only the appropriate documentation.

Polyester (reference: Criterion 8, Final Draft Textile criteria; R8 Nordic Swan)

The amount of antimony in the polyester fibres shall not exceed 260 ppm. Where no antimony is used, the applicant may state 'antimony free' (or equivalent text) in the eco-label labelled product.

Assessment and verification: The applicant shall provide either a declaration of non-use or a test report using the following test method: direct determination by Atomic Absorption Spectrometry. The test shall be carried out on the raw fibre prior to any wet processing. If the textile materials used are awarded with the Ecolabel scheme for the textile products, the requirements are satisfied. The applicant shall provide only the appropriate documentation.

Polypropylene (reference: Criterion 9, Final Draft Textile criteria; R10 Nordic Swan)

Lead-based pigments shall not be used.

Assessment and verification: The applicant shall provide a declaration of non-use.

Emissions of NO_x and SO_2 from the production of PP (monomer production, polymerisation and granulation) must not exceed the following limits:

***NO_x**: 12 kg/ton PP*

***SO_2**: 11 kg/ton PP*

Assessment and verification : the fibre manufacturer must measure or calculate the quantities of NO_x and SO_2 emitted during PP production and provide a declaration of compliance with the criterion. If the textile materials used are awarded with the Ecolabel scheme for the textile products, the requirements are satisfied. The applicant shall provide only the appropriate documentation.

1.2 Backing agents

It must be applied the "**generic material requirements"** described at the beginning of this criteria (**1. Raw materials**).

Foam made of rubber (natural and synthetic latex, polyurethane, etc…) could be used for backing purposes. In the Nordic Ecolabel for Floor coverings mandatory requirements are set with regard to the content of some prohibited materials (R13, R14).

The EU Ecolabel Criteria for Bed Mattresses has been used for the definition of some requirements and limits about latex foam and Polyurethane foam (see Decision of the European Commission 2002/740/EC, Criteria 1 and 2). The requirements, here omitted, can be consulted in the Draft Criteria document text.

Furthermore, it should be specified that "*vulcanized foams shall not be used for back coating*", due to the environmental impacts linked to their productive process.

2. PRODUCTION

The "**generic material requirements"** described at the beginning of this criteria (**1. Raw materials**) must be applied.

In addition, some further requirements should be set.

~~**Halogens**(reference: Criterion ……)~~

~~"*No halogenated organic compounds may be used in the manufacture of textile floor coverings*" is requested for all the National labels and the Final Draft Textile criteria.~~

~~*Assessment and verification:* the applicant shall provide a declaration of non use.~~

~~**Flame-retardants**(reference: Criterion ……)~~

~~For the management of the substances and prepared used as flame retardants in the floor coverings production, considered the correspondence in the treatments applied, it can be used the same requirement than those used for the Final Draft Textile criteria[44].~~

STAKEHOLDERS COMMENTS:

In order to include the suggestions raised during the last AHWG, the two above requirements have been reformulated for a better harmonization with the Final Draft on Textile Criteria (Criterion 28) as indicated below:

[44] Commission Decision 2002/371/EC – Criterion 28

Flame retardants

"No use is allowed of flame retardant substances or of flame retardant preparations that are assigned or may be assigned at the time of application any of the following risk phrases (or combinations thereof):
R40, R42, R 43, R45, R46, R49,R50, R51, R52, R53, R60, R61, R62, R63, R68

according to the Directive 67/548/CEE.

Halogenated or brominated flame retardants shall not be used.

In general, only such flame retardants shall be allowed for which a registration number under the REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (…)[45] *has been awarded by the European Chemicals Agency (ECHA).*

Until registration with ECHA becomes possible suppliers of flame retardants shall declare the availability of information required to constitute the REACH registration dossier, the quality of which matches the requirements of Annexes V and VII to X of the Regulation 1907/2006 and which contains evidence that no classification for any of the risk phrases listed above may occur. The supplier shall also commit to an as early as possible REACH registration".

Plasticizers (reference: RAL UZ 128, Criterion 3.1.5)

If any plasticizer substance in the manufacturing process is applied, it cannot contain phthalates.

Assessment and verification: the applicant shall provide a declaration of non-use. No more than 0.1% of phthalate in mass shall be present as impurities in the textile floor covering, as defined in Directive 2005/84/EC.

2.1 Auxiliaries

In many cases chemicals are used to treat textile fibres.

In the EU Ecolabel and in the Nordic Swan the auxiliaries requirement for textile products is:

"Alkylphenolethoxylates (APEOs), linear alkylbenzene sulfonates (LAS), bis(hydrogenated tallow alkyl) dimethyl ammonium chloride (DTDMAC), distearyl dimethyl ammonium chloride (DSDMAC), di(hardened tallow) dimethyl ammonium chloride (DHTDMAC), ethylene diamine tetra acetate

[45] OJ L 396 30.12.2006 p. 1

(EDTA), and diethylene triamine penta acetate (DTPA) shall not be used and shall not be part of any preparations or formulations used."

Assessment and verification: the applicant shall provide a declaration of non-use.

2.2 Dyes and pigments

Azo dyes (reference: Directive 2002/61/EC, Ecolabel Textile Final draft criteria, GUT)

Azo dyes are suited for the dyeing of various substrates such as synthetic and natural textile fibres, leather, paper, mineral oils and waxes.

Azo dyes originate from the coupling of diazotised aryl-amines with suitable coupling components. Through reductive cleavage, e.g., through chemical reduction agents or also intestinal bacteria, aromatic amines may, however, be released again.

Such azo dyes in textiles, including carpets, may release carcinogenic amines and may come in direct and prolonged contact with the human skin or oral cavity, thus they must neither be used nor marketed.

According to Directive 2002/61/EC: the use of Azo dyes, which potentially cleave one of the aromatic amines listed below is not permitted:

4-aminobiphenyl	*(92-67-1),*
benzidine	*(92-87-5),*
4-chloro-o-toluidine	*(95-69-2),*
2-naphthylamine	*(91-59-8),*
o-aminoazotoluene	*(97-56-3),*
2-amino-4-nitrotoluene	*(99-55-8),*
p-chloroaniline	*(106-47-8),*
2,4-diaminoanisole	*(615-05-4),*
4,4'-diaminodiphenylmethane	*(101-77-9),*
3,3'-dichlorobenzidine	*(91-94-1),*
3,3'-dimethoxybenzidine	*(119-90-4),*
3,3'-dimethylbenzidine	*(119-93-7),*
3,3'-dimethyl-4,4'-diaminodiphenylmethane	*(838-88-0),*
p-cresidine	*(120-71-8),*
4,4'-methylene-bis-(2-chloroaniline)	*(101-14-4),*

4,4'-oxydianiline *(101-80-4),*

4,4'-thiodianiline *(139-65-1),*

o-toluidine *(95-53-4),*

2,4-diaminotoluene *(95-80-7),*

2,4,5-trimethylaniline *(137-17-7),*

4-*aminoazobenzene* *(60-09-3),*

o-anisidine *(90-04-0).*

3,3'-dimethylbenzidine *(119-93-7).*

4-amino-3-fluorophenol *(399-95-1).*

6-amino-2-ethoxynaphthalene

2,4-Xylidine

2,6-Xylidine

Assessment and verification: the applicant shall provide a declaration of non-use according to the test method EN 14362-1[46] and 2[47]. If the textile products used are awarded with Ecolabel for the textile products, with the GUT label or with the Öko-Tex Standard 100, the requirements are satisfied and appropriate documentation shall be provided.

Dyes that are carcinogenic, teratogenic or reprotoxic

According to the Final Draft textile criteria (EU eco-label for textile products Criterion 22) and Öko-Tex Standard 100:

(a) the following *dyes shall not be used:*

C.I. Basic Red 9

C.I. Disperse Blue 1

C.I. Acid Red 26

C.I. Basic Violet 14

C.I. Disperse Orange 11

C. I. Direct Black 38

[46] Methods for the determination of certain aromatic amines derived from azo colorants — Part 1: Detection of the use of certain azo colorants accessible without extraction.

[47] Methods for determination of certain aromatic amines derived from azo colorants — Part 2: Detection of the use of certain azo colorants accessible by extracting the fibres.

C. I. Direct Blue 6

C. I. Direct Red 28

C. I. Disperse Yellow 3

Assessment and verification: The applicant shall provide a declaration of non-use of such dyes.

(b) *No use is allowed of dye substances or of dye preparations containing more than 0,1% by weight of substances that are assigned or may be assigned at the time of application any of the following risk phrases (or combinations thereof):*

***R40** (limited evidence of a carcinogenic effect),*

***R45** (may cause cancer),*

***R46** (may cause heritable genetic damage),*

***R49** (may cause cancer by inhalation),*

***R60** (may impair fertility),*

***R61** (may cause harm to the unborn child),*

***R62** (possible risk of impaired fertility),*

***R63** (possible risk of harm to the unborn child),*

***R68** (possible risk of irreversible effects),*

as laid down in Council Directive 67/548/EEC of 27 June 1967 on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances (1), and its subsequent amendments.

Assessment and verification: The applicant shall provide a declaration of non-use of such dyes.

Potentially sensitizing dyes

According to the Draft textile criteria (EU eco-label for textile products Criterion 23) and Öko-Tex Standard 100, (a) the *following dyes shall not be used:*

C.I. Disperse Blue 3 C.I. 61 505

C.I. Disperse Blue 7 C.I. 62 500

C.I. Disperse Blue 26 C.I. 63 305

C.I. Disperse Blue 35

C.I. Disperse Blue 102

C.I. Disperse Blue 106

C.I. Disperse Blue 124

C.I. Disperse Blue 124

C.I. Disperse Brown 1

C.I. Disperse Orange 1 C.I. 11 080

C.I. Disperse Orange 3 C.I. 11 005

C.I. Disperse Orange 37

C.I. Disperse Orange 76 (previously designated Orange 37)

C.I. Disperse Red 1 C.I. 11 110

C.I. Disperse Red 11 C.I. 62 015

C.I. Disperse Red 17 C.I. 11 210

C.I. Disperse Yellow 1 C.I. 10 345

C.I. Disperse Yellow 9 C.I. 10 375

C.I. Disperse Yellow 39

C.I. Disperse Yellow 49

Assessment and verification: The applicant shall provide a declaration of non-use of these dyes.

Heavy metals

According to the GUT requirements "*dyes and pigments containing the listed heavy metals as ingredients of the dyeing component must not be used to dye the materials because these have toxic and / or carcinogenic properties: lead (Pb), cadmium (Cd), mercury (Hg) or chromium (chromium total) or Cr(VI).*

The limit value for the total heavy metal content of a fitted carpet is 100 mg/kg."

The harmful effect of heavy metals is primarily based on the deactivation of enzymes, on changes in the permeability of cell membranes as well as on chronic, mutagenic and carcinogenic effects.

STAKEHOLDER COMMENTS:

EEB and BEUC suggested the total exclusion of any metal complex dye, however many CBs did not agree with this proposal during the 2°AHWG.

2.3 Water emissions

Wool – biocides (reference: Criterion 5, *Final Draft textile criteria)*
After treating the scouring effluent, the final COD discharge shall not exceed 5 g/kg greasy wool. The pH of the effluent discharged to surface waters shall be between 6 and 9 (unless the pH of the receiving waters is outside this range), and the temperature shall be below 40°C (unless the temperature of the receiving water is above this value).

Assessment and verification: the applicant shall provide relevant data and test report, using the following test method: ISO 6060.

Wastewater discharges from wet processing (reference: Criterion 27, *Final Draft textile criteria*)

(a) Waste water from wet-processing sites (except greasy wool scouring sites) shall, when discharged after treatment (whether on-site or off-site), have a COD content of less than 20 g/kg, expressed as an annual average.

Assessment and verification: The applicant shall provide detailed documentation and test reports, using ISO 6060, showing compliance with this criterion, together with a declaration of compliance.

(b) *If the effluent is treated on site and discharged directly to waters, it shall also have a pH between 6 and 9 (unless the pH of the receiving water is outside this range) and a temperature of less than 40 °C (unless the temperature of the receiving water is above this value).*

Assessment and verification: The applicant shall provide documentation and test reports showing compliance with this criterion, together with a declaration of compliance.

Detergents, fabric softeners and complexing agents (reference: Criterion 15, Final Draft textile criteria)

At each wet-processing site, at least 95% by weight of the detergents, at least 95% by weight of fabric softeners and at least 95% by weight complexing agents used shall be sufficiently degradable or eliminable in wastewater treatment plants.
At each wet-processing site, the detergents (which contain surfactants) in use shall fulfil the criteria: the surfactants meet the criteria for ultimate aerobic biodegradation. At least 95% of the other substances by weight shall be sufficiently degradable or eliminable in wastewater treatment plants.

Assessment and verification: '*sufficiently biodegradable'* means:

— if when tested with one of the methods OECD 301 A, OECD 301 E, ISO 7827, OECD 302 A, ISO 9887, OECD 302 B,

— or ISO 9888 it shows a percentage degradation of at least 70 % within 28 days, or if when tested with one of the methods OECD 301 B, ISO 9439, OECD 301 C, OECD 302 C, OECD 301 D, ISO 10707, OECD 301 F, ISO 9408, ISO 10708 or ISO 14593 it shows a percentage degradation of at least 60 % within 28 days,

— or if when tested with one of the methods OECD 303 or ISO 11733 it shows a percentage degradation of at least 80 % within 28 days,

— or, for substances for which these test methods are inapplicable, if evidence of an equivalent level of biodegradation is presented.

The applicant shall provide appropriate documentation, safety data sheets, test reports and/or declarations, indicating the test methods and results as indicated above, showing compliance with this criterion for all sizing preparations used.

Metal complex dyes (reference: Criterion 20, Final Draft textile criteria)

Considering that the use of the most dangerous heavy metals has been, already, excluded in the *Criterion 2.2 –"Heavy metals",* the following requirements concern only those metal complex dyes that are allowed.

If metal complex dyes based on copper or nickel are used:

(a) In case of cellulose dyeing, where metal complex dyes are part of the dye recipe, less than 20% of each of those metal complex dyes applied (input to the process) shall be discharged to waste water treatment (whether on-site or off-site).

In case of all other dyeing processes, where metal complex dyes are part of the dye recipe, less than 7% of each of those metal complex dyes applied (input to the process) shall be discharged to waste water treatment (whether on-site or off-site).

(b) The emissions to water after treatment shall not exceed: Cu 75 mg/kg (fibre, yarn or fabric); Ni 75 mg/kg.

Assessment and verification: the applicant shall either provide a declaration of non-use or documentation and test reports using the following test methods: ISO 8288.

STAKEHOLDER COMMENTS:

The EEB and BEUC suggested the total exclusion of any metal complex dye.

Since these limits are the same adopted by the EU Ecolabel criteria for Textile products, a further restriction of the values does not seem necessary.

2.4 Energy consumption

A calculation formula taking into account the proportion of renewable raw materials and recycled non-renewable raw materials and the energy consumption is proposed. The calculation formula refers to the Nordic Swan Ecolabelling, that is the only label that proposes a specific calculation tool for the limitation of the energy consumption at the manufacturing stage for “textile floor coverings”.

Energy consumption is referred only to the manufacturing stage, as for all the EU Ecolabel product groups (i.e.: hard coverings, footwear, coping paper, etc.)

The measurement method and control has been developed for the EU Ecolabel and tested with the inventory data used also for the LCA analysis provided at the beginning of this document and in compliance with the criteria requirements.

The requirements are organized in two parts: the calculation of a score point and the application of limits to the total score for textile coverings, as indicated below.

Energy consumption is calculated as an annual average of the energy consumed during the production process (excluding premises heating) from raw material in bulk to the finished floor covering.

The calculation shall not include the energy content of the raw material (nda: feedstock energy).

The unit chosen for the calculations is the **MJ/m^2**.

The energy contents of various fuels are given in the technical appendix A1.

Electricity consumption refers to electricity purchased from an external supplier.

If the producer has an energy surplus that is sold as electricity, steam or heat, the sold quantity can be deducted from the fuel consumption. Only the fuel that is actually used in floor covering production shall be included in the calculations.

Carpets

Environmental parameter
A = Proportion of renewable raw materials and recycled non-renewable raw materials (%)
B = Proportion of renewable fuels (%)
C = Electricity consumption (MJ/m2)
D = Fuel consumption (MJ/m2)

$$P = \frac{A}{25} + \frac{B}{25} + (4 - 0{,}72 \times C) + (4 - 0{,}3 \times D)$$

Synthetic

It is shown, below, an example that has been done using the LCA data:

Environmental parameter	Data
A = Proportion of renewable raw materials and recycled non-renewable raw materials (%)	30
B = Proportion of renewable fuels (%)	4,0[48]
C = Electricity consumption (MJ/m2)	2
D = Fuel consumption (MJ/m2)	8

Result	**P = 5,6**

Natural (woollen)

It is shown, below, an example that has been done using the LCA data

Environmental parameter	Data
A = Proportion of renewable raw materials and recycled non-renewable raw materials (%)	70
B = Proportion of renewable fuels (%)	4,0[48]
C = Electricity consumption (MJ/m2)	2
D = Fuel consumption (MJ/m2)	8

Result	**P = 7,2**

[48] Data source: “Renewable Fuels Association”

Several tests that have been carried out using different data sources and mixes and the outcome lead to the following proposal: a limit of **6 points** for **Synthetic carpet** and a limit of **7 points** for **Natural carpet** .

3. USE PHASE

3.1 Release of dangerous substances

Some emission parameters on the finished products must be managed in order to control the potential release of dangerous substances in the use phase and at the end of the textile floor coverings life.

Volatile organic compounds (VOC) are components which, at room temperature, may be released from materials or products in the form of gases.

The scheme adopted is based on the ECA-18-system and is compatible with other systems such as the procedure suggested by AgBB49 for the evaluation of building products used for large indoor areas.

According to the RAL UZ 128 and the GUT label, the finished products have to be tested in the test chamber and demonstrate conformity with the "*Health risk assessment process for emissions of volatile organic compounds (VOC) from building products*" developed by the Committee for Health-related Evaluation of Building Products.

The limits proposed are in line with the German label and aremore stringent with regard to the GUT (concerning the TVOC and Total VOC without LIC).

[49] Committee for Health-related Evaluation of Building Products

With regard to the classification of “Textile floor coverings”, as defined by the Article 2 of the current criteria proposal, products must not exceed the following emission values:

Substance	Requirement (after 3 days)
Total organic compounds within the retention range C6 – C16 (TVOC)	0,25 mg/m³ air
Total organic compounds within the retention range > C16 – C22 (TSVOC)	0,03 mg/m³ air
Total VOC without LIC[50]	0,05 mg/m³ air

The “Total VOC without LIC" is calculated considering also the non-identifiable substances.
To demonstrate compliance with this requirement, the applicant shall present a test certificate according to the emission tests ENV 13419[51] or prEN 15052[52] or DIN ISO 16006-6[53].

4. PACKAGING

Please, see the proposal at § 7 of the HC, pg. 56.

5. FITNESS FOR USE

Details of the test procedures and results shall be provided, together with a declaration that the product is fit for use based on all other information about the best application by the end-user.

6. DURABILITY AND SAFETY

The product shall fulfil the requirements on durability, strength, safety and stability in applicable EN or ISO standards. If there is no EN or ISO standard , specific standards for the products can be used or, in alternative, an evaluation of the product’s durability, strength, safety and stability on the basis of the design and choice of materials shall be performed by an independent test institution and/or laboratory.

[50] LCI = Lowest Concentration of Interest; cf. "Health risk assessment process for emissions of volatile organic compounds (VOC) from building products” (Federal Environmental Agency).
[51] Air quality - Building Products - Determination of the emission of volatile organic compounds
[52] Evaluation and requirements of volatile organic compounds (VOC) emissions for resilient, textile and laminate floor coverings.
[53] Determination of volatile organic compounds in indoor and test chamber air by active sampling on Tenax TAÃ‚Â® sorbent, thermal desorption and gas chromatography using MS/FID.

The user manual will provide the list of norms and standards which shall be used for the durability assessment.
A list of the acceptable norms and standards will be provided in the user manual.

Assessment and verification: The producer shall provide a declaration completed with documentation on the test methods performed by the accredited institution and/or laboratory and the test results. A clear indication of the product's durability shall be provided to the final consumer.

STAKEHOLDERS COMMENTS:

The introduction of a odour criterion has been advocated by BEUC and EEB during the 2°AHWG. It has to be underlined that, also if some test methods on odour has been developed in recent years, the perception of odour is subjective and subject to fluctuations. For this reason the EU commission has expressed a negative opinion on the introduction of a similar criterion.

Furthermore, the odour criterion has been deleted from the soil improvers and growing media Ecolabel criteria during the last revision.

7. CONSUMER INFORMATION

The criterion states that the product has to be sold with information about the EU Ecolabel award, with the recommendations for its use and maintenance, with an indication of the route of recycling or disposal and with information on the EU Ecolabel and its related product groups.

The standard life duration of the product should be indicated in the packaging for consumers information.

8. INFORMATION APPEARING ON THE ECOLABEL

The criterion cites that:

Box 2 of the Ecolabel shall contain the following text:

- *hazardous and toxic substance restricted;*
- *production process energy saving;*
- *limited pollutant emissions to water;*
- *no risk to health in the living environment;*
- ~~*reduced pollutant hazards in the wastes; No*~~
- *durability, safety and fitness for use.*

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