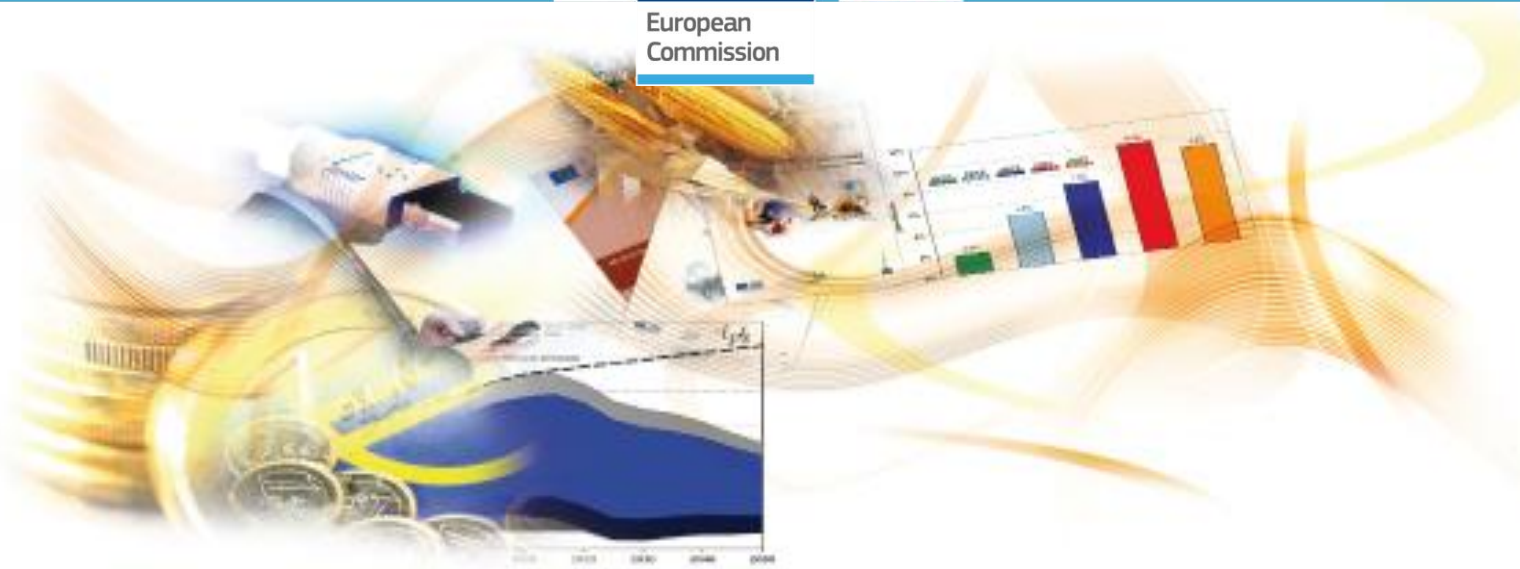




European
Commission



J R C T E C H N I C A L R E P O R T S

Revision of the European Ecolabel Criteria for Wooden Flooring Covering:

Technical Report 2.0:
Draft criteria proposal for revision of
ecological criteria

Alicia Boyano and Oliver Wolf – IPTS

April 2015

European Commission

Joint Research Centre
Institute for Prospective Technological Studies

Contact information

Dr. Alicia Boyano Larriba
Address: Joint Research Centre, Edificio Expo c/ Inca Garcilaso, 3 E-41092 Seville, Spain
E-mail: Alicia.Boyano-Larriba@ec.europa.eu

Tel.: +34 95 4488 363

Fax: +34 95 4488 426

<http://susproc.jrc.ec.europa.eu>

<http://www.jrc.ec.europa.eu/>

Legal Notice

This publication is a Technical Report by the Joint Research Centre, the European Commission's in-house science service. It aims to provide evidence-based scientific support to the European policy-making process. The scientific output expressed does not imply a policy position of the European Commission. Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use which might be made of this publication.

Reproduction is authorised provided the source is acknowledged.

Abstract

The EU Ecolabel criteria for wood based floor covering are under revision. The revision process will take into account the possible expansion of the scope for this product group in order to adapt it to the current market conditions. The criteria will address the most important environmental impacts of flooring in a life cycle perspective.

During the development of the EU Ecolabel criteria, continuous wide consultation is foreseen with experts and stakeholders of manufacturers, supply chain industry, consumer organizations, NGOs and Member States. The evidence base uses available scientific information and data, adopts a life-cycle approach and engages participants to discuss the issues and develop consensus. The proposals for criteria revision are motivated by the results of the accompanying background analysis.

TABLE OF CONTENTS

1	INTRODUCTION.....	4
1.1	HOW TO READ THIS DOCUMENT?.....	4
1.2	THE CURRENT SCOPE OF THE EU ECOLABEL CRITERIA DOCUMENT FOR WOODEN FLOOR COVERINGS	5
1.3	KEY ENVIRONMENTAL IMPACTS ASSOCIATED WITH THE PRODUCT GROUP AND THEIR LINKS TO THE PROPOSED EU ECOLABEL CRITERIA.....	5
1.4	PROPOSED FRAMEWORK FOR THE SECOND REVISION OF EU ECOLABEL CRITERIA	8
1.5	MAIN CHANGES BETWEEN TR1.0 AND TR2.0.....	10
2	EU ECOLABEL CRITERIA FOR WOOD-BASED FLOORING COVERINGS	11
2.1	NAME, SCOPE AND DEFINITION	11
2.2	CRITERION 1 – SUSTAINABLE WOOD, CORK AND BAMBOO	11
2.3	CRITERION 2 – GENERAL RESTRICTED SUBSTANCES	13
2.4	CRITERION 3 – SPECIFIC RESTRICTED SUBSTANCES	16
2.5	CRITERION 4 - PRODUCTION PROCESS	23
2.6	CRITERION 5 – EMISSIONS OF FORMALDEHYDE IN WOOD-BASED BOARDS	27
2.7	CRITERION 6 – FINISHED PRODUCT.....	28
2.8	PACKAGING.....	30
2.9	CRITERION 7 - INFORMATION	31
3	TRACKING OF THE CHANGES: NAME, SCOPE AND DEFINITION	33
4	TRACKING OF THE CHANGES: EU ECOLABEL CRITERIA FOR WOODEN FLOOR COVERINGS.....	39
4.1	SUSTAINABLE MANAGED WOOD AND PLANT-BASED MATERIALS	39
4.2	CONTAMINANTS IN RECYCLED WOOD	46
4.3	IMPREGNATING SUBSTANCES AND PRESERVATIVES	50
4.4	GENETICALLY MODIFIED WOOD.....	51
4.5	USE OF DANGEROUS SUBSTANCES	52
4.6	PRODUCTION PROCESS: ENERGY CONSUMPTION.....	75
4.7	PRODUCTION PROCESS: WASTE TREATMENT.....	80
4.8	USE PHASE: RELEASE OF DANGEROUS SUBSTANCES	83
4.9	PACKAGING.....	91
4.10	FITNESS FOR USE	92
4.11	CONSUMER INFORMATION	99
4.12	INFORMATION APPEARING ON THE EU ECOLABEL	101
4.13	END OF LIFE OF WOODEN FLOOR COVERINGS.....	102
5	TABLE OF COMMENTS.....	105
6	USER MANUAL RECOMMENDATIONS	113
6.1	CHECK-LIST OF DOCUMENTS NEEDED FOR THE ASSESSMENT AND VERIFICATION OF THE CRITERIA	113
6.2	CRITERION 1: SUSTAINABLE MANAGED WOOD, CORK AND BAMBOO..	121

Revision of EU Ecolabel Criteria for Wood Based Floor Covering – 2nd AHWG meeting, May 2015

6.3 CRITERION 2: GENERAL RESTRICTED SUBSTANCES..... 122
6.4 CRITERION 3: SPECIFIC RESTRICTED SUBSTANCES 125
6.5 CRITERION 4: ENERGY CONSUMPTION..... 127

List of Tables

Table 1. Link between the hotspots identified (LCA and non-LCA impacts) and the revised EU Ecolabel criteria	6
Table 2. Summary of the main changes between the current criteria and second criteria proposal	9
Table 3. Stakeholders comments and IPTS assessment on the criteria: certified sustainable sources	41
Table 4. Wood waste categories or grades: definition, typical sources of raw materials and typical markets (recovered wood)	48
Table 5 Limits included in different schemes on the conditions	48
Table 6. Stakeholders comments and IPTS assessment on the criteria: biocides	67
Table 7. Stakeholders feedback on the indoor climate criterion	85
Table 8. Testing costs in € ₂₀₁₅ in Italy	90
Table 9. Stakeholder's contributions after the 1 st AHWG meeting and IPTS assessment.	105
Table 10. Non-comprehensive check-list of the documents required for the assessment and verification of the criteria	113
Table 11. Calculations of the quantity of certified wood, cork or bamboo	122
Table 12. Check list for general restricted substances	122
Table 13. Declaration table for those restricted substances that are classified	124
Table 14 Check-list for specific restricted substances	125
Table 15. VOCs in the surface treatment	126

List of Figures

Figure 1. Flow diagram of decision process in assessment and verification of the criterion 2	61
Figure 2. Decision tree used to determine hazard classifications	63
Figure 3. Comparison of formaldehyde emission ambition levels in different schemes for wood-based panels. MDF = Medium density fibreboard; PB = Particleboard	87
Figure 4. Equivalence among standards for testing the fitness for use of wooden floor coverings and classifying the products	95

1 INTRODUCTION

This document is intended to provide the background information for the revision of the Ecolabel criteria for Wooden Floor Coverings. The study has been carried out by the Joint Research Centre's Institute for Prospective Technological Studies (JRC-IPTS) with the technical support from Life- Cycle Engineering (LCE). The work is being developed for the European Commission's Directorate General for Environment.

The main purpose of this document is to evaluate the current criteria and discuss if the criteria are still relevant or should be revised, restructured or removed. This document is complemented and supported by the preliminary report¹ released in September 2014, which consists of a series of chapters addressing:

- scope and definition
- market analysis
- technical analysis
- improvement potential

and a first technical report (TR1.0)² that was released in September 2014 including the first criteria proposal.

Moreover, during the course of the revision process two general questionnaires on the scope and improvement potential as well as queries specific to certain criteria were sent out to selected stakeholders. The target groups were industry, Member States, NGOs and academia. The specific information, views and suggestions arising from questions were reflected in the preliminary report and taken into consideration as far as possible in the proposals for the criteria revision.

The first draft version of the technical report has built the basis for the first Ad-Hoc Working Group (AHWG) meeting taken place in October 2014. The current revised technical report (TR2.0) provides an update of the criteria development process based on new information (stakeholder's discussion at the 1st AHWG meeting, further stakeholder inputs following the meeting, views and suggestions arising from the second questionnaire and further desk research).

1.1 HOW TO READ THIS DOCUMENT?

Due to the changes proposed in the EU Ecolabel criteria and their change of structure, the document was split into two main sections.

- **Chapter 1 and 2: "Introduction"** followed by **"EU Ecolabel criteria for Wood-based floor coverings"** presents the last criteria version and a small rationale. Then, this part provides the reader with a good understanding of the new proposed criteria and the basic reasons why each criterion is considered of importance for this product group. Those readers that want to have an overview of the criteria without going into the details of the criteria revision process are advised to read this part.

- **Chapter 2 and 3: The tracking of the EU Ecolabel revision process is presented in chapter 3 and chapter 4** of this TR2.0 Both chapters **track the criteria development starting from the current criteria** included in the Commission Decision 2010/18/EC³ and the corresponding corrigenda⁴ **and including all the relevant information that lead to the second proposal for the EU Ecolabel criteria**. Additionally, chapter 3 tracks the changes that the name, scope and definition of this product group have undertaken.

In chapter 4, for each of the criteria, boxes are provided with the current criteria (grey), the first proposal (blue) and a second proposal (red) for revised criteria. After each box, a discussion of the rationale for

¹ http://susproc.jrc.ec.europa.eu/wooden_floor_coverings/documents.html

² http://susproc.jrc.ec.europa.eu/wooden_floor_coverings/documents.html

³ OJL 8/32 13.01.2010

⁴ Corrigendum to Commission Decision 2010/18/EC of 26 November 2009 on establishing the ecological criteria for the award of the Community Ecolabel for wooden floor coverings 24.07.2013 OJL 199/7

Corrigendum to Commission Decision 2010/18/EC of 26 November 2009 on establishing the ecological criteria for the award of the Community Ecolabel for wooden floor coverings OJL 70/11, 14.03.2013

the proposed change (or not) to the criterion is made, based on the stakeholder feedback and further research.

- Chapter 5 "**Table of Comments**" includes the comments received from the 1st AHWG meeting up today⁵

- Chapter 6 "**User manual recommendations**" is an attempt for clarifying the documents and calculations that should be carried out for assessing and verifying the criteria.

Discussions are chronologically presented under the following headlines:

- '*Summary of the rationale presented in the 1st AHWG preliminary documents*' that briefly summaries the rationale and technical data discussed in the preliminary report and the first stakeholder questionnaire and that lead to the first criteria proposal

- '*Feedback from the 1st AHWG meeting*' that contains the views and suggestions made by the stakeholders during the first AHWG meeting and the subsequent commenting period

- '*Further research*' that summaries and discusses the desk research carried out on the points addressed by the stakeholders or any other point of relevance.

This second version of the technical report TR2.0 will bring together the scientific arguments for the proposed new criteria document to provide input for another stakeholder discussion at the second AHWG meeting that will take place in May 2015, before finally being voted upon the EU Ecolabelling Board.

1.2 THE CURRENT SCOPE OF THE EU ECOLABEL CRITERIA DOCUMENT FOR WOOD BASED FLOOR COVERINGS

As stated in the previous technical report (TR1.0) and in the preliminary report of the revision process for the EU Ecolabel criteria for Wooden Floor Coverings, there has been an important change in the breakdown of the products placed on the EU market. Laminate floorings are increasingly marketed (reaching around 70% of the market) while other kinds of flooring, such as solid wood parquets, are decreasing their market shares.

Laminate flooring is made, on average, of 80 % wt. wood and wood-based materials. Therefore, based on the segmentation of wooden floor covering market, it was proposed to *widen the scope of the EU Ecolabel criteria to cover a much broader share of the wooden floor coverings and to respond better to the expectations of potential EU Ecolabel license holders.*

This fact will affect the name, scope and definition of the product group (see Chapter 3) but most importantly will influence the Ecolabel criteria revision process and their structure. The revised Ecolabel criteria structure will increase the importance of the criteria dealing with the restriction of the possible hazardous substances that can be used during the manufacturing process remaining in the finished product or be contained in it as an essential material and that represent a risk for the health or the environment (See section 1.5 related to the main changes between TR1.0 and TR2.0).

The criteria proposed in the TR2.0 should be applied to all kind of floorings (laminates, solid wooden floorings, cork and bamboo floorings) to be awarded with the EU Ecolabel. No specific criteria have been developed for each of the mentioned flooring types. This approach aims at labelling those floorings that have an outstanding health and environmental performance regardless of their characteristics.

⁵ Table of replies to the second questionnaire is under development and will be included in the coming Technical Report.

1.3 KEY ENVIRONMENTAL IMPACTS ASSOCIATED WITH THE PRODUCT GROUP and THEIR LINKS TO THE PROPOSED EU ECOLABEL CRITERIA

Based on the LCA review presented in the chapter 4 of the preliminary report the overall findings indicate that the production phase and the extraction of the materials are associated with the most significant environmental impacts during the life cycle of wooden floor coverings.

- a) *Extraction of materials:* this stage causes the second most important lifecycle environmental impacts of wooden floor covering. The most common materials used in the production of wooden floor coverings are wood, plant-based materials, resins and other spreadable materials widely used for the preservation and treatment of wooden surfaces. The environmental impacts caused during this lifecycle stage are mainly due to unsustainable management of the forest and plantations. Therefore, it is important that wood and plant-based resources used in the wooden floor covering production come from well managed and reliable sustainable sources. Ensuring legality and sustainability of the wood and wood-based product placed on the EU market is the first step to guarantee the future of the forest and forest-based sectors.
- b) *Production stage:* this causes the main environmental impacts due to energy consumption and the use of adhesives, resins and other materials during wooden floor covering assembly. Depending on the type of wooden floor covering the energy demand as well as the chemicals used are different but in all cases they score similarly and cause environmental impacts such as: use of non-renewable raw materials, air-pollutant emissions (VOCs and formaldehyde), limited recyclability of the final product due to the impregnation with biocides, paints and/or varnishes.
- c) *Packaging and transportation stage:* this does not cause significant environmental impact (lower than 2 %) except for the international sea transportation of either the raw materials or the finished products. Packaging is made by using different kinds of plastics, paper or cardboard and, although these aspects present room for environmental improvement, they do not significantly influence the overall environmental impact of the product group
- d) *Use stage.* The environmental impacts caused during this life cycle stage are not significant in comparison to those of other lifecycle stages. Nevertheless, an extension of the lifetime of wooden floor covering products would imply a lower rate of replacement of these products. This fact would bring significant environmental benefits related to other lifecycle stages such as a lower extraction of materials, a saving of natural resources, lower energy consumption and lower production of residues, among others. Environmental benefits would also be achieved during the end-of-life stage.
- e) *End-of-Life stage:* its environmental impacts highly depend on the end-user behaviour. If wooden floor coverings are reused or recycled, the environmental impacts of this lifecycle stage are lower than if wooden floor coverings are incinerated (even with energy recovery) or disposed of landfills.

According to this summarized environmental information special attention should be paid to the energy consumed and the use of chemicals during the manufacturing processes and, then to the environmental aspects related to the extraction of wood and wood-based materials. Table 1 shows the link between the identified hotspots LCA and non-LCA impacts and the proposed EU Ecolabel criteria in TR2.0.

Table 1. Link between the hotspots identified (LCA and non-LCA impacts) and the revised EU Ecolabel criteria

Hotspots	% total impact	Revised EU Ecolabel criteria	Comments in the related criteria
Extraction of the raw materials			
Extraction of forestry raw materials	(-25) to 50%	Sustainable managed forest materials	It ensures that, at least 70% of the forestry raw materials used in the finished product are certified by a sustainable management forest certificate.
		Contaminants in recycled wood	It ensures that recycled wood can be introduced in the production stage without lowering the quality of the finished product. It enhances the use of recycled materials and preserves the extraction of new materials from forests.
		Wood preservatives	It ensures that wood could be successfully recycled at the end-of-life stage of the product and preserves the extraction of new forestry materials to be used

Revision of EU Ecolabel Criteria for Wood Based Floor Covering – 2nd AHWG meeting, May 2015

		Information appearing on the EU Ecolabel	It informs consumers that the product has larger amount of certified forestry material compared to other products while they are making purchase decisions
Transport	Negligible ⁶	--	The little relevance of these hotspots are the main reason for not developing EU Ecolabel criteria
Waste generation		--	
Water use		--	
Production and manufacturing of the wood-based flooring			
Energy consumed (drying, heating and pressing)	2-85%	Energy saving	The criterion limits the amount of total energy used during the production and sets up caps for the maximum electricity and fossil fuel sourced energy to be used.
		Information appearing on the EU Ecolabel	It informs consumers that the product has saved energy compared to other products while they are making purchase decisions
Waste generation	1-10%	Waste management	It ensures that the limited amount of waste will be generated and that this waste will be properly managed from the environmental point of view.
Packaging	< 2%	--	Their environmental impacts are not significant from the life-cycle perspective. No criteria have been proposed
Transport to and from the facilities		--	
Water use	Not rated	--	
Adhesives production	5-25%	VOCs and formaldehyde in adhesives	It limits the amount of VOCs and formaldehyde used in the resins
		Halogens	It ensures that halogens are not included in the bill of materials
		Plasticizers	It ensures that halogens are not included in the bill of materials
Finish and surface treatment production	Up to 6%	Heavy metals in paints and varnishes	It ensures that heavy metals do not reach the environment in large quantities
		VOC content in surface treatment	It ensures that end user's health will be protected during the use phase
Emissions from the core board	Not rated	Formaldehyde emissions from the wooden board	It limits the emissions coming out from the main wood-based material of the flooring preventing end-users
Other chemical	Not rated	Biocides/preservatives	It ensures that no persistent or biocide preservatives are included as an ingredient
		Flame retardants	It limits the use of potentially hazardous substances and mixtures that can be included in the product to those required by the national legislation. This limits the environmental and health risks for the consumers
		Hazardous substances and mixtures	
		Ingoing substances listed in accordance with article 59(1) of Regulation (EC) no 1907/2006	
Information appearing on the EU Ecolabel	It informs consumers that the product has a limited amount of hazardous substances while they are making purchase decisions		
Installation and use stage			
Laying and installation		User information	It ensures that end users are provided with the needed information to lay the flooring respecting the environment
Use phase	Not rated	Indoor emissions	It ensures that end user's health is preserved requiring floorings to be low-emitting products

⁶ Transportation significantly scores only in the case of bamboo flooring due to the long distances. International overseas transportation can amount for the second largest environmental impact of the product although it depends on the sources of the raw materials and the environmental profile of the flooring. Local transportation, however, scores similarly to other floorings and depends on the distances, type of transportation (trucks, rail, etc) and their energy efficiency (eg Euro 5).

	Indirect effects	Fitness for use	It ensures flooring will have a realistic useful life as long as expected for its intended use. It prevents from a premature refurbishment saving resources.
	10-30%	Maintenance	It prevents from the environmental impacts that can be caused during the useful life due to the use of VOC containing products and their associated emissions.
		User information	It ensures that consumers are provided with the needed information to maintain and use the product satisfactorily
End-of-life			
End life	(-20) to 50%	User information	It ensures that consumers are provided with the information needed to properly handle the product at the end its useful life. Further actions are out of the scope of this policy tool. Additionally, aspects that could harm an environmentally proper management have been tackled in other life-cycle stages of the product

1.4 PROPOSED FRAMEWORK FOR THE SECOND REVISION OF EU ECOLABEL CRITERIA

The revision and updating of the EU Ecolabel criteria led to a different name of the product group, different scope and different structure of the criteria set.

First of all, and as a consequence of the enlargement of material share that is not coming from forestry, a new name was proposed. The new name "wood-based floor covering" aims at fairly reflecting the different kinds of materials these products are made of although wood and plant-based materials remain as the largest part of.

After proposing a new aggregation of the first criteria proposal in the TR1.0 at the 1st AHWG, it was requested that, especially the criteria dealing with hazardous substance and the coating/surface treatment criteria should be re-organized. This restructuration will also affect the criteria dealing with wood and wood-based materials and their processing.

The criteria which structure is presented in section 1.4 are order following in the life-cycle of the product. In this way, the first three criteria (criteria 1-3) are related to the raw materials, including the restriction of materials depending on their origin or nature. The Criteria 4 and 5 correspond to the production phase. In criteria 4 restrictions are set up in the amount of energy to be used during the production stage and in the generation of waste. Criterion 5 sets up the requirements to be fulfilled by the core board. This criterion can be considered to be in between the production and the use phase.

Criteria 6 clearly set up the requirements related to the use phase of the product. Among them, the restriction of formaldehyde and VOC emissions and the guarantee for lasting are the most relevant ones.

Finally criteria 7 are related to the information to be given to the users and the information appearing in the EU Ecolabel. This criterion does not directly relate to any of the above mentioned life cycle phases but it can be considered as a horizontal criteria.

A summary of the structural rearrangement of the criteria between the current EU Ecolabel criteria set and the second criteria proposal is included in Table 2.

Table 2. Summary of the main changes between the current criteria and second criteria proposal

Name		Life cycle phase of the wood-based floor covering	New proposed name:		
Wooden floor coverings			Wood-based floor coverings		
Current criteria structure		Life cycle phase of the wood-based floor covering	New proposed criteria for 2 AHWG meeting		
Cluster	Criteria		Cluster	Criteria	
1 – Wood and wood-based materials	a) origin , traceability and sustainability b) contaminants in recycled wood c) preservatives in wood d) genetically modified wood	Raw materials	1- Sustainable managed forest materials		
3- Hazardous substances	a) dangerous substances for the raw wood and plant treatments: b) manufacturing process: adhesives, free-formaldehyde c) coating and surface treatment: biocides, formaldehyde		2.- General restrictions on hazardous substances	a) Restriction of substances of very high concern b) Restriction based on CLP hazard classification	
			3- Specific restrictions on substances	a) Contaminants in recycled wood b) Wood preservatives c) Biocides d) Flame retardants e) VOCs and formaldehyde in adhesives and resins f) Heavy metals in paints and varnishes g) VOC content in surface treatments h) Halogens i) Plasticizers	
4 – Manufacture process	a) Energy saving b) waste treatment	Production phase	4- Manufacture process	a) Energy consumption b) Waste minimization and management	
5 – Use phase	a) formaldehyde b) VOC	Use phase	5.- Formaldehyde emission from the wooden board		
6- Packaging			6- Finished product	6.1) indoor emissions 6.2) Fitness for use 6.3) Maintenance	
7- Fitness for use				7- Information	7.1) User information 7.2) Information appearing on the EU Ecolabel
8- Information for consumers	a) Consumer information for environmental use b) Information appearing on the Ecolabel				

1.5 MAIN CHANGES BETWEEN TR1.0 AND TR2.0

As shown in the Table 2 and briefly announced in the section 1.2, two criteria have been developed regulating the content of hazardous substances in the product itself or their use during any of the stage of the life-cycle of the product. The first criterion (criterion 2) restricts the content of any hazardous substances classified with one or several hazard statements in accordance with REACH⁷ and CLP⁸ or classified as substances of very high concern in accordance with Article 59(1) of REACH Regulation in a concentration equal or greater than 0.10% w/w. This criterion 2 follows the recommendations of the EU Ecolabel Regulation (EC) No 666/2010 and its wording and proposed threshold has been drafted in line with other EU Ecolabel criteria revisions and developments for other product groups such as EU Ecolabel for Furniture and Footwear.

The second criterion dealing with hazardous substances is Criterion 3. This criterion restricts the use of certain substances that can cause environmental damages and that can take part either during the production process and remain in the product with a concentration lower than 0.10%w/w or that can be intentionally added and contained into the product in lower concentrations that the above mentioned threshold.

This criterion is needed to ensure the outstanding environmental performance of the floorings and to counter count the lack of strictness of the general restricted substances Criterion 2. Therefore, the aim of criteria 3 is to limit or ban the use of those hazardous substances that have been identified as potential risky substances and that have already alternatives on the market.

⁷ Regulation (EC) No 1907/2006 of the European Parliament and the council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, OJ L 396, 30.12.2006, p. 1

⁸ Regulation (EC) No 1272/2008 of the European Parliament and the council of 20 January 2009 on classification, labelling and packaging of substances and mixtures entered into force. OJ L 353

2 EU ECOLABEL CRITERIA FOR WOOD-BASED FLOORING COVERINGS

The criteria for EU Ecolabel for wood-based floor covering are described in the sections below. This chapter starts, however, with the revision of the name, scope and definition.

2.1 NAME, SCOPE and DEFINITION

The product group of '**wood-based floor covering**' shall comprise wood- and plant-based pre-manufacturing floor coverings including wood and timber coverings, laminate floorings, cork coverings and bamboo floorings which are made, for more than 80 % in mass (in the final product), from wood, wood powder and/or wood/plant-based material.

It does not apply to wall coverings, unless properly indicated, or coverings for external use or for coverings with a structural function

Rationale

The **proposed change concerning the mass threshold** is focused on the wood and wood-based material content in the floor covering. Nowadays the dominant product in the European wooden floor covering market is the laminate flooring (70 % of the market share). This product consists of several layers of wood-based materials along with other materials. Its average **wood or wood-based material content amounts to 80 % w/w** having no evidence that the higher the wood content in the product the better the environmental performance is.

The **name of the product group** is proposed to be changed from "**wooden floor covering**" to "**wood-based floor covering**" reflecting the higher amount of other materials different from wood and plant-based materials that can take part of.

The requirements regarding the use of biocidal products have been removed from the definition and are now included as criterion 3.c where the use of biocides is not permitted at any stage of the production process⁹.

Additionally, a clarification of the type of wood-based floor covering has been added. On the wood-based floor covering market there are mainly two big groups of floorings. Those that are put on the market as a completely finished product and ready to be installed at the user's place and those that are provided as in logs and laminates and that should be sanded and finished after their installation. The products falling under the first group are so-called pre-manufactured wood-based floor coverings and they are the ones to be considered in this revision.

2.2 CRITERION 1 – SUSTAINABLE WOOD, CORK AND BAMBOO

Note 1: These criteria apply to solid wood, wood chips and wood fibres as well as cork and lignified materials other than wood such as bamboo. Hereinafter, these distinct materials are simply referred to as "wood".

Wood may originate from virgin or recycled material.

Virgin wood shall be covered by valid sustainable forest management and chain of custody certificates issued by an independent third party certification scheme such as FSC, PEFC or

⁹ Derogation provided for those with preservative functions in in-can chemical products

equivalent.

However, where certification schemes allow mixing of uncertified material with certified and/or recycled materials in a product or product line, a minimum of 70% of the wood shall be sustainable certified virgin material and/or recycled material.

Uncertified material shall be covered by a verification system which ensures that it is legally sourced.

The certification bodies issuing forest and/or chain of custody certificates shall be accredited or recognised by that certification scheme.

Assessment and verification

The applicant shall provide valid, independently certified chain of custody certificates and demonstrate that the at least 70% of the wood originates from forests managed according to Sustainable Forestry Management principles and/or from recycled sources that meet the requirements set out by the relevant independent chain of custody scheme. FSC, PEFC or equivalent schemes shall be accepted as independent third party certification.

If the product or product line includes uncertified material, proof should be provided that the content of uncertified material does not exceed 30% and is covered by a verification system which ensures that it is legally sourced.

Rationale

This criterion was proposed as two separate criteria in TR1.0 requesting that wood, fibre raw materials, cork and bamboo are coming from legal sources and that part of these materials have been grown in sustainable management forest.

Some stakeholders opposed splitting the criteria related to wood/wood-based materials as the new EU Timber Regulation (EC) No 994/2010¹⁰ does not make any exception for this product group. Consequently, all the wooden floor coverings on the EU market should be covered by this regulation ensuring their legality. Additionally, requiring the **coverage by a verification or certification system of all wood and plant-based materials would effectively ensure** that all forest materials are coming from legal origin, as it is one of the common premises of both schemes mainly used for verification.

The issue of **percentage certified wood requirement** has previously been discussed in other EU Ecolabel product groups such as furniture, converted paper, etc and indicates that the existing thresholds (70% for solid wood and 40% for wood-based materials) may not be stringent enough and should be revised upwards. The levels of at least 70% for solid wood and wood-based materials and 50% for cork and bamboo proposed in the 1st AHWG do not seem to comply with the label strictness needed.

Although 100% certified wood is desirable and was requested by some stakeholders, it could be difficult to maintain due to possible fluctuations in the market supplies. Therefore, the proposed text for sustainable managed wood and forestry materials proposed in this TR 2.0 proposes a **general threshold of 70% for certified sustainable wood and forestry materials**. This proposal generally aligns with the sustainable wood text developed for other EU Ecolabel product group's criteria sets that involve wood-based materials, namely furniture or footwear.

¹⁰ Regulation (EU) No 995/2010 of the European Parliament and of the Council of 20 October 2010 laying down the obligations of operators who place timber and timber products on the market, 12.11.2010 OJ L 295 p23

2.3 CRITERION 2 – GENERAL RESTRICTED SUBSTANCES

The presence in the product of substances that that have been identified according to Article 59 of the REACH Regulation¹¹ or meet the criteria for classification according to the CLP Regulation¹² for the hazards listed in Table 2.1 shall be restricted in accordance with sub-criterion 2.a and 2.b.

Table 2.1. Grouping of Candidate List SVHCs and CLP hazards

<p>Group 1 hazards – Substances of Very High Concern <i>Hazards that identify a substance as being within Group 1:</i></p> <ul style="list-style-type: none"> ○ Substances that appear on the Candidate List for Substances of Very High Concern (SVHC). ○ Category 1A or 1B CMR*: H340, H350, H350i, H360F, H360D, H360FD, H360Fd, H360Df
<p>Group 2 hazards – CLP <i>Hazards that identify a substance as being within Group 2:</i></p> <ul style="list-style-type: none"> ○ Category 2 CMR*: H341, H351, H361f, H361d, H361fd, H362 ○ Category 1 aquatic toxins: H400, H410 ○ Category 1 and 2 acute toxins: H300, H310, H330, H304 ○ Category 1 STOT*: H370, H372 ○ Category 1 Skin Sensitiser H317
<p>Group 3 hazards – CLP</p> <ul style="list-style-type: none"> ○ Category 2, 3 and 4 aquatic toxins: H411, H412, H413 ○ Category 3 acute toxins: H301, H311, H331, EUH070 ○ Category 2 STOT*: H371, H373

*CMR = Carcinogenic, Mutagenic or toxic to reproduction; STOT = Specific Target Organ Toxicity

2.a) Restriction of Substances of Very High Concern (SVHC's)

The wood-based floor covering product shall not contain substances that have been identified according to the procedure described in Article 59(1) of the Regulation (EC) No 1907/2006 (the 'REACH' Regulation) and included in the Candidate List for SVHCs, at concentrations of greater than 0.10% wt.

No derogation from this requirement shall be given to Candidate List SVHCs present in the product if they are present in the final product in concentrations greater than 0.10% wt.

Assessment and verification

The applicant and/or chemical product supplier shall compile declarations of the non-presence of SVHCs at or above the specified concentration limit for the final product. Declarations shall be with reference to the latest version of the Candidate List published by ECHA¹³

2.b) CLP restriction of the chemical products used in the wood-based floor covering product

Note 1: this requirement specifically refers to chemical products that are used in the manufacture of the wood-based floor covering product. The criterion is split into two parts.

2.b.(i) Referring specifically to chemical products used by the wood-based floor covering manufacturer during the production or assembly and any other treatment of the wood-based floor covering and

2.b.(ii) Referring only to listed chemical products used in the production of certain component

¹¹ 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), establishing a European Chemicals Agency (OJ L 136, 29.05.2007, p.3).

¹² Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 (OJ L 353, 31.12.2008, p.1).

¹³ ECHA, Candidate List of Substances of Very High concern for Authorization
<http://www.echa.europa.eu/candidate-list-table>

materials that are bought from suppliers¹⁴.

2.b.(i) CLP restriction of chemical products used by wood-based chemical

Chemical products used by the wood-based floor covering manufacturer during manufacture, assembly or any other treatment of the wood-based floor covering product shall not be classified with any of the CLP hazards listed in Table 2.1. Restricted chemical products shall include adhesives, paints, varnishes, wood stains, wood preservatives, resins and sealants.

However, the use of such restricted chemical products shall be permitted if one or more of the following conditions apply:

- that the quantity of the chemical product used does not reach a concentration greater than 0.10%wt of the final product
- that the chemical product changes its properties upon processing (e.g. becomes no longer bioavailable or undergoes chemical modification so that the restricted CLP hazards no longer apply and that the residual content of the restricted chemical product in the final product is less than 0.10%wt
- that compliance with specific derogation conditions, as set out in Table 2.2 is demonstrated.

2.b.(ii) CLP restriction of chemical products used by suppliers in components of the wood-based chemical

Note 2: any individual component part from suppliers used in the wood-based floor covering product that does not come into direct contact with users during normal use shall be considered exempt from the requirements set out in criterion 2.b.2

Supplier of solid wood and plant-based panels, paper layers or other supplied components shall demonstrate that the components have not been produced using chemical products that are classified with any of the CLP hazards listed in Table 2.1.

However, the use of such restricted chemical products shall be permitted if one or more of the following conditions apply:

- that the quantity of the chemical product used does not reach a concentration greater than 0.10%wt of the final product
- that the chemical product changes its properties upon processing (e.g. becomes no longer bioavailable or undergoes chemical modification so that the restricted CLP hazards no longer apply and that the residual content of the restricted chemical product in the final product is less than 0.10%wt
- that compliance with specific derogation conditions, as set out in Table 2.2 is demonstrated.

Table 2.2. Derogations to the hazard restrictions in Table 2.1 and applicable conditions.

Chemical product type	Applicability	Derogated classification	Derogation conditions
(a) biocides/preservatives	Treatment of wooden materials and components to be used in the final product	All group 3 hazard listed in Table 1	Only permitted when the formulation and any active substance(s) present are approved under Product Type 6 as per the requirements of the Biocidal Products Regulation (EU) No 528/2012

¹⁴ e.g. if the wooden core panel is directly bought and not manufactured by the applicant

(b) flame retardants		H351	The product must be intended to be used in applications in which it is required to meet fire protection requirements in ISO, EN, Member State or public sector procurement standards and regulations
----------------------	--	------	--

Assessment and verification

The applicant shall provide a declaration of compliance with criterion 2.b.(i), supported by a list of all the chemical products used by the wood-based floor covering manufacturer during the production, assembly and any treatment of the wood-based floor covering product together with their hazard classification (if any).

The applicant shall compile declarations of compliance with criterion 2.b.(ii) from suppliers of any of the components. These declarations shall be supported by lists of any relevant chemical products used and their hazard classifications (if any).

The following information shall be provided to support declarations of the hazard classifications or non-classification for each substance or mixture identified as being present in the product/component part:

- i. substance's CAS¹⁵, EC¹⁶ or list number
- ii. the physical form and state in which the substance is used
- iii. harmonised CLP hazard classifications
- iv. self-classification entries in ECHA's REACH registered substance database¹⁷

Self-classification entries from joint submissions shall be given priority when comparing entries in the REACH registered substance database.

Where a classification is recorded as 'data lacking' or 'inconclusive' according to REACH register database, or where a substance has not yet been registered under the REACH system, toxicological data meeting the requirements in Annex VII to the Regulation (EC) No 1907/2006 shall be provided that is sufficient to support conclusive self-classifications in accordance with Annex I of the Regulation (EC) No 1272/2008 and ECHA's supporting guidance. In the above cases of 'data lacking' or 'inconclusive' database entries, self-classifications shall be verified, the following information sources being accepted:

- Toxicological studies and hazard assessment by ECHA peer regulatory agencies¹⁸, Member State regulatory bodies or intergovernmental bodies
- A Safety Data Sheet (SDS) completed in accordance with sections 2, 3, 9, 10, 11 and 12 of the Annex II of the Regulation (EC) No 1907/2006
- A documented expert judgement based on a review of scientific literature and existing testing data, where necessary supported by results from new testing carried out by independent laboratories using methods approved by ECHA
- An attestation, where appropriate based on expert judgment, issued by an accredited conformity assessment body that carries out hazard assessments according to the GHS or CLP hazard classification systems.

Information on the hazardous properties of chemical products may, in accordance with Annex XI to Regulation (EC) No 1907/2006, be generated by means other than tests, for instance through the use of alternative methods such as in vitro methods, by quantitative structure activity models or by the use of grouping or read-across.

¹⁵ CAS, <https://www.cas.org/content/chemical-substances/faqs>

¹⁶ EC, http://en.wikipedia.org/wiki/European_Community_number

¹⁷ ECHA, REACH registered substances database:
<http://www.Echa.europa.eu/information-on-chemicals/registered-substances>

¹⁸ ECHA, Co-operation with peer regulatory agencies, <http://echa.europa.eu/en/about0us/partners-and-networks/international-cooperation/cooperation-with-peer-regulatory-agencies>

For criterion 2.b.1) or 2.b.2), as appropriate, where chemical products with the restricted hazards listed in Table 2.1 are added in a concentration no greater than 0.10%wt of the final product or are considered to no longer exhibit any restricted hazardous properties in the final product or relevant component part due to physical and/or chemical changes during processing, and residual levels in the final product, or relevant component, can be considered to be present at concentrations less than 0.1% w/w, the applicant shall specifically mention this in their declaration and provide supporting arguments.

For criterion 2.b.1) or 2.b.2), as appropriate, where the use of restricted chemical products may be subject to derogation as per Table 2.2, the applicant shall provide proof that all the derogation conditions are met, as described in Table 2.2. Where test reports are required, they shall be valid at the time of application for a production model

Rationale

Significant changes are proposed for Criterion 2 "General Restricted substances" compared to the current EU Ecolabel criterion and the proposal done for the 1st AHWG meeting.

Changes are triggered by the new EU Ecolabel Regulation 66/2010¹⁹ that requires, in accordance with its Article 6(6), that certain types of substances²⁰ are not present in the final products.

The new approach proposed in TR2.0 changes the perspective to assess the content of classified substances in the product. Initially, the current criterion bans the use of raw materials classified under certain R-phrases as well as the presence of several chemicals in the final product. The verification was proposed by means of the SDS of the ingredients.

The new approach, however, limits or restricts the content of those classified substances²¹ in the final product and therefore it does not restrict anymore the use of important chemicals that can be fundamental to certain manufacture processes. The new proposal does not longer restrict those chemicals that do not remain in the final product as such in a concentration more than 0.1%wt or those that undergo physical and chemical process and that become unclassified chemical products.

This new approach requires manufactures to comply with requirements for the final product. In this way, auxiliary chemical products classified with H-phrases listed in criterion 2 (Table 2.1) can be used during the production stages providing they undergone chemical or physical transformation that allow them not to be classified any longer or if they do not remain in the finished product as introduced (eg because they have reacted) with a concentration in more than 0.10%wt

The assessment and verification of this criterion should be carried out by demonstrating the non-presence of classified substances or at least, the non-presence of classified substances above the limit of 0.10% w/w. This compliance is required by screening the Hazardous Statements of the chemical products recipes based primarily in the SDS information. However, the SDS does not address the physical and chemical changes that can happen and therefore the applicant must compile and submit the evidences that demonstrate these changes.

This method of verification would not strictly be applied to many functional substances that remain in the final product and therefore criterion 2 dealing with non-SVHC substances is limited to specific screening requirements and derogations that are listed in the criteria body so

¹⁹ OJL27/1 30.1.2010

²⁰ "The EU Ecolabel may not be awarded to goods containing substances or preparations/mixtures meeting the criteria for classification as toxic, hazardous to the environment, carcinogenic, mutagenic or toxic for reproduction (CMR), in accordance with CLP Regulation (EC) No 1272/2008 not to goods containing substances referred to in Article 57 of REACH Regulation (EC) No 1907/2006"

²¹ Classified substances are considered those that meet the criteria for classification with the hazard statements as specified in Article 57 of Regulation (EC) No 1907/2006. R-phrases are not considered as they are phased out

that the applicant (and Competent Bodies) can work effectively. However, it was noticed that the complete picture of a substance's hazard classification may not be always readily available and because of that a decision making tool was developed together with ECHA to support the process. The resulting tool is explained in detail in section 4.5

Derogations can be granted depending on the actual state-of-the-art and best practices of the sector. For the time being, there is no official derogations request received for the EU Ecolabel criteria revision for Wood based Floor Covering. As a basic proposal, two derogations have been suggested in this criterion 2 (Table 2.2). These proposals are based on the feedback received in the EU Ecolabel criteria revision process for Furniture and the similarities that both product groups present.

Derogations are listed in Table 2.2 together with the conditions they should fulfil. The rationale behind is as follows:

- **Biocides and preservatives:** derogation condition appears in Table 2.2 for biocides and preservatives that respect the compliance with the Biocidal Product Regulation (EU) No 528/2012²² for the relevant Product Type. This derogation is included into the list, although not reaching the limits for being restricted (the concentration of the active biocidal substances is well below any 0.10% w/w limit of the coating layer), because their use should be identified during the hazardous substance screening work carried out by the applicant under criterion 2
- **Flame retardants:** are compounds restricted in the criteria 3 "Specific restricted substances". However, its use can be required by national regulations for safety reasons. Only under these conditions, and to allow applicants to fulfil the safety regulations, is its use allowed.

Isocyanate was previously proposed to be derogated, similarly to biocides and preservatives derogation. However, the derogation of isocyanates is not needed as likely its concentration in the finished product is well below 0.010% w/w, once the isocyanates have been completely cured during the manufacturing process. The likelihood of being identified as a hazardous substance during the screening work carried out by the applicant was the main reason behind this proposal for inclusion in TR1.0

Due to the new approach considered in criterion 2 "General Restricted substances" and its limitations to those substances that exceed the concentration of 0.10% w/w in the final product, a new criterion is needed when specific substances want to be banned or limited.

This **new criterion 3 focuses on the restriction of specific substances that are either present below the above mentioned concentration limits (0.1%wt), or that have been used along the manufacturing process causing environmental and health damages** in other life-cycle stages or that remain in the final product as residue.

2.4 CRITERION 3 – SPECIFIC RESTRICTED SUBSTANCES

Due to the modifications proposed in criterion 2 "General restricted substances", new criterion 3 Specific restricted substances has been drafted. This criterion aims at limiting the use of those substances of concern that are relevant for this product group and that can be used along the manufacturing process, remain in the final product in concentrations lower than 0.10% wt or that can be intentionally added at very low concentration.

²² Regulation (EU) No 528/2012 of the European Parliament and of the Council of 22 May 2012 concerning the making available on the market and use of biocidal products, OJL 167/1, 27.06.2012

3. a) Contaminants in recycled wood

Any recycled wood fibres used in the manufacture of wood-based panels included in the final wood-based floor covering product shall be tested for delivery conditions in accordance with the 2002 "EPF standard conditions for the delivery of recycled wood" (Table 3.1) or any other national regulation in place with equivalent or stricter limit values.

Table 3.1. Limit values for delivery conditions if no other national regulation is in place

Elements and compounds	Limit values (mg/kg dry panel)	Elements and compounds	Limit values (mg/kg dry panel)
Arsenic	25	Mercury	25
Cadmium	50	Fluorine	100
Chromium	25	Chlorine	1000
Copper	40	Pentachlorophenol (PCP)	5
Lead	90	Tar oils (benzo(a)pyrene)	0.5

Assessment and verification:

The applicant and/or his/her supplier(s) shall provide a declaration of compliance with the criterion supported by the following documentation:

- A declaration that no recycled wood fibres are used in the panel, or
- A declaration that all recycled wood fibres used have been tested in accordance with the 2002 "EPF standard conditions for the delivery of recycled wood" or any other national regulation with equivalent or restricted limits, supported by appropriate test reports that demonstrate compliance of the recycled wood samples with the limits specified in the table 3.1 or those of the national regulation.

3.b) Wood preservatives

Treatment of wooden components with preservatives shall not be permitted.

Assessment and verification:

The applicant shall provide a declaration of non-use of wood preservatives

3.c) Biocides

Biocides shall not be permitted. Biocides exclusively used for in-can preservation in aqueous coating materials and glues or flame retardants according to criterion 3.d) shall be exempt from this requirement.

Assessment and verification

The applicant shall either:

- Provide a declaration of non-use of biocides
- Provide a declaration stating what biocides or formulation(s) have been used with wood and wood-based materials, supported by SDS from the in-can preservation suppliers.

3.d) Flame retardants

Flame retardants should not be permitted in wood and wood-based materials unless specifically required for the wood-based floor covering to meet fire safety requirements in the country or countries where it is to be sold. Flame retardant substances shall comply with the general hazardous substance requirements set out in Criterion 2.

Assessment and verification

The applicant shall either

- Provide a declaration of non-use of flame retardants or,
- Provide a declaration stating what flame retardant substance(s) or formulation(s) have been used with wood and wood-based materials, supported by SDS from the flame retardant suppliers. The flame retarding substances shall meet the requirements on criterion 2 and being demonstrated in accordance with the “Assessment and verification” requirements of criterion 2,
- Provide evidence that the wood-based floor covering, when treated with flame retardant substance(s) or formulation(s), meets the fire safety requirements in the country or countries where it is to be sold.

3. e) VOCS and formaldehyde in adhesives and resins

Adhesives and/or resins used in manufacturing of the wooden boards should have

- VOC content less than 3% w/w,
- Free-formaldehyde less than 0.2% w/w.

Assessment and verification

The applicant and/or its supplier shall provide the material SDSs or an equivalent declaration of the compliance of this requirement, together with a complete recipe with designation of quantities and CAS numbers for constituent substances.

The content of free-formaldehyde in the resin and/or adhesive formulation shall be in accordance with ISO 11402

3.f) Heavy metals in paints and varnishes

Paints and varnishes used on wood and wood-based materials shall not contain additives based on cadmium, lead, chromium VI, mercury, arsenic, barium, selenium, antimony or cobalt at concentrations exceeding 0.010% w/w for each individual metal in the in-can paint or varnish formulation.

Assessment and verification

The applicant shall declare that the paint or varnish formulations do not contain the aforementioned heavy metals in concentrations > 0.010% w/w and provide the respective SDS from the suppliers of the coating substances used.

3. g) VOC content in surface treatment

Note 1: It shall not be necessary to meet the requirements of this sub-criterion if compliance with criterion 6.1 can be demonstrated

Surface treatment chemical products used to coat wood and wood-based materials, cork or bamboo panels used in the wood-based floor covering product shall either:

- a) Have a total VOC content of less than 5% w/w (in-can substance concentration),
or
- b) Be greater than 5% w/w VOC content but be shown to be applied in quantities that amount to less than 2g/m² of the coated surface area

Assessment and verification

The applicant shall provide the SDS of any coating substances used on wooden materials. If the SDS states that the VOC content of the surface treatment chemicals used is less than 5% w/w, then no further verification shall be necessary. If the VOC content is higher, then the applicant shall either:

- Provide calculations that demonstrate the effective quantity of VOC applied per m² of

the coated surface area of the final wood-based floor covering product is $< 2\text{g/m}^2$. Guidance on these calculations is provided in Appendix I, or

- Provide a test report demonstrating compliance with criterion 6.1 for the finished product.

Appendix I. Guidance on the calculation of the quantity of VOC applied

The requirement relates to the total VOC in the chemical products with the chemical composition they have in the wet form. If the products required dilutions, the calculation is to be based on the content in the dilutive product.

This method is based on the application method that calculates the quantities applied per m^2 surface area but it determines before the content of organic solvents and/or environmentally harmful substances as percentage of the surface treatment quantity applied.

The applied quantity of VOC according to option b) is calculated using the following formula

$$\frac{\text{Applied quantity } \left(\frac{\text{g}}{\text{m}^2}\right) \times \text{proportion VOC in surface treatment (\%)}}{\text{surface treatment efficacy}}$$

The formula consists in three parameters:

- The applied quantity of surface treatment reported in g/m^2 . It depends on the number of coats and the quantity applied per coat,
- The proportion of VOC in the surface treatment: the concentration is to be stated as a percentage by weight,
- The surface treatment efficiency that depends on the application method is tabled in accordance with the state-of-the-art of the coating industry as shown in Table 3.2.

Table 3.2. Efficiency of the surface treatments

Surface treatment	Efficiency	Surface treatment	Efficiency
Automatic spray application, no recycling	50%	Roller coating	95%
Automatic spray application with recycling	70%	Curtain coating	95%
Spray application, electrostatic	65%	Vacuum coating	95%
Spray application, bell/disc	80%		

3.h) Halogens

No halogenated organic compounds may be used (e.g. as binders, flame retardants) in the manufacture of the products, including the materials used in the manufacture (wood-based materials, adhesives, coatings, etc). Paints and varnishes with long chain perfluoroalkyl sulfonates ($>C_6$) and/or perfluorocarboxylic acids ($>C_8$) shall not be used on wood and wood-based materials

Assessment and verification

The applicant shall provide a declaration of non-use of halogenated organic compounds, supported by SDS in the case of the paints and varnishes.

Rationale

a) Contaminants in recycled wood

Possible treatment with any of a number of hazardous preservatives and fungicides may have occurred during the previous manufacture and use of the wood to be recycled. Even after careful pre-treatment, traces of these substances may still remain in the recycled wood fibers and it is necessary to test these materials prior to their re-use in any new products, in particular EU Ecolabel ones.

The EPF has developed a standard for delivery conditions of recycled wood that defines limit values for certain elements and substances that are at particular risk of being present in recycled wood due to treatment with fungicides, paints and varnishes. Compliance with this standard is a usual practice in the industry and is required in the current EU Ecolabel criteria set.

One stakeholder suggested that stricter limits should be used rather than those defined by the EPF. Other standards and/or regulations that require stricter limits than EPF standard²³ are the Austrian Recyclingverordnung²⁴, Natureplus²⁵ or the German Altholzverordnung²⁶ reported in Chapter 4.2. These standards set out, in general, stricter limit values regarding the content of chemical pollutants in the recycled wood, however, direct comparison is not possible to perform since testing is carried out and reported under different conditions (i.e. values calculated and communicated as media or median, % percentile, different correction factors, etc).

The proposed criterion includes the possibility of complying with national regulations or standards if they have a level of strictness equivalent or higher than the EPF standard (see Chapter 4.2 for further information). Including this alternative, an increase in the quality of the recycled wood is expected while no additional testing costs are added to the manufacturers. Additionally, this alternative ensures that care has been taken and no large quantities of available recycled wood would be excluded from the market.

b) Wood preservatives

Although very specific indoor environments may be aggressive to wood, it is preferred that instead of permitting the use of preservation or impregnation treatments in EU Ecolabel wood-based floor coverings per se, that confidence is placed in the end user to take the appropriate action in individual cases. For example, not purchasing wood-based floorings in areas with known termite problems or using household treatments for an infestation problem that would unexpectedly arise. For this reason, we took into account the feedback from the stakeholders, and changed the sub-criteria on wood preservatives banning them from indoor wood-based floor coverings.

c) Biocides

In the previous TR 1.0, the use of biocide active substances that were classified with Product type 8 and 18 of the BRP were proposed to be allowed. However, the feedback from the stakeholders informed that in this product group there is no need for using biocide active substances unless they are part of the formulation of in-can surface coating chemical products as preservatives.

For this reason, a change in the biocide sub-criteria is proposed, bringing this criterion in line with other national schemes. In the Blue Angel RAL UZ 176 (although it has broader scope than the EU Ecolabel) no use of any biocides is permitted (except in-can preservatives of coating substances) and the Natureplus for wood and wood-based floorings and the new proposed version of the Nordic Labelling also prohibit the addition of biocides and biocidal products to fibres or to the finished flooring covering for the purpose of achieving a disinfectant and antibacterial treatment or a disinfectant or antibacterial surface (Further information can be found in Chapter 4.5)

²³ PAS 111:2012, Specification for the requirements and test methods for processing waste wood,
<http://www.woodrecyclers.org/PAS111.pdf>

²⁴<http://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=20007830&ShowPrintPreview=True>

²⁵ Wood and wood-based flooring, Natureplus e.V. Award Guideline GL0209,

http://www.natureplus.org/fileadmin/user_upload/pdf/cert-criterias/RL0209_Wood_and_Wood_Based_Flooring.pdf

²⁶ <http://www.gesetze-im-internet.de/bundesrecht/altholzvg/gesamt.pdf>

d) Flame retardants

The restriction on the use of flame retardants was not included in previous TR1.0 and has been investigated as requested by stakeholders during 1st AHWG meeting. Flame retardants are added to some coating materials in order to slow, retard or suppress the risk of fire of coated products.

The non-use of flame retardants is preferential purely from an environmental point of view but any criteria relating to these substances should not be worded so as to potentially conflict with existing safety regulation at national level.

Flame retardants are not particularly important for solid wood, but they may be relevant to finishes of wood-based panels and coating papers. Therefore, it is still necessary to have specific sub-criteria related to flame retardants to prevent the possible entrance of hazardous substances into the EU Ecolabel wood-based floor covering products

e) VOCs and formaldehyde in adhesives and resins

The use of environment-friendly adhesives and resins for the manufacturing of the floor coverings is the aim of this criterion. Adhesives with lower VOCs and formaldehyde content that replace those mostly used such as urea-formaldehyde (UF) resin in the formaldehyde-based resin system would reduce the formaldehyde and VOC emissions from these materials.

The restriction has been re-introduced in the TR2.0 and targets for both formaldehyde and VOC content.

f) Heavy metals in paints and varnishes

A number of stakeholders criticised the complexity of the previous general hazardous substance criterion included in the TR1.0. That proposal stated a general restriction and some derogation permitting the use of some substances at certain life cycle stages of the product. Some of these derogations were related to barium, antimony and cobalt additives in paints and varnishes. These additives are now simply permitted by the criterion 2 based on the idea that they do not need to be derogated since requirements for general hazardous substances should apply to the content in the final flooring product and not to the content in chemical products applied or used for manufacturing the flooring. When considered as a % of the wooden floor covering product these additives will be far below the 0.10% w/w arbitrary cut-off limit that has been widely used for EU Ecolabel articles.

However, the criterion remains in the criterion 3 for prohibiting the use of paints or varnishes that include the heavy metals (ie cadmium, lead, chromium IV, mercury, arsenic and selenium) because:

- many of the additive compounds based on these heavy metals are REACH restricted
- even if additive compounds based on these metals are non-hazardous, the presence of these metals would complicate recycling of the wooden materials at end-of-life if the 2002 "EPF standard conditions for the delivery of recycled wood" is considered (see criterion 3.a)
- if materials containing these metals are incinerated, regardless of the hazard profile of the original additive, the metals may be transformed into more toxic and/or bioavailable forms and either remain in fly ash, bottom ash, air pollution control residues or be released directly to the atmosphere.

g) VOC content in surface treatments

VOC's include a wide variety of compounds that have been widely recognized as potentially harmful for the health and environment. Furthermore, VOC content in surface treatment can trigger emissions from the coating that continue after it leaves the factory.

A flexible approach was provided in the TR1.0 and kept in the TR2.0 to give the manufacturer the option to simply use low VOC coatings or, where surface quality is an important issue, higher VOC content coatings can be used so long as the total VOC applied or emitted is restricted. Although VOC testing is of interest it is recognised that such tests are expensive and time-consuming and may be biased against smaller businesses. If coated panels are supplied to manufacturers, who add no further coatings themselves, data from the coated panel suppliers can be used (Criterion 5). A flexible approach is allowed where the use of low VOC coatings and materials is sufficient to avoid the need for VOC chamber emission testing. The understanding of this rationale shall become clearer after reading the finished product criteria 6.1

The overall effect of this criterion should be to shift producers towards using low VOC concentration coatings (<5%) in EU Ecolabel products but without expressly excluding the use of higher VOC content coatings in certain cases as long as other restrictions are met.

g) Halogens

The environmental concern regarding the halogenated organic compounds that are used as plasticizers, paint components, adhesives, flame retardants, solvents or additives is that most of them are toxic, mutagenic, or carcinogenic but also persistent and bio accumulating. Due to the low amount of these chemicals used in the chemical products, a specific sub-criterion should be drafted.

The restriction regarding halogen substances concerns two kinds of substances:

- *halogenated organic compounds that can be found in recycled wood*: these substances are restricted due to the adverse consequences that its content will cause in the end-of-life stage of the flooring, making its recyclability impossible
- *perflourinated compounds that can be used in paints and varnishes*. These substances are not directly mentioned in TR 1.0 but are specifically banned from use in the recently voted paints and varnishes EU Ecolabel Criteria Decision (2014/312/EU).

Both restrictions, as well as the extension to all halogenated organic substances have been taken over in this new second criteria proposal

2.5 CRITERION 4 - PRODUCTION PROCESS

Criterion 4.1 Energy consumption

The energy consumption shall be calculated as the process energy used for the production of the coverings. The process energy, calculated as indicated in the Appendix IIa, shall exceed the following limits (E = scoring point):

- E > 11.0 for solid wood and laminate floor,
- E > 8.0 for parquet, bamboo and cork floor coverings.

Assessment and verification

The applicant shall demonstrate that the E score has been calculated according to the Appendix IIa instructions and exceeds the limits of this criterion.

Table 4.1. Calculation of the scoring point

Formula	Maximum requirements	
	$E = \frac{A}{20} + \left(5 - \frac{B}{3}\right) + \left(5 - \frac{C}{7}\right)$	A
B		15 kWh/m ²
C		35 kWh/m ²

Where A is the proportion of renewable fuel (%), B is the electricity consumption (kWh/m²) and C is the fuel consumption (kWh/m²)

The applicant should state and demonstrate:

- Which type(s) of fuel have been used in the manufacture of the wood based floor covering over the year prior to the application, and
- Which fuels are coming from renewable sources in accordance with Renewable Energy Directive 2009/80/EC²⁷.

In addition, it should be stated and declared how much electricity has been used (purchased) and how much flooring (m²) has been produced over the year prior to the application in accordance with the instructions given in Appendix IIb.

Appendix IIa. Guidance for calculating the process energy used

Energy consumption is calculated as an annual average. The following delimitations apply for what is included in the energy calculation:

- Electricity and fuel consumed in drying and sawing is included in the calculation for parquet flooring, bamboo flooring and solid wood floor,
- For laminate flooring that includes wood-based board in its structure, the energy consumed in the manufacture of the board is to be included.

At least 95%w/w of raw materials in the flooring must be included in the calculation of energy consumption during the manufacture process. Energy consumption in the manufacture of adhesives and lacquers used in the manufacture of the flooring is not included in the calculation.

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. If electrical energy is produced on-site, one of the following methods can be used for calculating fuel consumption;

- Actual annual consumption of fuel,
- Consumption of electricity produced on-site multiple by 1.25.

Only the fuel that is actually used in floor covering production shall be included in the calculations. Energy consumption is reported in kWh/m², although calculations may also be

²⁷ Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC, L 140/16, OJEU 5.6.2009

made in MJ/m² (1 kWh=3.6 MJ). The energy contents of various fuels are given in Table 4.2.

Table 4.2. Standard fuel values²⁸

Fuel	MJ/kg	Fuel	MJ/kg
Petrol	44.0	Pellets (7% W)	16.8
Diesel		Peat	7.8-3.8
LPG	45.2	Straw (15% W)	
Eo1 oil	42.3	Biogas	
Eo5 oil	44.0	Wood chips (45% W)	13.8 (25%W)
Natural gas	47.2	Waste Wood	
Power station coal	28.5	<i>GJ/ton is equivalent to MJ/kg</i>	

(% W) is the percentage by weight of water in the fuel and given the letter *f* in the formulas below. If nothing else is stated, *f* = 0% W and the ash content is average.

The formula for calculating the energy content of woodchips depends on the water content. Energy is required to evaporate the water in the wood. This energy reduces the heat value of the woodchips. The energy content can be calculated as:

$$\text{Woodchip} = 19.0 \left(\frac{\text{MJ}}{\text{kg}} \right) - 21.442 \times \frac{f}{100}$$

Where *f* is the water content in %W of the wood. The factor 21.442 is the sum of water's heat of evaporation (2.442MJ/kg) and the energy content of dry wood 19.0 MJ/kg. If the applicant has laboratory analyses of the heat value of a fuel, the competent bodies may consider using this heat value for calculating the energy content.

Appendix IIb. Guidance for reporting the type of fuels and amount of electricity consumed during the manufacturing process and the amount of flooring produced.

1) Specification of the fuels, quantities and flooring production per year

Year of calculations:

Total production in this year (m²/year):

Total electricity purchase (kWh/year)

Total fuel purchase:

Column	A	B	C	D	E
Fuel	Energy Source (non-RE /RE)	Quantity (kg/year)	Standard fuel value	MJ	kWh/m ²

Where:

Column A: classification of the fuels depending on the source. Fuels classified as RE should comply with the definition of "energy from renewable sources" in accordance with Renewable Energy Directive 2009/28/EC

"energy from renewable sources" means energy from renewable non-fossil sources, namely wind, solar, aerothermal, geothermal, hydrothermal and ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases"

Fuels not complying with the above definition should be classified as non-RE.

Column B: quantity of fuel purchased during the year considered

²⁸ There values are reported by the Energy Efficiency Directive 2012/27/EC, Chapter IV, "Energy content of selected fuels for end users". Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC, L 315/1, OJEU 14.11.2012

Column C: Standard fuel value is the factor attributed to each fuel as included in Table 6 of the Appendix IIa

Column D: Total MJ contained in the annual purchase of this fuel. Column D is calculated for each fuel as follows:

$$MJ = \text{Quantity} \left(\frac{kg}{year} \right) \times \text{Factor} \left(\frac{MJ}{kg} \right)$$

Column E: Total power per square meter of wood base floor covering attributed with each fuel. The column E should be calculated as

$$\frac{kWh}{m^2} = \frac{MJ \text{ (column D)}}{3.6 \times \text{total production this year (m}^2\text{)}}$$

2) Calculation of the values A, B and C to be used in the formula (Table 5) for calculating the energy consumed:

The values A, B and C are calculated as follows:

$$A = \frac{\sum MJ_{\text{Fuels classified as RE (Column A)}}}{\sum MJ}$$

$$B = \frac{\text{Total electricity purchase} \left(\frac{kWh}{year} \right)}{\text{Total production} \left(\frac{m^2}{year} \right)}$$

$$C = \sum \frac{kWh}{m^2} \text{ (Column E)}$$

Rationale

The energy consumption during the manufacture of the flooring was identified in the LCA of the preliminary report as the **main environmental aspect**. The **TR1.0 proposed several changes in the way the energy consumption during the manufacturing process is calculated** (in terms of the sources/data to be included and the benchmarks). Those changes were based on the improvement of the technologies installed in the wooden floor covering sector and mainly in the cork flooring production sector.

Summing up the changes focused on:

- **a revision of the formula to be purely focused on the energy related requirements regardless the percentage of sustainable certified wood and wood-based materials.** The formula consists of three terms equally weighted and promotes the low energy consumption in terms of electricity and fuel and quota of renewable energy sources.
- **stricter limits for the use of electricity and fuel.** This provides flexibility to the producers to choose the best available energy source while promoting the low contribution to the GHG effect.

Additionally in this revision, **the information about the standard fuel values to be used in the calculations, instructions on how to perform the calculations and instructions on how to calculate the annual share of renewable energy sources, m² of flooring or electricity used have been added in Appendix IIa and Appendix IIb.** This information is included in the assessment and verification section of this criterion.

Criterion 4.2 Waste minimization management plan

The producer shall:

- a) Sort waste at source into the fractions that arise during the production, and
- b) Draw up an appropriate waste minimization management programme stating waste fractions and describing implemented processes to deal with and to minimise waste originated from the production process through recovery and reuse or reprocessing.
- c) Implement the waste minimization management programme for at least the last year prior to the EU Ecolabel application and demonstrate its good performance

Waste from production with energy content greater than 10 MJ/kg (2.78 kWh/kg dry test) must be recovered, reused or reprocessed.

The waste management programme prepared under the responsibility of the applicant shall content and annually monitor and report the following information:

- Kind and quantity of waste produced,
- Breakdown of the total waste recovered to type of processes (information about the reuse of waste and secondary materials in the production of new products),
- Initiatives taken to reduce waste production and improve production efficiency,
- Initiatives taken to calculate and reduce the environmental impacts associated with the waste minimization or recovery,
- Initiatives or requirements for suppliers or contract manufactures.

Assessment and verification

The applicant shall provide appropriate documentation showing compliance with these requirements in writing and demonstrating its implementation during the last year (prior to the EU Ecolabel application). The documentation should include:

- Description of the facilities to sort waste at source into fractions stating the type of fractions to be sorted out and their capacity,
- Description of the waste minimization processes and procedures implemented,
- Information in form of mass balance sheets or/and environmental reporting system showing the rates and detail breakdown of recovery achieved in the previous year and the initiatives taken.

Rationale

The minimization of production waste and the proper management of these residues are of key importance for reducing the overall environmental damages during the production stage. The minimization of the waste production ensures an efficient use of the resources, saving natural resources and probably helping to decrease the production costs.

The minimization of production waste can be achieved by developing and implementing a waste minimization management programme. However, this requirement should be **easy and be flexible to be adapted to the specific conditions of each manufacturer and at the same time easily to be verified by the Competent Bodies.**

The changes proposed in this TR2.0 target the loopholes regarding the assessment and verification of the criterion proposed for the 1st AHWG meeting. In this sense, at present it is **required that the applicant demonstrates the availability of a waste management plant that has been running for at least one year prior to the EU Ecolabel application.**

Reporting these data to the competent bodies, it is demonstrated that the company has already settled down a waste management plan, that the needed facilities have already been built-up and that the manufacturer is able to monitor, collect, analysis and report data and incidences on this issue. Additionally, the competent bodies can identify if improvements have been achieved or are expected to be achieved.

2.6 CRITERION 5 – EMISSIONS OF FORMALDEHYDE IN WOOD-BASED BOARDS

Formaldehyde emissions from all supplied wood-based panels manufactured using formaldehyde-based resins or finishing agents shall either:

- Have formaldehyde emissions that are lower than 50% of the threshold value allowing them to be classified as E1²⁹.
- Specifically, in the case of MDF (Medium Density Fibreboard) panels, have formaldehyde emissions that are lower than 65% of the E1 threshold limit.
- Have formaldehyde emissions that are lower than the limits set out in the CARB Phase II or the Japanese F-3 star or F-4 star standards.

Assessment and verification:

The applicant shall provide a declaration of compliance with this criterion. The assessment and verification of low formaldehyde emission panels shall vary depending on the certification scheme it falls under. The verification documentation required for each scheme is described in Table 5.1.

Table 5.1. Assessment and verification of low formaldehyde emission panels

Certification scheme	Assessment and verification
E1- as defined in Annex B of the EN 13986 (developed in the EU)	A declaration from the wood-based panel supplier, stating that the panel is compliant with 50% of E1 emission limits or, in the case of MDF panels, with 65% of E1 emission limits, supported by test reports carried out according to either EN 717-1, EN 717-2 or EN 120
CARB- California Air Resources Board: Phase II limits (developed in the USA)	a declaration from the wood-based panel supplier, supported by third party verified test results according to ASTM E1333 or ASTM D6007, demonstrating panel compliance with the formaldehyde Phase II emission limits defined in the California Composite Wood Products Regulation 93120 ³⁰ . Optionally, the wood-based panel may be labelled in accordance with Section 93120.3(e), containing details in respect of the manufacturer's name, the product lot number or batch produced, and the CARB assigned number for the third party certifier (this part is not required if the products were made using no-added formaldehyde or certain ultra-low emitting formaldehyde-based resins).
F-3 or 4 star (developed in Japan)	the applicant shall provide a declaration from the panel supplier of compliance with the formaldehyde emission limits as per JIS A 5905 (for fibreboard) or JIS A 5908:2003 (for particleboard and plywood), supported by third party verified test data according to the JIS A 1460 desicator method.

In all cases, the applicant shall also declare that no further formaldehyde-based surface treatment was applied to supplied panels and that the panels were not modified in any another way that would comprise compliance with the formaldehyde emission limits set out in the European, American and Japanese schemes, as appropriate.

²⁹ E1 is a threshold emission limit originally introduced in 1985 in the EU due to concerns over adverse health effects due to formaldehyde exposure. The emission limits are defined in Chapter B of EN 13986 and correspond to steady state background levels of 0.1ppm formaldehyde after 28d in a chamber test according to EN 717-1.

³⁰ Regulation 93120 "Airborne toxic control measure to reduce formaldehyde emissions from composite wood products" California Code of Regulations.

Rationale

Wood-based panels are more and more used in the covering market as they are an essential part of laminate floorings. A crucial component in the wood-based panel industry is the optimization of thermosetting resins to bind the wood chips and fibers together to produce solid boards with useful technical properties.

From the time being, almost all the resins used have been formaldehyde based: urea-formaldehyde (UF), melamine-urea-formaldehyde (MUF), melamine-formaldehyde (MF) and phenol-formaldehyde (PF). The only significant non-formaldehyde-based resin used is methylene diisocyanate (MDI). Given that the most important environmental impact associated with these resins is formaldehyde emissions; their use is permitted in EU Ecolabel so long as the final emission criteria are complied with.

World-wide there are three reliable standards to rate the wooden boards regarding their formaldehyde emissions: E1 Standard, F standard and CARB standard. The level of ambition of these two last standards goes slightly beyond half the E1 standard and therefore this limit is the benchmark proposed in the TR2.0 (see further information in chapter 4.5). Suggesting this level of ambition, the strictness of this criterion has been slightly enhanced. However, feedback from stakeholders after the second questionnaire confirmed that it is feasible and there are products on the market that already reach this level.

Two levels of ambition are proposed depending on the nature of the wooden board (MDF or non-MDF). This fact is in accordance with other schemes such as the Nordic Ecolabel criteria for floor covering (version 6.0) and the CARB limits that also recognized the difficulties that face MDF manufacturers to reach those limits.

2.7 CRITERION 6 – FINISHED PRODUCT

Criterion 6.1 Indoor emissions

The wood-based floor coverings shall not exceed the emission values listed in Table 6.1 measured in a test chamber in accordance with TS/CEN 16516 or equivalent method and ISO EN 16000-3 for the formaldehyde emission value.

Table 6.1. Emission requirements

Compound or substance	Limit Value after 28 day in mg/m ³ air
TVOC*	0.16
TSVOC**	0.016
R-value***	1
Carcinogenic substances	0.004
Formaldehyde	0.04

* TVOC – total volatile organic compounds, defined as those compounds within the retention range of C₆ to C₁₆ (inclusive)
 ** TSVOC – total volatile organic compounds, defined as those compounds within the retention range of C₁₇ to C₂₂ (inclusive)
 ***R value: total of all quotients (C_i/LCI_i)<1 (where C_i=substance concentration in the chamber air, LCI_i = LCI value of the substance as defined by the latest data defined under the European Collaborative Action "urban air", indoor environment and human exposure

Assessment and verification

The applicant shall provide third party verified test results in accordance with TS/CEN 16516 or equivalent method showing that the limits above have been met.

The total VOC emissions per product unit basis shall be calculated and separately comply within each limit.

Rationale

This criterion aims to limit the emissions of VOCs into the indoor environment and by doing so, to limit people's exposure to proven harmful substances. Therefore, **floor covering products**

must comply with thresholds levels concerning the emissions of harmful substances from the product after 28 days.

Laboratory tests have to be performed by an ISO 17024 accredited test lab following the new so called horizontal European emission testing method CEN TS 16516. The emissions are measured after 28 days and it is in line with the Belgium and French VOC regulation. DIBt and AgBB measurement, however, can be consulted in this context. Further, test results already on hand, for example of adequate voluntary labels like the eco-INSTITUT-Label, Nordic Labelling or Blue Angel can also be evaluated according to these type of tests.

Three main aspects were revised from the last EU Ecolabel proposal: **the type of compounds to be tested** depending on their harmfulness, the **alignment of this criterion with national regulations** (in terms of type and number of testing) and the **availability and adequacy of international well-accepted standards** to perform and report the results.

Considering these three aspects, it was identified that **TVOC and TSVOC testing after 28 days** should be kept to ensure a minimum release of these compounds during the use phase. Additionally, the **R-value** was identified as a comprehensive test to reduce the emission of the most harmful VOCs (those with a LCI value) while the test of **Total VOCs without LCI** seems to be of less importance and higher uncertainty. Therefore this last testing is proposed to be withdrawn. Moreover, **formaldehyde release** from the finished product is important to be kept as a low content of free-formaldehyde in the raw materials will not complete ensure a good performance during the use-phase.

Most of these proposed testing are required in the national regulations of Belgium, Germany, France and Finland, which are the Member States with legislation on VOC emissions. This fact will ensure that no additional testing will be required if the manufacturers aim at marketing their products in those countries. CE marking requires the value of formaldehyde emissions at European level.

Finally, the **standards proposed** for conducting the tests is the **CEN/TS 16156 and ISO 16000-9 for formaldehyde**. CEN/TS 16516 is the most updated standard, based on the ISO 16000 standard series but with a greater reliability. Further information in Chapter 4.8.

Criterion 6.2 Fitness for use

Wooden floor coverings shall achieve at least:

- Class 32 for floor coverings for private use,
- Class 33 for floor coverings for commercial use,

in accordance with standard EN 685 or EN ISO 10874.

Assessment and verification:

The applicant shall provide third party verified test results in accordance with the appropriated standard that demonstrates that the requirement is fulfilled. The test method should be performed in accordance with:

- EN 13329 and EN 12104 (cork tiles) or equivalent for laminate flooring,
- EN 14354 (veneer wood flooring) or EN 438-2 or equivalent for wood flooring including solid wood flooring, factory lacquer wood flooring and parquet flooring,
- EN 687 or equivalent for bamboo flooring.

Rationale

Wooden floor coverings are products with a relatively long life span that varies between 15 and 50 years as commented in the TR1.0. Despite the long life, LCA studies showed that the use phase causes negligible environmental impacts, this is due to the fact that the maintenance of wooden floor coverings is quite simple and usually limited to cleaning operations (although it depends on the type of flooring, material and application).

Stakeholders commented **the need of increasing the level of ambition** of this criterion **to ensure a long life of the flooring installed in the residential sector**. The threshold proposed for the private use of the floorings for the 1st AHWG meeting (class 22+) only ensures a lifespan of 5 years while a class 32 or higher will extend the lifespan of the product above 15 years. Additionally, stakeholders proposed to measure the resistance of the floorings based on the abrasion class (AC).

A through revision of the standards and level of ambition for each of the floorings included in the scope of this EU Ecolabel criteria revision was carried out in this TR2.0. Some modifications were proposed regarding the standards to be used to classify the floorings with respect to their fitness for use. In general, **the classification on the intended use and intensity of traffic is kept as it is considered to be a more comprehensive testing** that just testing the abrasion resistance. Therefore, the level of performance is referred to standard EN 685 or EN ISO 10874.

Additionally, **the test methods suggested in the assessment and verification part have also been revised. Although not all type of floorings have specific standards developed, the standards proposed in this revision were found to be the most appropriate for each type of flooring.** Further information is provided in Chapter 4.10

Criterion 6.3 Maintenance

Maintenance of the products shall be possible without organic based solvents.

Assessment and verification:

The applicant shall provide the maintenance instructions of the product fulfilling the requirement

Rationale

This criterion was introduced for the 1st AHWG meeting and welcome by the participants. No feedback was received on this aspect.

2.8 PACKAGING

Criterion withdrawn

Rationale

On average the weight of the packaging represents a small percentage of the total environmental impact (packaging and transportation account for less than 2 % of the GWP₁₀₀ in most of the cases). Therefore withdrawing the current criterion is proposed.

Both arguments for and against packaging criteria were stated in the 1st AHWG meeting. The arguments for the inclusion of packaging criteria focuses on the initial impressions of customers and the fact that if this criterion was easily achievable and brought some little environmental benefits.

Arguments against packaging focused on the scientific data stating that packaging is only a small fraction of the overall weight of the packaged product and a small fraction of the overall environmental impact of a product. In such a case, if packaging criteria are set, we could have the possibility that a parquet that complies with all the detailed criteria for wood, energy

consumption, etc could actually fail the EU Ecolabel application assessment simply because the cardboard packing did not have a high enough recycled content, what would be absurd.

This discussion was brought on board in other EU Ecolabel criteria development and revision processes and manufacturers argued that the local availability of recycled materials is out of the control of the market. An ambitious requirement on recycled content packaging may be considered as more difficult to comply with for small enterprises rather than large ones, who can negotiate more specific conditions with suppliers due to larger contracts. These two reasons together with the above mentioned one, lead us to withdraw the packaging criteria.

2.9 CRITERION 7 - INFORMATION

Criterion 7.1 User information

The product shall be sold with the relevant user information on the packaging and/or on documentation accompanying the product, which provides advice on the product's proper installation, use and maintenance and indications to minimize waste at the end of its lifespan. These instructions should be legible or include graphical representation or icons and include information on:

- a) Recommendations for the installation. This information should include all relevant instructions referring to the best environmental installation practices. As appropriate, reference should be made to the necessary preparation of the underlying surface and the auxiliary materials needed, for example, the plastic underlayers or the adhesives and glues that can be used for its installation. In the case where adhesives is to be applied to the complete surface, it must be possible to use an adhesive certified with a Type I Ecolabel or at least a low emission adhesive complying with EMICODE EC1 or equivalent,
- b) Recommendations for the use and maintenance of the product. This information should highlight all relevant instructions particularly referring to the maintenance and use of products. As appropriate, reference should be made to the features of the product's use under difficult conditions, for example, water absorption, stain resistance, resistance to chemicals, necessary preparation of the underlying surface, cleaning instructions and recommended types of cleaning agents and cleaning intervals. The information should also include any possible indication on the product's potential life expectancy in technical terms, either as an average or as a range value,
- d) An indication of the route of recycling or disposal (explanation in order to give the consumer information about the high possible performance of such a product);

Assessment and verification:

The applicant shall provide a sample of the packaging and/or texts enclosed.

Rationale

According to the information collected and summarized in the preliminary report, the information given to the consumers can play an important role in the overall environmental performance of the product. In this sense, if the suppliers, installers and consumers follow these recommendations an outstanding performance of the product is expected fulfilling both technical and environmental expectations.

The evidences so far pointed out that the meaningful **user information** should include **recommendations on the installation** (eg base or underlay, adhesives if needed, type of area to use the product or the moisture and temperature limits, etc), **on its use and maintenance**

including the cleaning agents and methods. In this respect, recommendations regarding the use of low-emitting adhesives, if needed, have been included.

Finally, it can be useful to include recommendations on the end-of-life routes indicating those that are expected to cause the lowest possible environmental impacts.

Criterion 7.2 Information appearing on the EU Ecolabel

The logo should be visible and legible. The use of the EU Ecolabel is protected in primary EU law. The EU Ecolabel registration/licence number must appear on the product, it must be legible and clearly visible.

The optional label with text box shall contain the following text:

- Certified sustainable wood and wood-based materials,
- Limited hazardous substances used,
- Low-emitting product, emissions lower than 50%E1

Assessment and verification:

The applicant shall provide a sample of the packaging.

Rationale

Information on the label is useful for reinforcing messages that endorse the user's choice of this product over non-EU Ecolabel alternatives.

According to Article 8 (3b) of the EU Ecolabel Regulation 66/2010, for each product group, **key environmental characteristics (typically three)** of the ecolabelled product may be displayed in the optional label with text box. The guidelines for the use of the optional label with text box can be found in the 'Guidelines for the use of the EU Ecolabel logo' on the website: http://ec.europa.eu/environment/ecolabel/documents/logo_guidelines.pdf.

In the TR 1.0 the proposed criterion did not follow the recommendations included in the EU Ecolabel Regulation and therefore a revised draft of this criterion is proposed in TR2.0, **with a shorter list of characteristics**. Among the environmental aspects proved by the EU Ecolabel criteria for wooden floor coverings, it is proposed to keep the following three claims for this product groups:

- Made with sustainable certified forestry materials
- Limited use of hazardous substances
- Low-emitting product

3 TRACKING OF THE CHANGES: NAME, SCOPE AND DEFINITION

Current NAME, SCOPE AND DEFINITION
<p>The product group ‘wooden floor coverings’ shall comprise wood- and plant-based coverings: including wood and timber coverings, laminate floorings, cork coverings 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.</p> <p>It does not apply to wall coverings, where properly indicated, or coverings for external use or for coverings with a structural function.</p> <p>This product group will not include any covering treated with biocidal products at any stage of the production process, except where those biocidal products are included in Chapter IA to Directive 98/8/EC of the European Parliament and of the Council and where the active substance is authorised for the use in question according to Chapter V to Directive 98/8/EC.</p>

Summary of the rationale presented in the 1st AHWG preliminary documents

The market analysis included in the chapter 2 of the preliminary report³¹ showed that EU wooden flooring mainly consists of four types of products: solid wood, laminate, cork and bamboo floorings. Among them, the laminate flooring currently dominates the European wooden floor covering market, reaching 70% of the market share. This trend is expected to strength in the coming years when the financial crisis will be definitely overcome.

Laminate flooring is made of a combination of wood and wood-based materials and other kinds of materials such as glues or melamine, containing on average 80% w/w of wood and wood-based materials. This value was confirmed by ELFP³² that demonstrates that only few products are composed of at least 90% w/w of wooden materials. This possibility was also supported by the outcome of the first stakeholder's questionnaire where the high percentage of wood and wood based materials required in this product group was identified by the stakeholders as one of the barriers to apply to this scheme. Consequently, the scope was proposed to broaden aiming at encouraging the environmental improvement performance of a broader share of the floor covering sector.

Proposal for the 1 st AHWG meeting
<p>The product group ‘wooden floor coverings’ shall comprise wood- and plant-based coverings: including wood and timber coverings, laminate floorings, cork coverings and bamboo floorings which are made, for more than 80 % w/w from wood or wood based materials*.</p> <p>It does not apply to wall coverings, where properly indicated, or coverings for external use or for coverings with a structural function.</p> <p>This product group will not include any covering treated with biocidal products at any stage of the production process, except when active substances do not meet the criteria in articles 57 and 59 of the REACH Regulation and are authorized in the Regulation (EC) No 528/2012 (for product type 8 and type 18)</p> <p>* wood based materials means materials made by binding with adhesives and /or glues one or more of the following materials: wood fibres and /or stripped or sheared wood sheets, and/or wood residues from forest, plantations, sawn-wood, residues from pulp/paper industry, and/or recycled wood</p> <p>Wood based materials comprise: hardboard, fibreboard, medium density fibreboard, particleboard, OSB (oriented strand board), plywood, and panels in solid wood. It also refers to composite materials made from wood-based panels coated by plastics or laminated plastics or metals or other coating materials and finished/semi-finished</p>

³¹ http://susproc.jrc.ec.europa.eu/wooden_floor_coverings/documents.html

³² <http://www.elfp.com/en/faq/questions.html>

Proposal for the 1 st AHWG meeting
wood based panels.

Feedback from the 1st AHWG meeting

Stakeholders brought on the table the question that **a possible increase of content of resins, glues and other chemicals in the product could worsen the overall environmental performance of the finished product.** This statement was underpinned by a sensitive analysis carried out on a plywood panel where the content of urea-formaldehyde resin was modified from 11% to 15% wt³³. The results showed that an increase in the resin content leads to an increase in all the values of the environmental indicators under consideration.

Although this analysis is not representative of all the types of wooden floor coverings included in this product group, it has been considered relevant and the basis for further research.

Additionally, it was pointed out that in the scope of the EU Ecolabel for Wooden floor coverings should be **included the adhesives used for its installation into the scope.** This issue has been further investigated into this TR 2.0

Further research

Research on the environmental performance of wood-based floor coverings regarding the content of non-wood based materials

As a starting point of this analysis, the study carried out by Nebel et al³⁴ has been evaluated. **This study compared the environmental performance of several wooden floor coverings on the German market** in 1998. According to these authors, the quantity but above all the kind of chemicals used to manufacture (adhesives and finishing) and laying the floorings greatly influences one of the environmental impacts under analysis the photo-oxidant formation (measured by the POCP indicator). The reason why this indicator is greatly impacted is because its value mainly reflects VOCs emitted from the solvents in the used glues and surface finishes. The authors reported that referring to the POCP of the system under analysis³⁵; the unit process laying is by far the most important for the parquets, followed by the surface finishing and refurbishment (around 96% to the POCP). The solvents in glues and varnishes are responsible for the results for these life cycle stages.

The data for the production of glues and lacquers were calculated on the base of basic formulation provided from the manufacturers at that time. In this sense the type of glues for solid parquet was considered to be mainly solvent based (93%) and 100% solvent based for multilayer parquet. These data do not seem to fiercely reflect the actual production of glues and lacquers as the industry shifted towards glues and varnishes based on water-solvents. In this context, the authors also considered a waterborne finish in parquets (75%) and ultra-violet (UV)-curing lacquers for multilayer parquets, getting lower score in the POCP indicator.

Since **solid floor boards are supposed to be fixed mechanically to the ground and no surface finish is used the POCP reported in this study differs greatly from the multilayer parquet's POCPs.** Wood blocks are glued to the ground and no surface finish is used. Another interesting value is the comparatively low POCP of the unit process 'surface finishing' for multilayer parquet. This is because **the UV-radiation curing varnishes, using with almost no solvents, have been applied already in the plant.**

³³ Personal stakeholder contribution.

³⁴ Nebel B, Zimmer B., Wegener G., Life cycle assessment of wood floor coverings. A representative study of the German flooring Industry, Int J LCA 11 (3) 172-182 (2006)

³⁵ Six different wooden floorings were considered: solid parquet (8, 10 and 22mm), multilayer parquet, solid floor boards and wood blocks. The system includes the manufacturing of glues and varnishes, manufacturing of auxiliaries (eg lubricants) provision of energy and maintenance of machinery. The system excludes production of machinery and infrastructure and human labour. **All the floorings were referenced as the absolute dry mass of wood needed to provide 1m² of laid floor covering for 50 years.** The reference year of the flooring production is 1998

Additionally, a sensitivity analysis on the use of different glue and finish in the unit processes laying and surface finishing was performed by these authors. The choice of glue and finish influences the results to a great extent. In the sensitivity analysis different types of glue and finish were analyzed. In the basic scenario a solvent based glue and a water based finish are used for 8, 10 and 22 mm parquet, since there are the most widely used alternatives at that time in Germany. The sensitivity analysis looked at alternative scenarios using one different glue and one different finish (either solvent based or water based).

The replacement of the solvent based glue with water based reduces the POCP by about 70%. The combination of solvent based glue and a solvent based finish increase the POCP by almost 70%.

A sensitive analysis regarding the **floated laying versus glued laying for multilayer parquet** was also investigated in this study. The **floated laying option** for multilayer parquet influences the results in two ways. Firstly the **shorter time span**, ten years as opposed to 20 years, for the useful life requires five times the production of the flooring instead of three times. The primary **energy consumption is therefore about 20% higher for the scenario with floated laying.** Consequently the impact categories depending on the primary energy consumption have higher results as well. On the other hand, **floated laying requires far less glue and is a type which has comparatively low solvent content.** Therefore, the contribution to the POCP is reduced in this scenario by nearly 90%.

Solvent-based glues and resins differ on their chemical formulation and consequently on the formaldehyde and VOC content and emissions. Z He et al³⁶ studied the formaldehyde and VOC emissions from wood-based panels, which are recognized as major causes of poor indoor air quality. They also impact the POCP score. These emissions may be strongly influenced by the raw materials and manufacturing techniques of panels and the wooden floor covering in general. These authors determined and compared formaldehyde and VOC emissions, including their species and content at different manufacturing stages of wood-based panels such as urea-formaldehyde resin, wood chip, wood fiber after resin application, medium density fiberboard and phenol-formaldehyde resin. They draw the following conclusions of great relevance for this project:

- a variety of VOCs were identified but none of them were in all the specimens, indicating considerable **VOC species changes during the manufacturing process.**

This fact **introduces difficulties from the verification point of view** as it is difficult to determine which types of VOC are more relevant and worth monitoring to established the EU Ecolabel criteria during the manufacturing process

- the **formaldehyde in wood-based panels came primarily from urea-formaldehyde resin**, and there existed a **linear relationship between the formaldehyde content in resins and formaldehyde specific emission rate from wood-based panels.**

This fact indicates that:

- a) **reducing the formaldehyde content in the adhesives can be one of the most effective ways to control formaldehyde emissions** from wood-based panels. In fact, some methods such as lowering the formaldehyde to urea molar ratio and adding formaldehyde-scavenging materials have been employed to deal with this issue for urea-formaldehyde resins.

- b) manufacturing wood-based panels with the lowest formaldehyde emission level can be achieved by replacing urea-formaldehyde resin with other types of resins, such as phenol-formaldehyde resin in the manufacture of wood-based panels.

- c) the **influence of manufacturing techniques on formaldehyde and VOC emissions** should also be taken into consideration. For example, increasing hot-pressing

³⁶ Z. He, Y. Zhang, W. Wie, Formaldehyde and VOC emissions at different manufacturing stages of wood-based panels, Building and Environment, 47, 2012, 197-204

temperature or time could significantly enhance the formaldehyde and VOC emissions. The hot-pressed panels at a higher temperature for shorter times emit more formaldehyde and VOCs than those at a lower temperature for a longer time. However, it is not practical to increase both hot-pressing temperature and time simultaneously, because these variables will affect the mechanical and physical properties of final wood-based panels.

- VOCs in wood-based panels mainly came from the wood chips.

Wood-based panels are manufactured by bonding the small pieces of wood (eg. sheet, chip and fiber) with adhesives. Urea-formaldehyde resin is the most commonly used adhesive due to its good performance and low cost, while the phenol-formaldehyde resin is the second most used in the wood-based panel industry. The replacement of urea-formaldehyde resin by phenol-formaldehyde resin, as shown in this study, reduces significantly the likely formaldehyde emissions in the use phase.

However, the current state-of-the-art of the wood-based panel industry allows a total or partial replacement of urea-formaldehyde resins by other chemicals that have a better environmental performance. Urea-formaldehyde resins can be replaced by phenol-formaldehyde resins resulting in lower formaldehyde emissions, as reported.

It can be also replaced by water-based solvents that contain remarkably lower VOC and formaldehyde quantities. Indeed, evidences were collected that at present water-based chemicals are widely used for wooden floor covering manufacturing, significantly reducing the environmental impacts associated with solvent-based adhesives.

Feedback from the stakeholders replying the second questionnaire suggested the possibility of decreasing this wood content limit to 60%. This would give more possibilities for the label to be successful in the market, because more products with different technologies such as extrusion, injection moulding or compression moulding could be awarded. However, due to the controversy that caused this point it is considered that 80% could represent a good trade-off between the need for opening the label to other products while keeping forestry materials as the most important one

Research on the inclusion of adhesives (if any) needed for laying of the wood-based floorings

The following paragraphs discuss the **possibility of including the adhesive (if any) needed for the installation of the wood-based floor coverings into the scope.**

Wood-based floor coverings are laying today in different ways and using different technologies. These technologies and materials depend on the type of flooring as well as the nature of the subfloor on which it is being laid³⁷. For example, for laminate flooring the nature of the subfloor on which it is being laid is of high importance. Nowadays, most of the laminate floorings are assembled using a click system (to know more about this system visit reference³⁸). This type of laminates will need a vapour barrier (commonly a PE sheet of at least 0.2mm in thickness designed for the purpose) that prevents any residual moisture from the subfloor forcing its way upwards. In addition, a separating layer in order to reduce footstep sound, for example in PU foam or ribbed cardboard can be used. Laminate flooring can be laid not just on screed floors, however, but on existing old floors as well as such as eg wood, stone, ceramic, plastic, or similar materials.

Nowadays most of the laminate and solid wooden floorings on the market are quick and simple to install with a glueless locking system. These boards have long and short tongues on

³⁷

<http://nucasa.com/resources/LaminateFloorBuyingGuideHowtochoosealaminatetfloorWhatyouneedtoknowtomakethebestlaminatefloorchooice.htm>

³⁸

http://www.nzfloors.co.nz/resources/fa9488cc539554d83581644f480c08b7_laminate_flooring_installation_instructions.pdf

their sides and ends, which lock together to create tight joints that do not need glue. Solid wood floorings, with more traditional tongue-and-groove edges which push together to create simple joints, are also on the market. This system does not need extra fixing, as they come loose easily. The boards can be laid on self-adhesive underlay, they hold together without the need for glue or nails. Alternatively, boards can be secured to a timber sub-floor by secret nailing or glue them to the sub-floor (which must be dust-free and perfectly level). There is no need for underlay by using this last method³⁹.

Revising the inclusion of floor covering adhesives and other installation materials in other national ecolabels, it seems that in most of the schemes they are developed separately (eg Nordic labelling, Blue Angel, etc)⁴⁰. This fact can be due to the large type of materials that are included as adhesives and installation materials such as solvent-free adhesives (emulsion adhesives, powdered adhesives, fixing materials, etc), solvent-free base coats and primers, cement containing surfaces, calcium sulphate-based surfaces intended for use as installation materials in indoor environments, adhesive tapes, adhesive-films for the holohedral adhesion of floor coverings, etc. **In line with these national schemes, it is proposed to not include the adhesives into the scope of the EU Ecolabel for wood-based floor coverings but to include the pertinent environmental information on how to install the flooring as well as a recommendation on the best environmental performing materials that can be used for this purpose** (See Criterion 7.1 "user information").

Research on the name of the product

Due to the larger amount of non-plant-based materials that can be part of the EU Ecolabel floorings, a change in the product group name was suggested. **The new name should reflect both the forestry and non-forestry materials while keeping the relevance of the further ones.** The current name "wooden floor coverings" clearly reflects the content of wood or plant-materials but it fails when reflecting the presence of non-forestry materials.

Two names were suggested:

- *wood-based floor coverings*: that introduces a hint about the presence of other non-wooden materials and keeps the relevance of wood.
- *bio-based floor coverings*: this name gets rid of the term "wood" but includes the term "bio-based". Bio-based is defined in EN 16575 "Bio-based products: Vocabulary"⁴¹ as a material of biological origin excluding material embedded in geological formations and/or fossilized.

The term bio-based material expand the use of the label for different innovative laminates as replacement for PVC based vinyl floorings that are made of natural fibers such as natural fibers, recycled wood flour, cork residues or bio-based polymers.

Initially, it seems that the name wood-based floor coverings has been well-accepted by the majority of respondents to the second questionnaire. For this reason, this name is proposed in the TR 2.0 proposal.

Additionally, further clarification regarding the type of wood-based floor covering products that should be covered by this scheme was requested by several stakeholders. On the wooden floor covering market, there are mainly two types of floorings. The first group consists in those **floorings that are completely finished when they leave the manufacturing facilities and are**

³⁹ http://www.diy.com/help-advice/prepare-to-lay-laminate-and-wood-flooring/CC_npc_100029.art

⁴⁰ <https://www.blauer-engel.de/en/products/construction/low-emission-floor-covering-adhesives-and-other-covering-materials>

⁴¹ The verification of the bio-based share could be verified through Vincotte and DIN CERTCO that offer testing and certification of bio-based carbon according to the American ASTM standard D6866. Additionally CEN/TC 411 "Bio-based products" is currently working on establishing a European standard on bio-based carbon content measurement, which will probably be applied by certifiers after adoption by CEN

ready to be installed at the user's place. These products are so-called pre-manufactured floorings.

The second group consists in those floorings where no finishing or coatings have been applied. These floorings have to be treated after their installation in the houses or commercial buildings. The scope of this scheme refers to the first group and to make this distinction clear the word "pre-manufactured" has been added to the definition.

This represents a change with respect to the current scope, where both pre-manufactured and non-pre-manufactured floorings were included into the scope.

Proposal for the 2nd AHWG meeting

The product group of '**wood-based floor covering**' shall comprise **pre-manufactured** wood- and plant-based **floor** coverings: including wood and timber coverings, laminate floorings, cork coverings and bamboo floorings which are made, for more than **80 % in mass** (in the final product), from wood, wood powder and/or wood/plant-based material. It does not apply to wall coverings, unless properly indicated, or coverings for external use or for coverings with a structural function.

4 TRACKING OF THE CHANGES: EU ECOLABEL CRITERIA FOR WOODEN FLOOR COVERINGS

This chapter tracks and summarizes the revision process carried out until this point. The process started with the preparation of the Preliminary Technical report, the analysis of the inputs collected in the first stakeholder questionnaire and the first proposal for the revised EU Ecolabel criteria. All these documents were published before the 1st AHWG meeting that took place in October 2014 in Seville.

The chapter 4 is structured, for each existing EU Ecolabel criteria for Wooden floor covering as follows:

- **"Name" of the current criteria**
- **'Current EU Ecolabel criterion (in a grey box)'**. This box shows the current EU Ecolabel criterion and the current assessment and verification section of this criterion
- **'Summary of the rationale presented in the 1st AHWG preliminary documents'** briefly summarized the evidences reported in the preliminary report that were the basis of the first proposal of the EU Ecolabel criteria
- **'Proposal for the first AHWG meeting'** a blue box shows the proposal presented to the attendees during the meeting held in October 2014 in Seville
- **'Feedback from the 1st AHWG meeting'** summarizes the feedback sent by the stakeholders during and after the meeting. After each meeting a consultation period is opened for four weeks and stakeholders have the possibility of submitting their comments in written form. IPTS encourages to submit the comments through BATIS, an information systems that facilities the management of the comments and brings transparency to the process. Comments included in this section correspond to those saved under BATIS but also to those sent by conventional means. Comments after the 1st AHWG are collected in the "Table of Comments" in chapter 5
- **"Further research"** includes the research carried out after the 1st AHWG in selected issues.
- **"Proposal for the 2nd AHWG meeting"** a red box shows the new proposal to be discussed during the 2nd AHWG meeting that is going to take place in May 2015 in Brussels. Whenever possible, changes from the proposal for the 1st AHWG meeting have been marked in red.

4.1 SUSTAINABLE MANAGED WOOD AND PLANT-BASED MATERIALS

Current EU Ecolabel criterion
<p>a) The producer shall have a policy of sustainable wood and fibre procurement and a system to trace and verify the origin of wood and track it from forest to the first reception point</p> <p>b) Minimum percentage of solid wood-based materials from certified sustainably managed forests or recycled materials:</p> <ul style="list-style-type: none"> - until 30 June 2011: 50% and 20% respectfully - from 1 July 2011 to 31 December 2012: 60% and 30% respectfully - from 1 January 2013: 70% and 40% respectfully <p><u>Assessment and verification</u></p> <p>For meeting these conditions, the applicant shall demonstrate that any of their wooden eco-labelled products, when first placed on the market after the dates shown in the criterion will meet the appropriate level of certified wood. If this cannot be demonstrated the competent body will only issue the Ecolabel licence for the period for which compliance can be demonstrated. The applicant shall</p>

Current EU Ecolabel criterion

provide appropriate documentation from the wood supplier indicating the types, quantities and precise origins of wood used in the production of floor coverings. The applicant shall provide appropriate certificate(s) showing that the certification scheme correctly fulfils the requirements as laid down in paragraph 15 of the Council Resolution of 15 December 1998 on a forestry strategy for the European Union

Summary of the rationale presented in the 1st AHWG preliminary documents

The current criterion was proposed to be split into two criteria aiming to clearly request that wood, fibre raw materials, cork and bamboo are a) coming from legal sources and that b) part of these materials have been grown in sustainable management forests.

The reasons behind the requirement of legally sourced forest materials was the large amount of tropical wood-based material that is annually logging, especially in central Africa, the Amazon Basin and South East Africa and that can enter to Europa in the floorings imported from these countries.

The concept of sustainability of the wood and plant-based materials is linked to the "sustainability managed forest", and in addition, this concept of sustainable wood can also be extended to waste wood that is recycled, since re-use of a material that would otherwise be discarded as waste should have no negative impact whatsoever on the biodiversity, productivity, etc of any forest.

The two widest recognised schemes at present are FSC⁴² and PEFC⁴³. Both are international associations that provide a global forest certification system by which forests can be audited and certified. When a forestry organization has been awarded the certificate, the wood they produce may carry the label, which also includes the certificate number that any client can check against a database to ensure that it is still valid. If the wood material is sold among the clients, then they must obtain a chain of custody (CoC) certificate if they want to keep displaying the label on their products.

Two different levels of ambition were proposed depending on the type of plant-based materials, being higher for wood and wood-based materials (70%) and lower for cork and bamboo (50%). This difference was proposed based on information concerning the availability on the market of those latter materials.

Additionally, a derogation of the paper used in laminate floorings was proposed due to the difficulties and low benefit /cost ratio in carrying out its traceability back to the forest. The manufactured board, on the other hand, was proposed to be covered by this criterion.

Proposal for the 1st AHWG meeting

1.1.a) *Origin and traceability of wood, fibre raw materials, cork and bamboo*

All wood, fibre raw materials, cork and bamboo should be traceable to their origin, by at least stating the name and geographic origin of the kinds of materials used. All wood, fibre raw materials, cork and bamboo shall be virgin materials from controlled sources, forests certified or recycled wood.

Wood and plant-based materials from controlled sources may not:

- i. be illegally harvested
- ii. come from sources that are being converted from primary forest into plantations
- iii. include material from genetically trees or plants

Recycled wood/plant-based materials can be sourced from pre-consumer or post-consumer sources. In the case of pre-consumer wood/ plant-based materials, by –products or co-products of logging and sawmilling operations shall not be considered as recycled. Wood and plant-based materials wastes

⁴² <http://es.fsc.org/>

⁴³ <http://www.pefc.org/>

Proposal for the 1 st AHWG meeting
<p>generated that can be reused within the same process that generated it shall not be considered as recycled either.</p> <p>The requirement does not cover high pressure laminate, which is used as a surface finish on laminate flooring.</p> <p>1.1.b) Wood, manufactured board, cork and bamboo from certified sources Wooden floor coverings must contain materials that comply with i.) or ii.):</p> <ul style="list-style-type: none"> i. at least 70 % of wood and wood-based materials ii. at least 50 % of cork and bamboo materials <p>on annual basis shall be certified materials as sustainably managed by an independent recognised third party organisation and/or recycled materials calculated based on ISO/IEC 14021.</p> <p>Any intermediate organisation in the supply chain between the original source of virgin or recycled wood/plant-based materials and final wooden floor covering product point of sale that process, modify or repackage wood/plant-based materials in any way shall be covered by a valid chain of custody certificates issued by independent auditors that are approved by the same independent and internationally recognised third party.</p> <p><u>Assessment and verification</u></p> <p>Based on the current version of PEFC and FSC certifications, wooden flooring coverings that carry the label "<i>FSC-100 %</i>", "<i>FSC Mix</i>", "<i>FSC Recycled</i>", "<i>PEFC certified</i>" or "<i>PEFC recycled</i>" shall be deemed to comply with this requirement so long as the certificate number(s) that accompany the labels are valid at the moment of the application for the Ecolabel licence. Certificate validity can be checked online via the FSC and PEFC databases.</p> <p>If the product does not carry any of the abovementioned labels, the applicant should provide valid, independently third party certified chain of custody certificates that demonstrate that wood fibres have been grown according to Sustainable Forestry management principles⁽¹⁾ and/or are from controlled sources. For other forestry and vegetal materials with no sustainable source certifications available, origin and traceability shall be provided as well as evidence of written procedures on sustainable management chain.</p> <p>With regards to recycled wood, the geographical origin and nature (pre- or post-consumer) shall be declared and a chain of custody certificated presented.</p> <p>⁽¹⁾ Sustainable Forestry Management certification shall be in accordance with the Europe Forest principles available at http://www.foresteurope.org/sfm_criteria/criteria and supported by the European Communication on "A new EU Forest Strategy" COM (2013)659.</p>

Feedback from the 1st AHWG meeting

Stakeholders comments received through BATIS are summarized in Table 3 being the basis of the further research presented in the coming section.

Table 4. Stakeholders comments and IPTS assessment on the criteria: certified sustainable sources

Stakeholder comment	IPTS assessment
In general, this criterion can be more concise and to the point . Terms should be clearly defined.	Accepted. The wording used in related and voted EU Ecolabel criteria has been adapted to this product group in TR2.0

<p>How is geographic origin defined? Country, state, forest? If forest is meat, it should be verified carefully whether it is possible to trace material to the forest. Until recently this was not possible for FSC or PEFC certified material. For recycled material it seems impossible unless 'origin' means where the material was recycled.</p>	<p>The three comments are accepted. However the new proposed wording relies on the requirements of FSC and PEFC without detailing which they are. Consequently, the definitions of geographic origin, illegally harvested wood and primary forest would be those provided by these certifications schemes.</p>
<p>Definition of "illegally harvested" is needed</p>	
<p>What is considered primary forests? is conversion of secondary forests (which has been logged in the past) allowed? Also adding 'plantations' is questionable, is conversion for mining or infrastructure allowed? Preferably one refers to 'conversion of forests to other types of land use'.</p>	<p>Due to the lack of a universal definition of "legally harvested" wood⁴⁴. In Europe, it should be in line with the definition stated in EU FLEGT⁴⁵ saying that illegal logging takes place when "<i>timber is harvested in violation of national laws</i>"⁴⁶.</p>
<p>Wood, manufactured board, cork and bamboo from certified sources criterion can be reformulated</p>	<p>Accepted, a new formulation of the criterion in line with the wording accepted and voted in previous revised or developed EU Ecolabel criteria is proposed in TR2.0</p>

The additional comments dealt with:

- the desire to include the **same wording of the criterion as used in other recently reviewed EU Ecolabel criteria sets**, although some opposition was expressed, saying that the criterion was too vague to lay readers who are not familiar with the principles of the FSC and PEFC certification schemes and instead, criterion text should refer directly to some common sustainable management principles and then only to FSC and PEFC in the assessment and verification text
- the doubts about the **relevance of the term "FSC, PEFC or equivalent"** when even FSC and PEFC do not recognize each other as equivalent.
- the possible **ambiguity of the term that defines "recycled wood"**
- the desire of **increasing the percentage of sustainable wood content up to 70% for all kind of materials** and to include the reminder that **all the materials should be legal and controlled forestry materials.**

⁴⁴ http://mddb.apec.org/Documents/2014/EGILAT/EGILAT/14_egilat_023.pdf

⁴⁵ European Union Action Plan for Forest Law Enforcement, Governance and Trade <http://www.euflegt.efi.int/home/>

⁴⁶ "**Illegal logging**" means in accordance with different schemes and regulation:

FLEGT: situations where timber is produced in contravention of national and international laws on cutting, processing, transporting or exporting wood

FSC: is a violation of laws of cutting, processing and transporting timber. The definition of what makes wood legal or illegal is controversial but there are some general requirements for the legal timber. These include harvesting wood only where you have the rights to the timber, respecting quotas and restrictions, paying royalties and taxes and possessing the necessary authorization to transport and process logs.

WWF: is the harvesting, transporting, processing, buying or selling of timber in violation of national laws. This definition also applies to harvesting wood from protected areas, exporting threatened plant/tree species, and falsifying official documents. It also includes breaking license agreements, tax evasion, corrupting government officials and interfering with access and rights to forest areas.

UK Government Timber Procurement Policy defines "legal sources" are to mean "Harvested in accordance with the applicable legislation in the country of harvest" that mean the legislation in force in the country of harvest covering the following matters:

- o Rights to harvest timber within legally gazetted boundaries;
- o Payments for harvest rights and timber including duties related to timber harvesting;
- o Timber harvesting, including environmental and forest legislation including forest management and biodiversity conservation, where directly related to timber harvesting;
- o Third parties's legal rights concerning use and tenure that are affected by timber harvesting; and
- o Trade and customs, in so far as the forest sector is concerned

- the desire of **removing the proposed derogation for the top surface layer of the high pressure laminate floorings** as there are already on the market laminate floorings awarded with FSC without needing this derogation

Further research

Regarding the concerns listed above, some further investigation was conducted and it is presented in this section.

Research on the principles of sustainable forest management

Forest Europe has provided a definition of **sustainable forest management** at the European level which is as follows:

“the stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions, at local, national and global levels and that does not cause damage to other ecosystems”

However, sustainable forest management principles are quite **vague and difficult to legally verify**. The major advantage of the **FSC and PEFC schemes** is that they **describe not only principles but also systems that audit and verify the forests** as well as the traders in the timber supply chain and link this to clear labelling of the final product. These two schemes are the dominant certification schemes for sustainable forest management and cover approximately 10% of global forest in 2014. When a competent body is attempting to verify the claims that the wood and wood-based material in an EU Ecolabel product is indeed of sustainable origin then the **verification process is greatly simplified by the fact that the final and intermediate products can be FSC or PEFC labelled**. If the certificate number on the label is from an approved trader or producer (this can be checked on a publically available database online) then compliance with the EU Ecolabel criteria is essentially confirmed and a starting point for any further enquires is clearly defined

An attempt to list the sustainable forest management principles that are common to FSC and PEFC would be complicated due to the fact that each scheme has around 10 such principles and around 70 related sub-criteria (see TR3.0 of EU Ecolabel for furniture⁴⁷). Furthermore, because FSC and PEFC are private, stakeholder driven schemes, there is the possibility that their principles may change at any time and fall out of alignment with any concrete text drafted into EU Ecolabel criteria. The new proposed text in this TR 2.0 mimic the text generally accepted and implemented in other related EU Ecolabel criteria sets because it allows for changes in FSC and PEFC criteria to be taken into account without rendering EU Ecolabel criteria obsolete.

Research on "recycled wood"

Recycled wood is also explicitly mentioned in the criteria since it can be considered as at least equal to sustainable wood in terms of its environmental footprint. Both the FSC and PEFC schemes make allowances for recycled wood content. Due to the feedback of the ambiguity regarding the term "recycled wood" further research was carried out. The starting point was the definition of "recycling"⁴⁸ and "waste"⁴⁹ given in the EU Waste Framework Directive 2008/98/EC⁵⁰ and how these concepts, specifically in the wood sector, have been applied across the Member States⁵¹.

⁴⁷ <http://susproc.jrc.ec.europa.eu/furniture/>

⁴⁸ **recycling** means any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations

⁴⁹ **waste** means any substance or object which the holder discards or intends or is required to discard

⁵⁰ Directive 2008/98/EC of the European Parliament and of the of 19 November 2008 on waste and repealing certain Directives OJEU 22.11.2008, L 312/3

⁵¹ Competition in wood waste: inventory of policies and market, April 2013, NL Agency, Ministry of economic affairs

All the Member states have translated the EU Waste Framework Directive into national legislation following the basic requirements. That means that **post-consumer wood waste (or used wood) is considered a waste and therefore needs to follow the waste hierarchy while industrial timber residues (or residual wood from the industry) are not waste**. Post-consumer wood waste does not fall under the EUTR and therefore it is not required due diligence reporting when placing it back to the market. However, **FSC scheme considers that recycled wood comprises post- and pre-consumer wood, increasing the availability of recycled wood**.

There are **two relevant reasons** why the inclusion of pre-consumer wood waste can be considered as recycled wood. Firstly, and according to EUwood⁵², it is estimated that **Western Europe can suffer from shortage in the supply of forestry products in the near future (2020-2030)⁵³** and secondly that the **inclusion of pre-consumer wood waste allows the direct verification of this criterion throughout the certification schemes**.

Checking the availability of certified wood to satisfy demand, FSC's own data show that in some Member States well over 50% of all forests are FSC certified whereas in other less than 10% are certified. Regarding the type of wood certified, in Europe the availability of softwood from certified forestry is generally higher than hardwood. However, from these certification schemes no information was received pointing out possible supply problems

Research on the level of ambition

A **unique level of at least 70% sustainable certified plant material (or recycled plant material)** is proposed in the TR2.0 criteria version. It is not raised higher because this aligns with the two major sustainable forest management schemes (FSC and PEFC). A total of 5 labels between both schemes exist. Two of them require minimum sustainable certified wood content of 100% and 70% respectively, two more require a minimum sustainable certified wood content of 70% and the last label requires 100% certified wood. Additionally, four important aspects will be ensured by any of the above commented labels, they are:

- requiring that all wood (including recycled) be covered by valid chain of custody (CoC) certificates
- requiring that a minimum of 70% of virgin wood will be sustainably certified according to FSC, PEFC or equivalent
- accepting that any remaining quantity simply has to meet the requirements of FSC, PEFC or equivalent schemes for controlled sources
- not distinguishing between pre-consumer and post-consumer recycled materials.

Additionally, through these 5 labels **it is ensured that the rest of the plant-based material is legal and controlled**. According to an evaluation by NEPCON⁵⁴, the requirements for FSC and PEFC can be considered as equivalent for the following aspects:

- That controlled wood should be legally harvested
- That controlled wood should not come from forests being converted into plantations or other non-forest use
- That the wood shall not be from genetically modified organisms

Both schemes also have further conditions for controlled wood that are related to threats to high conservation values forests and indigenous people although the NEPCON comparison study⁵⁵ considered these as non-equivalent, with FSC requirements being more extensive. **Separate**

⁵² Mantau, U. et al. 2010: EUwood - Real potential for changes in growth and use of EU forests. Final report. Hamburg/Germany, June 2010. Available at:

http://www.ab.gov.tr/files/ardb/evt/1_avrupa_birligi/1_9_politikalar/1_9_6_enerji_politikasi/euwood_final_report.pdf

⁵³ It is expected that the demand for forestry products exceeds its supply in Western Europe. Among the factors that can cause this shortage is the growth of the woody biomass demand to fulfill the national Renewable Energy targets, the prosperous development of the wood industry and the already intensively used forestry potential supply in a region that is densely populated and relatively sparsely wooded.

⁵⁴ <http://www.nepcon.net/controlled-wood-forest-certification>

⁵⁵ NEPcom, Comparative analysis of the PEFC system with FSCTM Controlled Wood requirements, Prepared for FSC International Center, 1 May 2012

proposed criteria for legality and origin of wood together with requirement for non-GMO wood was removed accordingly.

Although it is unusual to refer directly to private schemes in EU Ecolabel criteria, almost all wood from sustainably managed forests that is available on the market currently falls under FSC or PEFC certification. **The use of the term "or equivalent" is necessary when referring to FSC or PEFC since these are indeed private schemes** and the EU Ecolabel criteria should not explicitly exclude other potential schemes that may arise in the future.

The proposal included in the TR1.0 for **derogating the compliance with this criterion of the top surface layer of the HDP laminate floorings** is deleted in the TR2.0. The change is based on the information provided by the Competent Bodies representatives who ensured this layer can be tracked and that although it is mainly made of paper, chain of custody can be requested to prove its compliance with the requirements of the certification scheme it is issued.

Research on the need on requesting "balance sheets"

During the 1st AHWG concerns arisen about the possibility of not tracking the certified wood that is used for the production of EU Ecolabel products. It was commented that once the certified wood reaches the manufacturing facilities it is, in some cases, difficult to ensure that this certified material ends up being part of the finished product.

Therefore, a question about the need of included the **"balance sheets" to track the amount of certified forestry material that goes in and out the manufacturer and suppliers facilities was stated**. Feedback from stakeholders informed that the inclusion of "balance sheets" in the "assessment and verification" of the criterion **is not needed as long as the criterion body requires a minimum certified material in the eco-labelled product**. However, a requirement on providing the balance sheets would be needed if the criterion required a minimum of certified material in the site producing the ecolabel product. In this last case, the threshold should have been lower as the whole production would have been covered by the requirement.

Proposal for the 2nd AHWG meeting

Note 1: These criteria apply to solid wood, wood chips and wood fibres as well as cork and lignified materials other than wood such as bamboo. Hereinafter, these distinct materials are simply referred to as "wood".

Wood may originate from virgin or recycled material.

Virgin wood shall be covered by valid sustainable forest management and chain of custody certificates issued by an independent third party certification scheme such as FSC, PEFC or equivalent.

However, where certification schemes allow mixing of uncertified material with certified and/or recycled materials in a product or product line, a minimum of 70% of the wood shall be sustainable certified virgin material and/or recycled material.

Uncertified material shall be covered by a verification system which ensures that it is legally sourced.

The certification bodies issuing forest and/or chain of custody certificates shall be accredited or recognized by that certification scheme.

Assessment and verification

The applicant shall provide valid, independently certified chain of custody certificates and demonstrate that the at least 70% of the wood originates from forests managed according to Sustainable Forestry Management principles and/or from recycled sources that meet the requirements set out by the relevant independent chain of custody scheme. FSC, PEFC or equivalent schemes shall be accepted as independent third party certification.

If the product or product line includes uncertified material, proof should be provided that the content of uncertified material does not exceed 30% and is covered by a verification system which ensures that it is legally sourced.

4.2 CONTAMINANTS IN RECYCLED WOOD

Current EU Ecolabel criterion			
Post-consumer wood, chips ⁵⁶ or fibres applied in the production of wood-based materials (input) shall at least comply with the provisions in the EPF industry standard, as reported in paragraph 6 of document "EPF standard for delivery conditions of recycled wood" of October 2002. The total amount of the recycled material shall comply with the limits indicated in table below:			
Elements and compounds	Limit values (mg/kg of total dry panel)	Elements and compounds	Limit values (mg/kg of total dry panel)
Arsenic	25	Mercury	25
Cadmium	50	Flourine	100
Chromium	25	Chlorine	1 000
Copper	40	Petachlorophenol (PCP)	5
Lead	90	Tar oils (benzo(a)pyrene)	0.5
Assessment and verification:			
A declaration shall be provided that recycled wood or plant materials comply with limit values as laid down in text. If it can be proved that the substances indicated have not been used in any previous preparation or treatment, the application of test to demonstrate compliance with this requirement can be avoided.			

Summary of the rationale presented in the 1st AHWG preliminary documents

Possible treatment with a number of hazardous preservatives and fungicides may have occurred during the previous manufacture and use of the wood to be recycled. Therefore, it seems advisable to keep a criterion on the quality of the recycled wood to be introduced in the manufacture of the particleboards or fibreboards.

The proposal for the 1st AHWG meeting proposed to keep the current criterion with little modifications (reference of the standard to be used) and the inclusion of compliance with other standards that can be considered as equivalent.

Proposal for the 1 st AHWG meeting			
Post-consumer recycled wood fibers shall not exceed the limits for contaminants set out in the "EPF Standard for delivery conditions of recycled wood" (2002) or equivalent. The total amount of the recycled material shall comply with the limits indicated in table below:			
Elements and compounds	Limit values (mg/kg of total dry panel)	Elements and compounds	Limit values (mg/kg of total dry panel)
Arsenic	25	Mercury	25
Cadmium	50	Flourine	100
Chromium	25	Chlorine	1 000
Copper	40	Petachlorophenol (PCP)	5
Lead	90	Tar oils (benzo(a)pyrene)	0.5
Assessment and verification:			
Test reports shall be provided with the results from the relevant analytical methods specified in the			

⁵⁶ 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". The woodchip delivered to the panel board manufacturer is considered waste, subject to the normal regulatory controls and it should be treated appropriately until is not 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.

Proposal for the 1st AHWG meeting

"EPF standard conditions for delivery of recycled wood" document showing compliance with the limit values for the contaminants listed in Table 20 in Chapter III.
If it can be proved that the substances indicated have not been used in any previous preparation or treatment, the presentation of a test report demonstrating compliance with this requirement can be avoided.

Feedback from the 1st AHWG meeting and further research

Some stakeholders **questioned the need to refer to an already widely accepted standard practice** in Europe and the added-value that its compliance will bring to the final products. In this line, it was suggested **the possibility of stricter the limits** defined by the EPF standard.

However, other stakeholders claimed that compliance with the standard ensures the product chemical safety and it is therefore **worth specifying these limits again for the benefit of any non-EU suppliers of recycled wood fibers or panels containing recycled wood.**

Further research

Research on the possibility of making the limits stricter

Several Member States have mandatory legislation in place that defines specific requirements for substance recycling and energy recovery and for the disposal of waste wood. In most of the Member States, these requirements are harmonized with the requirements for the management of waste wood pursuant to chemicals and hazardous substances law as well as the provisions governing the keeping of waste recovery and disposal records. This is the case of countries such as Germany (in accordance with the mandatory regulation "Altholzverordnung"⁵⁷), Austria ("Recyclingholzverordnung"⁵⁸), Netherlands (Landelijk Afval Plan, Sector 36 Hout 2010⁵⁹), Belgium (Flemish Regulation on Waste Prevention and Management⁶⁰) or UK (Waste regulations⁶¹). Additionally, requirements have also been set out in other voluntary schemes such as Natureplus⁶².

In general, the mandatory regulations cover all the common methods of waste wood management and they start assigning waste wood to one of three/four waste wood categories depending on the level of pollution (eg waste timber can be contaminated to different extents with paint, lacquer, coatings and wood preservatives). Some active ingredients can represent a particular risk potential and prevent waste wood to be recovered for some particular uses. An example of the classification of the waste wood is provided in Table 4

Table 5. Wood waste categories or grades: definition, typical sources of raw materials and typical markets (recovered wood)

Grade	Definition	Typical sources of raw material	Typical markets (recovered)
I or A Recycled wood	In its natural state or only mechanically worked which, during use, was at most insignificantly contaminated with substances harmful to wood	Solid softwood and hardwood, packaging waste, scrap pallets, packaging cases and cable drums Process off-cuts from joinery/manufacturing	Manufacture of products such as animal bedding, horticultural mulches and panelboard sector. Fuel in non WID installations, or manufacture of pellets and briquettes

⁵⁷ <http://www.gesetze-im-internet.de/bundesrecht/altholzvgesamt.pdf>

⁵⁸ <http://www.bmlfuw.gv.at/greentec/abfall-ressourcen/abfall-altlastenrecht/awg-verordnungen/recyclingholzvo.html>, Recyclingholzverordnung, BGBl. II Nr. 160/2012 (RecyclingholzV)

⁵⁹ <http://english.rvo.nl/sites/default/files/2013/12/Competition%20in%20wood%20waste%20June%202013.pdf>

⁶⁰ <http://www.recytyre.be/media/38339/order%20of%20the%20flemish%20government.pdf>

⁶¹ PAS 111:2012, Specification for the requirements and test methods for processing waste wood, <http://www.woodrecyclers.org/PAS111.pdf>

⁶² Wood and wood-based flooring, Natureplus e.V. Award Guideline GL0209, http://www.natureplus.org/fileadmin/user_upload/pdf/cert-criterias/RL0209_Wood_and_Wood_Based_Flooring.pdf

II or B Industrial feedstock	Bonded, painted, coated lacquered or otherwise treated waste wood with no halogenated organic compounds in the coating and no wood preservatives	Materials as above plus building and demolition materials and domestic furniture made from solid wood	A feedstock for industrial wood processing operations such as the manufacture of panel products, including chipboard and MDF
III or C Fuel grade	With halogenated organic compounds in the coating, with no wood preservatives	All the above plus, fencing products, flat pack furniture made from board products and DIY materials High content of panel products such as chipboard, MDF, plywood, OSB and fibreboard	Biomass fuel for use in the generation of electricity and /or heat in WID compliant installations
IV or D Hazardous waste	With wood preservatives, such as rail sleepers, hop poles, vine poles and other waste wood that due to its contamination cannot be assigned to the other waste wood categories	Fencing, transmission poles, railways sleepers, cooling towers,	Requires disposal at special facilities

Only certain pollution-free or low-pollution waste woods can be considered to be used in manufacturing derived timber products. Compliance with this requirement is guaranteed by binding pollutant limit values that have been established in most of the schemes. Regarding the chemical pollutants that can be contented in the recycled wood for the production of wood-based panels used as main core layers of the wooden floor coverings, Table 5 shows and compares the limits included in three schemes widely used.

The national standards are mainly developed to ensure the quality of post-consumer recycled wood. Most of these standards do not apply to the reuse of wood products or to the processing of pre-consumer wood waste. However, there are differences among the schemes regarding its use, strictness and verification procedures. For example, in the UK market the standard to be applied for the manufacturing of wooden panels is PAS 104 (EPF standard) and solely assesses the quality of post-consumer recycled wood. The testing can be carried out either ensuring the origin of the recycled wood or through compliance with laboratory testing. The German and Austrian schemes, however, refer to the maximum limits that can be contented in both pre and post-consumer recycled wood. Naturplus scheme is aligned with the German and Austrian schemes and requires that if old-wood is employed, it must be verified that it is free from harmful substances and that has a level that complies with category A1 old-wood in the Altholzverordnung or untreated wood in the Austrian Federal Waste Management Plan 2006.

Table 6 Limits included in different schemes on the conditions

(ppm or mg/kg dry mass)	EPF - UK ⁶³	Germany ⁶⁴	Austria ⁶⁵
Arsenic (As)	25	2	1.2
Cadmium (Cd)	50	2	0.8
Chromium	25	30	10
Copper	40	20	
Fluorine	100	100	15
Chlorine	1000	600	250
Lead	90	30	10
Mercury	25	0.4	0.05
Zinc			140
Creosote (Benzoapyrene)	0.5		
Pentachlorophenol ⁶⁶	5		

⁶³ <http://www2.wrap.org.uk/downloads/PAS104.Odb49fa8.10003.pdf>

⁶⁴ <http://www.bhkw-infozentrum.de/download/altholzverordnung.pdf>

⁶⁵ <http://www.bmlfuw.gv.at/greentec/abfall-ressourcen/abfall-altlastenrecht/awg-verordnungen/recyclingholzvo.html>

Polychlorinated Biphenyls		5	
PAHs (PCBs)			2

As seen in Table 5, other schemes require stricter limits for the pollutants that can be contained in the old-wood than the EPF standards. However, when establishing the limits of restricted substances in Criterion 3.a care must be taken that these limits would not exclude large quantities of available recycled wood.

On the other hand, **if there is national mandatory legislation in place with equivalent or stricter restriction limits than those proposed in this criterion** (eg Germany or Austria), **no testing in accordance with 2002 EPF standards should be required**. This exemption aims at decreasing the testing costs and streamlines the verification process. For this reason an additional condition has been introduced in the proposed criterion that recognizes the compliance with the national regulation and exempts for complying with criterion 3.a)

Proposal for the 2nd AHWG meeting

3.a) Contaminants in recycled wood

Any recycled wood fibres used in the manufacture of wood-based panels included in the final wood-based floor covering product shall be tested for delivery conditions in accordance with the 2002 "EPF standard conditions for the delivery of recycled wood" (table 3.1) **or any other national regulation in place with equivalent or stricter limit values**.

Table 3.1 Limit values for delivery conditions if no other national regulation is in place

Elements and compounds	Limit values (mg/kg dry panel)	Elements and compounds	Limit values (mg/kg dry panel)
Arsenic	25	Mercury	25
Cadmium	50	Fluorine	100
Chromium	25	Chlorine	1000
Copper	40	Pentachlorophenol (PCP)	5
Lead	90	Tar oils (benzo(a)pyrene)	0.5

Assessment and verification:

The applicant and/or his/her supplier(s) shall provide a declaration of compliance with the criterion supported by the following documentation:

- a declaration that no recycled wood fibres are used in the panel, or
- a declaration that all recycled wood fibres used have been tested in accordance with the 2002 "EPF standard conditions for the delivery of recycled wood" **or any other national regulation with equivalent or restricted limits**, supported by appropriate test reports that demonstrate compliance of the recycled wood samples with the limits specified in the table 3 **or those of the national regulation**

4.3 IMPREGNATING SUBSTANCES AND PRESERVATIVES

Current EU Ecolabel criterion

Wooden floor covering should not be impregnated.

Solid wood, after logging, shall not be treated with substances or preparations containing substances that are included in any of the following lists:

- WHO recommended classification of pesticides by hazard classified as class 1a (extremely

⁶⁶ Chloropesticides that include substances such as pentachlorophenol, tetrachlorophenol, γ-HCH (lindane), HCH-isomer, endosulfane, dichlorofluanid, chlorthalonil, DDT, DDD, DDE, Aldrin, Dieldrin, endrin, heptachlor, chlordan, HCB, mirex are considered in the Natureplus scheme

Current EU Ecolabel criterion
<p>hazardous)</p> <ul style="list-style-type: none">- WHO recommended classification of pesticides by hazard classified as class 1b (highly hazardous) <p>Moreover the treatment of wood shall be in accordance with the provisions of the Council Directive 79/117/EEC and Directive 76/769/EEC</p> <p><u>Assessment and verification:</u></p> <p>The applicant shall provide a declaration showing compliance to this criterion, a list of the substances which have been used and the safety data sheet for each of them.</p>

Summary of the rationale presented in the 1st AHWG preliminary documents

No changes were proposed for this criterion for the 1st AHWG meeting. Wood preservatives were identified as a potential source of environmental damages and although its use can extend the life of the product, a proper use is important.

The classification of pesticides in the WHO distinguishes between the more and the less hazardous forms of each pesticide, based on the toxicity of the compound and chemical formulation. The current and first proposal of the criterion banned the two first groups classified as extremely and highly hazardous substances.

Proposal for the 1 st AHWG meeting
<p><i>Wooden floor covering should not be impregnated.</i></p> <p>Solid wood, after logging, shall not be treated with substances or preparations containing substances that are included in any of the following lists:</p> <ul style="list-style-type: none">- WHO recommended classification of pesticides by hazard classified as class 1a (extremely hazardous)- WHO recommended classification of pesticides by hazard classified as class 1b (highly hazardous) <p>Moreover the treatment of wood shall be in accordance with the provisions of the Council Directive 79/117/EEC and Directive 76/769/EEC</p> <p><u>Assessment and verification:</u></p> <p>The applicant shall provide a declaration showing compliance to this criterion, a list of the substances which have been used and the safety data sheet for each of them.</p>

Feedback from the 1st AHWG meeting and further research

No feedback registered

Further research

Restrictions on impregnating substances and preservatives will allow a proper end-of-life management of the product when becoming a wood waste. Among those substances that would prevent wood waste to be recovered into high-value products are wood preservatives and biocides.

These substances have also been identified as substances of concern in other national voluntary schemes. For example, Natureplus scheme requires that the product applying for certification will be subject to pesticide and heavy metals tests and must fulfil the emission thresholds for specific pesticides substances such as organochloride pesticides, pyrethroids and others. For each compound, individual limits of 0,5 mg/kg are established as well as an overall threshold for all pesticides lower than 1mg/kg

Although very specific indoor environments may be aggressive to wood, it is preferred that instead of permitting the use of preservation or impregnation treatments in EU Ecolabel for

Revision of EU Ecolabel Criteria for Wood Based Floor Covering – 2nd AHWG meeting, May 2015

wood based floor coverings per se, that confidence is placed in the end user to take the appropriate action in individual cases.

Additionally, this criterion has been moved to criterion 3, being listed as criterion 3.b, that includes the list of restricted substances (aggregated by function) along the life-cycle of the wooden floor coverings.

Proposal for the 2nd AHWG meeting

Move to the criterion 3: Specific restricted Substances

4.4 GENETICALLY MODIFIED WOOD

Current EU Ecolabel criterion

The product should not contain GMO wood.

Assessment and verification:

The applicant shall provide a declaration stating that no genetically modified wood has been used

Summary of the rationale presented in the 1st AHWG preliminary documents

This criterion was proposed to be withdrawn as it is included in the requirements of criterion 1. In this way, the concept regarding the ban of using GMO wood is kept although the wording of the criteria has been changed to avoid repetition. The main reason to keep this criterion is that GMO plants and trees remain a controversial issue for environmentalists and there is no obvious benefit to the wooden flooring industry permitting the use of wood from such species.

Proposal for the 1st AHWG meeting

Withdrawn the criterion

Feedback from the 1st AHWG meeting

It was proposed to ban this although it seems such a ban is already covered under sustainable and controlled wood definitions if FSC and PEFC are accepted as compliance with criterion 1

Proposal for the 2nd AHWG meeting

Withdrawn the criterion

4.5 USE OF DANGEROUS SUBSTANCES

Current EU Ecolabel criterion

2.1 Dangerous substances for the raw wood and plant treatment

(a) No substances or preparations that are assigned, or may be assigned at the time of application, any of the following risk phrases (or combinations thereof) may be added to the wooden product:

R23 (toxic by inhalation)

R24 (toxic in contact with skin)

Current EU Ecolabel criterion

- R25 (toxic if swallowed)
- R26 (very toxic by inhalation)
- R27 (very toxic in contact with skin)
- R28 (very toxic if swallowed)
- R39 (danger of very serious irreversible effects)
- R40 (limited evidence of a carcinogenic effect)
- R42 (may cause sensitisation by inhalation)
- R43 (may cause sensitisation by skin contact)
- R45 (may cause cancer)
- R46 (may cause heritable genetic damage)
- R48 (danger or serious damage to health by prolonged exposure)
- 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)
- 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⁾ (Dangerous Substances Directive), and its subsequent amendments, and considering Directive 1999/45/EC of the European Parliament and of the Council ⁽²⁾ (Dangerous Preparations Directive).

Alternatively, classification may be considered according to Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 ⁽¹⁾. In this case no substances or preparations may be added to the raw materials that are assigned, or may be assigned at the time of application, any of the following hazard statements (or combinations thereof): H300, H301, H310, H311, H317 H330, H331, H334, H351, H350, H340, H350i, H400, H410, H411, H412, H413, H360F, H360D, H361f, H361d H360FD, H361fd, H360Fd, H360Df, H341, H370, H372.

(b) The product must not contain halogenated organic binding agents, azidirin and polyaziridins as well as pigments and additives based on:

- lead, cadmium, chrome (VI), mercury and their compounds,
- arsenic, boron and copper,
- organic tin.

Assessment and verification:

The applicant shall provide appropriate declaration verifying that the above requirements are met. For each chemical product used in the assembly of the product, a SDS or equivalent documentation shall be presented containing information on health hazard classification

2.2 Dangerous substances in the coating and surface treatments

Generic requirements

(a) The requirements of part 2.1 on dangerous substances for the raw wood and plant treatments shall also apply for coating and surface treatments.

(b) Chemical substances classified as harmful for the environment by the chemical manufacturer/supplier in accordance with EU classification system (28th Amendment to Directive

Current EU Ecolabel criterion

67/548/EEC) shall comply with the two following limits:

- chemical substances classified as harmful for the environment in accordance with the Directive 1999/45/EC 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 Directive 1999/13/EC ⁽²⁾ If the product requires dilution, the contents of the diluted product must not exceed the abovementioned threshold values,
- the applied quantity (wet paint/varnish) of environmentally harmful substances shall not exceed 14g/m² surface area and applied quantity (wet paint/varnish) of VOC shall not exceed 35g/m².

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 metre of surface.

The following standard degrees of effectiveness are used for the purpose of calculating the consumption of surface treatment product and of the applied quantity: spraying device without recycling 50 %, spraying device with recycling 70 %, electrostatic spraying 65 %, spraying, bell/disk 80 %, roller coating 95 %, blanket coating 95 %, vacuum coating 95 %, dipping 95 %, rinsing 95 %.

(c) 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 respected. For the chemical products used in the production a SDS or equivalent documentation shall be presented containing information on health hazard classification.

Adhesives

(a) The requirements of part 2.1 on dangerous substances for the raw wood and plant treatments shall also apply for adhesives.

Assessment and verification:

The applicant shall provide appropriate declarations verifying that the above requirements are met. For each chemical product used in the assembly of the product, a SDS or equivalent documentation shall be presented containing information on health hazard classification. Test reports or a declaration from the supplier shall be provided for the free formaldehyde content.

(b) The VOC content of adhesives used in the assembly of the product shall not exceed 10 % by weight (w/w).

Assessment and verification:

A declaration shall be provided by the applicant indicating all adhesives used in the assembly the product, as well as the compliance with this criterion.

Formaldehyde

Formaldehyde emissions from substances and preparations for surface treatment liberating formaldehyde shall be less than 0,05 ppm.

Assessment and verification:

The applicant and/or its supplier shall provide the Material Safety Data Sheet or an equivalent declaration for the compliance of this requirement, together with information on the formulation of the surface treatment.

Current EU Ecolabel criterion
<p>Plasticisers</p> <p>The requirements of part 2.1 on dangerous substances for the raw wood and plant treatments shall also apply for any phthalates used in the manufacturing process.</p> <p>Additionally DNOP (di-n-octyl phthalate), DINP (di-isononyl phthalate), DIDP (di-isodecyl phthalate) are not permitted in the product.</p> <p><u>Assessment and verification:</u></p> <p>The applicant shall provide a declaration of compliance with this criterion.</p>
<p>Biocides</p> <p>Only biocidal products containing biocidal active substances included in Chapter IA of Directive 98/8/EC, and authorised for use in floor coverings, shall be allowed for use.</p> <p><u>Assessment and verification:</u></p> <p>The applicant shall provide a declaration that the requirements of this criterion have been met along with a list of biocidal products used.</p> <p>(¹) OJ 196, 16.8.1967, p. 1. (²) OJ L 200, 30.7.1999, p. 1.</p> <p>(VOC shall mean 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).</p>

Summary of the rationale presented in the 1st AHWG preliminary documents

The importance of restricting the use of chemicals and chemical products in the manufacturing of the wooden floor coverings was acknowledged and therefore criteria that apply to substances in the product were kept. However, the criteria wording was modified to include the limitations on hazardous substances and mixtures needed according to implementation of the new EU Ecolabel Regulation (EC) No 66/2010⁶⁷.

The proposed criterion for the 1st AHWG meeting was structured into three parts:

- *restricting the content of dangerous substances in the floor covering bulk*: general requirements on all the substances involved in the manufacturing of wooden floor coverings were proposed. This sub-criterion applies to those substances that are listed under hazard classifications in the Regulation (EC) No 1272/2008, substances of very high concern (SVHC) and other specific listed substances.

Among those chemical products that were restricted are: halogenated organic bindings, phthalanes, aziridine, pigments, plasticisers or additives based on lead, cadmium, chrome (VI), mercury and their compounds, arsenic, boron, copper and organic tin compounds.

- *restricting the use of dangerous substances in the manufacturing process*. This sub-criterion aimed at limiting the use of chemicals and chemical products that although presenting hazardous inherent properties have no feasible and more environmentally friendly alternatives on the market.

Two alternatives were proposed regarding the content of VOC in resins and adhesives use in the assembly of the product. The first one set up limits for the VOC and free-formaldehyde content in the adhesives in accordance with other national schemes. These limits aim at encouraging the substitution of solvent-content chemicals and increasing the use of water-based adhesive varieties, VOC-free adhesives or mixtures that keep the solvent adhesive proportion to the minimum feasible.

⁶⁷ OJL27/1 30.1.2010

The second alternative proposed to keep the limits on VOC content in the adhesives but to withdraw the limit on free-formaldehyde content as a limit on formaldehyde emissions was required in another criterion. This proposal was also in line with other national schemes that set a limit on the formaldehyde emissions rather than the free formaldehyde content.

Derogation for using isocyanate-based resins was suggested in the first criteria proposal. Polyurethane is the mostly used isocyanate-based resin and is formed by reacting a polyol with a diisocyanate or polymeric isocyanate in the presence of suitable catalysts and additives. Its SDS provides a list of potential health effects.

However, the exposure to this compound is, according to EPA⁶⁸, of very low magnitude and frequency as it is considered completely cured products before they are sold. EPA also states that "*completely cured products are fully reacted and therefore are considered to be inert and non-toxic*"

- *restricting the use of dangerous substances in the surface treatment*: hazardous substances used during the coating and surface treatment process were restricted.

The chemical and chemical products used for the surface treatment can contain substances classified as environmental harmful. This criterion aims at reducing as much as possible the content of those substances applied during the surface treatment. This limitation was set either on the nature of the ingredients or on the quantity and method of application.

The three sub-criteria proposed were based on weight percentage or content of the substance of concern with respect to the total weight of the specific part of the finished product.

Proposal for the 1st AHWG meeting

2.1 General hazardous substances

Substances or preparations that contain hazardous substances and mixtures in accordance with the rules set out in the following sub-criteria which apply to:

- Hazard classifications and risk phrases in Regulation (EC) No 1272/2008
- Substances of Very High Concern (SVHC)
- Specific other listed substances

shall not be actively added in the product. Applicants are required to evidence that the product complies with the overall assessment and verification requirements together with any additional requirements.

2.1.a) Chemical and chemical products used to manufacture the wooden floor covering shall not be classified and/or labelled under the hazard statements and risk phrases listed in Regulation (EC) No 1272/2008

Acute toxicity	
H300 Fatal if swallowed	H301 Toxic if swallowed
H310 Fatal in contact with skin	H311 Toxic in contact with skin
H330 Fatal if inhaled	H331 Toxic if inhaled
H304 May be fatal if swallowed and enters airways	EUH070 Toxic by eye contact
H370 Causes damage to organs	H371 May cause damage to organs
H372 Causes damage to organs	H373 May cause damage to organs
Sensitisers	
H317 (1A): May cause allergic skin reaction	H317 (1B): May cause allergic skin reaction
H334 (1A): May cause allergy or asthma symptoms or breathing difficulties if inhaled	H334 (1B): May cause allergy or asthma symptoms or breathing difficulties if inhaled
CMR	
H340 May cause genetic defects	H341 Suspected of causing genetic defects
H350 May cause cancer	H351 Suspected of causing cancer

⁶⁸ Environmental Protection Agency, Methylene Diphenyl Diisocyanate (MDI) and Related Compounds Action Plan [RIN 2070-ZA15], April 2011, available at: <http://www.epa.gov/oppt/existingchemicals/pubs/actionplans/mdi.pdf>

Proposal for the 1 st AHWG meeting	
H350i May cause cancer by inhalation	
H360F May damage fertility	H361f Suspected of damaging fertility
H360D May damage the unborn child	H361d Suspected of damaging the unborn child
H360FD May damage fertility. May damage the unborn child	H361fd Suspected of damaging fertility. Suspected of damaging the unborn child
H360Fd May damage fertility. Suspected of damaging the unborn child	H362 May cause harm to breast fed children
H360Df May damage the unborn child. Suspected of damaging fertility	
Environmental hazards	
H400 Very toxic to aquatic life	H411 Toxic to aquatic life with long-lasting effects
H410 Very toxic to aquatic life with long-lasting effects	H412 Harmful to aquatic life with long-lasting effects
H413 May cause long-lasting effects to aquatic life	H059 Hazardous to the ozone layer
<p>The most recent classification rules adopted by the Union shall take precedence over the listed hazard classifications and risk phrases. In accordance with Article 15 of Regulation (EC) 1272/2008 applicants shall therefore ensure that classifications are based on the most recent rules on the classification, labelling and packaging of substances and mixtures.</p> <p>2.1.b) In accordance with Article 6(7) of Regulation (EC) No 66/2010 any ingredients or raw materials, shall not, unless specifically derogated, contain substances that:</p> <ul style="list-style-type: none"> - Meet the criteria in Article 57 of the REACH Regulation; - Have been identified according to the procedure described in Article 59(1) of the REACH Regulation which establishes the Candidate List for Substances of Very High Concern. <p>No derogation shall be given concerning substances that meet one or both of these conditions and which are present in the wooden floor covering product at concentrations higher than 0.010 % (weight by weight).</p> <p>2.1.c) The finished product shall not contain the following hazardous substances:</p> <p>Halogenated organic binding agents</p> <p>Phthalates: DBP (dibutyl phthalate), DIBP (diisobutyl phthalate), BBP (butyl benzyl phthalate), DnPP (di-n-octyl phthalate), DINP (di-isononyl phthalate), DIDP (di-isodecyl phthalate) are not permitted in the product</p> <p>Azidirin and polyzirimidings and</p> <p>Pigments, plasticisers and additives based on:</p> <ul style="list-style-type: none"> (i) lead, cadmium, chrome (VI), mercury and their compounds, (ii) arsenic, boron and copper and (iii) organic tin compounds <p>Chemical products for surface treatment are exempted from the requirement concerning the classification "Toxic to aquatic organisms/dangerous to the environment" since these are regulated in criterion 2.3</p> <p>Adhesive/resins products that contain isocyanates are exempted from the requirement concerning the classification R40</p> <p><u>Assessment and verification</u></p> <p>The applicant and/or its supplier shall provide the material SDSs or an equivalent declaration of the compliance of this requirement, together with a complete recipe with designation of quantities and CAS numbers for constituent substances. Applicants shall demonstrate that they have carried out a screening of ingoing substances against the current Candidate List for Substances of Very High Concern and the criteria in Article 57 of the REACH Regulation.</p> <p><u>2.2 Manufacturing process</u></p> <p>Chemical substances used in the assembly of the product shall comply with the following limits:</p> <ul style="list-style-type: none"> a) the VOC content of resins and/or adhesives shall not exceed 3 % (w/w). b) <i>Alternative 1</i>: The content of free-formaldehyde shall not exceed 0.2 % (w/w) in resin and/or adhesive formulations used in the manufacturing of panels 	

Proposal for the 1st AHWG meeting

Alternative 2: Withdrawn the current criterion

Assessment and verification

The applicant and/or its supplier shall provide the material SDSs or an equivalent declaration of the compliance of this requirement, together with a complete recipe with designation of quantities and CAS numbers for constituent substances.

Alternative 1: The content of free-formaldehyde in the resin and/or adhesive formulation shall be in accordance with ISO 11402

2.3 Surface treatment

The requirements of criterion 2.3 apply to all surface treatment of floor coverings regardless the flooring type.

2.3.a) Chemical products used in surface treatment systems must fulfil a) or b):

a) None of the chemicals/products are classified as environmental harmful (H400, H410, H411, H412, H413, H059 according to Regulation 1272/2008 (CLP))

b) Chemical substances classified as harmful for the environment by the chemical manufacturer/supplier in accordance with Regulation 1272/2008 shall comply with one of the two following limits:

b.1) Chemical substances classified as harmful for the environment in accordance with the Directive 1999/45/EC must not be added to substances and preparations for surface treatment. Nevertheless the products may contain up to 5 % w/w VOC as defined in the Regulation 1272/2008. If the product requires dilution, the contents of the diluted product must not exceed the abovementioned threshold values;

Alternatively, the VOC content in each surface treatment or the total content of VOCs in surface treatment products shall not exceed 5 % (w/w)

b.2) The applied quantity (wet paint/varnish) of environmentally harmful substances in accordance with Directive 1999/45/EC shall not exceed 7g/m² surface area and applied quantity (wet paint/varnish) of VOC shall not exceed 2g/m²

Assessment and verification:

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

- a complete recipe with designation of quantities and CAS numbers for constituent substances;
- the test method and test results present in the product, according to the Regulation 1272/2008;
- a declaration stating that all constituent substances have been discussed;
- 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 and of the applied quantity:

- Spraying device without recycling: 50 %,
- Electrostatic spraying: 65 %,
- Spraying device with recycling: 70 %
- Spraying bell/disk: 80 %
- Roller coating, Vacuum coating Rinsing Blanket coating and Dipping: 95 %

2.3.b) Biocides shall not be permitted in indoor wooden floor covering or applied to their surface for the purposes of adding a final disinfected effect. Only Biocidal Products with active substances that:

- comply with the requirements on dangerous substances in accordance with criteria 2.1.b
- are included and approved in the Biocidal Products Regulation (EC) 528/2012 (for product 8 and 18) can be added

Assessment and verification.

The applicant shall provide a dossier supported by declarations from materials suppliers, confirming that biocides have not been used or stating which biocidal products have been added, what active

Proposal for the 1st AHWG meeting

substance(s) are involved and the relevant concentrations and H classifications

Feedback from the 1st AHWG meeting

Restructuring of the hazardous substances criteria was unanimously pointed out by the stakeholders. It should include a general text referring to Article 6.6 of the EU Ecolabel Regulation (EC) No 66/2010 and specific texts for each chemical product aggregated by function to improve readability. The need for improving in both wording and verification and assessment parts was also identified. It was highlighted that if the wording remains as it was proposed, it was not clear who should come up with the documentation, which is the type of flooring or substances referred to and how the CB should verify each sub-criterion.

Specific feedback regarding the level of ambition or specific types of substances was given on different aspects and points. This section consists of a summary of those that dealt with the general criterion.

Stakeholders were in favor of the **derogation that allows the use of isocyanate** resins in the production of the wooden floor covering products. Although an agreement was expressed, a clause should be explicitly introduced stating that its use should be permitted as long as the formulation cures completely. It was pointed out that the **derogation on H412** that should come along with a condition on its biodegradability and that there is a need for updating the **ban on formaldehyde** regarding the new classification (carcenogenic cat 1) in accordance with the last EACH revision that will come into force from January 2015

Stakeholders commented that **the click-clip system** should be promoted since it does not use or uses a reduced amount of chemicals in the installation process.

Further research

Due to the unanimous agreement on rewritten the "General Restricted substances" criterion, a new approach has been considered in TR2.0. In this sense, the current criterion on "Dangerous substances" has been split into two new criteria:

- "Criterion 2: **General Restricted substances**". This criterion is rooted in Articles 6(6) and Articles 6(7) of the Ecolabel Regulation and aims at banning substances or preparations that are Toxic, hazardous to the environment or CMR. The new proposed wording tries to be aligned with the horizontal approach developed by the JRC in collaboration with ECHA. Regarding these criterion difficulties for assessing and verifying have been identified in other EU Ecolabel criteria and proposed solutions have also been considered in the new wording. In this new proposal there is a clear intention of developing a new approach that:
 - is pragmatic and with a clearly defined scope
 - is tailored to the specific nature fo the wood-based floor covering
 - minimises/avoids need for testing by applicants
 - focuses on the main hazardous substances/mixtures of concern
- "Criterion 3: **Specific restricted substances**" that sets restrictions on those substances that can be used during the manufacture process, being present in the final product below the concentration limit 0.10% w/w proposed in the previous criterion (either as a residue or as an intentionally added ingredient).

Further research on Criterion 2: General Restricted substances

Significant changes are proposed for Criterion 2 compared to the current EU Ecolabel criterion and the proposal done for the 1st AHWG meeting. Changes were triggered by the new EU Ecolabel Regulation 66/2010 that requires, in accordance with its Article 6(6), that certain types of substances are not present in the final products:

"The EU Ecolabel may not be awarded to goods containing substances or preparations/mixtures meeting the criteria for classification as toxic, hazardous to the environment, carcinogenic, mutagenic or toxic for reproduction (CMR), in accordance with CLP Regulation (EC) No 1272/2008 not to goods containing substances referred to in Article 57 of REACH Regulation (EC) No 1907/2006"

In this sense, the criterion 2 has been revised through 6 steps:

- 1. Product definition and bill of components, materials and substances.** The product definition was revised based on the market data collected. This revision identified the need of lowering the wood content of the product group allowing a higher amount of non-wooden materials. Additionally, information about the chemical products and raw materials, as well as the assembly steps was collected.
- 2. Screening for restricted substances and hazard classification.** The information compiling those chemical products that are classified as well as classified substances that can be used in this product group was obtained by checking EDP, literature and manufacturers feedback.
- 3. Product hazard substitution and green chemistry and engineering initiative.** The substitution of the hazardous substances whenever possible is the best option. The research for alternative substances was carried out by literature research and manufacturer's feedback
- 4. Screening and investigation of derogation requests.** In those cases where a feasible (from the environmental and economic points of view) alternative is not possible to be found on the market, derogation of the identified classified chemical product should be assessed. This derogation allows the product to comply with other parts of the requirements in criterion 2 as well as with other criteria.

Once this information was obtained, a new proposal for criterion 2 is drafted, being the last 2 steps of this criterion revision. Step 5 consists in the wording of the criteria and includes the **specifications and the derogations conditions** (if any) and step 6 consists in the **verification requirements**.

For the time being, two general approaches have been proposed by JRC-IPTS: **overall approach** or modular approach. The main difference among these two approaches is if the product is **considered as a whole** or as a group of components and consequently if the **information for the verification should come for the applicant** or the suppliers. Both approaches are built up on the four initial steps presented above.

In accordance with the feedback received from the stakeholders, in the TR2.0 **an overall approach** is proposed for the general restricted substance criteria. However, even if the approach is clear, there are still sources of confusion related to the interpretation of the Article 6(6). The first source of confusion deals with the **wording** regarding the type of raw materials to be manufactured. **Terms** such as "**substances**", used when referring to SVHC and REACH and "**mixtures/preparation**" used when referring to CLP caused confusion. Specifically for this product, it seems that the wooden and wood-based floor covering industry use commercially available mixtures /preparations and formulations, and therefore, in the **TR2.0 is proposed to use the term "chemical products"** to underline that these are products that are provided on the market by suppliers. This approach has been followed in other product groups with similar characteristics such as Furniture.

Where the product is on the market, and fulfilling REACH and CLP responsibilities, a hazard classification or SDS information should be available. This information will be used for the assessment and verification of the requirements.

The second need for clarification arises from the different words referring to different parts of the products. The word "**article**" (see Article 3(3) of REACH) is defined as "*an object with physical properties more important to its function than any chemical properties....*". However, another word typically used to refer to part of the product is "**component parts**". Additionally, the word "**homogenous part**" also indicates that it is a part of a product.

Finally, another source of confusion that has been identified is on what the restriction should be applied. A general agreement was reached at EUEB level that as a general threshold it should be applied a maximum of 0.10% wt to solid products or component parts and 0.010% wt to liquid products. However, it is not clear if this **threshold applies to each of the classified substances individually or there is only one threshold for all the substances classified with the same H-phrase.**

In this TR2.0 proposal for the general restrictions in hazardous substances it is proposed to use the words "**component parts**", **if needed**, to refer to the different parts of the product (eg each of the three layers a laminate flooring can be made of) and to apply the general thresholds to each of the chemical products individually.

The second main source of confusion was coming from the "**assessment and verification**" section. In this sense, the verification was considered to be messy and without a clear procedure on how to act.

Regarding the verification two levels can be identified that correspond with the above mentioned approaches. The first one would be based on restricting all chemical products used by the floor covering manufacturer themselves and the verification can be done through a self-assessment of the applicant. The second one would be based on restricting the substances in the chemical products bought from suppliers. This verification requires the collaboration from suppliers and can be more difficult and time consuming for the applicant.

In this TR2.0 the verification has been simplified and a clear procedure has been developed.

Firstly, the applicant should draw up a list of chemical products and the transformations (chemical and/or physical) that they undergo during the manufacturing and screen these products against the list of SVHC substances. If any of these SVHC substances are present in the finished product (not reacted, intentionally added to the product, produced during the manufacturing of the product, etc) in concentration more than 0.10%wt, then the product is not suitable for the EU Ecolabel. Should the product not contain any SHVC substances the general approach shown in Figure 1 should be followed.

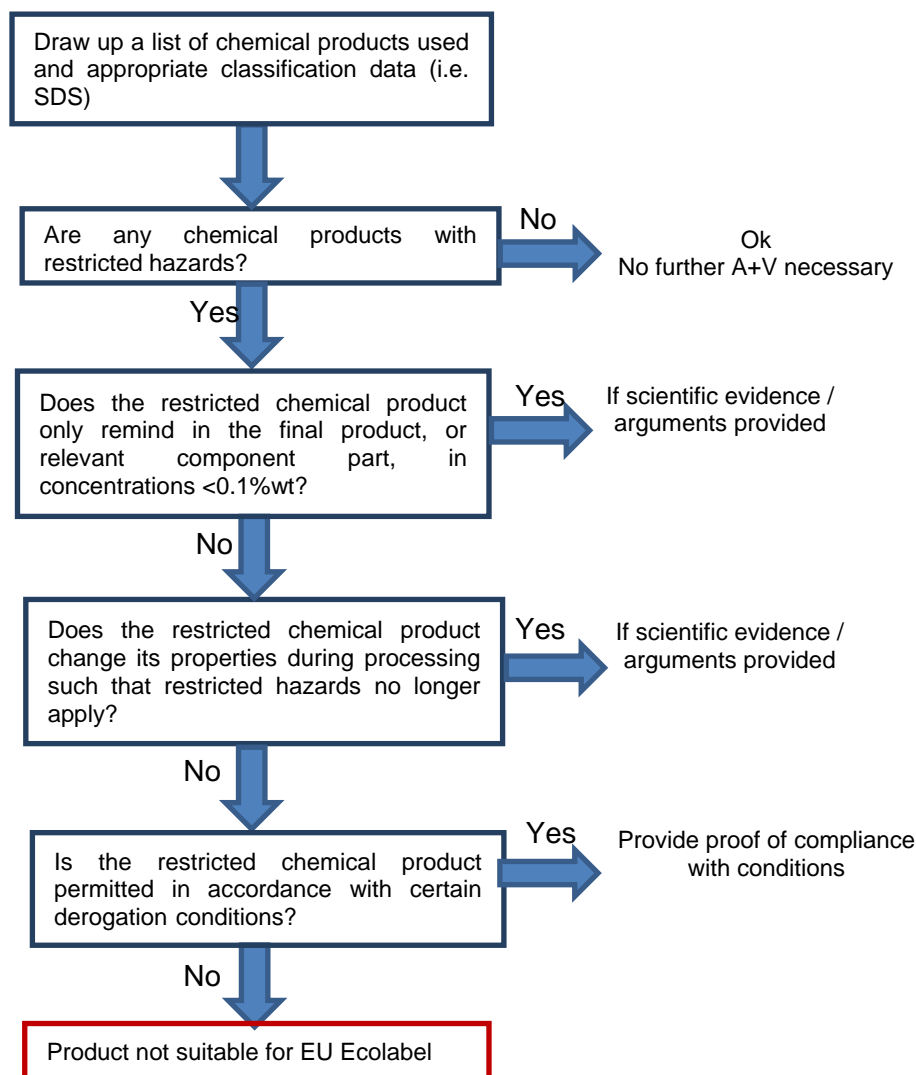


Figure 1. Flow diagram of decision process in assessment and verification of the criterion 2

So according to this proposal, the first action to do when applying for the criterion 2 as well as when verifying it, it is to look for the information at the chemical products as they are placed on the market. Information regarding the CLP requirements will be considered at the entire chemical product and not at the individual substances in the product. Then the applicant should screen the ingredients as listed on the product container and/or SDS against the SHVC list. This action may require getting in contact with the suppliers. Moreover, when several suppliers are providing there can be differences in the information included in the SDS as the supplier can have carried out a self-classification of the products.

It is worth noticing that if the classified substance change in properties during processing and they become no longer classified, then they can be used in the product (provided that the remaining of the reactants of the chemical reaction don't exceed the concentration of 0.1% wt in solid or 0.01% wt in liquid). This statement can be key when evaluating the chemical products used in coatings. Paints and varnishes are chemical products that are usually classified. These products however can often meet one of the exemption conditions presented above and commented in more detail, as follows:

- paints and varnishes can change in properties during the processing due to polymerization or drying. During this process the chemical products emit solvents. If the applicant proves that the dried paint film does not exhibit restricted hazards (ie. Requiring the information to the supplier), then s/he can go ahead with the Ecolabel application

- the coating surface material amounts for less than 0.1% wt in the coated article. If the applicant (ie requiring the information to the coating company) compare and prove that the weight of the article before and after the coating operation does not increase more than 0.1% wt then the applicant can go ahead with the Ecolabel application
- there can be derogations that allow the use of the surface materials (eg for biocides). In this case the applicant has the responsibility to obtain the proof compliance with the derogation conditions.

These examples (eg first and second example) can be applied to other chemical products that are usually used in the manufacturing of the floor covering and that may be classified with an H-phrase such as resins or additives which percentage in weight in the wooden board may vary between 2 and 10% wt.

Regarding the information available for the verification of the chemical products, it can be the case that a complete picture of a substance's hazard classification may not be readily available and because of that a decision making tool was developed together with ECHA to support the process. This tool can be helpful for the applicant's supplier to deliver the needed information to go ahead with the application. The resulting tool is explained in detail in below. Based on the discussions with ECHA it has been identified that holes in the substance's hazard classification information may be due to a number of factors:

- Substances are progressively being registered under REACH and so a substance may not be registered yet;
- Data gaps may exist in the hazard classifications for a substance and these may only be filled once testing proposals have been evaluated and agreed by ECHA;
- Where a substance has not been registered there may only be self-classifications to use as a reference point. These can be divergent depending on the state/form of the substance and, moreover, depending on the knowledge/expertise of the notifier they may not correspond to the final EU classification;
- Joint submissions and entries in the REACH registration database tend to provide greater confidence in the hazard classification because, as is encouraged by the REACH system, test data is shared by manufacturers;
- Harmonised classifications are only made where Member States or stakeholders make a proposal, as a result harmonisation may only focus on specific hazards associated with a substance.
- Adaptations to Technical Progress (ATPs) have resulted in changes to the classification rules, which may mean that self-classifications are incorrect.
- Data for low tonnage bands may more limited so, for example, there is the potential for gaps for hazards such as CMR which require longer term test data.

Because of these factors it may not therefore be possible to make a clear decision on a substances classification. It was therefore decided that, with input from ECHA, a decision making tool should be developed in order support the process. The resulting decision tree is presented in Figure 2.

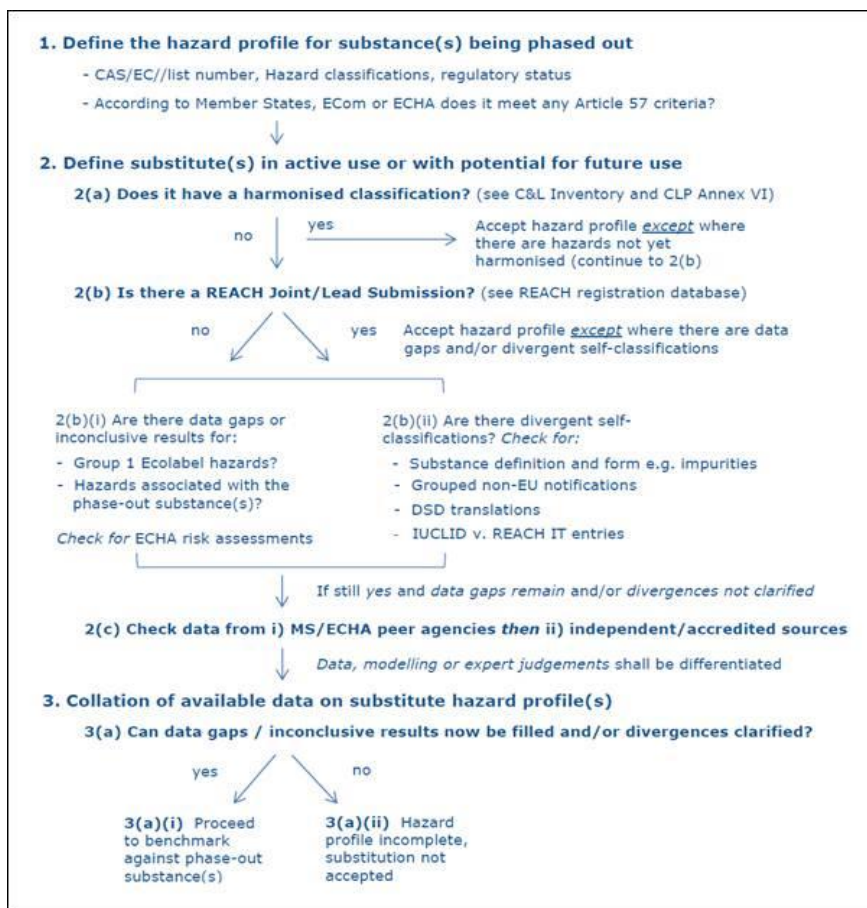


Figure 2. Decision tree used to determine hazard classifications

The applicant's supplier should provide information from the chemical product screening against the latest classification, followed by verification of the REACH registered data base. In case of data missing the number of options is given to provide information sufficient to conclude on the classifications. Accordingly, assessment and verification text was adapted. Whilst the option exists to accept the self-classifications made, cross checking a hazard assessment by an ECHA peer agency provides a potential means of filling the classification gaps and also highlights potential discrepancies in the self-classification for certain end-points.

The potential for granting derogations in accordance with Article 6(7) of the EU Ecolabel Regulation (EC) No 66/2010 needs to be carefully evaluated and adjusted to the actual state-of-the-art and best practices applications. Article 6(7) states that

"for specific categories of goods containing substances referred to in paragraph 6, and only in the event that it is not technically feasible to substitute them as such, or via the use of alternative materials or designs, or in the case of products which have a significantly higher overall environment performance compared with other goods of the same category, the commission may adopt measures to grant derogations from paragraph 6.

No derogation shall be given concerning substances that meet the criterion of Article 57 of Regulation (EC) no 1907/2006 and that are identified according to the procedure described in article 59(1) of that Regulation, present in mixtures, in an article or in any homogenous part of a complex article in concentrations higher than 0.10% w/w. those measures, designed to amend non-essential elements of this Regulation, shall be adopted in accordance with the regulatory procedure with scrutiny referred to Article 16(2)"

This is also an area in which cost and complexity of the verification process need to be carefully considered. For the time being, there is no official derogations request received for the EU Ecolabel criteria revision for Wood based floor covering.

Two proposed derogations and applicable conditions are provided and commented in more detail below. By using a horizontal approach, and applying it the final products instead of only

the homogenous parts thereof, it is now possible to remove many of the material specific sub-criteria that related to hazardous substances, as proposed in the previously.

For example, following this approach there is no need for derogating **formaldehyde** because after curing the **free formaldehyde content** is well below 0.10% w/w of wood-based panels. However, the use of adhesives with high free-formaldehyde content is regarded as undesired and therefore a restriction is included in Criterion 3. Similarly, the **derogation for isocyanates in adhesives** included in TR 1.0 becomes meaningless, since the adhesives no longer emit isocyanates after curing (i.e. in the final product), no such derogation should be necessary. The use of isocyanates in wood-based panel resins specifically refers to methylene diisocyanate MDI (CAS 101-68-8). The use of MDI is the main alternative to formaldehyde-based resins in wood-based panel manufacture and has the advantage of resulting in virtually zero formaldehyde emissions form the final product. Both isocyanate adhesives and resins are generally considered to cure completely and result in negligible residual emissions. Additionally, it is proposed not to impose any workplace health and safety exposure conditions on the use of isocyanate resins and adhesives because no agreed upon EU-wide limits could be found that would serve as a guideline.

In line with the revision of EU Ecolabel criteria for Furniture, it was considered in the EU Ecolabel revision process **derogation for VOCs in glues/adhesives**. However, and regarding the new approach, this derogation should be removed because it was not aligned with any specific hazard classification(s) and in any case would be an example of chemicals used in manufacture whose properties become non-hazardous after curing and which, in any case would not amount to more than 0.1% of the glued article. Additionally, according to literature, high VOC content glues are only used in situations where low-VOC glues are not technically viable and where water-based glues/adhesives do not give satisfactory performance.

Consequently only two chemical functional groups are proposed to be kept in this criterion 2 on **biocides and preservatives and on flame retardants**. Both functional groups are restricted in Criterion 3 (See rationale in the next section)

**Proposal for the 2nd AHWG meeting :
GENERAL RESTRICTION ON HAZARDOUS SUBSTANCES**

The presence in the product of substances that meet the criteria for identification with the Article 59 of the REACH Regulation⁶⁹ or meet the criteria for classification according to the CLP Regulation⁷⁰ for the hazards listed in Table 2.1 shall be restricted in accordance with sub-criterion 2.a and 2.b.

Table 2.1. Grouping of Candidate List SVHCs and CLP hazards

<p>Group 1 hazards – Substances of Very High Concern <i>Hazards that identify a substance as being within Group 1:</i></p> <ul style="list-style-type: none"> ○ Substances that appear on the Candidate List for Substances of Very High Concern (SVHC). ○ Category 1A or 1B CMR*: H340, H350, H350i, H360F, H360D, H360FD, H360Fd, H360Df
<p>Group 2 hazards – CLP <i>Hazards that identify a substance as being within Group 2:</i></p> <ul style="list-style-type: none"> ○ Category 2 CMR*: H341, H351, H361f, H361d, H361fd, H362 ○ Category 1 aquatic toxins: H400, H410 ○ Category 1 and 2 acute toxins: H300, H310, H330, H304 ○ Category 1 STOT*: H370, H372 ○ Category 1 Skin Sensitiser H317
<p>Group 3 hazards – CLP</p> <ul style="list-style-type: none"> ○ Category 2, 3 and 4 aquatic toxins: H411, H412, H413 ○ Category 3 acute toxins: H301, H311, H331, EUH070 ○ Category 2 STOT*: H371, H373

*CMR = Carcinogenic, Mutagenic or toxic to reproduction; STOT = Specific Target Organ Toxicity

2.a) Restriction of Substances of Very High Concern (SVHC's)

The wood-based floor covering product shall not contain substances that have been identified according to the procedure described in Article 59(1) of the Regulation (EC) No 1907/2006 (the 'REACH' Regulation) and included in the Candidate List for SVHCs, at concentrations of greater than 0.10% wt.

No derogation from this requirement shall be given to Candidate List SVHCs present in the product if they are present in the final product in concentrations greater than 0.10%wt.

Assessment and verification

The applicant and/or chemical product supplier shall compile declarations of the non-presence of SVHCs at or above the specified concentration limit for the final product. Declarations shall be with reference to the latest version of the Candidate List published by ECHA⁷¹

2.b) CLP restriction of the chemical products used in the wood-based floor covering product

Note 1: this requirement specifically refers to chemical products that are used in the manufacture of the wood-based floor covering product. The criterion is split into two parts.

2.b.1) Referring specifically to chemical products used by the wood-based floor covering manufacturer during the production or assembly and any other treatment of the wood-based floor covering and

*2.b.2) Referring only to **listed** chemical products used in the production of **certain** component materials that are bought from suppliers⁷².*

2.b.1) CLP restriction of chemical products used by wood-based chemical

⁶⁹ 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), establishing a European Chemicals Agency (OJ L 136, 29.05.2007, p.3).

⁷⁰ Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 (OJ L 353, 31.12.2008, p.1).

⁷¹ ECHA, Candidate List of Substances of Very High concern for Authorization

<http://www.echa.europa.eu/candidate-list-table>

⁷² e.g. if the wooden core panel is directly bought and not manufactured by the applicant

Chemical products used by the wood-based floor covering manufacturer during **manufacture**, assembly or any other treatment of the wood-based floor covering product shall not be classified with any of the CLP hazards listed in Table 2.1. Restricted chemical products shall include adhesives, paints, varnishes, wood stains, wood preservatives, resins and sealants.

However, the use of such restricted chemical products shall be permitted if one or more of the following conditions apply:

- that the quantity of the chemical product used does not reach a concentration greater than 0.10%wt of the final product

- that the chemical product changes its properties upon processing (e.g. becomes no longer bioavailable or undergoes chemical modification so that the restricted CLP hazards no longer apply and that the residual content of the restricted chemical product in the final product is less than 0.10%wt

- that compliance with specific derogation conditions, as set out in Table 2.2 is demonstrated.

2.b.2) CLP restriction of chemical products used by suppliers in components of the wood-based chemical

Note 2: any individual component part from suppliers used in the wood-based floor covering product that does not come into direct contact with users during normal use shall be considered exempt from the requirements set out in criterion 2.b.2

Supplier of solid wood and plant-based panels, paper layers or other components shall demonstrate that the components have not been produced using chemical products that are classified with any of the CLP hazards listed in Table 2.1.

However, the use of such restricted chemical products shall be permitted if one or more of the following conditions apply:

- that the quantity of the chemical product used does not reach a concentration greater than 0.10%wt of the final product

- that the chemical product changes its properties upon processing (e.g. becomes no longer bioavailable or undergoes chemical modification so that the restricted CLP hazards no longer apply and that the residual content of the restricted chemical product in the final product is less than 0.10%wt

- that compliance with specific derogation conditions, as set out in Table 2.2 is demonstrated.

Table 2.2. Derogations to the hazard restrictions in Table 2.1 and applicable conditions.

Chemical product type	Applicability	Derogated classification	Derogation conditions
(a) biocides/preservatives	Treatment of wooden materials and components to be used in the final product	All group 3 hazard listed in Table 1	Only permitted when the formulation and any active substance(s) present are approved under Product Type 6 as per the requirements of the Biocidal Products Regulation (EU) No 528/2012
(b) flame retardants		H351	The product must be intended to be used in applications in which it is required to meet fire protection requirements in ISO, EN, Member State or public sector procurement standards and regulations

Assessment and verification

The applicant shall provide a declaration of compliance with criterion 2.b.1), supported by a list of all the chemical products used by the wood-based floor covering manufacturer during the production, assembly and any treatment of the wood-based floor covering product together with their hazard classification (if any).

The applicant shall compile declarations of compliance with criterion 2.b.2) from suppliers of any of the components. These declarations shall be supported by lists of any relevant chemical products used and

their hazard classifications (if any).

The following information shall be provided to support declarations of the hazard classifications or non-classification for each substance or mixture identified as being present in the product/component part:

- i. substance's CAS⁷³, EC⁷⁴ or list number
- ii. the physical form and state in which the substance is used
- iii. harmonised CLP hazard classifications
- iv. self-classification entries in ECHA's REACH registered substance database⁷⁵

Self-classification entries from joint submissions shall be given priority when comparing entries in the REACH registered substance database.

Where a classification is recorded as 'data lacking' or 'inconclusive' according to REACH register database, or where a substance has not yet been registered under the REACH system, toxicological data meeting the requirements in Annex VII to the Regulation (EC) No 1907/2006 shall be provided that is sufficient to support conclusive self-classifications in accordance with Annex I of the Regulation (EC) No 1272/2008 and ECHA's supporting guidance. In the above cases of 'data lacking' or 'inconclusive' database entries, self-classifications shall be verified, the following information sources being accepted:

- Toxicological studies and hazard assessment by ECHA peer regulatory agencies⁷⁶, Member State regulatory bodies or intergovernmental bodies
- A Safety Data Sheet (SDS) completed in accordance with sections 2, 3, 9, 10, 11 and 12 of the Annex II of the Regulation (EC) No 1907/2006
- A documented expert judgement based on a review of scientific literature and existing testing data, where necessary supported by results from new testing carried out by independent laboratories using methods approved by ECHA
- An attestation, where appropriate based on expert judgment, issued by an accredited conformity assessment body that carries out hazard assessments according to the GHS or CLP hazard classification systems.

Information on the hazardous properties of chemical products may, in accordance with Annex XI to Regulation (EC) No 1907/2006, be generated by means other than tests, for instance through the use of alternative methods such as in vitro methods, by quantitative structure activity models or by the use of grouping or read-across.

For criterion 2.b.1) or 2.b.2), as appropriate, where chemical products with the restricted hazards listed in Table 2.1 are added in a concentration no greater than 0.10%wt of the final product or are considered to no longer exhibit any restricted hazardous properties in the final product or relevant component part due to physical and/or chemical changes during processing, and residual levels in the final product, or relevant component, can be considered to be present at concentrations less than 0.1% w/w, the applicant shall specifically mention this in their declaration and provide supporting arguments.

For criterion 2.b.1) or 2.b.2), as appropriate, where the use of restricted chemical products may be subject to derogation as per Table 2.2, the applicant shall provide proof that all the derogation conditions are met, as described in Table 2.2. Where test reports are required, they shall be valid at the time of application for a production model

Research on Criterion 3: Specific restricted substances

The **critterion 3 focuses on the restriction of specific substances** that either **are present below the mentioned concentration limit (0.10%w/w)**, or that have been **used along the manufacturing process (either being added intentionally or remaining in the finished product as residue)** and that might cause environmental and health damages in other life-cycle

⁷³ CAS, <https://www.cas.org/content/chemical-substances/faqs>

⁷⁴ EC, http://en.wikipedia.org/wiki/European_Community_number

⁷⁵ ECHA, REACH registered substances database:

<http://www.Echa.europa.eu/information-on-chemicals/registered-substances>

⁷⁶ ECHA, Co-operation with peer regulatory agencies, <http://echa.europa.eu/en/about0us/partners-and-networks/international-cooperation/cooperation-with-peer-regulatory-agencies>

stages. The discussion and the list of those substances that are proposed to be restricted are included in this Criterion 3.

a) Contaminants in recycled wood

See feedback and further research in Chapter 4.2

b) Wood preservatives

See feedback and further research in Chapter 4.3

c) Biocides

Feedback from the 1st AHWG meeting

Feedback from the stakeholders during and after the 1st AHWG meeting is shown in the Table 8 and discussed in the coming paragraphs.

Table 8. Stakeholders comments and IPTS assessment on the criteria: biocides

Stakeholder comment	IPTS assessment
<p>Austria is of the opinion that indoor materials shall not be impregnated with biocides, and that the proposal for the 1st AHWG refers only for outdoor-use. These chemicals are not necessary for interior equipment.</p> <p>Biocides are not only toxic against microorganisms, fungae or insects but bear danger for humans as well - some of them are CMR-substances, some allergenic, some neurotoxic</p> <p>To allow biocides - other than preservatives in adhesives and surface treatments - would mean to allow an additional source for indoor air pollution. These chemicals are often not found in VOC-measurements as they are mostly less volatile, emit slowly and accumulate in the surrounding for example in dust.</p> <p>Therefore biocides other than preservatives in adhesives and surface treatments should be excluded.</p>	<p>Accepted, criterion has been modified in accordance.</p>
<p>Biocides should not be used to impregnate indoor materials with biocides as these chemicals are not necessary for interior equipment. They are not only toxic against microorganisms, fungae or insects but also harmful for humans being an additional source of indoor air pollution</p>	<p>Accepted, criterion has been modified in accordance.</p>
<p>Biocides should not be permitted at any stage of the production. It was stated that the first criteria proposal was unclear about this restriction as it, at the same time, restricted the use of biocides and allowed them as in-can preservatives.</p>	<p>Partially accepted. Biocides are banned if intentionally added or used for preservative purposes of the product itself</p>

Further research

In the Blue Angel RAL-UZ 176⁷⁷ the use of any biocides is not permitted (except in-can preservatives in aqueous coating materials and glues or flame retardants permitted in additional criteria). This is also the approach followed by the Natureplus scheme⁷⁸, where indoor materials shall not be impregnated with biocides. The main reasons behind are that an allowance for biocides means an additional source of indoor air pollution and that these chemicals are often not found in VOC-measurements as they are most of the time less volatile, emit slowly and accumulate in the surroundings (eg dust). The current Nordic Ecolabel for floorings also forbids the addition of biocides in the form of pure active substances or in the form of biocidal products to the wooden floor covering with the aim of procuring a disinfectant or antibacterial treatment or a disinfected or antibacterial surface.

⁷⁷ Blue Angel RAL-UZ 176: Low emission floor coverings, panels and doors for interiors made of wood and wood-based materials, ed. Jan 2013

⁷⁸ Natureplus, Wood and wood-based flooring, September 2010 Award Guideline 209

Generally speaking, the use of biocides as preservatives are not needed for indoor use floorings, but they can be needed for the preservation of the in-can paints, varnishes or adhesives used in the manufacturing of the products. For this reason, and the above commented issues, a total restriction on biocides is proposed in this scheme with exception of those biocides being part of in-can preservatives in aqueous coating materials and glues or flame retardants, if permitted in accordance with Criteria 2 of this criteria set.

d) Flame retardants

Feedback from the 1st AHWG meeting

Stakeholders expressed their desire to ban the use of flame retardants, which was not proposed in the previous TR1.0. The need of further investigation on this point was identified.

Further research

The use of flame retardants has been proposed to be restricted in other EU Ecolabel products. Flame-retardants are a group of anthropogenic environmental contaminants used at relatively high concentrations in many applications. An example of this kind of substances is the largely marketed brominated flame retardants that are considered toxic, persistent and bioaccumulative.

Comparing some of the current national ecolabel schemes, both Blue Angel and Natureplus restrict the use of flame retardants. The later prohibits the use of synthetic-organic fire retardants while the further only allows the use of the following fire retardants: inorganic ammonium phosphates (diammonium phosphate, ammonium polyphosphate, etc), other dehydrating minerals (aluminium hydroxide or the like), or expandable graphite. Nordic Ecolabelling does also ban the use of halogenated flame retardants.

Flame retardants are not particularly important with solid wood but may be relevant to finishes or wood-based panels and coating papers and so it is necessary to have specific subcriteria related to flame retardants to prevent the possible entrance of hazardous substances into the EU Ecolabel products.

The non-use of flame retardants is preferential purely from an environmental point of view but any criteria relating to these substances should be worded so as to potentially conflict with existing fire safety regulations in the EU. Unfortunately the fire safety regulations vary between Member States. Therefore no specific fire resistance level or test is stipulated in this sub-criterion

e) VOC and formaldehyde in adhesives and resins

Feedback from the 1st AHWG meeting

One stakeholder asked why the free-formaldehyde content of the resin formulations was disregarded in the first criteria proposal, since it is the main factor to decrease the formaldehyde emissions from the wooden floor coverings. It was pointed out that checking the free-formaldehyde content at an early stage does not bring any burden to the production and will even be beneficial from the technical point of view.

Remarks on the assessment and verification parts were also pointed out. It was stated that the verification of this criterion is not clear and it was suggested to take over the Nordic Ecolabelling proposal.

Further research

Adhesives and glues are generally based on solvents. Solvents are liquid substances which dissolve other substances. They can be either inorganic (such a water) or organic such as formaldehyde resins (eg urea-formaldehyde resins, phenol-formaldehyde resins, melamine-formaldehyde resin), methylene diphenyl diisocyanate resins or polyurethane resins.

In the context of this study, adhesives and glues can release VOCs and formaldehyde, what are more relevant in the case of solvent-based adhesives, although this type of adhesives is

currently not the predominant one⁷⁹. Only in the case of bamboo floorings the only adhesive recommended is indeed a urethane based one that is classified with H334.

A reduction in the VOC content in the adhesives used for manufacturing the wooden floor coverings is proposed to be re-introduced in TR2.0 in accordance with the stakeholder's feedback confirming the technical and economic feasibility of this change. In the TR 1.0, it was proposed to withdraw this criterion as a check of the final product regarding the emission of VOCs during the use-phase of the product was proposed.

The **importance of limiting the content of the VOCs** in resins has been addressed in several national Ecolabel criteria sets. Natureplus requires that the amount of adhesives should be kept to the minimum quantity and must not exceed a content level of 5% w/w of the absolute dry weight of the wood/wood-based material. This scheme also sets out restrictions on the use of isocyanates that are allowed to be used whenever they do not exceed 2% w/w of the absolute dry weight of the wood/wood-based material. Nordic Ecolabelling restricts the use of substances that are classified as R40 (Carc 3 and restricted under H351), with the exemption of adhesives that contain isocyanates and/or formaldehyde and specifies that the VOC content in permitted adhesives must contain no more than 3% w/w VOC. This information was considered of relevance and valid to align the threshold proposed in the EU Ecolabel criteria.

Wood adhesive must be in correlation with the requirements for corresponding wood products, for which they are used. In this sense, formaldehyde based adhesive should achieve a compromise between their formaldehyde emission and performance of the wood product regarding the strength and/or water resistance.

Since values of formaldehyde emissions depend on the test method used, in Europe adhesives may generally be classified according to HCHO emissions in the rating of Emission 0 to Emission 1 (E0 to E1), as further explained in section 4.8. Although a great number of factors effect the formaldehyde emission of the cured products, such as the hardener system, the type of wood, etc, the emission of formaldehyde is in strict correlation with the free formaldehyde content of the resin before the curing process. E1 emission class can be achieved if the free formaldehyde content in the resin is lower than 0.2% by mass⁸⁰. Therefore, this limit is proposed as threshold for this requirement.

Pure urea-formaldehyde resins containing higher than 0.5% free formaldehyde by mass exceed emission class E2, and are not accepted. Low formaldehyde containing resins can be achieved by properly selecting synthesis conditions as well as raw materials. The quality of raw materials is an essential and determining factor for the synthesis of urea formaldehyde resins. The principal changes which may take place in the formaldehyde solution on storage are the polymerization and precipitation of the polymer, Cannizzaro reaction, methylal formation, oxydation to formic acid, condensation to hydroxyaldehydes and sugars. Any of these reactions are detrimental to product quality. The state of formaldehyde is also an essential factor, since the reaction of poly(methylene glycol)s with urea leads to methylene ether linkages resulting in emission of formaldehyde during storage and later on during the process of curing.

Hydrolysis, isomerisation and decomposition of urea may take place simultaneously during improper storage conditions, such as high humidity, high temperatures, industrial atmosphere. The side products formed affect the reaction with formaldehyde during the synthesis resulting in high free formaldehyde content of urea-formaldehyde resins.

f) Heavy metals in paints and varnishes

Feedback from the 1st AHWG meeting

No feedback was received regarding this point.

⁷⁹ F Bulian, JA Graystone, Wood coatings: theory and practice, Elsevier, First edition 2009

⁸⁰ Acta Biol Hung. 1998;49 (2-4):463-75, Urea-formaldehyde resins and free formaldehyde content, Vargha VI.

Further research

A number of stakeholders criticised the complexity of the previous general restricted substance criterion included in the TR1.0. That proposal stated a general restriction and some derogation permitting the use of some substances at certain life cycle stages of the product. Some of these derogations were related to barium, antimony and cobalt additives in paints and varnishes. These additives are now simply permitted based on the idea that they do not need to be derogated since derogations for general hazardous substances criteria for wooden floor coverings should apply to the % content in the final flooring product or % content of homogenous components thereof and not to the % content in substances applied to components of the flooring. When considered as a % of the wooden floor covering product (or homogenous components thereof) these additives will be far below the 0.1% w/w arbitrary cut-off limit that has been widely used for EU Ecolabel articles.

However, the criterion remains for prohibiting the use of paints or varnishes that include the remaining heavy metals (ie cadmium, lead, chromium IV, mercury, arsenic and selenium) because:

- many of the additive compounds based on these heavy metals are REACH restricted
- even if additive compounds based on these metals are non-hazardous, the presence of these metals would complicate recycling of the wooden materials at end-of-life if the 2002 "EPF standard conditions for the delivery of recycled wood" is considered (see criterion 3.a)
- if materials containing these metals are incinerated, regardless of the hazard profile of the original additive, the metals may be transformed into more toxic and/or bioavailable forms and either remain in fly ash, bottom ash, air pollution control residues or be released directly to the atmosphere.

g) VOC content in surface treatment

Feedback from the 1st AHWG meeting

With regards to the VOC content in the surface treatment, it was asked if the VOCs content should be derogated as long as the lifetime of the product would be extended. As respond, stakeholders commented the possibility that the higher the VOCs content, the higher the emissions that remain constant all over the lifetime of the product. If this is the case, then a higher VOC content would mean that the users are faced to higher VOCs emission for a longer time.

Further research

VOC's include a wide variety of compounds that have been widely recognized as potentially harmful for the health and environment. Furthermore, VOC content in surface treatment can trigger emissions from the coating that continue after it leaves the factory.

A flexible approach was provided in the TR1.0 and kept in the TR2.0 to give the manufacturer the option to simply use low VOC coatings or, where surface quality is an important issue, higher VOC content coatings can be used so long as the total VOC applied or emitted is restricted. Although VOC testing is of interest it is recognised that such tests are expensive and time-consuming and may be biased against smaller businesses. If coated panels are supplied to manufacturers, who add no further coatings themselves, data from the coated panel suppliers can be used. A flexible approach is allowed where the use of low VOC coatings and materials is sufficient to avoid the need for VOC chamber emission testing. However, this shall become clearer after reading the finished product criteria 6.1

The first way of proving the low VOC content is very simple and associated with the use of low (<5% w/w) VOC content coatings. This was supported by some industrial representatives during the development of other EU Ecolabel schemes of wood-based related products, such as Furniture. For low VOC content coatings (<5% w/w) all that is necessary is to demonstrate that the SDS of the coating shows that the VOC concentration is <5% w/w. A significant number of

coating substances and techniques that are widely regarded to be environmentally friendly are included in the <5% w/w VOC content category such as powder coatings and many UV cured coatings. One cured, these coatings have virtually zero VOC emissions.

However, it is noticed that in some cases the use of higher VOC concentration coatings may be desirable for durability, aesthetic or other practical reasons with certain components. The sequential criterion does allow for the use of higher VOC concentration coatings (no upper limit for VOC concentration of the coating substance is set) so long as the total quantity of VOC applied or emitted is restricted. This restriction can be applied in one of the two ways the preferred method may depend on how the coating is applied.

- The first option for restriction is to show that less than 2g VOCs are applied per m² of coated surface area. This option is well suited for mass production lines where identical pieces are coated using automatic coating techniques and consumption. This approach can be assessed and verified by the manufacturer at little additional cost or effort. Due to the potential for cost optimization, it is likely that monitoring of coating substance consumption is undertaken.

- The second option for restriction applies where either a higher quantity of VOCs are applied (>2g/m²) or where the manufacturer does not attempt or is not able to calculate the quantity of VOCs applied to the coated surface. In this case, it is necessary that the coated product or component complies with the VOC emission limits set out in criterion 6.1. This approach is particularly well suited for processes where VOC emissions are greatly reduced due to the drying and curing process used after application of the coating. Although VOC emission testing of the finished product may represent a significant extra cost and effort on behalf of the manufacturer, it is the most realistic assessment of potential exposure of users to VOC emissions from new products.

This possibility is included in the note prior to the criteria wording.

The overall effect of this criterion should be to shift producers towards using low VOC concentration coatings (<5%) in EU Ecolabel products but without expressly excluding the use of higher VOC content coatings in certain cases as long as other restrictions are met.

h) Halogens

Feedback from the 1st AHWG meeting

It was pointed out that the ban on halogenated organic binding agents should be extended to all halogenated organic substances as they play an important role during the end-of-life stages. It was commented that a broader restriction on halogenated organic substances is included in other set of criteria like those of Blue Angel and Nordic Ecolabelling.

Further research

The environmental concern regarding the halogenated organic compounds that are used as plasticizers, paint components, adhesives, flame retardants, solvents or additives is that most of them are toxic, mutagenic, or carcinogenic but also persistent and bio accumulating.

The restriction regarding halogens substances includes two kinds of substances:

- *halogenated organic compounds that can be found in recycled wood*: these substances are restricted due to the adverse consequences that its content will cause in the end-of-life stage of the final product. The content of halogenated organic compounds in the recycled wood grades down the materials, making impossible its used as raw material for wooden panels

- *perfluorinated compounds that can be used in paints and varnishes*. These substances are not directly mentioned in TR 1.0 but are specifically banned from use in the recently voted paints and varnishes EU Ecolabel Criteria Decision (2014/312/EU). As the general requirements for hazardous substances of criterion 2 do not apply to substances that undergo physical or chemical changes during processing which may alter or remove their hazardous properties, it was considered necessary to provide a separate sub-criterion to

exclude them from use in coating formulations to prevent them from being used by manufactures of EU Ecolabel products.

Both restrictions, as well as the extension to all halogenated organic substances have been taken over in the new second criteria proposal

i) Plasticizers

Feedback from the 1st AHWG meeting

No feedback was received regarding this point.

Further research

Plasticisers are substances used in products (eg. adhesives, sealants) to keep them soft while they are being applied. Some plasticizers can also emit traces of VOCs over a long period of time. Plasticisers are not considered to be volatile and therefore do not belong in the VOC category. Although plasticizers are classified with SVOCs, they are used in small quantities and not being regulated by this criterion. For this reason an additional requirement is needed.

j) Phthalates

Feedback from the 1st AHWG meeting

Several opinions were expressed regarding the restrictions on phthalates. On the one hand, an extension of the ban to all phthalates was mentioned. According to this stakeholder phthalates, regardless their classification, are sources of concerns and EU ecolabel criteria should be developed under the umbrella of the precautionary principle. On the other hand, disagreement with this restriction was expressed as not all the phthalates listed in the proposed wording are classified, proved that are carcinogenic or produced at industrial scale such as DNBO

Proposal for the 2nd AHWG meeting
SPECIFIC RESTRICTION ON HAZARDOUS SUBSTANCES

3. a) Contaminants in recycled wood

Any recycled wood fibres used in the manufacture of wood-based panels included in the final wood-based floor covering product shall be tested for delivery conditions in accordance with the 2002 "EPF standard conditions for the delivery of recycled wood" (table 3.1) **or any other national regulation in place with equivalent or stricter limit values.**

Table 3.1. Limit values for delivery conditions if no other national regulation is in place

Elements and compounds	Limit values (mg/kg dry panel)	Elements and compounds	Limit values (mg/kg dry panel)
Arsenic	25	Mercury	25
Cadmium	50	Fluorine	100
Chromium	25	Chlorine	1000
Copper	40	Pentachlorophenol (PCP)	5
Lead	90	Tar oils (benzo(a)pyrene)	0.5

Assessment and verification:

The applicant and/or his/her supplier(s) shall provide a declaration of compliance with the criterion supported by the following documentation:

- A declaration that no recycled wood fibres are used in the panel, or
- A declaration that all recycled wood fibres used have been tested in accordance with the 2002 "EPF standard conditions for the delivery of recycled wood" **or any other national regulation with equivalent or restricted limits**, supported by appropriate test reports that demonstrate compliance of the recycled wood samples with the limits specified in the table 3.1 **or those of the national regulation.**

3.b) Wood preservatives

Treatment of wooden components with preservatives shall not be permitted.

Assessment and verification:

The applicant shall provide a declaration of non-use of wood preservatives

3.c) Biocides

Biocides shall not be permitted. Biocides exclusively used for in-can preservation in aqueous coating materials and glues or flame retardants according to criterion 3.d) shall be exempt from this requirement.

Assessment and verification

The applicant shall either:

- Provide a declaration of non-use of biocides
- Provide a declaration stating what biocides or formulation(s) have been used with wood and wood-based materials, supported by SDS from the in-can preservation suppliers.

3.d) Flame retardants

Flame retardants should not be permitted in wood and wood-based materials unless specifically required for the wood-based floor covering to meet fire safety requirements in the country or countries where it is to be sold. Flame retardant substances shall comply with the general hazardous substance requirements set out in Criterion 2.

Assessment and verification

The applicant shall either

- Provide a declaration of non-use of flame retardants or,
- Provide a declaration stating what flame retardant substance(s) or formulation(s) have been used with wood and wood-based materials, supported by SDS from the flame retardant

suppliers. The flame retarding substances shall meet the requirements on criterion 2 and being demonstrated in accordance with the “Assessment and verification” requirements of criterion 2,

- Provide evidence that the wood-based floor covering, when treated with flame retardant substance(s) or formulation(s), meets the fire safety requirements in the country or countries where it is to be sold.

3. e) VOCs and formaldehyde in adhesives and resins

Adhesives and/or resins used in manufacturing of the wooden boards should have

- VOC content less than 3% w/w,
- Free-formaldehyde less than 0.2% w/w.

Assessment and verification

The applicant and/or its supplier shall provide the material SDSs or an equivalent declaration of the compliance of this requirement, together with a complete recipe with designation of quantities and CAS numbers for constituent substances.

The content of free-formaldehyde in the resin and/or adhesive formulation shall be in accordance with ISO 11402

3.f) Heavy metals in paints and varnishes

Paints and varnishes used on wood and wood-based materials shall not contain additives based on cadmium, lead, chromium VI, mercury, arsenic, barium, selenium, antimony or cobalt at concentrations exceeding 0.010% w/w for each individual metal in the in-can paint or varnish formulation.

Assessment and verification

The applicant shall declare that the paint or varnish formulations do not contain the aforementioned heavy metals in concentrations > 0.010% w/w and provide the respective SDS from the suppliers of the coating substances used.

3. g) VOC content in surface treatment

Note 1: It shall not be necessary to meet the requirements of this sub-criterion if compliance with criterion 6.1 can be demonstrated

Surface treatment chemical products used to coat wood and wood-based materials, cork or bamboo panels used in the wood-based floor covering product shall either:

- a) Have a total VOC content of less than 5% w/w (in-can substance concentration), or
- b) Be greater than 5% w/w VOC content but be shown to be applied in quantities that amount to less than 2g/m² of the coated surface area, or

Assessment and verification

The applicant shall provide the SDS of any coating substances used on wooden materials, cork or bamboo. If the SDS states that the VOC content of the surface treatment used is less than 5% w/w, then no further verification shall be necessary. If the VOC content is higher, then the applicant shall either:

- Provide calculations that demonstrate the effective quantity of VOC applied per m² of the coated surface area of the final wood-based floor covering product is < 2g/m². Guidance on these calculations is provided in Appendix I,
- Provide a test report demonstrating compliance with criterion 6.1 for the finished product.

Appendix I. Guidance on the calculation of the quantity of VOC applied

The requirement relates to the total VOC in the chemical products with the chemical composition they have in the wet form. If the products required dilutions, the calculation is to be based on the content in the dilutive product.

This method is based on the application method that calculates the quantities applied per m² surface area but it determines before the content of organic solvents and/or environmentally harmful substances as percentage of the surface treatment quantity applied.

The applied quantity of VOC according to option b) is calculated using the following formula

$$\frac{\text{Applied quantity } \left(\frac{g}{m^2}\right) \times \text{proportion VOC in surface treatment (\%)}}{\text{surface treatment efficacy}}$$

The formula consists in three parameters:

- The applied quantity of surface treatment reported in g/m². It depends on the number of coats and the quantity applied per coat,
- The proportion of VOC in the surface treatment: the concentration is to be stated as a percentage by weight,
- The surface treatment efficiency that depends on the application method is tabled in accordance with the state-of-the-art of the coating industry as shown in Table 3.2.

Table 3.2. Efficiency of the surface treatments

Surface treatment	Efficiency	Surface treatment	Efficiency
Automatic spray application, no recycling	50%	Roller coating	95%
Automatic spray application with recycling	70%	Curtain coating	95%
Spray application, electrostatic	65%	Vacuum coating	95%
Spray application, bell/disc	80%		

3.h) Halogens

No halogenated organic compounds may be used (e.g. as binders, flame retardants) in the manufacture of the products, including the materials used in the manufacture (wood-based materials, adhesives, coatings, etc). Paints and varnishes with long chain perfluoroalkyl sulfonates (>C₆) and/or perfluorocarboxylic acids (>C₈) shall not be used on wood and wood-based materials

Assessment and verification

The applicant shall provide a declaration of non-use of halogenated organic compounds, supported by SDS in the case of the paints and varnishes.

4.6 PRODUCTION PROCESS: ENERGY CONSUMPTION

Current EU Ecolabel criterion

The energy consumption shall be calculated as the process energy used for the production of the coverings. The process energy, calculated as indicated in the Technical Appendix, shall exceed the following limits (P = scoring point):

- P > 10.5 for wood floor
- P > 10.5 for bamboo coverings;
- P > 12.5 for laminate floor coverings and
- P > 9 for cork coverings

Assessment and verification:

The applicant shall calculate the Energy consumption of the production process according to the Technical Appendix instructions providing the related results and supporting documentation.

Formula	Maximum requirements	
$P = \frac{A}{25} + \frac{B}{25} + \frac{C}{25} + \left(4 - \frac{D}{5}\right) + \left(4 - \frac{D}{12.5}\right)$	A	kWh/m ²
	B	15 kWh/m ²
	C	35 kWh/m ²
	D	kWh/m ²

Summary of the rationale presented in the 1st AHWG preliminary documents

The energy consumption during the manufacturing was identified in the preliminary report⁸¹ as the environmental aspect that causes the highest environmental damage, regardless the type of flooring. Wooden floor covering manufacturing is an intensive energy sector where the BATs⁸² have been identified at EU level to reduce the energy consumption and the environmental damages associated with (mainly due to the consumption of fossil fuels).

The criterion proposed for the 1st AHWG meeting relied on the recent revision of the Nordic Ecolabelling for Floor coverings, version 6 (2014-2019)⁸³. This new formula proposed new stricter limits to award the license relying on the proportion of renewable fuel, the electricity consumption and the fuel consumption, but not on the percentage of certified wood as in the current criterion.

Proposal for the 1 st AHWG meeting										
<p>The energy consumption shall be calculated as the process energy used for the production of the coverings. The process energy, calculated as indicated in the Technical Appendix, shall exceed the following limits (E = scoring point):</p> <ul style="list-style-type: none"> - E > 11.0 for solid wood and laminate floor - E > 8.0 for parquet, bamboo and cork floor coverings; <p><u>Assessment and verification:</u></p> <p>The applicant shall calculate the Energy consumption of the production process according to the Technical Appendix instructions providing the related results and supporting documentation.</p>										
$E = \frac{A}{20} + \left(5 - \frac{B}{3}\right) + \left(5 - \frac{C}{7}\right)$	<table border="1"> <thead> <tr> <th colspan="2" style="background-color: #4F81BD; color: white;">Maximum requirements</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">A</td> <td style="text-align: center;">--</td> </tr> <tr> <td style="text-align: center;">B</td> <td style="text-align: center;">15 kWh/m²</td> </tr> <tr> <td style="text-align: center;">C</td> <td style="text-align: center;">35 kWh/m²</td> </tr> </tbody> </table>	Maximum requirements		A	--	B	15 kWh/m ²	C	35 kWh/m ²	
Maximum requirements										
A	--									
B	15 kWh/m ²									
C	35 kWh/m ²									

Feedback from the 1st AHWG meeting

No comments on the new energy formula and the new criterion dealing with the total energy consumption during the production process were arisen during or after the 1st AHWG meeting.

Further research

Revising the proposed criterion for the 1st AHGW meeting, it was identified the need of developing Appendix to provide the applicants within the details on how to calculate the terms A, B and C to be included in the calculation formula.

Two supplementary appendixes were prepared:

- Appendix IIa aims at providing the data on how to calculate the processing energy used. This appendix consists of the definitions of fuel and electricity used, the factors is the electricity is produced onsite and other data such as the standard fuel values to be used.
- Appendix IIb includes guidance for reporting the type of fuels and amount of electricity consumed during the manufacturing process and the amount of flooring produced. Detail information on how to perform the calculations is also displayed.

⁸¹ http://susproc.jrc.ec.europa.eu/wooden_floor_coverings/index.html

⁸² <http://eippcb.jrc.ec.europa.eu/reference/wbp.html>

⁸³ Nordic Ecolabelling for Floor coverings Version 6.0 18 November 2014 - 31 December 2019 available at: <http://www.ecolabel.dk/da/aktuelt/hoeringsforslag-og-afstemninger>

Proposal for the 2nd AHWG meeting

Criterion 4.1 Energy consumption

The energy consumption shall be calculated as the process energy used for the production of the coverings. The process energy, calculated as indicated in the Appendix IIa, shall exceed the following limits (E = scoring point):

- E > 11.0 for solid wood and laminate floor,
- E > 8.0 for parquet, bamboo and cork floor coverings.

Assessment and verification

The applicant shall demonstrate that the E score has been calculated according to the Appendix IIa instructions and exceeds the limits of this criterion.

Table 4.1. Calculation of the scoring point

Formula	Maximum requirements	
	$E = \frac{A}{20} + \left(5 - \frac{B}{3}\right) + \left(5 - \frac{C}{7}\right)$	A
B		15 kWh/m ²
C		35 kWh/m ²

Where A is the proportion of renewable fuel (%), B is the electricity consumption (kWh/m²) and C is the fuel consumption (kWh/m²)

The applicant should state:

- Which type(s) of fuel have been used in the manufacture of the wood based floor covering over the past year, and
- Which fuels are coming from renewable sources in accordance with Renewable Energy Directive 2009/28/EC.

In addition, it should be stated how much electricity has been used and how much flooring (m²) has been produced over the past year in accordance with the instructions given in Appendix IIb.

Proposal for the 2nd AHWG meeting**Appendix IIa. Guidance for calculating the process energy used**

Energy consumption is calculated as an annual average. The following delimitations apply for what is included in the energy calculation:

- Electricity and fuel consumed in drying and sawing is included in the calculation for parquet flooring, bamboo flooring and solid wood floor,
- For laminate flooring that includes wood-based board in its structure, the energy consumed in the manufacture of the board is to be included.

At least 95%w/w of raw materials in the flooring must be included in the calculation of energy consumption during the manufacture process. Energy consumption in the manufacture of adhesives and lacquers used in the manufacture of the flooring is not included in the calculation.

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. If electrical energy is produced on-site, one of the following methods can be used for calculating fuel consumption;

- Actual annual consumption of fuel,
- Consumption of electricity produced on-site multiple by 1.25.

Only the fuel that is actually used in floor covering production shall be included in the calculations. Energy consumption is reported in kWh/m², although calculations may also be made in MJ/m² (1 kWh=3.6 MJ). The energy contents of various fuels are given in Table 4.2.

Table 4.2. Standard fuel values⁸⁴

Fuel	MJ/kg	Fuel	MJ/kg
Petrol	44.0	Pellets (7% W)	16.8
Diesel		Peat	7.8-3.8
LPG	45.2	Straw (15% W)	
Eo1 oil	42.3	Biogas	
Eo5 oil	44.0	Wood chips (45% W)	13.8 (25% W)
Natural gas	47.2	Waste Wood	
Power station coal	28.5	<i>GJ/ton is equivalent to MJ/kg</i>	

(% W) is the percentage by weight of water in the fuel and given the letter *f* in the formulas below. If nothing else is stated, *f* = 0% W and the ash content is average.

The formula for calculating the energy content of woodchips depends on the water content. Energy is required to evaporate the water in the wood. This energy reduces the heat value of the woodchips. The energy content can be calculated as:

$$\text{Woodchip} = 19.0 \left(\frac{\text{MJ}}{\text{kg}} \right) - 21.442 \times \frac{f}{100}$$

Where *f* is the water content in %W of the wood. The factor 21.442 is the sum of water's heat of evaporation (2.442MJ/kg) and the energy content of dry wood 19.0 MJ/kg. If the applicant has laboratory analyses of the heat value of a fuel, the competent bodies may consider using this heat value for calculating the energy content.

Appendix IIb. Guidance for reporting the type of fuels and amount of electricity consumed during the manufacturing process and the amount of flooring produced.

⁸⁴ These values are reported by the Energy Efficiency Directive 2012/27/EC, Chapter IV, "Energy content of selected fuels for end users". Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC, L 315/1, OJEU 14.11.2012

1) Specification of the fuels, quantities and flooring production per year

Year of calculations:

Total production in this year (m²/year):

Total electricity purchase (kWh/year)

Total fuel purchase:

Column	A	B	C	D	E
Fuel	Energy Source (non-RE /RE)	Quantity (kg/year)	Standard fuel value	MJ	kWh/m ²

Where:

Column A: classification of the fuels depending on the source. Fuels classified as RE should comply with the definition of "energy from renewable sources" in accordance with Renewable Energy Directive 2009/28/EC⁸⁵

"energy from renewable sources" means energy from renewable non-fossil sources, namely wind, solar, aerothermal, geothermal, hydrothermal and ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases"

Fuels not complying with the above definition should be classified as non-RE.

Column B: quantity of fuel purchased during the year considered

Column C: Standard fuel value is the factor attributed to each fuel as included in Table 6 of the Appendix IIa

Column D: Total MJ contented in the annual purchase of this fuel. Column D is calculated for each fuel as follows:

$$MJ = \text{Quantity} \left(\frac{kg}{year} \right) \times \text{Factor} \left(\frac{MJ}{kg} \right)$$

Column E: Total power per square meter of wood base floor covering attributed with each fuel. The column E should be calculated as

$$\frac{kWh}{m^2} = \frac{MJ \text{ (column D)}}{3.6 \times \text{total production this year (m}^2\text{)}}$$

2) Calculation of the values A, B and C to be used in the formula (Table 5) for calculating the energy consumed:

The values A, B and C are calculated as follows:

$$A = \frac{\sum MJ_{\text{Fuels classified as RE (Column A)}}}{\sum MJ}$$

$$B = \frac{\text{Total electricity purchase} \left(\frac{kWh}{year} \right)}{\text{Total production} \left(\frac{m^2}{year} \right)}$$

$$C = \sum \frac{kWh}{m^2} \text{ (Column E)}$$

⁸⁵ Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC, L 140/16, OJEU 5.6.2009

4.7 PRODUCTION PROCESS: WASTE TREATMENT

Current EU Ecolabel criterion
<p>The applicant shall provide an appropriate documentation on the procedures adopted for the recovery of the by-products originated from the process. The applicant shall provide a report including the following information:</p> <ul style="list-style-type: none"> - kind and quantity of waste recovered, - kind of disposal, - information about the reuse (internally or externally to the production process) of waste and secondary materials in the production of new products. <p><u>Assessment and verification:</u></p> <p>The applicant shall provide appropriate documentation such as mass balance sheets or/and environmental reporting system showing the rates of recovery achieved by means of recycling, re-use or reclamation/regeneration</p>

Summary of the rationale presented in the 1st AHWG working documents

The minimization of production waste and the proper management of these residues are essential for reducing the environmental impacts during this life cycle. The minimization of residues ensures an efficient use of the resources, saving natural resources and probably helping to decrease the production costs.

The minimization of production waste can be achieved by developing and implementing a waste management plant prioritizing the minimization of waste formation as well as its recovery and reprocessing.

For the 1st AHWG meeting two modifications were proposed:

- a specification regarding the types of materials to be recovered
- the development and implementation of a waste minimization management programme that includes process to minimize waste through recovery and reuse and reprocessing and the monitors, records and reports several essential points as shown in the wording below.

Proposal for the 1 st AHWG meeting
<p>The producer shall</p> <ol style="list-style-type: none"> a) sort waste at source into the fractions that arise during the production and b) draw up an appropriate waste minimization management programme stating waste fractions and describing and implement processes to deal with and to minimise waste originated from the production process through recovery and reuse or reprocessing. <p>Waste from production with energy content greater than 10 MJ/kg (2.78 kWh/kg dry test) must be recovered, reused or reprocessed.</p> <p>The waste management programme shall annually report the following information:</p> <ul style="list-style-type: none"> - kind and quantity of waste produced, - breakdown of the total waste recovered to type of processes (information about the reuse of waste and secondary materials in the production of new products). - initiatives taken to reduce waste production and improve production - initiatives taken to calculate and reduce the environmental impacts associated with the waste minimization or recovery - initiatives or requirements for suppliers or contract manufactures. <p><u>Assessment and verification:</u></p> <p>The applicant shall provide appropriate documentation showing compliance with these requirements in writing. The documentation should include:</p> <ul style="list-style-type: none"> - description of the waste minimization processes and procedures implemented - Information in form of mass balance sheets or/and environmental reporting system showing the rates and detail breakdown of recovery achieved and the initiatives taken

Feedback from the 1st AHWG meeting

It was generally accepted that the criteria dealing with the development and implementation of a waste management plan is a good idea but the kind of criteria that is **difficult to implement and to assess by the competent bodies**.

However, it was also pointed out that most of the producers have already some management procedure that permits them to reuse, recycle with or without further processing or recover materials, as it helps them to reduce the production costs. General requirements are therefore welcome by the industry.

Stakeholders wondered if there are no criteria dealing with the end-of-life of the products. This point is addressed in the Chapter 4.13 of this report. Additionally, stakeholders pointed out as feedback from the second questionnaire that requirements for the end-of-life of the products will be hard to audit and prove.

Further research

It was acknowledged that the verification and assessment of the proposed criterion was weak and difficult to be verified by the Competent Bodies. For example, it was not clear how to demonstrate the implementation, monitoring and recording of the achievements reached through the waste management plan.

For this reason, more accurate and precise requirements are proposed in the new criterion wording. Among the changes, it is proposed to monitor and report data from at least one year before the EU Ecolabel application. These data must be considered as a proof that the required installations for sorting out and collecting the waste as well as monitoring and reporting the data are already in place. Additionally, these data will show if an improvement in the waste management in the facilities was achieved and if there is still potential for improvement.

Proposal for the 2nd AHWG meeting

The producer shall:

- a) Sort waste at source into the fractions that arise during the production, and
- b) Draw up an appropriate waste minimization management programme stating waste fractions and describing and implemented processes to deal with and to minimise waste originated from the production process through recovery and reuse or reprocessing.
- c) **Implement the waste minimization management programme for at least the year prior to the EU Ecolabel application and demonstrate its good performance**

Waste from production with energy content greater than 10 MJ/kg (2.78 kWh/kg dry test) must be recovered, reused or reprocessed.

The waste management programme shall content and annually monitor and report the following information:

- Kind and quantity of waste produced,
- Breakdown of the total waste recovered to type of processes (information about the reuse of waste and secondary materials in the production of new products),
- Initiatives taken to reduce waste production and improve production efficiency,
- Initiatives taken to calculate and reduce the environmental impacts associated with the waste minimization or recovery,
- Initiatives or requirements for suppliers or contract manufactures.

Assessment and verification

The applicant shall provide appropriate documentation showing compliance with these requirements in writing and demonstrating its implementation during the year prior to the EU Ecolabel application.

The documentation should include:

- **Description of the facilities to sort waste at source into fractions stating the type of fractions to be sorted out and their capacity,**
- **Description of the waste minimization processes and procedures implemented and monitored for at least one year prior to the EU Ecolabel application,**
- **Information in form of mass balance sheets or/and environmental reporting system showing the rates and detail breakdown of recovery achieved for at least one year prior to the EU Ecolabel application and the initiatives taken.**

4.8 USE PHASE: RELEASE OF DANGEROUS SUBSTANCES

Current EU Ecolabel criterion
<p>In order to control the potential release of dangerous substances in the use phase and at the end of the wood and plant based coverings life, the following parameters on the finished products shall be verified:</p> <p>a) Formaldehyde</p> <p>Wood-based materials are only allowed for use in wooden floor coverings if they comply with the following requirements on formaldehyde emissions:</p> <ol style="list-style-type: none"> a. Particleboard: the emission of formaldehyde from particleboards in their raw state, i.e. prior to machining or coating, shall not exceed 50 % of the threshold value that would allow it to be classified as E1 according to standard EN 312. b. Fibreboard: the emission of formaldehyde from fibreboard(s) in their raw state, i.e. prior to machining or coating, shall not exceed 50 % of the threshold value that would allow it to be classified as E1 quality according to EN 622-1. However, fibreboard(s) classified as E1 will be accepted if they do not represent more than 50 % of the total wood and wood-based materials used in the product. c. Cork and bamboo: The release of formaldehyde shall not exceed 0.062 mg/m³ air. <p>Assessment and verification:</p> <p>The applicant and/or his supplier shall provide evidence that the wood- based materials emit less than 4 mg/100 g oven dry board according to EN 120 (perforation method) or less than 0.062 mg/m³ air according to EN 717-1 (chamber method). Additionally, a declaration that a system of factory production control in accordance with EN 312 or EN 622-1 has been established shall be provided’.</p> <p>b) Volatile organic compounds (VOC)</p> <p>The finished products must not exceed the following emission values: Substance Requirement (after 3 days)</p> <ul style="list-style-type: none"> 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 LCI⁸⁶ < 0.05 mg/m³ air <p>Assessment and verification:</p> <p>The applicant shall present a test certificate according to emission tests:</p> <ul style="list-style-type: none"> - prEN 15052 - EN ISO 16000-9

Summary of the rationale presented in the 1st AHWG preliminary documents

Formaldehyde is the single VOC of most concern from the health and environmental points of view. Similarly, other types of VOCs can be of concern. Both VOCs and formaldehyde emissions from wooden floor coverings may come from products used for surface treatment (such as lacquers and oils), raw materials (such as wood and adhesives) and other chemicals used in the manufacture process.

It is possible that during the manufacture, substitution of harmful substances with less harmful substances can occur and that was the aim of the criterion proposed for the 1st AHWG making stricter the emission limits from the wooden panels or the finished products.

⁸⁶ LCI = lowest concentration of interest; see ‘Health risk assessment process for emissions of volatile organic compounds (VOC) from building products’ (Federal Environmental Agency).

The proposed criterion for the 1st AHWG suggested the possibility of including two alternatives. The first one tried to limit the emissions of VOCs and formaldehyde by restricting the content of free-formaldehyde and VOC content in the raw materials (wooden panels and surface treatment). The second alternative restricted the emissions of several types of VOCs and formaldehyde from the finished products.

Proposal for the 1st AHWG meeting

In order to control the potential release of dangerous substances in the use phase and in the end of life phase of the wooden floor covering, one of the following alternatives shall be verified.

Alternative 1

1) Formaldehyde

Where neither formaldehyde nor substances that emit formaldehyde have been used in the manufacture and assembly of the wooden floor covering, floorings shall be deemed to comply with this criterion.

Where formaldehyde-containing materials or substances that emit formaldehyde have been added to the product as part of the manufacture process, the core layers shall be tested and comply with either a) or b)

- a) the average free formaldehyde emissions must not exceed in accordance with EN120 or an equivalent method
5 mg/100g dry substance for MDF
4 mg/100g dry substance for other types of manufactured boards or wooden floorings
- b) the average emission of formaldehyde must not exceed in accordance with EN717-1 or an equivalent method
0.062 mg formaldehyde /m³ air for MDF panels and
0.070 mg formaldehyde/m³ air for other types of manufactured boards or wooden floorings

2) Volatile organic compounds (VOC)

The wooden floor covering has been produced by using core layers that complies with the requirements of criterion 4.1 and the surface treatment products contain a maximum of 4 % w/w VOCs.

Assessment and verification:

The applicant shall provide test reports showing that the limits of this criterion have been met:

- a. Certification from the solid wood or board supplier declaring the absence of formaldehyde-containing or formaldehyde-emitting ingredients or declaration of the manufacture process and the material safety datasheet of the ingredients showing compliance with the absence of formaldehyde-containing or –emitting materials
- b. Certification from the board supplier showing compliance with 50 % of the E1 level or analysis reports of the core layers including measurement methods and measurement results. The testing standard used must be clearly stated as well as the independent third party that conducted the analysis.
- c. Declaration of the surface treatment recipe and the material safety datasheet showing compliance with the VOC content.

Alternative 2

The finished wooden floor covering product shall not exceed the following emission values:

Substance Requirement (after 28 days)

- a) Total organic compounds within the retention range C₆-C₁₆ (TVOC) < 0.16 mg/m³ air
- b) Total semivolatile organic compounds within the retention range C₁₆-C₂₂ (TSVOC) < 0.016 mg/m³ air
- c) Total VOC without LCI < 0.05 mg/m³ air
- d) Formaldehyde < 0.4 mg/m³ air

Assessment and verification:

The applicant shall provide test reports showing that the limits of this criterion have been met in accordance with CEN/TS 16516, EN ISO 16000-9 or equivalent. The testing standard used and

Proposal for the 1st AHWG meeting

independent third party laboratory that performed the analysis must be clearly stated

Feedback from the 1st AHWG meeting

The importance of this criterion was reflected in the number of comments received during and after the 1st AHWG meeting. The comments were sorted out and aggregated based on common points as shown in Table 7.

Table 9. Stakeholders feedback on the indoor climate criterion

	Stakeholder's feedback
Nature of the panel	- difficult to understand why the thresholds depend on the nature of the panel
Alignment with CE marking or national regulations	- alignment with CE marking (which is mandatory) and its requirements would make easier the testing procedure as the producers have already a value ready to be reported without additional cost - CE marking just requires testing formaldehyde emissions in accordance with E1 but not any other value
Type of testing	- concerns about the lack of carcinogenic substances testing and the existence of this requirement to be awarded with the ecological label for a building - There is no harmonization among the VOC testing required by the Member States. However, if the EU Ecolabel required the same testing that the Member States, the cost of testing for producers would be significantly reduced. As an example, it was pointed out that in the new Belgian regulation 8 testing are requested. - 180 compounds are classified as VOCs, among them some have LCIs and quite a few do not. The R-value , that relies on the LCI values and considers lots of substances for its calculation, was identified as an additional value to be requested in the EU Ecolabel. German AgBB announced to take over the harmonized EU LCI values soon; once that occurred, this procedure will be harmonized between Belgium and Germany and constitute sort of state-of-technique for setting limits for emission of individual VOCs. - Total VOC without LCI does not make sense in toxicological meaning. The VOC without LCI are considered as "less hazardous" while those with LCI are considered as "more hazardous" and the main focus of this criterion.
Testing of the finished product	- General agreement was expressed on the need of VOC testing the finished product. This decision does not prevent from setting out requirements on the VOC emissions or content level in the raw materials of the flooring. - VOC and formaldehyde testing in the finished product will decrease the uncertainties associated with a verification of the emissions throughout the VOC emissions or content in the raw materials - testing facilities and test chamber measurements are becoming largely available in all Member States, reducing the limitations to perform these kind of tests
Level of ambition	- the level of ambition of the formaldehyde requirements should be in line with the Japanese and Californian schemes as they are considered the front-runners in the sector. However, it was also pointed out that these limits are not easily achieved in the current market. - Higher and lower levels of ambition regarding the formaldehyde emissions were pointed out as desirable by the stakeholders.
Standards	- reference to CEN/TS 16516 should be made as it is already approved - EN 717 is not equivalent to CEN/TS 16516 - The postulated correlation between EN 120 and EN 717-1 test results is proven only for certain uncoated wooden boards as specified in EN 13986. As long as a top coating is applied, this correlation changes significantly
Others	- Several tests for specific wooden floorings showed that the VOC content in a coating before application, "in-can", show no correlation at all with what is e from the product 28 days after application (or even longer, if the coating is applied in a factory, and the product then is dispatched to another place before it is installed).

Further research

Further research on the **type of testing, level of ambitious and standards** to be used was clearly identified thanks to the comments received. Due to the unanimous agreement that testing of the finished product is needed, this criterion is proposed in TR2.0 to be split into two criteria:

- **Criteria 5: Formaldehyde emissions from the wooden board** that focuses on limiting the formaldehyde emissions from the wooden panel used
- **Criteria 6.1: VOCs emissions from the finished product** that is proposed as part of Criterion 6 "Finished product" and will focus on restricting the emissions of VOCs from the product to be installed.

Further research on Criteria 5: Formaldehyde emissions from the wooden panels

Wood-based panels are more and more frequently used in the wood-based floor covering market as they are an essential part of laminate floorings. These materials reduce the demand for solid wood while providing higher quality end-uses. However, a crucial component in the wood-based panel industry is the optimization of thermosetting resins to bind the wood chips and fibers together to produce solid boards with useful technical properties.

Historically, almost all the resins used were formaldehyde based: urea-formaldehyde (UF), melamine-urea-formaldehyde (MUF), melamine-formaldehyde (MF) and phenol-formaldehyde (PF). The only significant non-formaldehyde-based resin used is methylene diisocyanate (MDI). Given that the most important environmental impact associated with these resins is formaldehyde emissions; their use is permitted in EU Ecolabel so long as the final emission criteria are complied with.

Formaldehyde is currently classified as a Category 1B carcinogen (H350 - may cause cancer) in 2015⁸⁷. However, the use of formaldehyde-based resin formulations remains the most common method of produced wood-based panels. The European industry (via EPF) has helped develop the E1 standard for formaldehyde emissions. A framework for testing of wood-based panels is given in EN 13986 (Chapter B) where quicker methods (EN 120 or EN 717-2) can be used in conjunction with a standard 28 day chamber test (EN 717-1). Each of these methods provides test results with different numerical values but which can be translated into the E1 standard value. This value is also required by the CE Marking Directive⁸⁸ adding no further testing cost to this criterion.

The ambition level of this criterion was slightly increased in the TR1.0 and it is proposed to be kept as such. The E1 limits were initially introduced almost 30 years ago and proposals to shift to a more stringent "E1-plus" standard, that would set limits at around 65% of the current E1 limit, have yet to be agreed upon or even discussed in detail at the EU level. Today many ecolabel initiatives such as the Nordic Ecolabel, Blue Angel and French NF 217, require emissions that are 50% of the E1 limit. The most prominent non-EU initiatives to go beyond E1 requirements are the California Air Resources Board (CARB) and the Japanese F-star rating system (for 3-star and 4-star rated panels).

⁸⁷ See the following link for specific changes to formaldehyde classification (entry 605-001-00-5): http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:JOL_2014_167_R_0004&from=EN

To be included in part 3 of Chapter VI of Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures.

⁸⁸ Council Directive 93/68/EEC of 22 July 1993 amending Directives 87/404/EEC (simple pressure vessels), 88/378/EEC (safety of toys), 89/106/EEC (construction products), 89/336/EEC (electromagnetic compatibility), 89/392/EEC (machinery), 89/686/EEC (personal protective equipment), 90/384/EEC (non-automatic weighing instruments), 90/385/EEC (active implantable medicinal devices), 90/396/EEC (appliances burning gaseous fuels), 91/263/EEC (telecommunications terminal equipment), 92/42/EEC (new hot-water boilers fired with liquid or gaseous fuels) and 73/23/EEC (electrical equipment designed for use within certain voltage limits), OJ L 220, 30.8.1993, p.

A direct comparison of formaldehyde emission limits between the CARB, JIS F-star and E1 systems is difficult to make due to the fact that they each use different testing methods. However, research published in the literature where the same products are tested by different methods and the numerical values correlated can allow for an approximate comparison as illustrated in Figure 3^{89 90}.

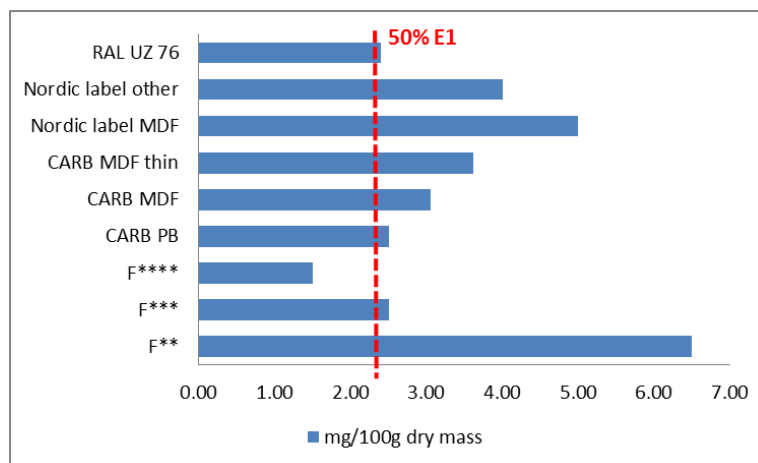


Figure 3. Comparison of formaldehyde emission ambition levels in different schemes for wood-based panels.
MDF = Medium density fibreboard; PB = Particleboard

The Blue Angel RAL UZ 176 criteria (Jan 2013) for low emission floor coverings, panels and doors for interiors made of wood and wood-based materials refers to the Blue Angel RAL UZ 76 criteria (April 2011) for low emission composite wood panels when setting the formaldehyde content limits. This latter set of criteria simply states that panels shall comply with the emission requirements of 50% of E1. It is uncertain if this also extends to unfaced panels or not.

The Nordic Ecolabel criteria for floor coverings (Version 6.0), reveals an interesting discrepancy between medium density fibreboard panels (MDF) and other wood-based panels. Basically, formaldehyde emission limits are 5mg/100g dry panel of MDF and 4mg/100g dry mass for other types of panels according to EN 120. The reason for this may be the fact that MDF is traditionally made using urea formaldehyde (the highest residual formaldehyde emitting resin type) and the fact that MDF panels can be of varying thicknesses.

The CARB limits also distinguish between MDF and other panel types but go one step further by also distinguishing plywood from other panels. The CARB Phase II levels are around 62-63% E1 for MDF and are very close to 50% of E1 for particleboards. With plywood, a stricter limit of around 30% E1 is stated and this can be linked to the fact that plywood manufacture traditionally uses phenol formaldehyde, which has very low residual formaldehyde emissions due to the stability of the thermoset resin when it comes into contact with atmospheric humidity.

Finally, the Japanese requirements show that F-3 star levels are roughly equivalent to 50% E1 and the F-4 star level to around 30% E1. The F-4 star level is often considered as the most stringent level for wood based panels constructed with formaldehyde based resins.

In light of the above points, it is considered that the requirement for 50% of E1 is feasible and not overly ambitious but that some flexibility is required with MDF panels and for this reason they are permitted to reach up to 65% of the E1 emission threshold. Other non-EU initiatives are also permitted (i.e. CARB Phase II and Japanese F-3 and 4 star) since these have been demonstrated to be equivalent or better than the 50% / 65% E1 emission limit requirements

⁸⁹ Groah et al., 1991. Comparative response of reconstituted wood products to European and North American test methods for determining formaldehyde emissions. *Envi. Sci. Technol.*, Vol. 25, p.117-122.

⁹⁰ Risholm-Sundman et al., 2007. Formaldehyde emission – Comparison of different standard methods. *Atmospheric Environment*, Vol. 41, p.3193-3202.

Proposal for the 2nd AHWG meeting
CRITERION 5: FORMALDEHYDE EMISSIONS FROM THE WOODEN PANEL

All wood-based panels used in the finished wood-based floor covering using formaldehyde-based resins or finishing agents shall either:

- Have formaldehyde emissions that are lower than 50% of the threshold value allowing them to be classified as E1⁹¹. In the case of MDF (Medium Density Fibreboard) panels, formaldehyde emissions shall be lower than 65% of the E1 threshold limit.
- Have formaldehyde emissions that are lower than the limits set out in the CARB Phase II or the Japanese F-3 star or F-4 star standards.

Assessment and verification:

The applicant shall provide a declaration of compliance with this criterion. The assessment and verification of low formaldehyde emission panels shall vary depending on the certification scheme it falls under. The verification documentation required for each scheme is described in Table 5.1.

Table 5.1. Assessment and verification of low formaldehyde emission panels

Certification scheme	Assessment and verification
E1- as defined in Annex B of the EN 13986 (developed in the EU)	A declaration from the wood-based panel supplier, stating that the panel is compliant with 50% of E1 emission limits or, in the case of MDF panels, with 65% of E1 emission limits, supported by test reports carried out according to either EN 717-1, EN 717-2 or EN 120
CARB- California Air Resources Board: Phase II limits (developed in the USA)	a declaration from the wood-based panel supplier, supported by third party verified test results according to ASTM E1333 or ASTM D6007, demonstrating panel compliance with the formaldehyde Phase II emission limits defined in the California Composite Wood Products Regulation 9312092. Optionally, the wood-based panel may be labelled in accordance with Section 93120.3(e), containing details in respect of the manufacturer's name, the product lot number or batch produced, and the CARB assigned number for the third party certifier (this part is not required if the products were made using no-added formaldehyde or certain ultra-low emitting formaldehyde-based resins).
F-3 or 4 star (developed in Japan)	the applicant shall provide a declaration from the panel supplier of compliance with the formaldehyde emission limits as per JIS A 5905 (for fibreboard) or JIS A 5908:2003 (for particleboard and plywood), supported by third party verified test data according to the JIS A 1460 desicator method.

In all cases, the applicant shall also declare that no further formaldehyde-based surface treatment was applied to supplied panels and that the panels were not modified in any another way that would comprise compliance with the formaldehyde emission limits set out in the European, American and Japanese schemes, as appropriate.

Further research on Criteria 6.1: Indoor climate: VOC emissions from the finished products

This criterion aims to limit the emissions of VOCs into the indoor environment and by doing so, to limit people's exposure to proven harmful substances. Therefore, **floor covering products**

⁹¹ E1 is a threshold emission limit originally introduced in 1985 in the EU due to concerns over adverse health effects due to formaldehyde exposure. The emission limits are defined in Chapter B of EN 13986 and correspond to steady state background levels of 0.1ppm formaldehyde after 28d in a chamber test according to EN 717-1.

⁹² Regulation 93120 "Airborne toxic control measure to reduce formaldehyde emissions from composite wood products" California Code of Regulations.

must comply with thresholds levels concern the emissions of harmful substances from the product after 28 days to award the EU Ecolabel.

The **approach** proposed in the TR2.0 is in line with the newly release Belgian Regulation⁹³ (not in the level of ambition but it does in the way the emissions are restricted). It requires each product to be covered by a product emissions file containing the substantiation of the manufacturer that the products comply with the threshold values. This approach is, however, slightly different from the German Regulation⁹⁴ that does not contain a requirement to test each product or from the French Regulation⁹⁵ that only requires the labelling of the products.

Regarding the feedback received and the data found in the literature, the following compounds or group of compounds are proposed for testing in the TR2.0. These **selected compounds or groups of compounds have been chosen based on the availability of testing standards, level of harmfulness of the compounds and requirements for their testing in mandatory regulation of the Member States or CE marking.**

- **R-value:** this value groups more than 170 different VOCs and is the sum of all ratios R_i ⁹⁶ for all VOC with a known LCI value. The concentration of the individual VOC values is proposed to be determined according to prCEN/TS 16516:2013. The preparation of the samples should be done in accordance with ISO 16000-11. For liquid systems, a preconditioning time of 3 days is permitted.

The LCI values are, when they stand, the harmonized list composed by the JRC⁹⁷. As long as the JRC list is not publicly available the notified LCI values of AgBB that apply at the moment of application must be used.

The R-value is used by the Belgian, French and the German regulations as well as in a number of voluntary schemes. This criterion and the associated threshold value (**R-value <1**) and assessment method are recommended by the JRC in various ECA reports.

- **TVOC** is suggested to be measured as it ensures the removal of a number of unfamiliar substances. The lower the TVOC level, the lower the quantity of VOCs that is emitted and therefore the higher the chances of a reduced health impact on the final users. The concentration of TVOC values is proposed to be determined according to FprCEN/TS 16516:2013.

TVOC values are required to be below respective thresholds in the Belgian and German Regulations and mandatory declared in France. That means, that TVOC values must be calculated in all those Member States

- **TSVOC** is proposed to be measured as well. The concentration of TVOC values is proposed to be determined according to FprCEN/TS 16516:2013.

The value of TSVOC must be below the respective thresholds in Belgium and Germany.

- **Carcinogenous** is proposed to be included in the new drafting of the criterion. Cancinogenic substances are those classified as category 1A and 1B, as referred to in Article 36 (1) (c) of CLP Regulation (EC) No 1272/2008. The main argument is that

⁹³ Royal Decree establishing threshold levels for the emissions to the indoor environment from construction products for certain intended uses, Kingdom of Belgium, Federal Public Service of Health, Food chain safety and Environment

⁹⁴ AgBB evaluation scheme, information available at: <http://www.eco-institut.de/en/certifications-services/national-marks-of-conformity/agbb-scheme/> and AgBB scheme 2015 published with new LCI values applying also for VVOC and SVOC, available at <http://www.eco-institut.de/en/home/detail/agbb-scheme-2015-published-with-new-lci-values-applying-also-for-vvoc-and-svoc/>

⁹⁵ Décret no 2011-321 du 23 mars 2011 relatif à l'étiquetage des produits de construction ou de revêtement de mur ou de sol et des peintures et vernis sur leurs émissions de polluants volatils available at: <http://www.eurofins.com/media/2369635/D%C3%A9cret%20C3%A9tiquetage.pdf> and further information at <http://www.eurofins.com/media/3686245/French%20VOC%20Regulations%20-%20ch-en.pdf>

⁹⁶ The R_i ratio is the ration of the measured concentration in the test room of a certain volatile organic substance an the LCI (lowest Concentration of interest) value associated with this volatile organic substance.

⁹⁷ JRC, Institute for Health and Consumer Protection, Chemical Assessment and Testing Unit, Report No 29, Harmonisation framework for health based evaluation of indoor emissions from construction products in the European Union using the EU-LCI concept, 2013, EUR 26168 EN

carcinogenous must be avoided. The concentration of carcinogenic substances is proposed to be determined according to FprCEN/TS 16516:2013.

The carcinogenic concentration of substances is required to be below respective thresholds in the Belgian and German Regulations and it is limited in a number of voluntary schemes.

- **Formaldehyde** is proposed to be kept in the criteria. Formaldehyde emissions are required by the CE marking of construction products⁹⁸ to get the E1 class and therefore, the formaldehyde emission values should be ready to be reported before placing the product on the market.

VOC without LCI values are proposed to be left out. The VOC without LCI values are supposed to be less harmful substances and its determination imply further uncertainties. For this reason, it is proposed to be left out.

The new proposed criterion relies on the CEN/TS 16516 standard for measuring the TVOC, TSVOC, R-value and carcinogenic substances. Previously, most of these values were proposed to be measured in accordance with ISO 16000-9. According to the literature, the CEN/TS 16516 is based on ISO 16000 standard series, but it contains additional refinements for improving reliability and has gone through extensive validation⁹⁹. Considering that the CEN/TS 16516 is the most updated standard and that it has already been introduced into national regulations, we consider that it is the standard to be followed.

In those Member States where no national regulation is established, the applicant should carry out the testing to demonstrate compliance with the thresholds included in the EU Ecolabel criteria. The expected testing cost of the analyses in accordance with the selected standards and being performed by an accredited laboratory is shown in Table 10.

Table 10. Testing costs in €₂₀₁₅ in Italy

	Standard	Samples /conditions	€₂₀₁₅
Formaldehyde	(EN 717-2)	3 sample 400mm x 50mm x panel thickness	290
VOC- 1st sample	ISO 16000-9	28 days	990
VOC – 2 nd sample	ISO 16000-9	28 days	700

⁹⁸ Regulation (EU) No 305/2011 of the European Parliament and of the council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC, 4.4.2011, OJ L88 p.5

⁹⁹ New EU VOC emission testing methods CEN/TS 16516 and CE marking products, R Oppl

Proposal for the 2nd AHWG meeting
CRITERION 6.1: INDOOR CLIMATE

The wood-based floor coverings shall not exceed the emission values listed in Table 6.1 measured in a test chamber in accordance with TS/CEN 16516 or equivalent method and ISO EN 16000-3 for the formaldehyde emission value.

Table 6.1. Emission requirements

Compound or substance	Limit Value after 28 day in mg/m ³ air
TVOC*	0.16
TSVOC**	0.016
R-value***	1
Total VOC without LCI	0.05
Carcinogenic substances	0.004
Formaldehyde	0.04

* TVOC – total volatile organic compounds, defined as those compounds within the retention range of C₆ to C₁₆ (inclusive)

* TSVOC – total volatile organic compounds, defined as those compounds within the retention range of C₁₇ to C₂₂ (inclusive)

***R value: total of all quotients (C_i/LCI_i)<1 (where C_i=substance concentration in the chamber air, LCI_i = LCI value of the substance as defined by the latest data defined under the European Collaborative Action "urban air", indoor environment and human exposure

Assessment and verification

The applicant shall provide third party verified test results in accordance with TS/CEN 16516 or equivalent method and ISO EN 16000-3 for the formaldehyde emission value showing that the limits above have been met. The total VOC emissions per product unit basis shall be calculated and separately comply within each limit.

4.9 PACKAGING

Current EU Ecolabel criterion

Packaging must be made out of one of the following:

- easily recyclable material,
- materials taken from renewable resources,
- materials intended to be reusable.

Assessment and verification:

The applicant shall provide a description of the product packaging together with a declaration of compliance with this criterion.

Summary of the rationale presented in the 1st AHWG preliminary documents

On average the weight of the packaging represents a small percentage of the overall environmental impact of the wooden floor coverings. According to the LCA review carried out in the preliminary studies, the packaging and transportation life cycle stages together amount for less than 2% of the GWP100 and similar values for other indicators.

For the 1st AHWG meeting, it was proposed to withdraw this criterion due to its little relevance from an LCA perspective.

Proposal for the 1st AHWG meeting

Withdrawn the criterion

Feedback from the 1st AHWG meeting

Agreement and disagreement with this proposal was expressed by the stakeholders. In support of packaging criteria was the high impact that has on consumers during the first impressions, even if packaging is not a dominant factor on environmental impacts. It can influence consumer opinion. It was pointed out that currently there is a clear conflict in sustainable products being stored or delivered in unsustainable packaging. In addition, it was stated that the reduction of packaging is always important at European level and suggested that LCA outcomes should be used only to identify the hotspots of the product group but not to assess as irrelevant any criteria.

In support of withdrawing the packaging criterion it was stated that it would be in line with other national levels that do not include any requirement on packaging and the outcomes of all LCA assessments that weight the environmental impact caused by packaging as irrelevant. Moreover, it was pointed out that if a packaging criterion is included into the set, it would have the same importance as other criteria because the EU Ecolabel scheme is a pass/fail schemes without the possibility of weighting the importance of each criterion.

Proposal for the 2nd AHWG meeting

Withdrawn the criterion

4.10 FITNESS FOR USE

Current EU Ecolabel criterion

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

Assessment and verification:

The applicant shall provide details of the test procedures and results, together with a declaration that the product is fit for use based on all other information about the best application by the end user.

According to Directive 89/106/EEC a product is presumed to be fit for use if it conforms to a harmonised standard, a European technical approval or a non-harmonized technical specification recognized at Community level. The EC conformity mark 'CE' for construction products provides producers with an attestation of conformity easily recognisable and may be considered as sufficient in this context

Summary of the rationale presented in the 1st AHWG preliminary documents

Wooden floor coverings are products with a relatively long life span that varies between 15 and 50 years as commented in the TR1.0. Despite the long life, LCA studies showed that the use stage causes negligible environmental impacts, this is due to the fact that the maintenance of wooden floor coverings is quite simple and usually limited to cleaning operations (although it depends on the type of flooring, material and application).

However, a reduction of the environmental impacts caused by the wooden floor coverings can be achieved if the service life of the product is extended since a lower number of turn-overs is required. To guarantee a long durability of the finished products a design for durability, reparability, maintenance and fitness for use is needed. Therefore, this criterion plays an important role in minimizing the environmental damages.

The first proposal of the criterion fitness for use introduced benchmarks of minimum performance depending on the intended use of the flooring and the material it was made of. The compliance with this criterion was suggested in base of a set of standards. Additionally, an extra

sub-criterion was introduced requiring that the cleaning procedure of the wooden floor covering should be possible to be performed without using organic based solvents. This clause ensures that VOC emissions are not released to the indoor climate during the use phase.

Proposal for the 1 st AHWG meeting
<p>a) Wooden floor coverings shall achieve at least:</p> <ul style="list-style-type: none">- class 22+ for floor coverings for private use- class 33 for floor coverings for commercial use- class 2 for bamboo flooring <p>In accordance with:</p> <ul style="list-style-type: none">- EN 14041 and ISO 10874 or EN 12104 (cork tiles) or equivalent for laminate flooring- EN 14354, EN 335 or EN 438 or equivalent for wood flooring including solid wood flooring, factory lacquer wood flooring and parquet flooring- EN 687 or equivalent for bamboo flooring <p>Assessment and verification: The applicant shall provide test reports from an independent testing institute that the requirement is fulfilled.</p> <p>b) Maintenance of the products shall be possible without organic based solvents.</p> <p>Assessment and verification: The applicant shall provide the maintenance instructions of the product fulfilling the requirement.</p>

Feedback from the 1st AHWG meeting

Stakeholders proposed to **clearly define the level of fitness for use for each of the intended uses of the floor coverings in accordance with international standards**. Generally speaking, stakeholders welcomed the proposal. However, some modifications were proposed. On the one hand, stakeholders proposed to **set up a minimum fitness for use performance on class 32** independently of the use. The reasons for this proposal is that this performance class gives good results and although class 22+ is the normal level for domestic applications, most of the products on the shelves intended to be used in the residential sector stand a level of performance that corresponds to class 32. This means that longer durability is expected from this type of flooring while not market restrictions are created.

Further research

A through **revision of the current testing methods and product standards harmonized across Europe** for the majority of flooring material types that allow flooring classification according to their durability and suitability for different environments was carried out in this TR2.0. The analysis of this criterion was conducted for each of the four types of floorings included in the scope

a) Laminate floorings¹⁰⁰

Two classifications are available to declare the resistance of laminte floor coverings

- a) **EN 13329** "Laminate floor coverings -Specifications, requirements and test methods" classified the products depending on the resistance to abrasion and foot traffic ranking the

¹⁰⁰ Laminate flooring covering defined according to the Standard EN 13329:2006+A1:2008 as 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). By the simultaneous action of heat and pressure, these sheets are either pressed as such (HPL, CPL. Compact) and in the case of HPL and CPL bonded on a substrate (usually wood-based panels), or in the case of DPL directly pressed on a substrate (usually wood-based panels). The product is usually finished with a backing (eg HPL, CPL, impregnated papers and veneers), primarily used as a balancing material.

The laminate floor covering element is consisting of a surface layer, a substrate and a backing, shape and machined on its sides to the appropriate dimensions.

products from class AC1: low resistance to abrasion to class AC5: excellent resistance to abrasion¹⁰¹.

EN 13329 specifies the characteristics, testing methodology, and other requirements for laminate flooring. The standard contains a classification system, which applies practical standards for areas of use and levels of use and serves as a guide that tells the consumer which type of flooring should be used in certain situations. This standard allows the consumer to make an informed decision about the product they are purchasing. Other requirements are also specified by the standard: dimensional changes caused by relative humidity, height difference between adjacent floor boards, width of gaps between adjacent flooring sections, rectangularity of the boards, light fastness and soundness. The standard EN 13329 states that

"all laminate floor coverings shall be classified as suitable for different levels of use according to the performance requirements specified in table 2, when tested by the methods given therein. Classification shall conform to the scheme specified in EN 685. Laminate floor coverings are considered only for domestic and commercial levels of use".

b) **EN 685 "Resilient, textile and laminate floor coverings – Classification"** establishes a classification system for resilient, textile and laminate floor coverings. The classification is based on **practical requirements for areas of use and intensity of use**. In addition, it should be noted, as stated in EN 685 that the lasting of the floorings is also influenced by the installation and maintenance, the condition of the sub-floor and the kind of use (type of footwear, high concentrations of localized traffic etc.). These factors should be taken into account when using the classification system presented in EN 685.

According to the classification shown in the standard EN 685, the level of use is categorized as domestic, commercial or light industrial. Each level of use is divided into three or four groups that vary from moderate/light use to very heavy use. Examples of general use in the domestic level (class 22+) is attributed to areas with medium to heavy use such as living rooms, entrance halls, dining rooms and corridors. Examples of general use for commercial level (class 32) include classrooms, small offices, hotels or boutiques. This standard also notes that:

"the list of examples is neither complete nor typical for all the countries. Upon implementation of this European standard appropriate examples can be chosen by the national standardization bodies of each country based on the general guidelines included in the Chapter A of EN 685. This will reflect practical requirements for areas of use and the different expectation of performance and conditions of service for certain locations in the different countries. Exporters should carefully consider the examples for areas of use chosen by the relevant importing country".

Although standard EN 685 classified the laminate flooring in classes from 21 to 33 according to the service category, the most used classification on the market divides the laminate flooring into four groups depending on the resistance to abrasion. Some stakeholders proposed to refer to the AC classification reaching a minimum value of AC3 (regardless the intended use of the flooring). Some stakeholder even proposed the possibility of increasing the quality level to class AC4. The reason behind is the current availability of these products in the selves and the exclusion from the Ecolabel scheme of wooden floorings intended for temporary uses which usually fall under class 21 (approx. equivalent to AC1).

However, both classifications are not totally equivalent as they are not based on the same tests. When performing tests of laminate floorings according to EN 13329, several properties have to be tested. Laminate floorings are tested to determine their:

- resistance against abrasion according to EN 13329 Chapter E
- resistance against impact according to EN 13329 Chapter F. This test can be carried out with a small ball or a big ball according to EN 438 part 2

¹⁰¹ The resistance to abrasion method is included in the Appendix E of the Standard EN 13329 and groups vary from AC1 very low resistance to abrasion to AC5 excellent resistance to abrasion
<http://www.timberfloorcentre.com.au/abrasion-class>

- residual indentation according to EN 433
- surface soundness according to En 311
- resistance against staining according to EN 13329 with the indicated test substances of EN 438-2
- resistance against cigarette burns according to EN 438-2
- thickness swelling according to EN 13329 Chapter G
- light fastness according to EN 13329 and with the indicated blue wool scale according to EN 20105 or grey scale according to ISO 105-A02 for the visual inspection
- geometric properties according to EN 13329 Chapter A and Chapter B
- effect of the simulated movement of a furniture leg according to EN 424
- resistance against soft chair rolls according to EN 425
- humidity according to EN 322
- assessment of appearance according to EN 438

The global assessment of all of them determines the level of use of the product group. Differences and equivalences can be shown in Figure 4, where the above mentioned standards to classify the floorings regarding other properties are also included.

At the light of this analysis and in agreement with the evaluation carried out by Kaindl¹⁰², who also pointed out that the way the quality of laminate floorings has been assessed in the recent years relied almost exclusively on the basis of the Taber values is far from adequate, the **classification (class based on the level of use) included in EN 685** is proposed to be **kept as the reference** for assessing the fitness for use of the wood-based floor coverings. The reason behind is that the level of use classes is considered to be a comprehensive test while the abrasion class is just assessing a property of the floorings. Kaindl assessment also indicates that the based only in the abrasion resistance test method of the laminate surface using a rotating sand paper to grind away the overlay until the first sign of damage to the printed pattern sheet becomes apparent allows deviation of up to 40% of the quality assessment indicated by EN 13329. The precision of the workmanship, the properties of the substrate or the balancer used, among other criteria are responsible for these deviations.

Classification Requirements of the Service Categories						Test	
Service Category	Domestic			Commercial			EN 685
	Light	Normal	Heavy	Light	Normal	Heavy	
Category	21	22	23	31	32	33	
Pictograms							
Resistance to abrasion	AC 1 IP ≥ 900	AC 2 IP ≥ 1.500	AC 3 IP ≥ 2.000		AC 4 IP ≥ 4.000	AC 5 IP ≥ 6.000	Appendix E
Impact Resistance Newton/mm drop height	IC 1 10N/800mm 8N/1000mm			IC 2 15N/1000	IC 3 20N/1200 15N/1600		Appendix F EN 438 2.11/2.12
Resistance to Stains Groups 1 & 2 Group 3	Grade 4 Grade 3	Grade 5 Grade 4					EN 438 2.15
Resistance to cigarette burns	--	Grade 4					EN 438 2.18
Effect of a furniture leg	--		No visible damage when tested with test object Type O				EN 424
Effect of a castor chair	--		No visible change or damage				EN 425
Thickness Swelling	≤20%			≤18%			Appendix G

AC= abrasion class

W= abrasion class (wear)

*= this method is not for the determination of abrasion resistance according to pr EN 13329

IC= impact classes

Figure 4. Equivalence among standards for testing the fitness for use of wooden floor coverings and classifying the products¹⁰³

Considering the abovementioned facts, **an increase in the level of ambition of the fitness for use criterion in comparison to the proposed criterion included in the TR1.0 seems to be feasible**

¹⁰² http://www.kaindl.com/fileadmin/user_upload/downloads/16_EN13329_E_s17.pdf

¹⁰³ http://www.kaindl.com/fileadmin/user_upload/downloads/16_EN13329_E_s17.pdf

as the current trend of the market is going in this direction while the reference to the level of use has to be kept.

Regarding the **laminated floorings**, and the **assessment and verification** in the EU Ecolabel criteria, it is proposed to refer only to EN 13329 since this standard refers to other test methods standards such as EN 438-2, EN 424, EN 425 or EN 311 whenever needed (see below)

b) Cork floorings¹⁰⁴

The standard **EN 12104** requires that the cork flooring should be appropriate for the intended use **in accordance with the classification included in the standard EN 685**. The standard EN 12104 states that

"Cork floor coverings described in this standard shall be classified as suitable for different levels of intensity of use in accordance with the performance requirements specified in table 2, when tested in accordance with the test methods stated therein. Classification shall conform to the system specified in EN 685"

That means that the cork floorings are classified as the laminated floorings and therefore an increase in the strictness of the previously proposed criterion for fitness for use can be considered.

c) Solid wooden floorings¹⁰⁵

The standard **EN 14354 "Wood-based panels - Wood veneer floor covering"¹⁰⁶** also refers to **the standard EN 685 for the classification of the floorings as follows:**

"Veneer floor coverings shall be classified as suitable for different levels of use, according to the performance requirements specified in table 3, when tested with the methods given therein. Classification shall conform to the scheme specified in EN 685 (levels 21, 22, 23, 31, 32, 33)."

In this type of floorings, the level of use will depend on the pre-finishing if any, or/and the finishing used, and the frequency and quality of the maintenance. In this sense, the level of use although it falls under the same levels of use requires different testing depending if the flooring is lacquered or unlacquered.

The criterion proposed in the TR1.0 refers to standard EN 335 "durability of wood and/or wood-based products" when addressing the fitness for use of the following wood floorings: solid wood flooring, factory lacquer wood flooring and parquet flooring. **In TR 2.0 a change is proposed removing the reference to standard EN 335 as it classifies the wood and wood-based products depending on their exposition to the moisture.** All the products included in this EU Ecolabel are classified, according to this standard EN 335 as use class 1 or 2 because they are intended to be used indoors. Additionally, this standard lists a number of possible biological dangers the wood and wood-based products can be exposed.

Test methods and levels of use for solid wood floorings, factory lacquered wood floorings and parquet floorings are revised in this TR2.0 too. The resistance to wear of solid wood flooring,

¹⁰⁴ Cork floor covering is defined in accordance with EN 12104 a floor covering the main component of which is agglomerated composition cork, intended to be used with a finish EN 12466.

¹⁰⁵ Laminated flooring covering defined according to the Standard EN 13329:2006+A1:2008 as 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). By the simultaneous action of heat and pressure, these sheets are either pressed as such (HPL, CPL, Compact) and in the case of HPL and CPL bonded on a substrate (usually wood-based panels), or in the case of DPL directly pressed on a substrate (usually wood-based panels). The product is usually finished with a backing (eg HPL, CPL, impregnated papers and veneers), primarily used as a balancing material.

The laminated floor covering element is consisting of a surface layer, a substrate and a backing, shape and machined on its sides to the appropriate dimensions.

¹⁰⁶ wood veneer floor covering element is defined in the standard EN 14354 as the smallest single item identified as the complete product, consisting of a top layer, a substrate and possibly a backing, shaped and machined on its sides to the appropriate dimensions. The element is provided with a suitable connection system intended to be assembled together at installation

lacquered or not cannot be compared easily with that of other materials because of the specific features of timber and its lacquer. This has led to the situation where test methods and evaluation procedures differ from one country to another. Because of the complexity of the problem, the **standard ENV 13696** was developed. This standard consists in three sections, one of them is based on standard EN 438-2, which describes the wear resistance test methods. The level of use to be achieved by this type of floorings should be similar to that required to laminate floorings (Class 32).

d) Bamboo floorings

The fitness for use criterion proposed in the TR1.0 suggested a minimum performance "class 2" for bamboo floorings. The testing was proposed to be in accordance with standard EN 687 or equivalent. **Standard EN 687 "Resilient floor coverings - Specification for plain and decorative linoleum on a corkment backing¹⁰⁷" does not refer to bamboo floorings but it was proposed due to the lack of standards.**

As the type of flooring included in this standard addresses is a resilient floor **coverings reference to the standard EN 685 is included.** In this way the requirements for plain and decorative linoleum on a corkment backing should be in accordance with EN 685 and related to the nominal thickness of the linoleum composition (>1.5mm for class 21 to class 32 and 2mm for class 33 and class 41 as light/moderate industrial level of use)

If there is no harmonised European testing standard, floor coverings such as bamboo flooring can be tested according to a test method chosen by an independent testing institute with the competence to conduct wear tests on flooring or being tested according to the test method ANSI/3-20058 "high pressure decorative laminates" where the limit value is set at 500-600 revolutions. The lowest permissible classification for bamboo flooring is the equivalent of class 2 as defined in EN 687

Finally, this section lists the standards that were included in the Fitness for use criterion in TR1.0 to test the products given the reasons for withdrawing or keeping the standards.

- **EN 14041 Resilient, textile and laminate floor coverings - Health, safety and energy-saving requirements.** This standard sets up the requirements for CE – labelling which is a precondition to sell laminate flooring into the European Market. This standard sets requirement concerning the reaction to fire in accordance with EN 13329 or slip resistance tested in accordance with EN 13893. This standard, however, does not refer to the resistance to the abrasion or the classification of the flooring regarding its durability and therefore, it is proposed to withdraw its reference in the fitness for use criterion.

- **EN ISO 10874:2009¹⁰⁸ Resilient, textile and laminate floor coverings – Classification.** This standard is classified as a product standard and defines classes depending on the intended use of the floorings. The classes are equivalent to those defined by EN 685 as they are divided into three groups (private, commercial and industrial) and into different levels of intensity (moderate, medium and heavy). Reference to this standard has been added

- **EN 12104:2000 Resilient floor coverings: cork floor tiles –specification.** This Standard specifies the requirements for cork floor coverings made from agglomerated composition cork supplied in tile form and includes a classification system based on intensity of use which shows where cork floor tiles should give satisfactory service (see EN 685).

- **EN 14354 Wood-based panels: wood veneer floor covering¹⁰⁹** is an standard prepared by the technical committee (TC 112) which specifies test methods and requirements for wood veneer floor coverings for internal use. According to this standard, the veneer floor coverings shall be classified as suitable for different levels of use, when tested with the

¹⁰⁷ product produced by calendering a homogeneous mixture of linoleum cement, cork and/or woodflour, pigments and inorganic filler onto a corkment backing

¹⁰⁸ <http://www.floorsymbols.com/downloads/pdf/FCSS-06-2013.pdf>

¹⁰⁹ wood veneer floor covering is defined as rigid floor covering consisting of a substrate made from a wood-based panel, with a top layer of wood veneer and possibly a backing

methods given therein. The classification is referred to the scheme specified in EN ISO 10874. This standard includes both Chapter C and Chapter D on the linked test methods.

- **EN 335 Durability of wood and wood- based products - Use classes: definitions, application to solid wood and wood based panels.** This standard classified the use classes based on differences in environment exposures which can make the wood or wood based products susceptible to biological deterioration. However, as the scope of this product group is restricted to indoor use, all the products fall under the use class 1¹¹⁰. Due to the aim of this standard and the little significant for the EU Ecolabel it is proposed to withdraw it from the fitness for use criterion.

- **EN 438 High pressure decorative laminates (HPL) – sheets based on thermosetting resins (usually called laminates)- Part 9: classification and specifications for alternative core laminates** is a product standard that sets up the minimum properties this type of materials should comply with. Among these requirements a minimum resistance to surface wear for coloured core laminates and for metal reinforced core laminates is indicated. Although this standard does not classify the products depending on their level of use, it is proposed to be kept.

- The European standard **EN 13696 Wood and parquet flooring - Determination of elasticity and resistance to wear** is a test method standard that specifies two alternative test methods to determine the resistance to wear of lacquered wood floorings (grit feeder system and sand paper system) and one method to test the elasticity of the lacquer. This European standard incorporates reference to **prEN 1534:1999 Wood flooring (including parquet) - Test method - Resistance to indentation (Brinell)** which is another test methods to assess the resistance of wood flooring.

Finally the standard listed to test bamboo flooring in TR1.0 is:

- **EN 687 Resilient floor coverings - Specification for plain and decorative linoleum on a corkment backing.** In this standard the classification scheme for resilient floor coverings is referred to the classification showed in EN 685. The requirements are related to level of use and the nominal thickness.

At the light of this revision, the most relevant standard for the classification of wood-based floorings is **EN 685 Resilient, textile and laminate floor coverings – Classification.** The **classification is based** on practical requirements for **areas of use and intensity of use and is linked to the requirements specified in the standard for each type of floor covering.** The different areas of use are specified and tabled and some examples are included intending to explain the definitions and the choice of correct class of floor coverings. This standard would be equivalent to **EN ISO 10874:2009.** **Reference to standards EN 685 or EN ISO 10874** are included in other standards that deal with other types of flooring such as **EN 12104 for cork tile floorings or EN 14354 for wood veneer floor covering.**

¹¹⁰ Situations in which the wood or wood-based product is inside a construction, not exposed to the weather and wetting. The risk of attack by surface moulds or by staining or wood-destroying fungi is insignificant and always accidental. Attack by wood-boring insects, including termites, is possible although the frequency and importance of the insect risk depends on the geographical region

Proposal for the 2nd AHWG meeting
CRITERION: FINISHED PRODUCT

Criterion 6.2 Fitness for use

Wooden floor coverings shall achieve at least:

- Class 32 for floor coverings for private use,
- Class 33 for floor coverings for commercial use,

in accordance with standard EN 685 or EN ISO 10874.

Assessment and verification:

The applicant shall provide third party verified test results in accordance with the appropriated standard that demonstrates that the requirement is fulfilled. The test method should be performed in accordance with:

- EN 13329 and EN 12104 (cork tiles) or equivalent for laminate flooring,
- EN 14354 (veneer wood flooring) or EN 438-2 or equivalent for wood flooring including solid wood flooring, factory lacquer wood flooring and parquet flooring,
- EN 687 or equivalent for bamboo flooring.

Criterion 6.3 Maintenance

Maintenance of the products shall be possible without organic based solvents.

Assessment and verification:

The applicant shall provide the maintenance instructions of the product fulfilling the requirement

4.11 CONSUMER INFORMATION

Current EU Ecolabel criterion

The product shall be sold with relevant user information, which provides advice on the product's proper and best general and technical use as well as its maintenance. It shall bear the following information on the packaging and/or on documentation accompanying the product:

- a) information that the product has been awarded the EU Ecolabel together with a brief yet specific explanation as to what this means in addition to the general information provided by box 2 of the logo;
- b) recommendations for the use and maintenance of the product. This information should highlight all relevant instructions particularly referring to the maintenance and use of products. As appropriate, reference should be made to the features of the product's use under difficult conditions, for example, water absorption, stain resistance, resistance to chemicals, necessary preparation of the underlying surface, cleaning instructions and recommended types of cleaning agents and cleaning intervals. The information should also include any possible indication on the product's potential life expectancy in technical terms, either as an average or as a range value;
- c) an indication of the route of recycling or disposal (explanation in order to give the consumer information about the high possible performance of such a product);
- d) information on the EU Ecolabel and its related product groups, including the following text (or equivalent): 'for more information visit the EU Ecolabel website: <http://ec.europa.eu/environment/ecolabel/>'.

Assessment and verification:

The applicant shall provide a sample of the packaging and/or texts enclosed.

Summary of the rationale presented in the 1st AHWG preliminary documents

Information given to the consumers can play an important role in the overall performance of the product. In this sense, if the suppliers, installers and consumers follow the recommendations a reduction of the environmental impacts can be achieved.

No modifications were proposed for this criterion for the 1st AHWG meeting,

Proposal for the 1st AHWG meeting

The product shall be sold with relevant user information, which provides advice on the product's proper and best general and technical use as well as its maintenance. It shall bear the following information on the packaging and/or on documentation accompanying the product:

- a) information that the product has been awarded the EU Ecolabel together with a brief yet specific explanation as to what this means in addition to the general information provided by box 2 of the logo;
- b) recommendations for the use and maintenance of the product. This information should highlight all relevant instructions particularly referring to the maintenance and use of products. As appropriate, reference should be made to the features of the product's use under difficult conditions, for example, water absorption, stain resistance, resistance to chemicals, necessary preparation of the underlying surface, cleaning instructions and recommended types of cleaning agents and cleaning intervals. The information should also include any possible indication on the product's potential life expectancy in technical terms, either as an average or as a range value;
- c) an indication of the route of recycling or disposal (explanation in order to give the consumer information about the high possible performance of such a product);
- d) information on the EU Ecolabel and its related product groups, including the following text (or equivalent): 'for more information visit the EU Ecolabel website: <http://ec.europa.eu/environment/ecolabel/>'.

Assessment and verification:

The applicant shall provide a sample of the packaging and/or texts enclosed.

Feedback from the 1st AHWG meeting

No feedback was recorded from the 1st AHWG meeting. However, stakeholders after the second questionnaire proposed the convenience of including information regarding:

- The use of adhesives to be used for laying the product as it is an important part of the product structure.
- The missing information regarding the credits awarded due to the recycled material used. This point is however included into the information appearing on the EU Ecolabel criteria
- The end-of-life of innovative laminates that can be recycled in extrusion and compression moulding processes.

Further research

Further research was carried out to integrate the information related to the use of materials needed for the installation of the floorings as required by the stakeholders in the Chapter 3. According to the information included in Chapter 3, the adhesive or absence of adhesive used for laying the floorings can have a great environmental impact. The magnitude of the impact would depend on the subflooring and the composition of the adhesives and glues used.

As commented in the Chapter 3, one of the main environmental impacts is due to the emission of VOCs and formaldehyde from these chemicals. Actually, there are labels that inform about adhesives manufacturing for laying that are classified as low-emitting adhesives. Among those labels are EMICODE and other national Ecolabeling schemes such as Nordic Labelling or Blue Angel.

For this reason, information about the most recommended adhesives for laying has been added to the user information criterion.

Proposal for the 2nd AHWG meeting
CRITERION: INFORMATION

Criterion 7.1 User information

The product shall be sold with relevant user information on the packaging and/or on documentation accompanying the product, which provides advice on the product's proper installation, use and maintenance and indications to minimize waste at the end of its lifespan. These instructions should be legible or include graphical representation or icons and include information on:

- c) Recommendations for the installation. This information should include all relevant instructions referring to the best environmental installation alternatives. **As appropriate, reference should be made to the necessary preparation of the underlying surface and the auxiliary materials needed, for example, the plastic underlayers or the adhesives and glues that can be used for its installation. In the case that adhesives is to be applied to the complete surface, it must be possible to use an adhesive certified with a Type I Ecolabel or at least a low emission adhesive complying with EMICODE EC1 or equivalent,**
- d) Recommendations for the use and maintenance of the product. This information should highlight all relevant instructions particularly referring to the maintenance and use of products. As appropriate, reference should be made to the features of the product's use under difficult conditions, for example, water absorption, stain resistance, resistance to chemicals, necessary preparation of the underlying surface, cleaning instructions and recommended types of cleaning agents and cleaning intervals. The information should also include any possible indication on the product's potential life expectancy in technical terms, either as an average or as a range value,
- d) An indication of the route of recycling or disposal (explanation in order to give the consumer information about the high possible performance of such a product);

Assessment and verification:

The applicant shall provide a sample of the packaging and/or texts enclosed.

Criterion 7.2 Information appearing on the EU Ecolabel

The logo should be visible and legible. The use of the EU Ecolabel is protected in primary EU law. The EU Ecolabel registration/licence number must appear on the product, it must be legible and clearly visible.

The optional label with text box shall contain the following text:

- **Certified sustainable wood and wood-based materials,**
- **Limited hazardous substances used,**
- **Low emitting product, emissions lower than 50% E1**

Assessment and verification:

The applicant shall provide a sample of the packaging.

4.12 INFORMATION APPEARING ON THE EU ECOLABEL

Current EU Ecolabel criterion

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,
- lower risk to health in the living environment.

Current EU Ecolabel criterion

Assessment and verification:

The applicant shall provide an example of packaging that will be used for the product showing the label with abovementioned information.

Summary of the rationale presented in the 1st AHWG preliminary documents

Due to the importance of information to ensure a correct environmental performance of the product, the criterion on the information appearing on the EU Ecolabel was proposed to be kept. This criterion suggested several statements that have been revised.

Proposal for the 1st AHWG meeting

Box 2 of the Ecolabel shall contain the following text:

- sustainable managed forests and reduced impact on habitats,
- promoting renewable, recycled and recyclable materials
- hazardous substance restricted,
- production process energy saving,
- lower risk to health in the living environment.
- products tested for durability

Assessment and verification:

The applicant shall provide an example of packaging that will be used for the product showing the label with abovementioned information.

Feedback from the 1st AHWG meeting

No feedback registered during the 1st AHWG meeting. However, stakeholders pointed out after the second questionnaire the importance of keeping the statement concerning the use of certified sustainable wood-based materials (or bio-based materials if the term is eventually accepted)

Further research

The revision of the criterion based on the harmonization of the wording with the pieces of advices included in the EU Ecolabel Regulation (EC) No 66/2010 and those wording included in other recently revised EU Ecolabel criteria sets.

Among the proposed changes are the importance of including an EU Ecolabel logo and application number clearly visible and the limitation to three statements that highlight the main characteristics of this product from an environmental point of view.

Proposal for the 2nd AHWG meeting

Moved and merged within the previous criterion

4.13 END OF LIFE OF WOODEN FLOOR COVERINGS

Comments regarding the lack of a criterion that addresses the end of life of the product were pointed out. Although this aspect was not considered in the TR1.0 due to the uncertainties of future scenarios, further research has been conducted in this report.

The end-of-life of wooden floor coverings is considered in different reports, EPDs and LCA studies. The information obtained in the revision of these studies has been considered to draft

EU Ecolabel criteria that ensure that any EU Ecolabel product will be suitable to be disposed following the best route available (materials or energy recovery). Therefore, the research on the end-of-life of the products will be reflected in the Criteria that deal with substances and will aim at preventing the use of substances that might hinder such recovery routes.

In the current EU Ecolabel criteria set, the information should be provided to the consumers on *"the route of recycling or disposal (explanation in order to give the consumer information about the high possible performance of such a product)"*.

At the end-of-life of the product, at present there are several routes of recycling, recovering or disposing depending on the local conditions. These possible scenarios have been studied at the current state of the technology in different scientific works. For example, the study *"life cycle assessment of closed loop MDF recycling: microrelease trial"*¹¹¹ assessed the environmental impact associated with the recycling of MDF panel waste throughout microrelease technology.

These authors concluded that in terms of manufacturing, the recycling of fibres should reduce the demand for virgin fibres and consequently will reduce the overall environmental impacts, even if currently internal MDF waste is used for heating reducing significantly the natural gas demand. According to these authors, the energy recovery of the fibres brings credits as it avoids the use of fossil fuels and the transportation of the waste to offsite facilities. On the other hand, and according to the assumptions of this study, if the MDF waste arising from the manufacturing process is disposed, the highest overall environmental impacts are achieved.

Further information on the end-of-life of laminate floorings is provided in the environmental product declarations published by Egger¹¹². According to the information provided in this study, the laminate floorings can be processed and used again in a wood-based material manufacturing process as long as they lay without using glue. If no glue is used, the flooring can be easily separated and used again in the same or similar applications.

Laminate floorings at the end-of-their-life as well as the laminate floorings left-overs during the production process can also undergo an energy recovery (in correspond approved systems) because of its high calorific value of approx. 17MJ/kg. Laminate floorings and left-overs can be used as fuel for the generation of heat and electricity in for example cogeneration systems.

Finally, laminate floorings and the left-overs that arise during the production process can be disposed in landfills. This route should be, according to the end-of-life scenarios studied in the Egger EPDs, the last one to be chosen as it is preferable to route these materials into a material utilization stream or an energy utilization rather than being placed in a landfill.

Most of the LCA studies on laminate floorings do not cover the end-of-life stage, probably due to the uncertainties of assessing the most likely scenario of a long-lasting product. However, there are two studies analyzing the whole life-cycle of wood floor coverings from cradle to grave, each of them considering different end-of-life scenarios. The study *"A comparative life cycle assessment of Canadian hardwood flooring with alternative flooring types"* assessed the environmental impacts due to the landfilling of this flooring after 25 years of service. As previously commented, the study revealed that discarding wood in landfills significantly contributes to global warming potential due to the methane emissions from decaying wooden material.

As this scenario is less and less likely due to the Waste directive that has been implemented in Europe in the last years, an alternative is considered in the study based on the assumption that flooring board could be recovered for energy.

A second study focuses on solid wood floor coverings and assumes that the wooden floorings will undergo a thermal recovery. The study is limited to Germany, where the legislation does

¹¹¹ LCA of Closed Loop MDF Recycling: Microrelease Trial, Final Report, WRAP, September 2009, ISBN: 1-84405-417-9 available at <http://www.wrap.org.uk/sites/files/wrap/MDF%20LCA%20FINAL%20version.pdf>

¹¹² For example:

https://www.fundermax.at/fileadmin/redakteure/Downloads_FRENCH/Certificats/Declaration_enviromentale_de_s_produits__EPD_.pdf

not allow the disposal of postconsumer wood. This study shows the credits gained during this last stage which significantly important for the primary energy indicator and the acidification potential one.

Regarding this information and the scope of the EU Ecolabel scheme, it seems to be advisable not to draft a criterion on the end-of-life of the product but to make sure that the best route available (material or energy recovery) will not be hinder by any substance contained in the product.

5 TABLE OF COMMENTS

The table of comments shows the feedback received along the process from the 1st AHWG meeting to the current moment. Comments in the table have been aggregated based on the topic and the chronological order when they were submitted. The comments arisen during the 1st AHWG by the attendees are available at: http://susproc.jrc.ec.europa.eu/wooden_floor_coverings/documents.html The comments included in this table are anonymous preserving the identity of the authors.

Table 11. Stakeholder's contributions after the 1st AHWG meeting and IPTS assessment.

	Stakeholder's comment	ITPS/LCE assessment and further research	Amendment
PR	We disagree with the statement that there is “ no evidence that the higher the wood content in the product the better the environmental performance is ”.	We appreciate the feedback and the example provided that has been taken as a basis for the further research carried out in section 3. However, according to this research the sentence seems to be correct	No further actions are proposed
Scope	<p>We are concerned that the change in the scope from 90% to 80% wt in wood or wood-based materials can lead to a less ecological product.</p> <p>An increase of 10% more implies doubling the current amount of synthetic or plastic components, which can correlate with higher emissions of formaldehyde or VOC. It is not stated in the proposal which kind of main component will increase this 10% and requirements are not set for all possible materials.</p> <p>By lowering the threshold to 80% there will be other materials or glues that may have a higher impact on environment, energy consumption in production, emissions. Besides the impacts inherent to the added components there may be possible negative effects on recyclability. Additionally, depending on eventual hazardous substances, waste materials of mixed wooden flooring possible have to be treated as chemical waste</p>	<p>As confirmed by the information provided in section 3, there is no clear evidence that lowering the wood and wood-based material of the wood-base floor covering a decrease in the environmental performance is caused. However, we recognize that a higher amount of other materials makes other criteria no dealing with wood more relevant. Attention has been paid in the revision to the level of strictness and ambition of other criteria to avoid possible loopholes.</p>	No further actions are proposed
	<p>We highly recommend covering glues used in the installation of the flooring systems by the general requirements on chemicals, and VOC values. Furthermore, NGOs support the promotion of the click system, which avoids the use of chemicals during installation, and it is a largely spread method. As a minimum, the recommendation to use low emitting glues should be added to the consumer information (see http://www.emicode.com/index.php?id=1&L=1).</p>	<p>The extension of the scope to include the chemicals needed for the installation of the wooden floor coverings has been considered in section 3. Due to the differences in the nature of both products, it does not seem recommendable an extension of the scope. Additionally, other national schemes regard both products as different ones too and in most of the schemes there are two different criteria sets. However, we realized that it is important to recommend the use of environmentally friendlier products during the installation of the flooring and therefore information is proposed to be given to the consumers.</p>	Revision of the user's information criteria to include, when suitable, adhesive and underlayer recommendations

Sustainability of wood and wood-based materials	<p>In general, this criterion can be more concise and to the point. How is geographic origin defined? Country, state, forest? If forest is meant, it should be verified carefully whether it is possible to trace material to the forest. Until recently this was not possible for FSC or PEFC certified material. For recycled material it seems impossible unless 'origin' means where the material was recycled.</p>		
	<p>What is considered primary forests? Is conversion of secondary forests (which has been logged in the past) allowed? Also adding 'plantations' is questionable, is conversion for mining or infrastructure allowed? Preferably one refers to 'conversion of forests to other types of land use'.</p>		
	<p>This criterion can be formulated more straightforward.</p>		
	<p>We would highly recommend requiring that 100% of the wood be from certified sustainably managed forests.</p>		
	<p>We would like to have consistent wording in line with product groups that have been <u>previously discussed and approved by the EU Ecolabelling Board</u>.</p>		
	<p>The requirement on "assessment and verification" introduces an important weakening of current practice. The EU Ecolabel criteria require FSC, PEFC or equivalent. In the current wording this equivalence is no longer asked for. Instead, the European forest principles are the basic line (instead of PEFC). An extensive discussion would be required to assess the implications of the new proposal in terms of auditing and universal application (boreal forests with indigenous peoples, tropics, etc).</p>		
	<p>There are two important controversial sources which are of particular relevance (and are not considered so far by PEFC), taking into account the potential risks of using tropical timber:</p> <ol style="list-style-type: none"> 1. Wood harvested in violation of traditional and civil rights; 2. Wood harvested in forests where high conservation values are threatened by management activities. 		
	<p>It is unclear why the assessment and verification part requires making a differentiation on pre or post-consumer wood, while in the rest of the criterion this differentiation is not clearly required.</p>		

	<p>Moreover, it is not justified why “high pressure laminate” is exempted from this requirement. The background report argues that it is because it contains paper. However, it can still be from sustainable forestry, as requested in other EU Ecolabel wood related product groups. Following discussions at the AHWG with the Competent Bodies concerned by this aspect, NGOs understand that requesting chain of custody for HPL is possible, as the concerns raised were more related to chemicals aspects (which are not covered by the criterion on sustainable forest management).</p>	<p>Although the weight of the part proposed to be derogated is significantly low, we recognize that it can be verified.</p>	<p>Derogation has been withdrawn</p>
<p>GMO wood</p>	<p>We strongly recommend the reintroduction of a requirement to ensure that the product shall not contain GMO wood. This was a requirement widely supported by the EUEB, and even if it is part of controversial sources to be avoided in FSC and PEFC, it cannot be excluded that in the future any of these certification systems change their rules.</p>	<p>Duplication of the requirements is not needed in a pass/fail scheme. Therefore we consider that it brings clarity not to repeat the requirements in different criteria</p>	<p>No further actions proposed</p>
<p>Recycled wood</p>	<p>It should be considered that the EPF standard is widely accepted and standard practice in Europe. Although we recognise that applying these limits can have added value in the case of non-EU suppliers, the ambition level of this requirement can be questioned. The limits on relevant substances that might be found in recycled wood fibres as listed in in the EPF Standard seem too high as compared with the German Altholzverordnung or the test parameters set by the Naturplus label. In addition there are other substances that might be found in recycled wood which are not listed in the EPF Standard.</p>	<p>Research carried out in section 4.2 shows that EPF standard is widely accepted and standard practice in Europe. Additionally, information was found that other standards may be mandatory in other Member States having a level of ambition higher than EPF standard. Therefore, it is proposed that wherever the recycled wood complies with equivalent of stricter standards for recycled wood, the recycler/manufacturer is exempt of complying with EPF standards. This aims at decreasing the testing costs and time while keeping the quality of the raw materials</p>	<p>Addition of the possibility of complying with other standards as long as their level of ambition is higher or equivalent</p>
<p>Biocides: impregnating</p>	<p>This criterion is not really clear: hopefully biocidal products allowed are only for outdoor-use. To be completely sure: we are of the opinion that indoor materials shall not be impregnated with biocides. These chemicals are not necessary for interior equipment. Biocides are not only toxic against microorganisms, fungi or insects but bear danger for humans as well - some of them are CMR-substances, some allergenic, some neurotoxic a.s.o.! To allow biocides - other than preservatives in adhesives and surface treatments - would mean to allow an additional source for indoor air pollution. These chemicals are often not found in VOC-measurements as they are mostly less volatile, emit slowly and accumulate in the surrounding ie. in dust. Therefore biocides other than preservatives in adhesives and surface treatments should be excluded.</p>	<p>The use of biocides is allowed in the current criteria as preservative of the wood if they are not classified with 1A or 1B of the WHO toxicity classification. We agree that the impregnation of WFC for indoor used should not be allowed as this fact will imply the inclusion of a higher amount of chemicals. Due to the re-structuration proposed, this restriction will be part of the specific hazardous substance criteria</p>	<p>Ban of biocides other than preservatives in in-can chemical products (ie adhesives and surface treatments)</p>

	<p>We highly welcome that WFC are not allowed to be impregnated. However, NGOs question why biocides can be used after logging and recommend to compare with the Blue Angel requirements (RAL-UZ 176) where no biocides are to be used (see also the Austrian Ecolabel).</p> <p>If decided to allow them, it is highly recommended, in addition to the acute WHO toxicity classification, to include biocides of high concern meeting the exclusion or substitution criteria under the Biocides Products Regulation (528/2012/EC) art. 5(1) and in art. 10(1)</p> <p>The formulation of the requirement has some ambiguity. Are biocides only allowed for outdoor-use? The second part of the proposed requirement is unclear and seems to grant exemptions permitting the use of biocides with disinfecting properties (only those included in the BPR and complying with the requirements set in 2.1.b are allowed...).</p> <p>We strongly oppose the option to impregnate indoor materials with biocides as these chemicals are not necessary for interior equipment.</p>		
<p>General requirement on hazardous substances</p>	<p>We strongly support additional substances to be excluded:</p> <p>a) Halogenated organic substances and not only of halogenated organic binding agents, to avoid future recycling problems and impacts during end of life (this includes chlorine based plastics).</p> <p>b) All phthalates.</p> <p>c) Flame retardants.</p> <p>d) Isothiazolinones should be restricted, as done by the Nordic Swan and the Naturplus label5.</p> <p>e) Nanomaterials should be restricted based on the precautionary principle, as done by the Nordic Swan.</p>	<p>Specific rationale for each of the products has been developed in section 4.5. General groups of substances are restricted in criterion 3 whenever information has been provided</p>	<p>Criteria 2 and criteria 3 have been changed to better address the use of chemical products</p>
<p>Derogation of isocyanate-adhesive</p>	<p>Isocyanate is classified as H351 (may cause cancer) and therefore it is proposed to grant a derogation for its use in adhesive/resins. The preliminary report states Naturplus label restrict them at 2%, but it is proposed not to restrict them in the EU Ecolabel, because formulations available on the market cure completely and there is no residue and the adhesives will be effectively VOC-free. We recommend additional requirements to ensure that there will be no residue on the product when setting the conditions for the derogation. In this respect, Naturplus label sets a criterion to ensure that there is no measurement of monomer isocyanate 24 h after loading the testing chamber.</p>	<p>Isocyanate has been derogated since it is considered an alternative to the adhesives based on urea-formaldehyde. The use of isocyanate limits the indoor emissions and in most of the schemes is considered as one of the few feasible alternatives for the adhesives. the derogation on isocyanate is likely redundant as isocyanate complete cures losing the inherent properties that lead it be classified. However, to make the verification process easier, it was proposed to keep the derogation.</p>	<p>No further actions</p>

formaldehyde	<p>Derogations for formaldehyde should also be discussed, as since June 2014 this is classified as Carcinogenic Category 1b (Commission Regulation (EU) No 605/2014 of 5 June 2014). The new classification will apply as of 1 of April 2015. The information provided by the technical report on page 49 as regards the classifications on formaldehyde should be updated accordingly.</p>	<p>The derogation for formaldehyde has been withdrawn based on the information provided and the updating of its new classification as Carcinogenic Category 1B. Additionally, the change in the approach to restrict the hazardous substances allows to be used as long as there are no remaining in the finished product or undergoes a chemical or physical change. The restriction on the free-formaldehyde in the in-can chemical products to be used in the manufacturing process has been reintroduced due to the feedback regarding the benefits for the control of the product quality and the costs of these experiments.</p>	<p>Removal of the derogation for formaldehyde</p> <p>Reintroduction of the free-formaldehyde restriction</p>
	<p>Bearing in mind the classification of formaldehyde as Carcinogenic 1b, NGOs advocate for very strict requirements on this substance. Thus, we cannot support withdrawal of the current criterion limiting the content of free-formaldehyde in resin and/or adhesives and advocate for alternative 1 (free formaldehyde shall not exceed 0.2% (w/w)). This information does not add extra costs to the applicants as it is available on the material safety data sheets for the resin used.</p>		
	<p>We strongly recommend the reintroduction of a requirement on formaldehyde emissions from substances and preparations for surface treatment (currently less than 0.062 mg/m³ air). Although formaldehyde emissions are addressed in the proposed criterion 4, lower formaldehyde concentration in the components will contribute to better indoor air quality results. This criterion is important for the manufacturing control process on surface and coating treatments, in the same way as for VOCs</p>		
VOCs and formaldehyde emissions	<p>The postulated correlation between EN 120 and EN 717-1 test results is proven only for certain uncoated wooden boards as specified in EN 13986; as soon as you apply a top coating, this correlation changes significantly. Do you have sufficient data to specify the alternatives 4.1 a) and b) as equivalent?</p>		
	<p>We don't appreciate the alternative 1 as there are a lot of uncertainties if we just look at the % of VOC in the surface treatments. It is certainly not equal to VOC-measurements of the finished product (Alternative 2, where the real emissions are tested and in addition the VOCs are differentiated). At least in Germany and Austria test chamber measurements are getting more and more common for all construction materials, coverings being on the front. Therefore it is not necessary to offer an alternative which undermines the actual developments. We ask to cancel this possibility.</p>		

	<p>We welcome to set lower limits for VOC. LCIs shall not be reached and this criterion shall be included. For this purpose R-factor has to be <1. Regarding formaldehyde we wonder about the high limit of 0,4 mg/m³ air. Not only compared to the limits in the Blue Angel and the Austrian Ecolabel, but also compared to Alternative 1 this is much too high. We ask for the German and Austrian limit of 0,05 ppm = 0,061 mg/m³ air.</p>		
<p>VOCs and formaldehyde emissions</p>	<p>We highly welcome a requirement on indoor air quality during the use phase and advocate for alternative 2 as it takes into account a higher number of end points. However, it is strongly recommended to revise the parameters considered, to better align with the Blue Angel and the Austrian Ecolabel (applying similar approach), which cover in addition carcinogen substances.</p> <p>The limit for the use phase in the finished product is controlled by EN 717-1, chamber emission test which simulate normal room conditions. When testing in these conditions finished products must fulfil 50% E1 formaldehyde.</p> <p>Control of components can be done by the easiest method to get cheaper and feasible system for manufacturers, as for example EN 120 Perforator test for core board test. Equivalence between EN 120 and EN 717-1 has been established and it is well known. Components mean core board, resins and surface treatments at least.</p> <p>Differences found in other ecolabels related to the limits accepted for emissions because the type of core board (MDF core board is accepted to have higher emissions) could be possible when testing according to EN 120 in the production phase but not in the finished product when testing following EN 717-1, where any kind of wood floor must fulfil the same requirements.</p>	<p>Alternative 2 has been considered as the solely way of verification of VOC emission from the wood core board. Well-recognized schemes such as E1, CARB and F star, are considered appropriate for the compliance.</p> <p>Due to the differences in the level of ambition and the different measured unit the schemes are not completely equivalent. However, similar values of ambition can be considered the compliance with 50% E1, CARB phase II and F-3 or F-4.</p> <p>Differences set in the level of emissions from the different panels (MDF or others). These differences seem to be reasonable based on the manufacturing methods.</p> <p>Verification can be carried out through the test data from accredited labs.</p>	<p>Acceptance of the CARB and Fstar schemes for limiting the VOC emissions</p>

	<p>The requirement "Total VOC without LCI <0.05mg/m³ air" does not make sense in toxicological meaning: You restrict the less hazardous VOCs (those who have not been assigned a LCI value) without restricting the more hazardous VOCs (those who have a LCI value). It is hard to understand the meaning. If you want to restrict more emissions than TVOC, TSVOC and formaldehyde, then the best way is to require: "R value < 1,0; the R value is calculated using the harmonized European LCI values (JRC), and using the AgBB LCI values for all VOCs for which no EU LCI value exists (as in the Belgian VOC regulation)."</p> <p>German AgBB announced to take over the harmonized EU LCI values soon; once that occurred, this procedure will be harmonized between Belgium and Germany and constitute sort of state-of-technique for setting limits for emission of individual VOCs. See this link for the combined LCI list as used in Belgium</p>	<p>The R-value is required in most of the national regulations (the three already in place) as well as in several voluntary schemes. Therefore, the compliance with this value does not bring additional cost to the testing of the product while it demonstrates that the most harmful substance emissions are limited.</p>	
	<p>In draft TR 1.0 report: Please substitute "Draft CEN/TS 16516" with "CEN/TS 16516" - the draft has become an official document in 2013 and please update the content of table 43 (Loading factor range) with what you find in the table 2 of the linked document. And you may want to add that document as a source of that content as reference.</p>		
	<p>Several tests for specific wooden floorings showed that the VOC content in a coating before application, "in-can", show no correlation at all with what is e from the product 28 days after application (or even longer, if the coating is applied in a factory, and the product then is dispatched to another place before it is installed). Do you have sufficient data to specify the alternatives 1 and 2 for VOCs (4.2) as equivalent?</p>		
<p>Waste management</p>	<p>We support requirements on waste management. However, the current proposal addresses the waste management in the factory. Additional requirements should be set as regards end of life of the material itself (only refer to it on the product label).</p> <p>At the AHWG meeting the following arguments for not addressing these requirements were presented (see page 10 of the minutes): uncertainties to assess scenarios for a product that lasts for 10-15 years and lack of users' responsibility. NGOs would like to react to this, as it is manufacturers responsibility to make it possible to recycle the product. It is not acceptable that the responsibility is shifted to the end user by the EU Ecolabel.</p>	<p>Waste management criteria has been revised, see section 4.8</p> <p>The introduction of restriction on the end-of-life of the product seems to be out of the scope of this policy tool.</p> <p>However, we agree that it is manufacturer's responsibility to make it possible to recycle the product and therefore other criteria aim at reflecting this need. User's information criterion is considered a mean to give this information</p>	<p>Modifications in the use's information criteria to provide recommendations on the end-of-life phase.</p>

Packaging	<p>We disagree with the withdrawal of this criterion. The use of LCA is needed to ensure that the aspects with highest impacts are addressed, but it should not be concluded on that basis that those aspects that score as less important should not be looked into. It is very incoherent to produce an ecoproduct and wrap it in a non-ecologic packaging. In addition it is not justified that finding more environmentally friendly packaging is much more difficult/expensive. Moreover, we find the criterion set by the Blue Angel very relevant for this product group: the products shall be packed for sale so as to allow post-manufacture outgassing of volatile elements.</p>	<p>LCA provides data that packaging accounts for a negligible environmental impact. Additionally, if the lifetime of the product is further extended, these impacts will become even smaller. There is an intention of reducing the number of criteria and the withdraw of the packaging criterion allows for that</p>	<p>No further actions</p>
Fitness for use	<p>Durability is an important requirement. NGOs recommend requiring European Class 32 as regards floor coverings for private use. There are currently three classifications: domestic, commercial and industrial use. Class 2x is for domestic, class 3x is for public, and 4x for industrial. However, Class 2x is hardly found in the market, as commonly manufacturers offer 3x class to consumers. Class 31 is moderate commercial use, class 32 is general commercial use and class 33 is intensive commercial use. European class 32 provides a satisfactory quality including endurance level.</p>	<p>Further research has been conducted in section 4.10 to analyse the state of the art of the standards, the correspondence to the types of flooring and the possible level of ambition that can be required.</p>	<p>Modifications needed to bring in line the criteria with the state of the art of the standards and the offer of the market</p>
Consumer information	<p>Clear information to the consumers on the added value of the floor covering awarded with the EU Ecolabel, is highly recommended to help an informed choice and as a marketing too. It should be declared that low values of formaldehyde emissions and VOCs are achieved, if biocides are used or not (e.g. if yes that the floor covering is intended to be used outside), specify which underlayer is to be used, maintenance recommendations, etc...</p>	<p>Further research on the recommendations for the installation of the floorings has been performed and summarized in chapter 4.12. Especial recommendations are suggested to promote the use of low-emitting adhesives. Similarly, information on the maintenance and use of the product is enhanced and shown in chapter 4.12</p>	<p>Revision of the user information criteria</p>
	<p>Introduction of the statement claiming the low emission values in the EU Ecolabel label</p>		<p>Revision of statements</p>

6 USER MANUAL RECOMMENDATIONS

This section is a non-comprehensive check-list and some recommendations on how to interpret and conduct the calculations needed to comply with the newly proposed EU Ecolabel criteria for Wood-based floor coverings.

6.1 CHECK-LIST OF DOCUMENTS NEEDED FOR THE ASSESSMENT AND VERIFICATION OF THE CRITERIA

Due to the large number of documents to be collected as a proof of compliance with the criteria proposed the following check-list has been prepared. It is neither a comprehensive list nor should all the documents listed be provided if the chemical products or methods have not been used. The check-list refers to Table 11 to Table 15. These tables are included in this chapter of the TR2.0 and aim at providing an overview of the data and calculations needed to demonstrate the compliance with each of the criteria.

Table 12. Non-comprehensive check-list of the documents required for the assessment and verification of the criteria

Assessment and verification	Documents
<p>1. Sustainable wood, cork and bamboo</p> <p>The applicant shall provide valid, independently certified chain of custody certificates and demonstrate that the at least 70% of the wood originates from forests managed according to Sustainable Forestry Management principles and/or from recycled sources that meet the requirements set out by the relevant independent chain of custody scheme. FSC, PEFC or equivalent schemes shall be accepted as independent third party certification.</p> <p>If the product or product line includes uncertified material, proof should be provided that the content of uncertified material does not exceed 30% and is covered by a verification system which ensures that it is legally sourced.</p>	<p>1.1 Table 13. Calculations of the quantity of certified wood, cork or bamboo</p> <p>1.2 CoC and FSC, PEFC certificates or equivalent</p> <p>1.3 Documentation to verify that certified wood is delivered to the manufacturer of the EU Ecolabel product (eg copy of a contract or specified invoices)</p>

<p>2. General restricted substances</p> <p><u>2.a) Restriction of Substances of Very High Concern (SVHC's)</u></p> <p>The applicant and/or material supplier shall compile declarations of the non-presence of SVHCs at or above the specified concentration limit for the final product. Declarations shall be referenced to the latest version of the Candidate List published by ECHA</p> <p><u>2.b) Restriction based on CLP hazard classification</u></p> <p>The applicant shall provide a declaration of compliance with criterion 2.b.1), supported by a list of all the chemical products used by the wood-based floor covering manufacturer during the production, assembly and any treatment of the wood-based floor covering product together with their hazard classification (if any).</p> <p>The applicant shall compile declarations of compliance with criterion 2.b.2) from suppliers of any of the components. These declarations shall be supported by lists of any relevant chemical products used and their hazard classifications (if any).</p> <p>The following information shall be provided to support declarations of the hazard classifications or non-classification for each substance or mixture identified as being present in the product/component part:</p> <ul style="list-style-type: none"> i. substance's CAS, EC or list number ii. the physical form and state in which the substance is used iii. harmonised CLP hazard classifications iv. self-classification entries in ECHA's REACH registered substance database <p>Where a classification is recorded as 'data lacking' or 'inconclusive' according to ECHA's REACH register database, or where a substance has not yet been registered under the REACH system, toxicological data meeting the requirements in Annex VII to the REACH Regulation shall be provided that is sufficient to support conclusive self-classifications in accordance with Annex I of the CLP Regulation and ECHA's supporting guidance. In the above mentioned cases self-classifications shall be verified, the following information sources being accepted:</p> <ul style="list-style-type: none"> - Toxicological studies and hazard assessment by ECHA peer regulatory agencies, Member State regulatory bodies or intergovernmental bodies - A Safety Data Sheet (SDS) completed in accordance with sections 2, 3, 9, 10, 11 and 12 of the Chapter II of the REACH Regulation - A documented expert judgement based on a review of scientific literature and existing testing data, where necessary supported by results from new testing carried out by independent laboratories using methods approved by ECHA - A report providing expert judgement prepared by a toxicologist accredited to an independent hazard assessment scheme. The scheme shall be based on the GHS or CLP hazard classification system and operated in accordance with the guideline in Chapters I and II of ISO 17065 <p><u>Information on the hazardous properties of substances may, in accordance with Chapter XI to the REACH</u></p>	<p>2.1 Table 14. Check list for general restricted substances</p> <p>2.2 Table 15. Declaration table for those restricted substances that are classified</p> <p>2.3 Declarations and SDS from all the suppliers and all the chemical products used</p>
<p>Regulation, be generated by means other than tests, for instance through the use of alternative methods such as quantitative structure activity model or by the use of grouping or read-across</p> <p>Where chemical products with the restricted hazards listed in Table 2.1 are considered to no longer exhibit any restricted hazardous properties in the final product or relevant component part due to physical and chemical changes during processing, or can be considered to be present in the final product, or relevant component part</p>	

<p>3. Specific restricted substances</p> <p>a) Contaminants in recycled wood The applicant and/or his/her supplier(s) shall provide a declaration of compliance with the criterion supported by the following documentation:</p> <ul style="list-style-type: none"> - A declaration that no recycled wood fibres are used in the panel, or - A declaration that all recycled wood fibres used have been tested in accordance with the 2002 "EPF standard conditions for the delivery of recycled wood" or any other national regulation with equivalent or restricted limits, supported by appropriate test reports that demonstrate compliance of the recycled wood samples with the limits specified in the table 3.1 or those of the national regulation. <p>b) Wood preservatives: The applicant shall provide a declaration of non-use of wood preservatives e applicant shall either:</p> <ul style="list-style-type: none"> - Provide a declaration of non-use of biocides - Provide a declaration stating what biocides or formulation(s) have been used with wood and wood-based materials, supported by SDS from the in-can preservation suppliers. <p>c) Biocides The applicant shall either: Provide a declaration of non-use of biocides Provide a declaration stating what biocides or formulation(s) have been used with wood and wood-based materials, supported by SDS from the in-can preservation suppliers.</p> <p>d) Flame retardants The applicant shall either Provide a declaration of non-use of flame retardants or, Provide a declaration stating what flame retardant substance(s) or formulation(s) have been used with wood and wood-based materials, supported by SDS from the flame retardant suppliers. The flame retarding substances shall meet the requirements on criterion 2 and being demonstrated in accordance with the "Assessment and verification" requirements of criterion 2, Provide evidence that the wood-based floor covering, when treated with flame retardant substance(s) or formulation(s), meets the fire safety requirements in the country or countries where it is to be sold.</p> <p>e) VOCs and formaldehyde in adhesives and resins The applicant and/or its supplier shall provide the material SDSs or an equivalent declaration of the compliance of this requirement, together with a complete recipe with designation of quantities and CAS numbers for constituent substances. The content of free-formaldehyde in the resin and/or adhesive formulation shall be in accordance with ISO 11402</p> <p>f) Heavy metals in paints and varnishes: The applicant shall declare that the paint or varnish formulations do not contain the aforementioned heavy metals in concentrations > 0.010% w/w and provide the respective SDS from the suppliers of the coating substances used.</p>	<p>3.1 Table 14 Check-list for specific restricted substances</p> <p>3.2 List of declaration of no-use (if needed) for:</p> <ul style="list-style-type: none"> - no recycled wood fibers are used in the panel - wood preservatives - biocides - flame retardants - halogenated organic compounds <p>or</p> <p>List of Declarations for:</p> <ul style="list-style-type: none"> - compliance with EPF standard or any other equivalent or stricter national scheme - biocides and formulations used with wood and wood-based materials - flame retardant substances and formulations used meet the requirements of criteria 2 - proof of evidence that FR meet the fire safety requirements in the countries or countries to be sold - compliance with the limits for VOC content and free-formaldehyde in adhesives and resins - compliance with the limits for VOC content in surface treatment chemical products - no content of the heavy metals listed in criteria 3.e in the paints and varnishes used in concentration more than 0.010% wt <p>together with the SDS from the supplier of the chemical products used as:</p> <ul style="list-style-type: none"> - biocides and formulations used with wood and wood-based materials - flame retardant substances and formulations - adhesives and resins - surface treatment chemical products - paints and varnishes
---	---

<p><u>g) VOC content in surface treatment</u></p> <p>The applicant shall provide the SDS of any coating substances used on wooden materials. If the SDS states that the VOC content of the surface treatment chemicals used is less than 5% w/w, then no further verification shall be necessary. If the VOC content is higher, then the applicant shall either:</p> <p>Provide calculations that demonstrate the effective quantity of VOC applied per m² of the coated surface area of the final wood-based floor covering product is < 2g/m². Guidance on these calculations is provided in Appendix I, or</p> <p>Provide a test report demonstrating compliance with criterion 6.1 for the finished product.</p>	<p>3.3 Table 15. VOCs in the surface treatment</p> <p>3.4 Calculations that demonstrate the effective quantity of VOC applied (if needed)</p> <p>3.5 SDS of the surface treatments</p> <p>or</p> <p>see documents for criteria 6.1</p>
<p><u>4 Production process</u></p> <p><u>4.a Energy consumption</u></p> <p>The applicant shall demonstrate that the E score has been calculated according to the Appendix IIa instructions and exceeds the limits of this criterion. The applicant should state and demonstrate:</p> <p>Which type(s) of fuel have been used in the manufacture of the wood based floor covering over the year prior to the application, and</p> <p>Which fuels are coming from renewable sources in accordance with Renewable Energy Directive 2009/80/EC¹¹³.</p> <p>In addition, it should be stated and declared how much electricity has been used (purchased) and how much flooring (m²) has been produced over the year prior to the application in accordance with the instructions given in Appendix IIb.</p>	<p>4.1 Calculations of the E value</p> <p>4.2 Invoices or copies of the contracts of the electricity purchase or the fuel purchase</p> <p>4.3 Declarations of the electricity produced on-site, if needed</p> <p>4.4 Declarations of the RE produced, if needed</p> <p>4.5 Declaration of the flooring production</p>

¹¹³ Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC, L 140/16, OJEU 5.6.2009

<p><u>4.b Waste management</u></p> <p>The applicant shall provide appropriate documentation showing compliance with these requirements in writing and demonstrating its implementation during the last year (prior to the EU Ecolabel application). The documentation should include:</p> <p>Description of the facilities to sort waste at source into fractions stating the type of fractions to be sorted out and their capacity,</p> <p>Description of the waste minimization processes and procedures implemented,</p> <p>Information in form of mass balance sheets or/and environmental reporting system showing the rates and detail breakdown of recovery achieved in the previous year and the initiatives taken.</p>	<p>4.6 Copy of the waste management plan including:</p> <ul style="list-style-type: none"> - Kind and quantity of waste produced, - Breakdown of the total waste recovered to type of processes (information about the reuse of waste and secondary materials in the production of new products), - Initiatives taken to reduce waste production and improve production efficiency, - Initiatives taken to calculate and reduce the environmental impacts associated with the waste minimization or recovery, - Initiatives or requirements for suppliers or contract manufactures <p>4.7 Description of the facilities to sort waste at source into fractions stating the type of fractions to be sorted out and their capacity</p> <p>4.8 Description of the waste minimization processes and procedures implemented</p> <p>4.9 Mass balance sheets or/and environmental reporting system showing the rates and detail breakdown of recovery achieved in the year prior to the application</p> <p>4.10 List and description of the initiatives taken.</p>
--	--

5 Emissions from formaldehyde	
<p>The applicant shall provide a declaration of compliance with this criterion. The assessment and verification of low formaldehyde emission panels shall vary depending on the certification scheme it falls under. The verification documentation required for each scheme is described in Table 5.1.</p>	
<p>Table 5.1. Assessment and verification of low formaldehyde emission panels</p>	
Certification scheme	Assessment and verification
E1- as defined in Annex B of the EN 13986 (developed in the EU)	A declaration from the wood-based panel supplier, stating that the panel is compliant with 50% of E1 emission limits or, in the case of MDF panels, with 65% of E1 emission limits, supported by test reports carried out according to either EN 717-1, EN 717-2 or EN 120
CARB- California Air Resources Board: Phase II limits (developed in the USA)	<p>a declaration from the wood-based panel supplier, supported by third party verified test results according to ASTM E1333 or ASTM D6007, demonstrating panel compliance with the formaldehyde Phase II emission limits defined in the California Composite Wood Products Regulation 93120¹¹⁴.</p> <p>Optionally, the wood-based panel may be labelled in accordance with Section 93120.3(e), containing details in respect of the manufacturer's name, the product lot number or batch produced, and the CARB assigned number for the third party certifier (this part is not required if the products were made using no-added formaldehyde or certain ultra-low emitting formaldehyde-based resins).</p>
F-3 or 4 star (developed in Japan)	the applicant shall provide a declaration from the panel supplier of compliance with the formaldehyde emission limits as per JIS A 5905 (for fibreboard) or JIS A 5908:2003 (for particleboard and plywood), supported by third party verified test data according to the JIS A 1460 desicator method.
<p>In all cases, the applicant shall also declare that no further formaldehyde-based surface treatment was applied to supplied panels and that the panels were not modified in any another way that would comprise compliance with the formaldehyde emission limits set out in the European, American and Japanese schemes, as appropriate.</p>	
<p>5.1 Declaration from the wood-based panel supplier of</p> <ul style="list-style-type: none"> - compliance with 50% E1 emission limits or 65% emission limits in case of MDF panels, or - test report from an accredited lab showing the results of the tests carried out in accordance with EN 717-1, EN 717-2 or EN 120 <p>Or</p> <ul style="list-style-type: none"> - compliance with ASTM E1333 or ASTM D6007 or - test results according to ASTM E1333 or ASTM D6007 carried out by a third party verified body, or - compliance with the formaldehyde emissions limits as per JIS A5905 for particleboard or JIS A5908:2003 for particleboard and plywood and - third party verified test data according to the JIS A 460 desicator method <p>5.2 Declaration that no further formaldehyde-based surface treatment was applied to supplied panels and that the panels were not modified in any other way that would compromise with the formaldehyde emission limits.</p>	

¹¹⁴ Regulation 93120 "Airborne toxic control measure to reduce formaldehyde emissions from composite wood products" California Code of Regulations.

<p><u>6.1 Indoor climate</u> The applicant shall provide third party verified test results in accordance with TS/CEN 16516 or equivalent method showing that the limits above have been met. The total VOC emissions per product unit basis shall be calculated and separately comply within each limit</p>	<p>6.1 Test reports from an accredited laboratory 6.2 Calculations of the VOC emissions per product unit</p>
<p><u>6.2 Fitness for use</u> The applicant shall provide third party verified test results in accordance with the appropriated standard that demonstrates that the requirement is fulfilled. The test method should be performed in accordance with:</p> <ul style="list-style-type: none"> - EN 13329 and EN 12104 (cork tiles) or equivalent for laminate flooring, - EN 14354 (veneer wood flooring) or EN 438-2 or equivalent for wood flooring including solid wood flooring, factory lacquer wood flooring and parquet flooring, - EN 687 or equivalent for bamboo flooring. 	<p>6.3 Test reports from a third party verified body in accordance with the appropriate standard</p> <ul style="list-style-type: none"> - laminate flooring: EN 13329 or for - cork tiles: EN 12104 - veneer wood flooring: EN 14354 - solid wood flooring EN 438-2 - bamboo flooring EN 687
<p><u>6.3 Maintenance</u> The applicant shall provide the maintenance instructions of the product fulfilling the requirement</p>	<p>6.4 Copy of the user manual of the wood based floor covering if included</p>

<p><u>7.Information</u></p> <p><u>7a. User information</u></p> <p>Recommendations for the installation. This information should include all relevant instructions referring to the best environmental installation practices. As appropriate, reference should be made to the necessary preparation of the underlying surface and the auxiliary materials needed, for example, the plastic underlayers or the adhesives and glues that can be used for its installation. In the case where adhesives is to be applied to the complete surface, it must be possible to use an adhesive certified with a Type I Ecolabel or at least a low emission adhesive complying with EMICODE EC1 or equivalent,</p> <p>Recommendations for the use and maintenance of the product. This information should highlight all relevant instructions particularly referring to the maintenance and use of products. As appropriate, reference should be made to the features of the product’s use under difficult conditions, for example, water absorption, stain resistance, resistance to chemicals, necessary preparation of the underlying surface, cleaning instructions and recommended types of cleaning agents and cleaning intervals. The information should also include any possible indication on the product’s potential life expectancy in technical terms, either as an average or as a range value,</p> <p>An indication of the route of recycling or disposal (explanation in order to give the consumer information about the high possible performance of such a product);</p> <p><u>7b. Information appearing on the EU Ecolabel</u></p> <p>The logo should be visible and legible.</p> <p>The EU Ecolabel registration/license number must appear on the product, it must be legible and clearly visible.</p> <p>The optional label with text box shall contain the following text:</p> <ul style="list-style-type: none"> - Certified sustainable wood and wood-based materials, - Limited hazardous substances used, - Low-emitting product 	<p>7.1 Copy of the packaging or label. This should include:</p> <ul style="list-style-type: none"> - recommendations for the installation - recommendations for the use and maintenance of the product - indications of the route of recycling or disposal <p>7.2 Copy of the EU Ecolabel. This should include:</p> <ul style="list-style-type: none"> - the statements/claims - the number of license <p>7.3 A lay-out (graphical representation) of the packaging showing where the information to the users and the EU Ecolabel</p>
--	---

6.2 CRITERION 1: SUSTAINABLE MANAGED WOOD, CORK AND BAMBOO

Directions for forestry certification

The EU Ecolabel allows the certification of sustainable managed through the certification of FSC, PEFC or equivalent scheme. Although FSC and PEFC schemes are not complete equivalent, they have some common points that should be considered when assessing the equivalence of any other certification scheme. The main points to look at are:

- requirements on forestry standards
 - the standard must balance economic, ecological and social interests and comply with the Forest principles and relevant international conventions and agreements
 - the standard must contain absolute requirements and promote and contribute towards sustainable forestry, e.g. the standard must include effective requirements to protect the forest from illegal felling and that the requirements protect the biodiversity of the forest.
 - the standard must be available to the general public
- requirements on certification system
 - the certification system must be open, have significant national or international credibility and be able to verify that the requirements in the forestry standard are fulfilled
- requirements of the certification body
 - the certification body must be independent, credible and capable of verifying that the requirements of the standard have been fulfilled. The certification body must also be able to communicate the results and to facilitate the effective implementation of the standard
 - The purpose of the certification body is to ensure that the requirements regarding forestry standards are fulfilled. The certification system must be designed to verify that the requirements of the forest standard are fulfilled. The methods used of certification must be repeatable and applicable to forest. Certification must be in respect to a specific forestry standard. The forest must be inspected prior to certification
- requirements on chain of custody certification
 - chain of custody certification must be issued by an accredited, competent third party (as for forest certification)
 - The system shall stipulate requirements regarding the chain of custody that assure traceability, documentation and controls throughout the production chain.
 - If recycled fibre, wood shavings or sawdust are used, the pulp manufacturer must verify that this originates from recycled materials.
- documentation
 - copy of forestry/ fibre raw material standard, name, address and telephone number to the organization who has worked out the standard and audit reports.
 - references to persons who represents stakeholders with ecological, economic and social interests who have been invited to participate
- any other document that the CB considers of relevance

Basis for calculation of certified amount of wood, cork or bamboo raw material

To verify that at least 70% of the wood, cork and bamboo material, on an annual basis, shall be derived from areas where forestry operations are certified pursuant to a forestry standard and certification system that meet the criteria included in FSC, PEFC or equivalent schemes the:

- table and calculation below, shall be filled in by the manufacturer of wood-based floor

coverings

- documentation shall be submitted to verified that certified wood is delivered to the manufacturer of the EU Ecolabel product. For example a copy of a contract and/or specified invoices

Financial figures are not relevant and are not necessary to be cleared.

Table 13. Calculations of the quantity of certified wood, cork or bamboo

Supplier	Type of wood	Amount	Geographical origin	Type of certification management system	Quantity (%) of timber from certified forests used in the product

The amount can be included either in volume or in weight as long as the same unit is used all through the table.

$$\begin{aligned} \text{Amount of timber, cork or bamboo derived from certified forests} &= \\ &= \frac{\text{timber, cork or bamboo from certified forests}}{\text{total amount of timber, cork or bamboo in the flooring}} \end{aligned}$$

6.3 CRITERION 2: GENERAL RESTRICTED SUBSTANCES

The chemical requirements cover all chemical products added to the floor covering or used in the manufacture of the floor covering, including the surface treatment. Here, manufacture is defined as all manufacturing/treatment conducted by the manufacturer, but also by its suppliers of raw materials or constituent products.

This declaration is completed and signed by the chemical product supplier based on the knowledge we have at the time of the application, based on tests and/or declarations from raw material manufacturers, with reservations for new advances and knowledge.

For each of the chemical products used in the manufacturing of the flooring it is needed:

Declaration of the chemical product supplier:

- **product name**
- **manufacturer/supplier**
- **product's function/ product group (adhesive, paint, etc)**

Table 14. Check list for general restricted substances

Check-list for general restricted substances	Yes	No
CRM		
Does the chemical product contain any of the following CMR substances? - carcinogenic category 1A/1B (Carc H350 / Carc H350i) - mutagenic category 1A/1B (Mut with H340) - Toxic for reproduction category 1A/1B (Rep with H360F and/or H360)		

Does the chemical product contain any of the CMR substances? - carcinogenic category 2 (Carc H351) - mutagenic category 2 (Mut with H341) - Toxic for reproduction category 2 (Rep with H361)		
If yes, specify the quantity as a percentage by weight of each substance		% wt
<u>Other substances excluded from use</u>		
Does the chemical product contain any of the following	yes	No
Substances that appear on the Candidate List for Substances of Very High Concern (SVHC)		
Category 1 aquatic toxins: H400, H410		
Category 1 and 2 acute toxins: H300, H310, H330, H304		
Category 1 STOT*: H370, H372- Category 2, 3 and 4 aquatic toxins: H411, H412, H413		
Category 3 acute toxins: H301, H311, H331, EUH070		
Category 2 STOT*: H371, H373		
Category 1 Skin Sensitiser: H317		
Category 1 Respiratory Sensitiser: H334		

For those chemical products that stand a classification, the following information should be provided (Table 15).

Table 15. Declaration table for those restricted substances that are classified

Chemical product name	List of substances in the chemical product formulation	CAS no, EC or list number	Physical form and state	Harmonized CLP hazard	Self-classification in ECHA's REACH	%wt used in the product as raw material	Value got	Value threshold	Declaration or any other evidence (e.g SDS from supplier)

6.4 CRITERION 3: SPECIFIC RESTRICTED SUBSTANCES

List of specific restricted substances

This declaration is completed and signed by the chemical product supplier based on the knowledge we have at the time of the application, based on tests and/or declarations from raw material manufacturers, with reservations for new advances and knowledge.

Table 16 Check-list for specific restricted substances

Check-list for specific restricted substances	Yes	No
<u>Wood preservatives</u>		
Are the wood, cork or bamboo raw materials treated with pesticides or wood preservatives?		
<u>Biocides</u>		
Has any of the following substances been added to the fibres or the finished product for the purpose of achieving a disinfectant or antibacterial treatment or a disinfectant surface? - antibacterial substances - biocides in the form of pure active substances or as biocidal products		
If biocides were added, were the biocides exclusively used as preservatives in aqueous coating materials, glues and/or flame retardants?		
<u>Flame retardants</u>		
Are flame retardants used in the flooring manufacturing?		
Are flame retardants obligated to be added in accordance with the national regulation of the country where the finished product is going to be sold?		
<u>Halogens</u>		
Are halogenated organic compounds used?		
Are Paints and varnishes with long chain perfluoroalkyl sulfonates (>C ₆) and/or perfluorocarboxylic acids (>C ₈) used?		
<u>VOCS and formaldehyde in adhesives and resins</u>		
Does the adhesive contain VOC content in more than 3% w/w?		
If no, how high is the concentration of VOC content in each chemical product? Name of the chemical product: Concentration of VOCs (add so many chemical products as needed)		
Does the adhesive contain free-formaldehyde in more than 0.2% w/w?		
If no, how high is the concentration of free-formaldehyde content in each chemical product? Name of the chemical product: Concentration of free-formaldehyde: (add so many chemical products as needed)		
<u>Heavy metals in paints and varnishes</u>		
Are additives based on one or several of the following heavy metals in metal used in the paints and/or varnishes added?		

If so, how high are the concentrations of each heavy metal in each of the in-can chemical products:		
Name of the chemical product: Product function: Concentration - cadmium: - lead: - chromium VI: - mercury: - arsenic: - barium: - selenium: - antimony: - cobalt: (add so many chemical products as needed)		

Chemical requirements applicable only to surface treatment

This declaration shall be completed and signed by the surface treatment part.

Manufacturer/supplier

Name of the product

Table 17. VOCs in the surface treatment

<u>Quantity applied and application method</u>		
Short description of the surface treatment		
Number of coats		
Quantity applied (g/m ²)		
Application method(s)		
<u>VOCs in the surface treatment systems only</u>	Yes	No
Does the surface treatment system contain VOC?		
If yes, please specify:		
State chemical name	CAS-no	% wt

For **alternative b)** of the **criteria 3. g** "Be greater than 5% w/w VOC content but be shown to be applied in quantities that amount to less than 2g/m² of the coated surface area", calculations in accordance with the appendix I should be demonstrated. An example of this calculation is provided below.

EXAMPLE:

The manufacturer of flooring uses 3 chemical products in the surface treatment system and roller coating technique is used (efficiency rate 95%, according to table 3.1)

The products contain: (information provided in accordance with the Table 17)

Product A: 5.2% VOC, quantity applied 3g/m²

Product B: 7% VOC, quantity applied 0.3g/m²

Product C: 6% VOC, quantity applied 1g/m²

The calculation

$$Sum VOC = \frac{(0.052*3)+(0.07*0.3)+(0.06*1)}{0.95} = 0.444g/m^2$$

6.5 CRITERION 4: ENERGY CONSUMPTION

The energy consumption should be calculated in accordance with Appendix IIa and Appendix IIb. This section provides an example showing how calculations in accordance with the previously mentioned Appendixes should be performed.

The declaration should be declared and signed by the manufacturer of the flooring.

EXAMPLE

The manufacturer of flooring uses 3 energy fuels as detailed below and additionally bought 50kWh/year during the year 20xx. Additionally a solar energy source was used providing 50kWh/year:

- petrol 10kg/year
- LPG 80kg/year
- natural gas 3.5kg/year

The total production during year 20xx amounted to 8000 m²

The calculations:

1) Specification of the fuels, quantities and flooring production per year

Year of calculations:

Total production in this year (m²/year):

Total electricity purchase (kWh/year)

Total fuel purchase:

Column	A	B	C	D	E
Fuel	Energy Source (non-RE /RE)	Quantity (kg/year)	Standard fuel value (MJ/kg)	MJ	kWh/m ²
Petrol	non-RE	10	44.0	4400	0.152
LPG	non-RE	80	45.2	3616	0.125
Natural gas	non-RE	3.5	47.2	165.2	0.0057
Solar energy	RE	--			0.00625
Electricity from the grid					0.00625
TOTAL				8181.2	

2) Calculation of the values A, B and C to be used in the formula (Table 5) for calculating the energy consumed:

The values A, B and C are calculated as follows:

$$A = \frac{\sum MJ_{\text{Fuels classified as RE (Column A)}}}{\sum MJ} = \frac{(180)}{8181.2} = 0.022$$

$$B = \frac{\text{Total electricity purchase } \left(\frac{kWh}{\text{year}}\right)}{\text{Total production } \left(\frac{m^2}{\text{year}}\right)} = \frac{50}{8000} = 0.00625$$

$$C = \sum \frac{kWh}{m^2} (\text{Column E}) = (0.152 + 0.125 + 0.0057) = 0.2827$$

3) Calculation of the value E

$$E = \left(\frac{A}{20}\right) + \left(5 - \frac{B}{3}\right) + \left(5 - \frac{C}{7}\right) = \left(\frac{0.022}{20}\right) + \left(5 - \frac{0.00625}{3}\right) + \left(5 - \frac{0.2827}{7}\right) = 9.95$$

This manufacturer passes the threshold as long as the flooring is classified as parquet, bamboo or cork floor coverings. An increase in the RE sources, or a decrease in the fossil fuel or electricity purchases leading to a E score higher than 11 would be needed to Ecolabel this flooring if it is a solid wood or a laminate flooring.

Europe Direct is a service to help you find answers to your questions about the European Union
Freephone number (*): 00 800 6 7 8 9 10 11

(*) Certain mobile telephone operators do not allow access to 00 800 numbers or these calls may be billed.

A great deal of additional information on the European Union is available on the Internet.
It can be accessed through the Europa server <http://europa.eu>.

How to obtain EU publications

Our publications are available from EU Bookshop (<http://bookshop.europa.eu>),
where you can place an order with the sales agent of your choice.

The Publications Office has a worldwide network of sales agents.
You can obtain their contact details by sending a fax to (352) 29 29-42758.

JRC Mission

As the Commission's in-house science service, the Joint Research Centre's mission is to provide EU policies with independent, evidence-based scientific and technical support throughout the whole policy cycle.

Working in close cooperation with policy Directorates-General, the JRC addresses key societal challenges while stimulating innovation through developing new methods, tools and standards, and sharing its know-how with the Member States, the scientific community and international partners.

*Serving society
Stimulating innovation
Supporting legislation*

European Commission

Joint Research Centre – Institute for Prospective Technological Studies

Title: Revision of the European Ecolabel and Green Public Procurement (GPP) Criteria for Wooden Floor coverings: Working Document for the 1st AHWG meeting.

Authors: ALICIA BOYANO LARRIBA and OLIVER WOLF – IPTS