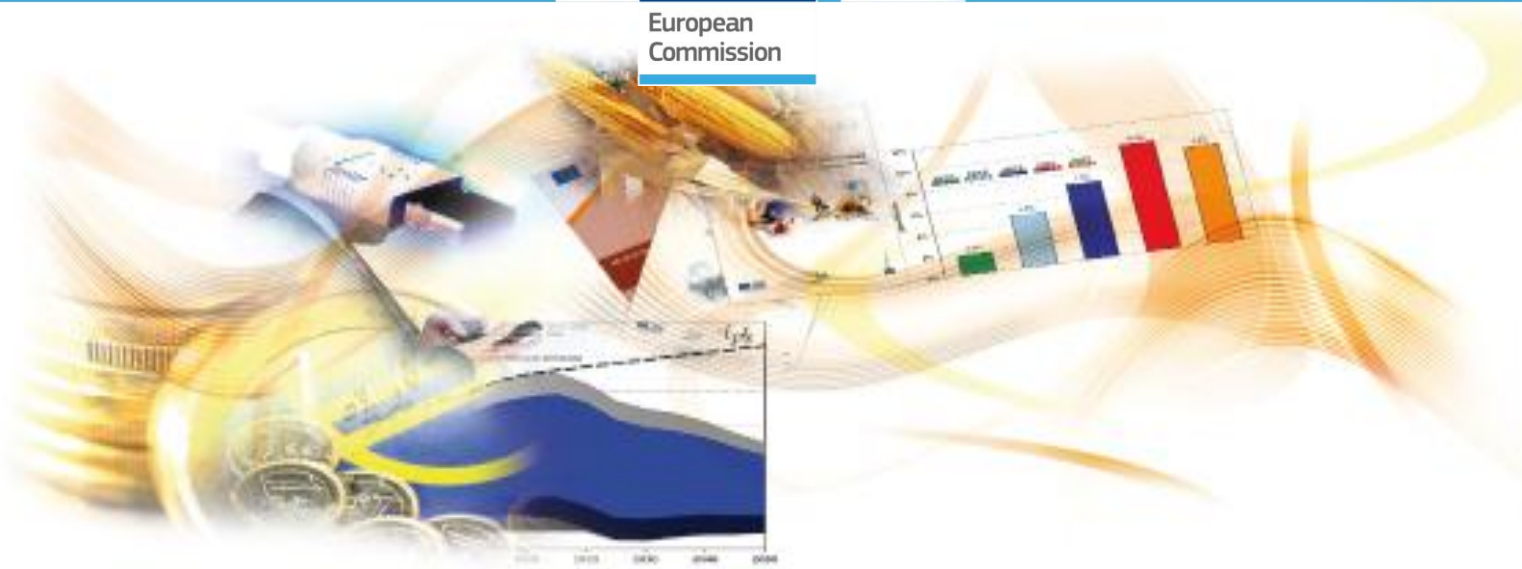




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Revision of the European Ecolabel Criteria for Wooden Flooring Covering:

Technical Report:
Draft criteria proposal for revision of
ecological criteria

Alicia Boyano and Oliver Wolf – IPTS

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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>

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Abstract

The EU Ecolabel criteria for wooden 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.

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1 EXECUTIVE SUMMARY

The EU Ecolabel criteria for wooden floor covering (WFC) [1] are under revision. The objective of this revision is to update the scope of the current market conditions and reflect these changes into the EU Ecolabel criteria for Wooden Floor Covering, so that the best top environmental performing products can be labelled. The revision process can lead to the modification, addition or removal of the current criteria to faithfully address the most important environmental impacts of this product ground in a life cycle perspective.

A Technical Background Report [2] has been prepared to analyse different aspects relevant for the revision of the EU Ecolabel criteria for 'Wooden floor covering'. This report includes all the needed background information, the feedback from the continuous wide consultation with experts and stakeholders (of manufacturers, supply chain industry, consumer organizations, NGOs and Member States) [3] and scientific evidence based on the most updated available data. It adopts a life-cycle approach and engages participants to discuss the issues and develop consensus.

The Technical Background Report [2] covers in detail the following areas: a revision of the current European legislation, European Standards, and other environmental labelling schemes, a worldwide and European market analysis, a screening and analysis of Life Cycle Assessment (LCA) studies and an analysis of hazardous substances used in the wooden floor covering industry according to REACH regulation (EC) 1907/2006. A brief summary of the main findings is included in this report. Based on these results a validity check of the product scope has been conducted, as well as an assessment of the need for amending or changing the existing EU Ecolabel criteria.

This report summarizes the proposed criteria changes. Table in chapter 1.3 gives an overview of the changes by showing current Ecolabel criteria versus the proposed updated criteria. The rationale and discussion for each criterion can be found in the following sections. For even more detailed information, the reader is kindly directed to the accompanying Technical Background Report [2].

The main criteria changes proposed in this report consist of:

- An *extension of the current scope* by lowering the total wood and wood-based material content of the wooden flooring up to 80 % wt. This change aims to reflect the change in the European market dominated by laminate flooring and increase the product market share that can be awarded with the Ecolabel.
- An *increase in the content of certified and recycled wood and plant-based materials* up to 70 % for wood and wood-based materials and 60 % for cork and bamboo to guarantee the sustainability of the forests where they are harvested
- An *update of the restriction of hazardous substances* in accordance with the requirements of Article 6.6 and 6.7 of the Ecolabel Regulation 66/2010
- A *reduction of the energy consumption needed to manufacture the products* as well as an update of the formula used to calculate it. This change aims to reflect the improvements on energy efficiency carried out by the European industry

1.1 TECHNICAL BACKGROUND REPORT - SUMMARY

The Technical Background Report [2] summarizes the research carried out to underpin the proposed criteria modifications. The main findings of the Technical Background Report are:

- The *market analysis* reveals that the most common kind of wooden flooring in the current EU market is laminate flooring (about 70 %) [4]. Solid wood flooring is the second type most commonly used (about 20 %, considering also mosaic floors) and other types such as cork or bamboo have lower market shares. Laminate flooring is made, on average, of 80 % wt. wood and wood-based materials. Therefore, based on the segmentation of the wooden floor covering, it is considered reasonable 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 the potential EU Ecolabel license holders*. Regarding the current market of EU Ecolabel products, there are not enough evidences to ensure that there is a favorable framework to host these products although it seems that issues concerning sustainability and environmentally-friendly products are becoming increasingly important.

- The main outcomes from the *environmental assessments* review and other sources of information can be summarised as follows:

- a) *Extraction of material* stage causes the second most important lifecycle environmental impacts of WFC. The most common materials used in the production of wooden floor covering are wood, plant-based materials, resins and other spreadable materials widely used for the preservation and treatment of the wooden surfaces. The environmental impacts caused during this lifecycle stage are mainly due to unsustainability management of the forest and plantations. Therefore, it is important that wood and plant-based resources used in the WFC production comes 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) *Manufacturing stage* causes environmental impacts due to the use of energy consumption and the use of adhesives, resins and other materials for the wooden floor covering assembling. Depending on the type of wooden floor covering the energy demand as well as the chemicals used are different but in all the cases they all cause similar environmental impacts such as: use of non-renewable raw materials, air-pollutant emissions (VOCs and formaldehyde) or limited recyclability of the final product due to the impregnation with biocides, paints and/or varnishes.
- c) *Packaging and transportation stage* 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 long 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 other. Environmental benefits would also be achieved during the end-of-life stage.
- e) *End-of-Life stage* and its environmental impacts are highly depending 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 in landfills.

According to the environmental information collected and screened in the Technical Background Report, special attention should be paid to the most important environmental impacts, which are associated with firstly the energy consumed and use of chemicals during the

manufacturing processes and secondly with the extraction of wood and wood-based materials (such as sustainable forestry).

EU Ecolabel wooden floor covering should not contain harmful substances. They should not pose any potential threat to human health and environment along the product life cycle. An analysis of the most commonly used substances has been conducted and those substances of concern (e.g. classified with H- hazard statements according to CLP regulation) have been identified based on the substances inherent properties. The consideration of more stringent requirements (in comparison with the currently existing criteria) is proposed wherever it will ensure a better environmental performance of this product group.

WORKING DRAFT IN PROGRESS

1.2 Definition comparison table

DEFINITION OF THE PRODUCT GROUP	
EXISTING DEFINITION OF PRODUCT GROUP	Potential changes, modifications or amendments
<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. 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 Annex 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 Annex V to Directive 98/8/EC.</p>	<p><i>The product group of 'wooden floor covering' 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 % in mass (in the final product), from wood, wood powder and/or wood/plant-based material. It does not apply to wall coverings, where properly indicated, or coverings for external use or for coverings with a structural function.</i></p> <p><i>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 article 57 and 59 of the REACH regulation and are authorized in the Regulation (EC) No 528/2012 (for product 8 and 18)</i></p>
	<p>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 its environmental performance is.</p> <p>The requirements regarding the use of biocidal products have been updated in accordance with the Biocidal Product Regulation (EC) No 528/2012.</p>
<p><u>Legenda:</u> Text: existing criteria Text: proposed criteria Text: summary of the evidences Text: proposed changes on the criteria</p>	

1.3 Criteria comparison table

CRITERIA	
EXISTING EU ECOLABEL CRITERIA	Potential changes, modifications or amendments
1. Materials (Wood and wood-based materials)	
<p><u>1.1 Sustainable use of natural resources by encouraging sustainable forestry management</u></p> <ul style="list-style-type: none"> - 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. - Minimum percentages of solid wood and wood-based materials from certified sustainably managed forests or recycled materials: <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>1.1 Sustainable use of natural resources by encouraging forestry management</u></p> <p>1.1.a) Origin and traceability of wood, fibre raw materials, cork and bamboo</p> <p><i>All wood, fibre raw materials, cork and bamboo should be traceable to their origin and be virgin materials from controlled sources, forests certified or recycled wood.</i></p> <p><i>Wood and plant-based materials from controlled sources may not:</i></p> <ul style="list-style-type: none"> <i>i. be illegally harvested</i> <i>ii. come from sources that are being converted from primary forest into plantations</i> <i>iii. include material from genetically trees or plants</i> <p><i>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 generated that can be reused within the same process that generated it shall not be considered as recycled either.</i></p> <p><i>The requirement does not cover high pressure laminate, which is used as a surface finish on laminate flooring.</i></p> <p>1.1.b) Wood, manufactured board, cork and bamboo from certified sources</p> <p><i>Wooden floor coverings must content materials that comply with i.) or ii.):</i></p> <ul style="list-style-type: none"> <i>i. at least 70 % of wood and wood-based materials</i> <i>ii. at least 50 % of cork and bamboo materials</i> <p><i>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.</i></p> <p><i>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.</i></p>

The **proposed changes** are focused on the entry into force of the EU Timber Regulation No 995/2010 that requires proving the legal sources of the timber introduced on the market and the feasibility of easily tracking it.

The minimum percentages of wood and wood-materials coming from certified sustainable management forests or being recycled wood has been merged and increased to 70 % for wood and wood-based materials and to 50 % when bamboo, cork or wood and bamboo are part of the manufactured board. Merging both thresholds avoids difficulties to fulfil quality standards or scarcities in the supply.

The threshold of 70 % for wood and wood-based materials coming from certified sustainable managed forests or recycled sources makes easier the assessment and verification of this requirement since it is in line with the requirements of the mostly used certification schemes.

The threshold of 50 % for cork and bamboo materials coming from certified or recycled sources is set up lower due to the lower availability of these materials.

1. Materials (Recycled wood and wood-based materials)

1.2 Limitation of the use of substances harmful for the environment and health

- Post consumer wood chips or fibres applied in the production of wood-based materials (input) shall at least comply with the provisions in the EPF Industry standard.

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

- Wooden flooring shall not be impregnated:
 - No use of 1a & 1b substances classed by WHO recommended classification of pesticides in solid and virgin wood treatment and preparations.
 - The treatment of wood shall be in accordance with the provisions of Directive 79/117/EEC and Directive 76/769/EEC.

1.2 Limitation of the use of substances harmful for the environment and health

- *Post-consumer recycled wood or wood-based material shall at least comply with the provisions in the "EPF Standard for delivery conditions of recycled wood (2002)" or equivalent.*

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

- Wooden flooring shall not be impregnated.
 - *No use of 1a & 1b substances classed by WHO recommended classification of pesticides in solid and virgin wood treatment and preparations.*
 - *The treatment of wood shall be in accordance with the provisions of Directive 79/117/EEC and Council Directive 76/769/EEC*

<p>- No GMO wood.</p>	<p>These criteria remain unchanged because:</p> <ul style="list-style-type: none"> - The limits of harmful substances in the recycled wood remain unchanged as these substances are considered to not migrate and stricter limits (lower weight thresholds of the elements and compounds included in the above table) would prevent from recycling of wooden floor coverings waste. - The restriction of using pesticides and preparations classed as 1a and 1b type substances by WHO remains unchanged since these lists are regularly updated and they are not used in the EU market. This criterion, however, prevents from labelling non-EU products where these substances may have been used. - Current availability of GMO wood and plant-based materials is in Europe very low (< 1 % of the forest area) as well as that coming from outside EU frontiers, e.g. the only commercial GMO forest of poplars in China is less than 500ha. Therefore it is proposed to keep this requirement as it does not cause any market restriction. In addition, there are no obvious benefits to the WFC industry permitting the use of GMO wood. Moreover, this requirement is included in the criterion regarding the origin and traceability of the wood and plant-materials and thus it has been removed from this requirement.
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2. Manufacturing (Raw wood and plant treatment)

<p><u>2.1 Dangerous substances for the raw wood and plant treatments</u></p> <p>(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:</p> <p>R23 (toxic by inhalation) R24 (toxic in contact with skin) R25 (toxic if swallowed) R26 (very toxic by inhalation) R27 (very toxic in contact with skin) R28 (very toxic if swallowed)</p>	<p><u>2.1 General requirements</u></p> <p>Substances or preparations that contain hazardous substances and mixtures in accordance with the rules set out in the following sub-criteria which apply to:</p> <ul style="list-style-type: none"> - Hazard classifications and risk phrases in Regulation (EC) No 1272/2008 - Substances of Very High Concern (SVHC) - Specific other listed substances <p>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.</p> <p>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</p> <table border="1" data-bbox="1115 1257 2056 1415"> <tr> <td colspan="2">Acute toxicity</td> </tr> <tr> <td>H300 Fatal if swallowed</td> <td>H301 Toxic if swallowed</td> </tr> <tr> <td>H310 Fatal in contact with skin</td> <td>H311 Toxic in contact with skin</td> </tr> <tr> <td>H330 Fatal if inhaled</td> <td>H331 Toxic if inhaled</td> </tr> <tr> <td>H304 May be fatal if swallowed and enters</td> <td>H070 Toxic by eye contact</td> </tr> </table>	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	H070 Toxic by eye contact
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	H070 Toxic by eye contact										

<p>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),</p> <p>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 (Dangerous Substances Directive), and its subsequent amendments, and considering Directive 1999/45/EC of the European Parliament and of the Council (Dangerous Preparations Directive).</p> <p>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.</p> <p>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.</p>	airways	
	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
	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>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>	

<p>(b) The product must not contain halogenated organic binding agents, azidirin and polyaziridins as well as pigments and additives based on:</p> <ul style="list-style-type: none"> - lead, cadmium, chrome (VI), mercury and their compounds, - arsenic, boron and copper, - organic tin. <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. Additionally DNOP (di-n-octyl phthalate), DINP (di-isononyl phthalate), DIDP (diisodecyl phthalate) are not permitted in the product</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>c) The product shall not contain the following hazardous substances:</p> <ul style="list-style-type: none"> - Halogenated organic binding agents - Azidirin and polyziridins and - Pigments, plasticisers and additives based on: <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 - Phthalates: <ul style="list-style-type: none"> - DBP (dibutyl phthalate), - DIBP (diisobutyl phthalate), - BBP (butyl benzyl phthalate), - DNOP (di-n-octyl phthalate), - DINP (di-isononyl phthalate), - DIDP (diisodecyl phthalate) are not permitted in the product <p><u>DEROGATION</u></p> <p>Chemical products for surface treatment are exempted from the requirement concerning the classification "Toxic to aquatic organisms" (H400) or since these are regulated in criterion 2.3</p> <p>Adhesive/resin products that contain isocyanates are exempted from the requirement concerning the classification R40 ("Limited evidence of a carcinogenic effect")</p>
	<p>The proposed changes consist of:</p> <ul style="list-style-type: none"> - The restriction in the use of dangerous substances has been reworded following article 6.6 and 6.7 of the EU Ecolabel Regulation (EC) No 66/2010. In this sense, dangerous substances are considered those classified or label under the risk phrases listed in Regulation (EC) No 1272/2008 or Directive 67/548/EC, until 2015.

	<ul style="list-style-type: none"> - A clause remarking the importance of compliance with the most recent classification rules adopted by the Union has also been included. This clause aims at foreseeing any possible updating of the abovementioned regulation - A clause highlighting the no derogation of any ingredient or raw material, unless specifically derogated that meets the criteria of article 57 and/or article 59 of the REACH Regulation has been added. This clause restricts the substances listed in the List and Candidate list of SVHC - Three new phthalates are proposed to be banned in accordance with other national schemes such as Nordic Swan 6.0 or Environmental Choice NZ. The three new phthalates proposed for banning are: DBP (dibutyl phthalate), DIBP (diisobutyl phthalate) and BBP (butyl benzyl phthalate). - Finally two derogations are included in this section: <ul style="list-style-type: none"> a) the first one corresponds to the chemicals used for the surface treatment as specific criteria have been developed. The main reason for developing specific criteria for the surface treatment is that these materials contain R-phrases classified substances without being at present any suitable alternative on the market. b) the second one derogates adhesive products that contain isocyanates from the requirement concerning classification R40 as it is proved that they do not release the product during the use phase. The use of isocyanate as alternative would decrease the use of VOC containing adhesives although its current price on the market makes this option not to be the preferred one.
<p><u>2.2 Manufacturing process</u></p> <p>Adhesives</p> <ul style="list-style-type: none"> (a) The requirements of part 2.1 on dangerous substances for the raw wood and plant treatments shall also apply for adhesives. (b) The VOC content of adhesives used in the assembly of the product shall not exceed 10 % by weight (w/w). <p>(a) The content of free formaldehyde</p> <ul style="list-style-type: none"> - in products or preparations used in the panels shall not exceed 0.3 % by weight. - in binding agents, adhesives, and glues for plywood panels or laminated wood panels shall not exceed 0.5 % by weight. 	<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 adhesives shall not exceed 3 % w/w. b) Free-formaldehyde (two alternatives are proposed) <u>Alternative 1</u> b) the content of free-formaldehyde shall not exceed 0.2 % (w/w) in the resin and adhesive formulation used in the manufacturing of panels <p><u>Alternative 2</u> b) Withdrawn the current criterion</p>

	<p>The proposed changes are based on:</p> <ul style="list-style-type: none"> - the reduction in the VOC content in the adhesives is proposed in accordance with the stakeholders feedback confirming the technical and economic feasibility of this changes - regarding the free-formaldehyde content in the products and preparations used in the panels two alternatives are proposed: <ol style="list-style-type: none"> a) alternative 1 follows the limit on the formaldehyde content. In this sense, it proposes a reduction on the free formaldehyde content in the resins and adhesives used in the manufacturing of panels based on the improvements achieved in the industry in the last years. b) alternative 2 proposes to withdraw the current criteria based on the requirements of criterion 4.a that sets up limits on the formaldehyde emissions from the finished product. This alternative aims at reducing the number of testing that the applicants should carry out to be awarded and at giving freedom to the producers to choose the most suitable combination of chemicals that complies with criterion 4.a
<p><u>2.3 Coating and surface treatments</u></p> <p>(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.</p> <p>(b) chemical substances classified as harmful for the environment by the chemical manufacturer/supplier in accordance with EU classification system (28th Amendment to Directive 67/548/EEC) shall comply with one of the two following limits:</p> <ul style="list-style-type: none"> - 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. <p>Nevertheless the products may contain up to 5 % volatile organic compounds (VOC) as defined in Directive 1999/13/EC. If the product requires dilution, the contents of the diluted product must not exceed the abovementioned threshold values,</p> <ul style="list-style-type: none"> - the applied quantity (wet paint/varnish) of environmentally harmful substances 	<p><u>2.3 Coating and surface treatments</u></p> <p>The requirements of criterion 2.3 apply to all surface treatment of floor coverings regardless the flooring type.</p> <p><u>Environmental harmful products</u></p> <p>Chemical products used in surface treatment systems must fulfil one of the following two alternatives:</p> <ol style="list-style-type: none"> a) None of the chemicals products are classified as environmental harmful (as H400, H41a, H411, H412, H413, H059 according to Regulation 1272/2008) b) Chemical substances classified as harmful for the environment (H400, H41a, H411, H412, H413, H059) by the chemical manufacturer/supplier in accordance with Regulation 1272/2008 shall comply with one of the two following limits: <ol style="list-style-type: none"> b.1) Chemical substances classified as harmful for the environment in accordance with the Regulation 1272/2008 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

<p>in accordance with Directive 1999/45/EC shall not exceed 14 g/m² surface area and applied quantity (wet paint/varnish) of VOC shall not exceed 35 g/m²</p> <p>(VOC shall mean any organic compound having at 293.15K a vapour pressure of 0.01kPa or more, or having a corresponding volatility under the particular conditions of use)</p> <p><u>Biocides</u> Only biocidal products containing biocidal active substances included in Annex IA of Directive 98/8/EC, and authorised for use in floor coverings, shall be allowed for use.</p> <p><u>Formaldehyde</u> Formaldehyde emissions from substances and preparations for surface treatment liberating formaldehyde shall be less than 0.062 mg/m³ air.</p>	<p>substances in accordance with Regulation 1272/2008 shall not exceed 7g/m² surface area and applied quantity (wet paint/varnish) of VOC shall not exceed 2 g/m²</p> <p><u>Biocides</u> Biocides shall not be permitted in EU Ecolabel wooden floor covering or applied to their surface for the purposes of adding a final disinfected effect. Only Biocidal Products with active substances that:</p> <ul style="list-style-type: none"> - comply with the requirements on dangerous substances in accordance with criterion 2.1.b - are included and approved in the Biocidal Products Regulation (EC) 528/2012 (for product 8 and 18) can be added <p><u>Formaldehyde</u> Withdraw the current criterion</p>
	<p>The <u>proposed changes</u> consist of</p> <ul style="list-style-type: none"> - a restriction of the applied quantity (wet paint/varnish) of environmentally harmful substances based on the possibilities of using lower containing VOC chemicals (such as water-borne chemicals or UV-curing ones) and better applying technologies during the surface treatments e.g. roller coating, vacuum coating rinsing blanket coating or dipping that have the maximum efficiency - a rewording of the criterion dealing with the non-use of biocides in accordance with the new Biocidal product regulation 528/2012 - the withdrawing of the criterion regarding the formaldehyde emissions from substances and preparations for surface treatment is proposed as formaldehyde emissions shall be tested from the panel and finished product in criterion 4

3. Manufacturing: energy consumption

3.1 Energy saving

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):

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

calculated as

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
B		15 kWh/m ²
C		35 kWh/m ²
D		-- kWh/m ²

3.1 Energy saving

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):

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

calculated as

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

The **proposed changes** are due to the improvement technologies installed in the wooden floor covering sector and mainly in the cork flooring production sector. This information has been changed in accordance with the information provided by the last proposed revision of the Nordic Ecolabel criteria in 2014.

Two main changes are proposed in this criterion:

- The formula has been revised and **purely focused on the energy-related requirements** regardless the percentage of wood and wood-based materials coming from certified sustainable sources or recycled sources. The new formula consists in **three terms, equally weighted: promotion of low energy consumption** in terms of electricity and fuel and **proportion of renewable energy sources**.
- The formula contains requirements and limit values 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.

3.2 Energy managing plan (additional criterion)

The producer must have effective energy management policies and procedures and/or energy management program. This program should annually report:

- total energy use
- breakdown of total energy use to type of energy used
- energy use related to production
- initiatives taken to reduce energy use and improve energy efficiency
- initiatives taken to calculate and reduce CO₂ emissions associated with

	<p>energy use and</p> <ul style="list-style-type: none"> - initiatives or requirements for suppliers or contract manufacturers
	<p>The proposed changes are based on the importance of drawing up and implementing an energy managing plan that defines the energy policies and procedures to be followed by the applicants in the long-term. This kind of tools is required in several national schemes (e.g. Nordic Ecolabelling version 5.2 and 6.0 or Environmental choice from NZ) and its effectiveness has been demonstrated.</p>
<p>3. Manufacturing: Waste minimization and management</p>	
<p><u>3.3 Production process: waste treatment</u></p> <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>3.3 Production process: waste minimization and management programme</u></p> <p>The applicant 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 plan 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>The proposed changes includes the development and implementation of a waste minimization management program that favors the recovery and reuse or reprocessing of the waste originated during the manufacturing process</p>

4. Use phase: Indoor climate

Limitation of toxic residues in products

4.1. Release of dangerous substances

4.1 Formaldehyde

Wood-based materials are only allowed for use in wooden floor coverings if they comply with the following requirements on formaldehyde emissions:

- 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.

4.2 Volatile organic compounds (VOC)

The finished products must not exceed the following emission values. Emission value of finished products (requirement after 3 days):

- TOC in the retention range C₆ – C₁₆ (TVOC) < 0.25 mg/m³ air.
- TOC in the retention range > C₆ – C₁₆ (TSVOC) < 0.03 mg/m³ air.
- Total VOC without LCI < 0.05 mg/m³ air.

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

Limitation of toxic residues in products

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

4.1) 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

4.2) Volatile organic compounds (VOC)

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

Alternative 2

The finished wooden floor covering product shall not exceed the following emission values: Substance Requirement (after 28 days)

- a) TOC within the retention range C₆ -C₁₆ (TVOC) < 0.16 mg/m³ air
- b) TOC 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

	<p>The proposed changes aim at:</p> <ul style="list-style-type: none"> - reducing the number of testing: exemptions for testing can be awarded if certifications from producers and low VOC containing surface treatment products are presented - Recognizing the efforts to manufacture low-emitting formaldehyde boards depending on the type of board nature in flooring. Allowed emissions of formaldehyde for MDF are higher than for non-MDF boards - increasing the strictness of VOC emissions as the technologies allow for that. The used of water-borne additives and low containing and low emitting VOC materials for the production and surface treatment makes possible to decrease the VOCs emission from the products while achieving high quality materials.
5. Packaging	
<p><u>5.1 Use of recycled Materials</u> Packaging must be made out of one of the following:</p> <ul style="list-style-type: none"> - Easily recyclable material. - Materials taken from renewable resources. <p>Materials intended to be reusable</p>	<p><u>5.1 Packaging</u> Withdraw this criterion</p>
	<p>The proposed changes are based on the little significant of the packaging with respect to the overall environmental impact of the wooden flooring. For example, the contribution of packaging and transportation of the flooring accounts for less than 2 % for the indicator GWP₁₀₀.</p>
6. Fitness for Use	
<p><u>Fitness for use</u> - The product shall be fit for use. Evidence may include data from appropriate ISO, CEN or equivalent test methods.</p>	<p><u>Fitness for use</u> 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>b) Maintenance of the products shall be possible without organic based solvents.</p>
	<p>The proposed changes aim at providing clarity on the level of fitness for use of floorings depending on the intended use by setting up both the standards to be use and the minimum level of performance.</p>

	This criterion includes a requirement to avoid the use of organic based solvents during the use phase.
7. Use	
<p><u>Consumer information for environmental use</u> 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:</p> <ol style="list-style-type: none"> 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/'. <p><u>Information on the EU Ecolabel.</u> Box 2 of the Ecolabel shall contain the following text:</p> <ul style="list-style-type: none"> - sustainable managed forests and reduced impact on habitats, - hazardous substance restricted, - production process energy saving, - lower risk to health in the living environment. 	<p><u>Consumer information for environmental use</u> 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:</p> <ol style="list-style-type: none"> 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/'. <p><u>Information on the EU Ecolabel.</u> Some proposal to implement are:</p> <ul style="list-style-type: none"> - Products tested for durability and safety ergonomics - Production process energy saving - sustainable managed forests and reduced impact on habitats - Restricted hazardous substances - lower risk to health in the living environment - Promoting renewable, recycled and recyclable materials

	The proposed changes are due to the changes in the criteria dealing with the fitness for use that sets up the minimum level of resistance of the wooden floorings depending on the intended use and those in the packaging criteria that encourage the use of renewable, recycled and recyclable materials.
<p><u>Legenda:</u> Text: existing criteria Text: proposed criteria Text: summary of the evidences Text: proposed changes on the criteria</p>	

2 REVISION OF EXISTING DEFINITION AND SCOPE FOR EU ECOLABEL

At present in the EU Ecolabel criteria document for 'wooden floor covering' the following definition and scope are given:

Current definition:

The product group of '**wooden floor covering**' shall comprise wood- and plant-based covering 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.

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

This product group will not include any covering treated with biocidal products at any stage of the product process, except where those biocidal products are included in Annex IA to Directive 98/8/EC of the EU Parliament and of the council and where the active substance is authorized for the use in question according to Annex V to Directive 98/8/EC.

Proposal for new definition and scope

The product group of 'wooden floor covering' shall comprise wood and plant based covering 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*.

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

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 article 57 and 59 of the REACH regulation and are authorized in the Regulation (EC) No 528/2012 (for product 8 and 18)

* *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.

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 wood based panels

Rationale and discussion:

It is important that the scope is unambiguous as well as representative for the whole market. In order to define the scope and definition of this product group, it is important to take into account the types of wooden floor coverings with greater market shares. The market analysis included into the Technical Background Report [2] 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, having a production market share, including Turkey, of 89 % in 2012 what reached 53 % of the worldwide production. In addition, laminate flooring production is expected to increase provided the construction sector overcomes the current financial crisis.

This type of floor coverings is made of a combination of wood and wood-based materials with other kind of materials such as glues or melamine, containing on average 80 % w/w of wood or wood-based materials. This value is confirmed by EPLF, the European Producers of Laminate Flooring¹ that demonstrates that only a few products are composed of at least 90 % w/w of wood. Consequently, the current scope does not cover a significant share of the laminate floor covering in the market. The extension of the scope (from wooden floor covering with a minimum content of 90 % w/w of wood to wooden floor covering made of several materials up to 20 %) could substantially increase the potential market share of the EU Ecolabel licenses. This will encourage the environmental improvement of a broader share of the floor covering sector.

According to the LCA screening, in general, the environmental impacts of wooden floor coverings are associated with the production and treatment of raw materials used in the manufacturing, rather than in any other life stage. Therefore, the focus in the revision will be given to the environmental performance of the raw materials used in floor covering, the applied finishing treatments and the use of other resources during the production process such as the energy consumption.

Based on the outcome of the questionnaire [3], the possible scope extension was also supported by stakeholders. In the questionnaire, it was asked for the main barriers that prevent producers from applying for this scheme. Among the possible reasons, stakeholders pointed out that the 90 % w/w threshold for wood content was one those.

¹ Note: Laminate flooring is 80 % wood: Wood fibres, wood chips, pulp derived from wood (paper). Wood products can be found in all three layers of the laminate floor: Decorative paper + overlay (wear layer), core layer, stabilizing layer. With the exception of the core layer each of these layers is impregnated with synthetic resin (e.g. melamine resin). These are pressed onto the core layer at high pressure and high temperature. (Question 10: <http://www.eplf.com/en/faq/questions.html>)

3 REVISION OF EXISTING CRITERIA OF EU ECOLABEL

In this section, the current EU Ecolabel criteria are reviewed and discussed. Revised and new criteria are proposed, together with possible points for discussion.

3.1 CRITERION 1.1 - RAW MATERIALS: SUSTAINABLE FOREST MANAGEMENT

Current criteria 1.1:

The producer shall have a policy for sustainable wood procurement and a system to trace and verify the origin of wood and tracking it from forest to the first reception point.

The origin of all wood shall be documented. The producer must ensure that all wood originate from legal sources. The wood shall not come from protected areas or areas in the official process of designation for protection, old growth forests and high conservation value forests defined in national stakeholder processes unless the purchases are clearly in line with the national conservation regulations.

From 1 January 2013, for wooden products placed on the market bearing the Ecolabel at least 70 % of any solid wood and 40 % wood-based materials must originate either from sustainably managed forests which have been certified by independent third party schemes fulfilling the criteria listed in paragraph 15 of the Council Resolution of 15 December 1998 on a forestry strategy for the European Union and further development thereof, or from recycled materials.

Assessment and verification: 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 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.

Proposal for criterion 1.1

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 generated that can be reused within the same process that

Proposal for criterion 1.1

generated it shall not be considered as recycled either.

The requirement does not cover high pressure laminate, which is used as a surface finish on laminate flooring.

1.1.b) Wood, manufactured board, cork and bamboo from certified sources

Wooden floor coverings must contain materials that comply with i.) or ii.):

- i. at least 70 % of wood and wood-based materials
- ii. at least 50 % of cork and bamboo materials

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.

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.

Assessment and verification

Based on the current version of PEFC and FSC certifications, wooden flooring coverings that carry the label "FSC-100 %", "FSC Mix", "FSC Recycled", "PEFC certified" or "PEFC recycled" 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.

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.

With regards to recycled wood, the geographical origin and nature (pre- or post-consumer) shall be declared and a chain of custody certificated presented.

⁽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.

Rationale and discussion:

This criterion is split into two sub-criteria aiming to clearly request 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 forests. In addition, splitting this criterion will bring harmonization with similar requirements set up in other major EU Ecolabels, such as Nordic Ecolabelling, Österreichisches Umweltzeichen, Blue Angel RAL-UZ 173, Environmental Choice in New Zealand or the Korean label.

i) Origin and traceability of wood, fibre raw materials, cork and bamboo

The Timber Trade Regulation (No 994/2010) that came into force in 2013 bans that illegal wood enters in Europe. However, the attributed devastating environmental impacts and the knowledge that it is still a common practice in some countries is the justification for having a clear and separate criterion requesting for legal wood. Although no reliable statistics are

available, a 2012 joint study by the UNEP and Interpol [5] stated that illegal logging accounts for up to 30 % of the global logging trade and contributes to more than 50 % of tropical deforestation in Central Africa, the Amazon Basin and South East Africa. This illegal wood can enter to Europe if, as it is the case, floorings or raw materials are imported from these countries.

Complying with this EU Timber Regulation (No 995/2010) it is ensured that an effective ban to the entry and commercialization of illegally harvested timber in the EU is set since it should be applied to all the combined nomenclature in which the wooden floor covering can fall into (See Table A.2 in [2]). In addition, the Regulation obliges the operators (the first person that puts the timber on the EU market) to comply but does not oblige final manufactures to maintain chain of custody certificates.

Therefore the Timber Regulation's requirements of businesses do somewhat facilitate fulfilment of this criterion with regard to wood raw material origin and traceability. However, it does not completely replace the requirements, as the Timber Regulation applies to illegal felling and is consistent with the legislation of the country in question. This criterion, however, applies to all wood raw materials, regardless the geographic origin, even if the problem of illegal felling is greater in the tropical regions overall.

The criterion is applied to cork and bamboo materials, however, some materials used in the laminate flooring such as paper are exempt from the traceability requirements and also from the certified forestry requirement, because they are difficult to document the traceability back to the forest. The manufactured board, on the other hand, is covered by the criterion.

ii) Sustainability of the wood, manufactured board, cork and bamboo

The concept of sustainability of the wood and plant-based materials is linked to the definition of "sustainable development", and therefore to the "sustainably managed forests". Although this concept is clear, from a legal perspective, it is challenge to define the boundaries between precisely when a forest is sustainably managed or not. In addition, the concept of sustainable wood can also be extended to waste wood that is recycled, since the 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.

Due to the complications involved with verifying whether or not the forest for which wood is sourced is sustainably managed, a number of certification initiatives had arisen. Among them, the widest ones are FSC and PEFC. Both are international associations that provide a global forest certification system by which forests can be audited and certified. To obtain certification, the organisation that applies for the certificate must meet the principles to a sufficient degree. When a forestry organisation 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 on displaying the label on their products.

With regards to material sourcing, the systems distinguish between certified wood², controlled wood³ and reclaimed/recycled materials⁴.

² Certified wood is basically virgin wood sourced from certified forest areas that complies with the principles and handled only by any producers and intermediaries that possess valid COC certificates.

³ Controlled wood is wood supplied by organisations that comply with certain standards or has been satisfactorily risk-assessed by the certified buying organisation. For example, FSC-controlled wood must not comply with the following requisites:

- a) Illegally harvested Wood
- b) Wood harvested in violation of traditional and civil rights
- c) Wood harvested in forests where high conservation values are threatened by management activities.
- d) Wood harvested in forests being converted to plantations or non-forest use.
- e) Wood from forests in which genetically modified trees are planted.

While PEFC-controlled wood must not comply with a), d) and e) requisites

These distinctions lead to different types of labelling. In this sense, FSC defines three strict conditions under which wood can be labelled:

- **FSC 100 %:** where 100 % of the wood based materials used must come from FSC certified forests.
- **FSC Mix:** where ≥ 70 % of all wood based materials are FSC certified virgin materials and/or post-consumer reclaimed materials and the remainder consists of pre-consumer reclaimed materials and/or controlled wood.
- **FSC Recycled:** where 100 % of the wood based materials are reclaimed, with at least 85 % being post-consumer and the remainder being pre-consumer recycled materials.

On the other hand, PEFC clearly differentiates in this area although certain common aspects can be found. The main differences are that PEFC does not have a specific 100 % logo and that no distinction is made between pre-consumer and post-consumer recycled material by PEFC, unlike FSC. The two types of PEFC labels are:

- **PEFC certified:** includes minimum of 70 % of “certified material” from forest which has been certified against PEFC scheme as sustainably managed or from recycled material. The content of recycled material is lower than 85 %.
- **PEFC recycled:** The product includes a minimum of 70 % of “certified material” from recycled sources. The content of recycled material is calculated based on ISO/IEC 14021.

In both cases, any remainder of wood-based material that is not PEFC certified or recycled must be made up by PEFC controlled wood.

70 % of certified wood and wood-based material is the current EU Ecolabel requirement. This requirement does not seem to be appropriate from the stakeholder's perspective regarding the current market conditions. Also the revision of other EU Ecolabel criteria pointed out that this limit should be revised upwards. For this reason, the revised EU Ecolabel criterion aims at increasing its strictness while making easy the verification procedures. For this reason, this criterion aligns with both schemes and sets requirements that should be deemed to comply with at least FSC mix or PEFC certified.

A lower benchmark is proposed for cork and bamboo materials to be in line with other national schemes. The requirements of certified and/or recycled wood have been introduced in other national scheme as summarized in Table 1.

⁴ Reclaimed material is material that would otherwise have been disposed of as waste or used for energy recovery but has instead been used in-lieu of virgin materials in a manufacturing process. The term includes both post-consumer and pre-consumer reclaimed material. Post-consumer reclaimed material is considered as: "Material that is reclaimed from a consumer or commercial product that has been used for its intended purpose by individuals, households or by commercial, industrial and institutional facilities in their role as end-users of the product."

Pre-consumer reclaimed material is considered as: "Material that is reclaimed from a process of secondary manufacture or further downstream industry, in which the material has not been intentionally produced, is unfit for end use and not capable of being re-used on-site in the same manufacturing process that generated it." [6]

Table 1: Summary of the Ecolabel criteria on requirements for certified and recycled wood content in the review European and non-European national schemes.

Label	% of certified wood and wood-based materials
Current EU Ecolabel	Wooden products placed on the market bearing the Ecolabel at least -70 % of any solid wood and - 40 % wood-based materials must originate either from sustainably managed forests or from recycled materials
Nordic Swan 5.2 (Floor Covering)	Wood raw materials but not bamboo should at least 30 % (annual average) must come from certified forests.
Nordic Swan 6.0 (floor covering)	Wood, manufacturing board, cork and bamboo by weight on annual basis > 70 % of the wood and raw material content and/or > 50 % of the bamboo and cork content and/or > 50 % of the wood and bamboo raw material content of manufactured board/fibreboard Must be from certified forestry
Österreichisches Umweltzeichen	At least 50 % of solid wood and 50 % of primary raw materials for wood-based materials must be originated from sustainably managed forest
Blue Angel RAL-UZ 176	At least 50 % of solid wood and 50 % of primary raw materials for wood-based materials must be originated from sustainable forest which are managed in a verified economically viable, environmentally sound and socially responsible way
NZ label Environmental Choice	Solid wood must be either made from recycled wood or content a minimum of 50 % w/w from certified forest Wood-based materials must content at least 30 % w/w of all wood from certified forest or at least 40 % from wood processing operations, forest harvesting waste and/or untreated demolition and/or recycled fibre or at least 40 % of all wood purchased from a combination of the above described origins Bamboo shall content at least 50 % w/w from certified forest Cork shall come from certified forest
Korean label	At least 70 % of wood shall be originated from sustainable forest resources in accordance with the forestry principles in UNCED The usage of waste wood according to wood materials of wood flooring materials shall conform to the following criteria. When a wood materials has been produced by using sustainable forest resources to a degree of 100 %, however, such a case shall be considered as conforming the criteria > 70 % for particle board > 30 % for fiber board > 70 % for other

Points for discussion

1. Is the proposed traceability of the wood and wood-based materials possible and feasible to ensure the legality of the harvesting?
2. Shall the benchmark on recycled and certified wood and wood-based materials content be merged?
3. Are the requirements on 70 % for wood and wood-based or 50 % for cork and bamboo respectively for recycled and certified wood and wood-based materials content feasible?

3.2 CRITERION 1.2 - RAW MATERIALS: RECYCLED WOOD AND PLANT MATERIAL

Current criterion 1.2

Post-consumer wood, chips⁵ 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.

Proposal for Criterion 1.2

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 "EPF standard conditions for delivery of recycled wood" document showing compliance with the limit values for the contaminants listed in Table 20 in Annex 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.

⁵ 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.

Rationale and discussion:

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.

The use of *recycled wood* in the manufacture of particleboards or fibreboards requires deliveries of material to the processor to ensure that reclaimed raw materials and the finished panel product are strictly controlled in respect of contaminating chemical elements and compounds that might be present at unacceptable levels in recycled wood. In this sense, a clear definition of what is recycled wood is needed. For the EU Ecolabel criteria for wooden floor covering the term "recycled wood" includes those wood materials that are sourced either pre-consumer or post-consumer and that can no longer be used for their intended purpose, either before or after their consume use. At this point, they are reclaimed and recycled as raw material for a manufacturing process (e.g. from the manufacture of panelboards, assembled products or building structures).

A number of national quality control schemes exist in Europe such as the German criteria RAL-Gütezeichen label "Recyclingprodukte aus Gebrauchtholz" or that developed by the European Panel Federation's (EPF) "Industry Standard for delivery conditions of recycled wood", which is based on a responsible care approach. EFP standards [7] have been developed for delivery conditions of recycled wood that defines limit values of certain elements and substances that are at particular risk of being present in recycled wood due to treatment with fungicides, paints and/or vanishes. The development of EU Ecolabel criteria for wooden furniture addressed this point suggesting maintaining the current limits. The need to refer to an already widely accepted standard practice in Europe as an Ecolabel criterion was questioned in that scheme consultation as well as the possibility of stricter the limits defined by the EPF. After the analysis of the stakeholder's feedback, it is proposed to maintain the specified limits for the benefit of any non-European suppliers of recycled wood fibres or panels containing recycled wood and with the same level of strictness although possible changes can be considered in the future in collaboration with EPF (See Table in the proposed criterion).

Further information can be found in Appendix A.1 of the Technical Background Report [2].

3.3 CRITERION 1.3 - RAW MATERIALS: IMPREGNATING SUBSTANCES AND PRESERVATIVES

Current criterion 1.3:

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 hazardous)⁶
- WHO recommended classification of pesticides by hazard classified as class 1b (highly hazardous)

Moreover the treatment of wood shall be in accordance with the provisions of the Council Directive 79/117/EEC and Directive 76/769/EEC.

Assessment and verification: 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.

Proposal for criterion 1.3

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 hazardous)
- WHO recommended classification of pesticides by hazard classified as class 1b (highly hazardous)

Moreover the treatment of wood shall be in accordance with the provisions of the Council Directive 79/117/EEC and Directive 76/769/EEC

Assessment and verification: 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.

Rationale and discussion:

No changes are proposed for this sub-criterion. Wood has been traditionally treated with pesticides to prevent the undesired damages caused by insects and mould over time. In this sense, the use of wood pesticides and in general the use of wood preservatives can extend the life of the wood and reduce the need for forest resources, but proper use is important. Some preservatives can slowly leach into the surrounding soil or water and even, sometimes touching the wood can leave residue on exposed skin.

The classification of pesticides in the WHO distinguishes between the more and the less hazardous forms of each pesticide. It is based on the toxicity of the technical compound and on its formulation. The classification is based primarily on the accurate oral and dermal toxicity to the rat since these determinations are standard procedures in toxicology. According to the WHO classification the pesticides are ranked in four groups: 1a (extremely hazardous), 1b (highly hazardous), 2 (moderately hazardous) and 3 (slightly hazardous). The criterion proposed the ban on the two first groups classified as extremely and highly hazardous substances. The use of

⁶ The WHO recommended classification of pesticides by hazard and guidelines to classification, available at http://www.inchem.org/documents/pds/pdsother/class_2009.pdf

these pesticides is not widely applied in Europe and therefore this ban does not create market restrictions.

Wood preservatives that are used during the impregnation process can contain substances like chromium, arsenic, copper or creosote that are substances mostly banned or classified as hazardous substances in several official classifications and therefore they should also be restricted in EU Ecolabel products. However, these substances are not explicitly banned in this criterion as they followed under the restrictions set up in Criterion 2.1. A detail description of the most commonly used substances and their respective classification can be found in the Technical Background Report (Appendix A1 – Technical analysis) [2]

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3.4 CRITERION 1.4 - RAW MATERIALS: GENERICALLY MODIFIED WOOD

Current criterion 1.4

The product shall not contain GMO wood.

Assessment and verification: The applicant shall provide a declaration stating that no genetically modified wood has been used.

Proposal for criterion 1.4

Withdrawn criterion

Rationale and discussion:

This criterion is proposed to be withdrawn as it is included in the requirements of criterion 1.1. In this way, the current requirement of this criterion is maintained into the set of criteria although wording avoiding repetition. The main reasons 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.

A study from the Food and Agriculture Organization of the United Nations (FAO) [8] suggested that as of 2002, less than 500 ha of genetically modified forest trees (poplar clones) were being grown commercially in China. Populus is the genus of forest tree in which genetic modification has been researched most widely, although some genetic modification research has been reported for about 19 genera of forest trees.

This same criterion can be found in other EU Ecolabel schemes e.g EU Ecolabel for wooden furniture, other type I Ecolabels (Nordic Ecolabel) and FSC certification.

Finally, stakeholder consultation provides as feedback a positive support on the exclusion of GMO wood and plant-based materials. However, this question will be consulted once again in the coming ad-hoc working group meetings. Further information can be found in Appendix A1 – Technical analysis of the background report [2].

3.5 CRITERION 2.1 - USE OF DANGEROUS SUBSTANCES- DANGEROUS SUBSTANCES FOR THE RAW WOOD AND PLANT TREATMENT

Current criterion 2.1

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

- R23 (toxicity by inhalation)
- R24 (toxic in contact with skin)
- R25 (toxic if swallowed)
- R26 (very toxic of inhalation)
- R27 (very toxic in contact with skin)
- R28 (very toxic if swallowed)
- R39 (danger of vary 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 in Council Directive 67/548/EEC of 27 June 1967 (Dangerous substances directive) on the approximation of the laws, regulations and administrative provisions regarding to the classification, packaging and labelling of dangerous substances and its subsequent amendments, and considering the Council Directive 1999/45/EC (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 67/584/EC, and amending Regulation (EC) No 1907/2006. 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, with and of the following hazard statements (or combinations thereof): H300, H301, H302, H311, H312, H314, H315, H317, H330, H331, H334, H351, H340, H350i, H400, H410, H411, H412, H413, H360F, H360D, H361f, H361d, H360FD, H360Fd, H360Fd, H360Df, H341, H370, H372

b) the product must not contain halogenated organic binding agents, azidirin and polyzirimins 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 Substance Data Sheet (SDS) or equivalent documentation shall be presented containing information on health hazard classification

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3.6 CRITERION 2.2 AND 2.3 - USE OF DANGEROUS SUBSTANCES –DANGEROUS SUBSTANCES IN THE COATING AND SURFACE TREATMENTS

Current criterion 2.2

2.2.1) Generic requirements

a) The requirements of part (2.1.a) 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 67/548/EEC) shall comply with one of 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)⁷ as defined in Directive 1999/13/EC. 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 in accordance with Directive 1999/45/EC shall not exceed 14 g/m² surface area and applied quantity (wet paint/varnish) of VOC shall not exceed 35 g/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 m² 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 %

c) The content of free formaldehyde in

- products or preparations used in the panels shall not exceed 0.3 % by weight.
- 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 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.

⁷ 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

2.2.3) Adhesives

a) the requirements of part 2.1.1 on dangerous substances for the raw wood and plant treatment 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.

2.2.4) Formaldehyde

Formaldehyde emissions from substances and preparations for surface treatment liberating formaldehyde shall be less than 0.062 mg/m³ air.

Assessment and verification: the applicant and/or his supplier shall provide a declaration that the above requirement is met, together with either information on the formulation of the surface treatment (e.g. SDS) or test results proving that the maximum formaldehyde emission value does not exceed the stated limit (based on EN 717-1).;

2.2.5) Plasticizers

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. Additionally DNOP (di-n-octyl phthalate), DINP (di-isononyl phthalate), DIDP (di-isodecyl phthalate) are not permitted in the product.

Assessment and verification: The applicant shall provide compliance with this criterion.

2.2.6) Biocides

Only biocidal products containing biocidal active substances included in Annex IA of the Directive 98/8/EC of the European Parliament and of the Council, and authorized for use in floor coverings, shall be allowed for use.

Assessment and verification: The applicant shall provide a declaration that the requirements of this criterion have been met making available a list of all the biocides used.

General rationale and discussion on criteria related to the use of dangerous substances:

The use of chemical requirements to avoid or restrict the use of dangerous substances cover all chemical and chemical products to the floor coverings 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. Therefore these criteria apply to substances in the product that are considered as constituent substances, that means, those that are fundamental ingredients for the flooring, including additives such as preservatives or resins but does not include impurities from primary production. Impurity refers to residues from primary production which may be found in the finished product at concentrations below 0.01 % w/w, but not substances that have

been added to a raw material or the product actively and/or for a particular purpose, irrespective of quantity.

The criteria regarding the use and restriction of dangerous substances are worded depending on the lifecycle stages where they are used or emitted (production and use stages) as well as on for what they are used in the production stage. The three criteria are:

- Restricted content of dangerous substances in the floor covering bulk
- Restricted use of dangerous substances in the surface treatment
- Limit on the possible emissions of dangerous substances during the use stage.

As seen, the restrictions in the content or in the emission of dangerous substances are the two alternatives proposed to decrease the potential harm of the substances contained in this product group. In addition, these criteria include the limitations on hazardous substances and mixtures needed to be included in the criteria set according to all new EU Ecolabel criteria decisions developed or revised after the implementation of the new EU Ecolabel Regulation [9].

Article 6(6) of EU Ecolabel Regulation EC No 66/2010 requires that certain types of substances are not allowed in ecolabelled 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 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 nor to goods containing substances referred to in Article 57 of Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)".

Nevertheless, the EU Ecolabel Regulation recognizes also that in certain circumstances restriction of some substances may not be technically or economically viable. Therefore, Article 6(7) of the Regulation 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".

However, and according to article 6(7) of Regulation (EC) No 66/2010, no derogations shall be given concerning substances that meet the criteria 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 0.1 % w/w. As such, some specific substances are strictly and without exception excluded from the EU Ecolabel products and there is no room to derogate them.

The proposed criteria regarding the restriction of hazardous substances have been structured in a different way.

- Firstly, general requirements on all the substances involved in the manufacturing of wooden floor coverings are addressed (criterion 2.1). This criterion applies to those substances that are listed under hazard classifications and risk phrases in Regulation (EC) No 1272/2008, Substances of Very High Concern (SVHC) and other specific listed substances.

- Secondly, *hazardous substances used during the manufacturing processes* are addressed (criterion 2.2). This criterion aims to limit the use of chemical and chemical products that although presenting hazardous inherent properties have no feasible and more environmentally friendly alternatives on the market.
- Finally, hazardous substances used during the coating and surface treatment process are restricted in the criterion 2.3.

The three criteria are based on weight percentage or content of the substance of concern with respect to the total weight of the finished product or a specific part of. Alternative benchmarks and methodologies are proposed when suitable.

Proposal to criterion 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
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

Proposal to criterion 2.1- General hazardous substances

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.

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:

- 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.

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).

2.1.c) The finished product shall not contain the following hazardous substances:

- Halogenated organic binding agents
- 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
- Azidirin and polyzirimidings and
- Pigments, plasticisers and additives based on:
 - (i) lead, cadmium, chrome (VI), mercury and their compounds,
 - (ii) arsenic, boron and copper and
 - (iii) organic tin compounds

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

Adhesive/resins products that contain isocyanates are exempted from the requirement concerning the classification R40

Assessment and verification

The applicant and/or its supplier shall provide the material Safety Data Sheets 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.

Rationale and discussion:

The aim of this criterion is to ensure that the health and environmental damage of using chemical products is reduced as much as possible but it does not mean that the finished product will be innocuous to the environment. Chemical products that are carcinogenic, mutagenic, reprotoxic, very toxic, toxic or harmful to the environment must not be used in the manufacture of the floor covering.

The term chemical products include adhesives, paints, pigments and impregnation agents used in the manufacture of the flooring, understanding that manufacture is defined as all manufacturing/treatment conducted by the manufacturer, or that the manufacturer has ordered from a supplier.

Some requirements concerning environmentally and healthy harmful substances have been revised in this criterion in accordance with Article 6(6) of Regulation (EC) No 66/2010. The proposed requirements are amended and tightened in comparison with the current criterion so that it is also not possible to use chemical products that fall into the classifications used in the CLP Regulation or are on the Candidate List for Substances of Very High Concern in accordance with Article 59(1) of the REACH Regulation. In some cases, the CMR requirements will overlap with the previous and more general requirement concerning the chemical product classification. In other cases, it will be necessary to have exemptions/derogations since these specific substances are essential ingredients and there may be no available alternatives on the market. It is worth noting that this criterion addresses the classification of chemical products and not the individual substances that make up the product.

The *sub-criterion (2.1.b)* covers and excludes the substances of very high concern (SVHC) that are substances that require great caution due to their inherent properties. They meet the criteria in Article 57 of the REACH regulation and cannot be derogated in accordance with Article 6(7) of the Regulation (EC) No 66/2010. SVHC are those that are classified as:

- CMR (category 1 and 2) under the Dangerous Substances directive 67/548/EEC
- category 1A and 1B under the CLP Regulation
- PBT substances and vPvB substances and
- Substances that have endocrine disruptive properties
- Environmentally harmful without meeting the criteria for PBT or vPvB.

SVHCs may be included on the Candidate List with a view to them being inscribed on the Authorization List, which means that the substance becomes regulated (ban, phasing out or other form of restriction). Since these substances are being phased out or banned, it is only logical not to permit this type of substances in the EU Ecolabel product that are considered front-runners from an environmental performance point of view. These substances are apart from those classified as CMR and category 1a and 1b under the CLP Regulation, the substances that are classified as PBT and vPvB substances according to the Annex 13 of REACH and listed at: <http://csis.jrc.ec.europa.eu>. Those substances "deferred" or substances "under evaluation" are assumed not to have PBT or vPvB properties and potential endocrine disruptors. Further information can be found in Appendix A1 of the Background report [2].

The *sub-criterion (2.1.c)* covers chemical products used at the manufacture stage. This requirement aims at being as much as possible harmonized with the criteria developed for other product groups, e.g. wooden furniture, and by national Ecolabel schemes and covering the specific chemicals of relevance in the flooring manufacturing. The appendix A1 of the Technical Background Report [2] describes in detail the environmental aspects of these substances that are proposed to be banned in the revised criteria and also sets out the relevance of the substances to the wooden floor covering sector. In brief, the chemical products included are:

- Halogenated organic binders are organic compounds that contain the halogens. A large number of these substances are harmful to health and environment, are highly toxic to aquatic organisms, carcinogenic or harmful to human health.
- Phthalates are classified as toxic for reproduction (Article 57c of REACH), some are endocrine disruptors and others are being more deeply investigated. Due to the high toxicity of certain phthalates as well as the scarce used in the sector under study; three specific phthalates were proposed to be completely banned: DnOP, DINP and DIDP in the current EU Ecolabel criteria. The new revised criterion proposes to reinforce the current ban and also extend it to other phthalates such as DBP, DEHP, DIPP, BPP and DnPP due to the same reasons. This measure does not expect to bring any market restriction due to the above mentioned reasons.

The proposal is supported by the recent revisions of national ecolabel schemes that include bans on phthalates acting as plasticizers. For example, Nordic Ecolabelling 6.0 excludes the use of phthalates in labelled products and NZ label requires the submission of appropriate information about the phthalates used as plasticizers and explicitly bans

the use of DBP, DEHP, DIPP, BPP, DnPP, DnOP, DINP and DIDP as they are considered phthalanes of concern.

- Aziridine is classified as: Flam. Liq. 2, Carc. 1B, Muta. 1B, Acute Tox. 2, Acute Tox. 1, Skin Corr. 1B and Aquatic Chronic 2 (H225, H350, H340, H330, H310, H300, H314 and H411) according to harmonized classification of table 3.1 of Annex VI of CLP regulation. Aziridine is mainly used in polymerization products as a monomer for polyethylenimine (polyaziridines), in, for example, adhesives, binders, coating resins and varnishes
- Pigments, plasticisers and additives based on lead, cadmium, chrome (VI), mercury and their compounds, arsenic, boron and copper and organic tin compounds are proposed for exclusion. Some pigments and adhesives that can be used in the flooring manufacturing are based on heavy metals that can accumulate in the environment and cause serious damage to ecosystems and human health, having the potential of bioaccumulation and leading to toxic effects in plants and animals if they are subjects of heavier exposure. The sub-criterion focuses on excluding pigments, plasticisers and additives that are based on particular elements of concern (lead, mercury, etc.) rather than simply the actual hazard classification of the functional substance itself. Further information is included in the Appendix A1 of the background report [2].

However, there are **some pigments containing metals which have been derogated in other EU Ecolabel set of criteria** e.g. EU Ecolabel for paints and varnishes [10]. They are pigments that even containing metals can be used where laboratory testing shows that the metal chromophore is bonded within a crystal lattice and is insoluble. The following **metal containing pigments are derogated for use: barium sulphate, antimony nickel within an insoluble TiO₂ lattice, cobalt aluminate blue spinel and cobalt chromite blue-green spinel.** As assessment and verification of this derogation test results are required demonstrating that the pigment chromophore is bonded within a crystal lattice and is insoluble in accordance with DIN 53770-1 or equivalent

- Organic tin compounds such as tributyltin (TBT), dibutyltin (DBT), dioctyltin (DOT) and triphenyltin (TPT) are all substances of concern that are used in pigments and additives. TBT is the organic tin compound that has been investigated most thoroughly showing to cause endocrine disruption in marine organisms.

Points for discussion

1. Shall derogation on the pigments containing metals that shows that the metal chromophore is bonded within a crystal lattice and is insoluble be, in line within the EU Ecolabel criteria for paints and varnishes, included?
2. Is there any other substance or type of substance to be included into the restriction list (subcriterion 3)?
3. Shall the glues used in the installation of the flooring be considered? Shall the click system, that avoids the use of chemicals during the installation, be promoted?

Proposal to criterion 2.2- Manufacturing process

Chemical substances used in the assembly of the product shall comply with the following limits:

a) the VOC content of resins and/or adhesives shall not exceed 3 % (w/w).

b) Alternative 1

The content of free-formaldehyde shall not exceed 0.2 % (w/w) in resin and/or adhesive formulations used in the manufacturing of panels

Alternative 2: Withdrawn the current criterion

Assessment and verification

The applicant and/or its supplier shall provide the material Safety Data Sheets 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

Rationale and discussion:

- Adhesives and resins and VOC content

Floor coverings use adhesives and/or resins for various purposes, including the resins and adhesives for manufacturing the boards and wood laminates and those used in their subsequent surface treatment. In this work, requirements address adhesives and resins used for manufacturing the floorings equally, if not specifically indicated. Many of these products contain substances that are undesirable in terms of health and the environment (VOCs).

Adhesives and resins used for the manufacturing of wooden floor coverings can be classified as: VOC free, water-based or solvent-based. These three types of adhesives or their combination can be used in the same facilities being the major VOC emissions arisen during the application and drying process of solvent-based coatings what is the subject of the next criterion and secondly those coming from the use of adhesives in the manufacture. Minor VOC emissions occur from mixing processes, cleaning of tools and equipment, storage of paints, wastes and other VOC containing products used in the coating process but they can be minimized by good housekeeping practices.

Concerning the adhesives for lamination, there are four main types of adhesives. Two of these are based on formaldehyde (urea-formaldehyde resins and melamine-urea-formaldehyde resins) and mainly used for manufacturing MDF, plywood and fibrewood, one is based on polyvinyl acetate (PVAs adhesive) and one is based on isocyanates (EPI adhesives, being a free-formaldehyde adhesive). Further information about the use, costs, environmental aspects, performance and possibilities of substitution are included in the Appendix A1 of the Background report. The limit sets in this criterion aims at encouraging the substitution of 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.

Existing alternatives that are VOC-free are already on the market. Most of these alternatives are based upon isocyanates (e.g. polyurethane or polyuria). However, the use of these alternatives is not free of risks as isocyanate is classified as R40 and its use is also restricted in some national labels. For example, Nature plus restricts the use of isocyanate-adhesives to 2 % w/w of the absolute dry weight of the wood/wood-based material. However, other national Ecolabel schemes such as the Nordic Ecolabelling 6.0 allows its use thanks to derogation and the EU Ecolabel criteria for wooden furniture proposed a **default derogation to use isocyanate-adhesive classified as R40**. The main reason for this derogation is that current formulations on the market cure completely and leave no residue free isocyanate being adhesives that are effectively VOC-free. This proposal emerged as a request of stakeholders as they considered the

original proposed criteria regarding harmful substances unclear and confusing on the limits for VOCs in coatings and adhesives.

This requirement is included in other labels. For example, Nature Plus requires a content level lower than 5 % w/w of the absolute dry weight of the wood/wood based material, Nordic Ecolabelling 6.0 only permits adhesives that contain no more than 3 % w/w and the Belgian GPP scheme requires a maximum aromatics content of the solvents upto 5 % w/w.

- Free-formaldehyde content

Formaldehyde is a kind of VOCs and is present in the products and preparations used in the wooden panel production such as resins and adhesives and in the chemicals used for surface treatment. Formaldehyde emissions therefore are coming from the solvents as well as from the wooden panels after their production.

Formaldehyde as such is classed by the International Agency for Research on Cancer as a carcinogen, basing this classification on the possible effects of large doses of formaldehyde to which workers in some chemical and manufacturing plants were formerly exposed. There is no evidence that small dosages (much lower than the guideline limit, 0.1 mg/m³, with reference to the domestic environment) have any carcinogenic effect.

Not all wood-based panels contain added free formaldehyde as a component of the binding system, and in those panel types where a formaldehyde based synthetic resin binder is used the amount of free formaldehyde given off depends on several factors. Release is influenced by the binder type, temperature, humidity, panel thickness and percentage concentration. Experiments have demonstrated that in a stable environment (temperature and humidity) formaldehyde release does decrease over time and the low initial values of typical particleboards and MDF will decrease by at least 50 % within a few weeks of manufacture.

However, the use of formaldehyde-based resin formulations remains the most common method of produced wood-based panels. That is due to the lack of substitutes that without presenting physical or human health risks can be used for these applications. For this reason, a total ban of formaldehyde based resin is, for the time being, not feasible due to the lack of alternatives. The current EU Ecolabel criterion, therefore, aimed at restricting the formaldehyde content in the raw materials.

The current EU Ecolabel criteria for wooden floor coverings require two limits depending on the product that contains the free-formaldehyde. The first limit applies to products and preparations used in the panels and shall not exceed 0.3 % w/w. The second limit applies to binding agents, adhesives and glues for plywood panels or laminated wood panels and shall not exceed 0.5 % w/w.

Other EU Ecolabel related schemes (for example those for wooden furniture) have also required a revision of the wording used for formulating the criteria dealing with formaldehyde emissions and content. Stakeholders pointed out that a restriction in the content of free formaldehyde in the binding agents, adhesives and glues for plywood panels or laminated wood panels not exceeding 0.2 % w/w could effectively prohibit all aminoplastic based resins from being used in EU Ecolabel products. Moreover, it was suggested that the limit should apply to the "resin formulation" (resin plus hardener), rather than individual components of the formulation. This proposal has been included into the Alternative 1. Additionally, the industry argued that concerns over risks from higher free formaldehyde ingredients are controlled automated handling processes. It was also communicated that for verification purposes, reference should be made to ISO 11402 tests for free-formaldehyde contents. This approach is followed by, for example, the Belgian GPP scheme.

The revision of other national schemes points out the possibility of withdrawing this sub-criterion as a limit on formaldehyde emissions will be required in criterion 3.2. In this sense, other national schemes such as the Nordic ecolabelling version 6.0, Blue angel RAL-UL176, Nature Plus or even third party schemes such as the Korean label or the NZ Environmental choice proposed a limit on the formaldehyde emissions rather than the free formaldehyde content. This approach is followed in the Alternative 2.

Points for discussion

1. Shall derogation on adhesive products that contain isocyanates and/or formaldehyde to be exempted from the requirement concerning the classification R40 be included?
2. Shall the criterion on maximum free-formaldehyde content homogeneous to all chemicals and chemical products to be used in the flooring production and extended to the formulation instead of the single components?
3. Shall the criterion on maximum free-formaldehyde content be withdrawn?

Proposal to criterion 2.3 - Surface treatment

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

Environmental harmful products

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 2 g/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 %

Assessment and verification: the applicant and/or its supplier shall provide the SDS or an equivalent declaration of the compliance of this requirement, together with information on the formation of the surface treatment. Test reports based on the specific standards or a declaration from the supplier shall be provided.

Proposal to criterion 2.3 - Surface treatment

2.3.b) Biocides

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

* VOC shall mean any organic compound having at 293.15K a vapor pressure of 0.01 kPa or more, or having a corresponding volatility under the particular conditions of use

Rationale and discussion:

The various types of flooring covering are often surface treated to ensure a durable, easy to clean surface and above all hard wearing surface that allows a long service life for the floor. The surface treatment largely takes the form of lacquers (different types) and oils along with primers, sealants, undercoats and top coats that are used alone or together in systems and often involve more than one lacquering product and several coats being applied in different quantities.

The chemicals 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 is set either on the nature of the ingredients of the chemicals or on the quantity and method of application.

The most important sources of solvent related VOC emissions occurs during the coating treatment and although depending on the process and products used, generally surface treatment and the subsequent drying process of the workpiece is the most relevant ones. Techniques to reduce the environmental damages associated to this process are: use of low VOC substances, improved application efficiency in the coating process or use of abatement technologies (especially oxidation).

The use of low VOC substances implies the substitution of mostly used chemicals by others such as water-borne coatings or UV-curing coatings than content 25-40 % or 2-5 % VOCs respectively. However, completely VOC free coatings are rarely used for wood coatings due to the large investment costs needed and the potential adverse impacts on the substrate properties.

Whenever the surface quality requires the use of organic solvents, the limits set for VOC content can be achieved by increasing the efficiency of the application technologies and consequently decreasing the total amount of organic solvent to be needed. The examination of the European best available technology report on surface treatment using organic solvents shows that it is appropriate to calculate the environmental impact of the use of organic solvents using the application method (g/m^2). The method involves calculating of environmentally harmful substances based on the application method and the percentage of content of any harmful substance in the solvents used. This method considers the efficiency of the mostly used techniques and applies efficacy rates that remain as shown criterion proposal. Further information is included in Appendix A1 of the Technical Background Report [2].

The current EU Ecolabel criteria sets a restriction in the applied quantity of wet paint/varnish of environmentally harmful substances in accordance with the Directive 1999/45/EC that shall not exceed $14\text{g}/\text{m}^2$ surface area and applied quantity (wet paint/varnish) of VOC shall not exceed $35\text{g}/\text{m}^2$. Both restrictions are proposed to be stricter in the revised EU Ecolabel criteria set since

the technology and current market conditions allow for that fulfilling at the same time, the requirements concerning the quality and durability of the flooring surface. This proposal is supported by the limits set up in other revised national schemes as shown in Table 2 and Table 3.

Table 2: Summary of the Ecolabel criteria on applied quantity of wet paint and varnish of environmental harmful substances in the reviewed national schemes

Label	Applied quantity of wet paint/varnish of environmental harmful substances
Current EU Ecolabel	The applied quantity (wet paint/varnish) of environmentally harmful substances in accordance with Directive 1999/45/EC shall not exceed 14g/m ² surface area and applied quantity (wet paint/varnish) of VOC shall not exceed 35 g/m ²
Belgian GPP	--
Nordic Ecolabel version 5.2 (Floor Covering)	The total quantity of chemicals in the surface treatment product (e.g. fillers, stains and varnishes) that are classified as dangerous for the environment must either a) not exceed 5 % w/w or b) not exceed 7g/m ² of floor covering, calculated in wet state
Nordic Ecolabel version 6.0 (floor covering)	Chemical products used in surface treatment systems (e.g. fillers, oils, stains, lacquers) must fulfil one of the following two alternatives - none of the chemical products are classified as environmentally harmful (H410, H411 or H412) - the quantity of environmentally harmful substances applied in the surface treatment system may be no more than 100g/m ² , calculated in a wet state. One of the formulas below is to be used to first calculate the total amount of environmentally harmful substances in the surface treatment system 100*H410+10*H411+H412 or 100*(R50/53) +10*(R51/53) +(R52/53)
Österreichisches Umweltzeichen	Refers only to the general restrictions
Blue Angel RAL-UZ 176	--
NZ label Environmental Choice	Criterion applies where the treatment amounts to more than 5 % w/w in the finished product: - the treatment substances must not contain more than 7 % by weight x efficiency of organic solvents or - the flooring product may be treated with a maximum of 14g/m ² of substances that are classified as ecotoxic and - the amount of organic solvent added in the surface treatment must not exceed 35g/m ²
Korean label	--

Table 3: Summary of the limits on organic solvents in the surface treatment products in the reviewed national schemes

Label	Limits on organic solvents in the surface treatment products
Current EU Ecolabel	The products may contain up to 5 % w/w VOC as defined in Directive 1999/13/EC
Belgian GPP	Agents for maintenance/surface treatment must not contain more than 5 % w/w of organic solvents. The aromatic content of the solvent must not exceed 5 % w/w
Nordic Ecolabel version 5.2 (floor covering)	--
Nordic Ecolabel version 6.0 (floor covering)	Within each surface treatment system, the total amount of VOC in surface treatment products must either: <ul style="list-style-type: none"> - be below 5 % w/w total or - amount to a maximum of 2g/m² treated surface in total The requirement to the total VOC in the chemical product with the chemical composition they have in wet form. If the products required dilutions, the calculation is to be based on the content in the dilutive product
NZ label Environmental Choice	The content of aromatic solvent in products must not exceed 1 % w/w
Korean label	--

Free-formaldehyde is also present in the chemicals used for surface treatment. The emissions of formaldehyde can be limited either restricting their content in the chemicals and chemical products to be used in the surface treatments or restricting their emissions from a component or the finished product.

The second option is the preferred one in some of the revised national schemes, as commented in the revision of the previous criterion. This option gives freedom to the producers to choose the most convenient combination of chemicals to obtain a high quality product while achieving the emission limits requested by the ecological criteria.

An alternative to this criterion is proposed in line with these national schemes that limit the emissions of formaldehydes from the finished product instead of restricting their content in the chemical and chemicals products used in the surface treatments. For this reason, this criterion is included into criterion 3.2

Biocides

In accordance with the set of EU Ecolabel criteria for other indoor wooden products biocides should not be permitted or applied to the surface of any finished material for the purposes of adding a final disinfected effect. These substances should only be permitted in the impregnation of wood logging activities that is stored prior and after the saw mill stage. The active substance(s) used shall comply with the requirements on hazardous substances in accordance with general criterion 2.1.b and contain only active substances approved under the biocidal Products Regulation (EC) No 528/2012 (for product group 8 or 18). Applicants should consult the listing of authorized biocides approved by the European Commission by product type: http://ec.europa.eu/environment/chemicals/biocides/active-substances/approved-substances_en.htm

Preservatives for which a dossier has been submitted for evaluation pending a decision on authorization or non-inclusion may be used in the interim period up until the adoption of the Decision.

A revision of the national labels regarding the criterion that restricts the use biocides is shown in Table 4.

Table 4: Summary of the criteria on biocides in the reviewed national schemes

Label	Limits on biocides
Current EU Ecolabel	Only biocidal products containing biocidal active substances included in Annex IA of the Directive 98/8/EC of the European Parliament and of the Council, and authorized for use in floor coverings, shall be allowed for use.
Belgian GPP	The active substances (biocides) in maintenance products for wood must not be potentially bioaccumulative in accordance with the criteria in Directive 67/548/EC.
Nordic Ecolabel version 5.2 (floor covering)	It is forbidden to add biocides in the form of pure active substance or in the form of biocidal products to the floor covering with the aim of procuring a disinfectant or antibacterial treatment nor a disinfected or antibacterial surface.
Nordic Ecolabel version 6.0 (floor covering)	The following substances must not be added to fibers or to the finished floor covering for the purpose of achieving a disinfectant or antibacterial treatment or a disinfectant or antibacterial surface: - antibacterial substances (including silver ions, nanosilver and nanocopper) and/or - biocides in the form of pure active substances or as biocidal products
Österreichisches Umweltzeichen	It must not intentionally added treatment agents e.g coating materials whose biocidal site equipment over a pot-preservation goes (film or object-preservative) and the ingredients contain in particular against wood-damage linge
Blue Angel RAL-UZ 176	The use of biocides shall not be permitted. Biocides exclusively used for in-can preservation on aqueous coating materials and glues or flame retardants according to criterion 3.2.2 shall be exempt from this requirement
NZ label Environmental Choice	Plywood and wooden floor panels may only be treated with preservatives in accordance with the requirements of the NZ building code and to the minimum acceptable level in the NZ standard NZS 3602 based on its intended use
Korean label	--

Finally, it should be noticed that during the revision of other relevant EU Ecolabel criteria some stakeholders specifically stated that derogation for R43 preservatives (biocides) would be required if water-borne coatings were to be used. Further information about this topic is needed.

Points for discussion

1. Are the new benchmarks on applied quantity (wet paint/varnish) of environmentally harmful substances feasible, $<7\text{g/m}^2$ surface area and $<2\text{g/m}^2$ of VOC?
2. Should the current requirements on VOC content in each surface treatment or the total content of VOCs in surface treatment products be set as an alternative?
3. Should the current requirement on formaldehyde emission from the surface treatment chemicals be withdrawn or included into criterion 3.2?
4. Is it needed a derogation for R43 preservatives (biocides) if water-borne coatings are used?

3.7 CRITERION 3.1 - PRODUCTION PROCESS: ENERGY CONSUMPTION

Current criteria 3.1

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

Proposal for criterion 3.1

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):

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

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

Rationale and discussion:

The energy consumption during the manufacturing was identified in the Technical Background Report [2] as the environmental aspect that causes the highest environmental damage, regardless the type of flooring. In general, wooden floor coverings (based on wooden based panels) is an intensive energy sector where the best available technologies (BATs) [11] have been identified at EU level to reduce the energy consumption and the environmental damages associated with. Drying the wood is the most energy consuming process step being followed by the sawing and milling. Both demands can be reduced, for example, by using air-drying or waste materials for on-site energy production.

The current criterion proposes a calculation formula and respective benchmarks depending on the type of wooden flooring. The calculation formula takes into account the proportion of raw material coming from certificated forests or equivalent, and eventually from recycled material, and the sources of energy to cover the energy demand of the process, based on the estimations carried out by the Nordic ecolabelling in 2006 [12].

This formula has been revised in the last proposal of Nordic ecolabelling criteria for Floor covering in 2014 and new stricter limits to award the licence in accordance to the following equation to has been proposed

$$E = \frac{A}{20} + \left(5 - \frac{B}{3}\right) + \left(5 - \frac{C}{7}\right)$$

Where A is the proportion of renewable fuel (%), B is the electricity consumption (kWh/m²) with a maximum requirement of 15kWh/m² and C is the fuel consumption (kWh/m²) within a maximum 35kWh/m². The minimum values to be achieved to award the label are:

- E>11.0 for solid wood and laminate flooring and
- E>8.0 for parquet flooring, bamboo flooring and cork flooring

The energy consumption (E) is calculated as electricity and fuel consumption in drying and sawing for parquet, bamboo and solid wood flooring and the energy consumed in the manufacture of the board for laminates. At least 95 % w/w of the raw materials in the flooring must be included but energy consumption in the manufacture of adhesives and lacquers are however excluded.

This formulation has the advantages of being purely based on energy-related requirements, removing the parameters in the calculation related to the proportion of wood raw material from certified forestry and the proportion of recycled wood raw material. The reason behind is that these points are dealt with in other criteria as for example criteria 1.1-1.4.

The energy requirement comprises two parts: requirements/limit values for the use of electricity and fuel and a total limit that must be achieved. The energy requirement promotes low energy consumption in terms of electricity and fuel, plus a high proportion of renewable fuels. Each term contributes equally, making all of them significant. The less energy used during the manufacture or the higher proportion of renewable fuel, the higher the total E achieved. Nordic ecolabelling checked that this requirement level for the sum total of E has been tightened slightly, compared with previous requirements concerning the equivalent sum total (called P, in the current criterion box). The requirement is judged to have a steering effect, such that the floor covering in each flooring category that have the highest energy consumption and/or lowest proportion of renewable energy do not meet the requirement level. Since the sum total P also included a contribution from the proportion of certified wood and renewable raw materials, P and E are not comparable. Further details can be found in Appendix A1 of the Background report.

The revision of other national schemes arise the proposal of including an additional criteria focused on the **energy management during the production process**. This proposal is discussed under the next section of this report.

3.8 CRITERION 3.2 - PRODUCTION PROCESS: WASTE TREATMENT

Current criteria 3.2

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:

- 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.

Assessment and verification: 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;

Proposal for criterion 3.2

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 implement processes to deal with and to minimise waste originated from the production process through recovery and reuse or reprocessing.

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 annually 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
- 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. The documentation should include:

- 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.

Rationale and discussion:

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. The programme must ensure that during the manufacturing stage, processes to minimise waste through recovery and reuse or reprocessing have been implemented. The waste produced during the manufacturing stage is mainly wood

chips, waste wood from wood processing operations, waste from the forest harvesting and/or untreated fibre of wood and plant-based materials, which should be either recycled in the production or used as fuel in on-site combustion plants. All these materials are characterized by having high energy content and being considered as CO₂ storage. For these reasons, it is important to prevent their landfilling or incineration without energy recovery. The good-practices (recovery, reuse and reprocessing) are environmentally beneficial because, among other reasons, they prevent further harvesting of virgin trees and save energy (recycling uses less energy than that required by virgin materials).

Regarding the current criterion two modifications that aim to include the above mentioned evidences are proposed:

a) A specification regarding the types of materials to be recovered. A sentence that specifies that *waste from production that has energy content greater than 10 MJ/kg (2.78 kWh/kg dry test) must be recovered, reused or reprocessed.* (They mean that the waste shall be reintroduced into production or used as a source of energy).

b) The development and implementation of a waste minimization management programme that includes processes to minimize waste through recovery and reuse or reprocessing and that records and reports:

- the total waste produced
- breakdown of the total waste production recovery to type of processes or final destination
- 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.

3.9 CRITERION 4 - USE PHASE: RELEASE OF DANGEROUS SUBSTANCES

Current criteria:

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:

4.a) Formaldehyde

Wood-based materials are only allowed for use in wooden floor coverings if they comply with the following requirements on formaldehyde emissions:

- 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.

Assessment and verification: 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 provided⁸.

4.b) Volatile organic compounds (VOC)

The finished products must not exceed the following emission values: Substance Requirement (after 3 days)

Total organic compounds within the retention range C₆-C₁₆ (TVOC) < 0.25 mg/m³ air

Total organic compounds within the retention range > C₁₆-C₂₂ (TSVOC) < 0.03 mg/m³ air

Total VOC without LCI⁸ < 0.05 mg/m³ air

Assessment and verification: The applicant shall present a test certificate according to emission tests:

- prEN 15052
- EN ISO 16000-9.

⁸ LCI = lowest concentration of interest; see 'Health risk assessment process for emissions of volatile organic compounds (VOC) from building products' (Federal Environmental Agency).

Proposal for criterion 4

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

4.1) 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

4.2) 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

Proposal for criterion 4

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

Rationale and discussion:

Formaldehyde

Formaldehyde is the single VOC of most concern from the health and environmental points of view. Formaldehyde emissions from wooden flooring may come from products used for surface treatment (lacquers and oils), raw materials (wood), other chemicals used such as adhesives in manufactured board and those used as glue to glue the flooring to the subfloor and jointing compounds used.

It is possible that during the manufacture, substitution of harmful substances with less harmful substances can occur. But, for the time being, resins based on formaldehyde are the only ones that have the potential to produce high quality wood-based materials at a significantly lower cost. For this reason, this criterion aims at limiting the formaldehyde emissions from the wooden-based panels. It also encourages producers to only use the minimum amount of resin required to give the product the necessary technical properties and to favour optimally designed resin formulations that result in the lowest residual free formaldehyde contents after curing.

The comparison of the methodologies and benchmarks set by the national schemes for limiting the emission of formaldehyde during the use phase varies significantly. Methods and reporting units are different making difficult the direct comparison among them. However, most of them rely on two different test methods: the perforator method (EN120) and the chamber method (EN 717-1). The latter method is less aggressive and aim to mimic natural environments and last up to 28 days whereas the former method is shorter and more aggressive generally used for factory production control.

On the other hand, a framework for free-formaldehyde emissions testing of wood-based panels (EN 13986) [13] was developed by the European industry. It classifies wood-based panels used in internal applications as either Class E1 or Class E2 depending on their formaldehyde release. Each of the above-mentioned standards provides test results with different numerical values but which can be translated into the E1 standard value.

As summarized in Table 5, the strictness of the national schemes varies widely. The most strictest ones such as the Austrian UZ 56, Blue Angel RAL-UZ 76 or Nature plus require a formaldehyde emission level for all type of panels so low as approx. 0.0615 mg/m^3 or even 0.0369 mg/m^3 after 28 days. These values are much lower than 50 % of the E1 values and are in line with the requirements of the Japanese F-star rating system [14] (based on the JIS A1460 standard) or the limits introduced by CARB [15] in California (based on the ASTM E1333 standard). These last two schemes, however, set different limits depending on the type of panels.

The medium-strict national schemes propose two levels of emissions depending on the nature of the panel, being higher for MDF panels. Among these schemes, the Nordic Swam 6.0 and 5.2, the Belgian GPP or the NZ environmental choice are good examples. The key factor in determining the appropriate ambition level of formaldehyde emission criteria relies on the resin formulations that are commercially available and their substitutes. There is an agreement among producers that it is easier to reduce formaldehyde emissions in certain products than in MDF panels. This fact is underpinned by the different limits set in national schemes reviewed in this study and summarized in Table 5. Traditionally MDF manufacturing plants have been based on UF resins and to change to other resins that emit less formaldehyde, or formaldehyde-free resins may require significant adjustment to be made to the production line. However, those national

schemes that require a single limit of formaldehyde emissions confirm the existence and feasibility of alternative resins and chemical products for manufacturing.

Table 5: Formaldehyde emissions during the use phase in different environmental labels' schemes

Label	Formaldehyde release from floor covering
Current EU Ecolabel	<p>Wood-based materials are only allowed for use in wooden floor coverings if they comply with the following requirements on formaldehyde emissions:</p> <ul style="list-style-type: none"> - Particleboard < 50 % of the value to be classified as E1 according to standard EN 312. - Fibreboard < 50 % of the value to be classified as E1 quality according to EN 622-1. 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. - Cork and bamboo < 0.062 mg/m³ air. <p>In addition, evidence that:</p> <ul style="list-style-type: none"> - the wood-based materials emit < 4 mg/100 g oven dry board according to EN 120 for an individual value (perforation method) or - < 0.062 mg/m³ air according to EN 717-1 (chamber method). <p>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>
Belgian GPP for floor covering	<p><u>Alternative 1</u></p> <p>The content of formaldehyde of wood based panels that contain formaldehyde based additives does not exceed those values:</p> <ul style="list-style-type: none"> - < 8 mg/100g dry matter in accordance with EN 120, for an individual value - < 6.5 mg/100g dry matter in accordance with EN 120, for mean value during six months <p><u>Alternative 2</u></p> <p>The emission of formaldehyde must be < 0.13mg/m³ air on testing in a climate chamber according to EN 717-1</p>
Nordic Ecolabel version 5.2 (floor covering)	<p>A floor covering that has additives that contain formaldehyde or other substances that release formaldehyde must fulfil requirement a) or b).</p> <ol style="list-style-type: none"> a. Testing of formaldehyde emissions from the finished floor covering. Emissions to air must be less than 0.13 mg/m³ air. Testing shall follow the chamber method according to EN 717-1. b. For floor coverings that contain chipboard or fibreboard (e.g. MDF), this requirement can be fulfilled by testing according to the “perforator method” described in EN 120. <p>The following limits must be fulfilled: Single test reading: ≤ 8 mg/100g dry test Six-month average: ≤ 6.5 mg/100g dry test</p>
Nordic Ecolabel version 6.0 (floor covering)	<p><u>Alternative 2</u></p> <p>Manufactured board in flooring that contains formaldehyde-based additives or substances that emit formaldehyde must fulfil a) or b)</p> <ol style="list-style-type: none"> a) the average content free formaldehyde must not exceed <ul style="list-style-type: none"> - 5 mg/100g dry substance for MDF - 4 mg/100g dry substance for other types of manufactured boards in accordance with the current version of EN120 or an equivalent method b) the average emission of formaldehyde must not exceed <ul style="list-style-type: none"> - 0.124 mg formaldehyde /m³ air for MDF panels and - 0.07 mg formaldehyde/m³ air for other types of manufactured board in accordance with the current version of EN 717-1 or an equivalent method
AT UZ 56 Fußbodenbe läge	<p>Wood-based floorings (parquet, laminate) have to comply with the following requirements on formaldehyde emissions: < 0.05 ppm</p>
Blue Angel RAL UZ 176	<p>Wood-based floorings (parquet, laminate) have to comply with the following requirements on formaldehyde emissions: < 0.05 ppm = 0.061 5mg/m³ (EN 717-1, 28 days)</p>

Label	Formaldehyde release from floor covering
Labelling of construction products (FR)	Classification of the construction products depending on the emission level in accordance with NF EN ISO 16000-3 for formaldehyde: <ul style="list-style-type: none"> - class A⁺ < 0.01mg/m³ (after 28 days) - class A < 0.06mg/m³ (after 28 days)
Nature PLUS	Wood and laminate flooring according to EN717-1: Basic criterion < 0.05ppm = 0.061 5 mg/m ³ (end value 28 days) Additional criterion < 0.03ppm = 0.036 9 mg/m ³ (end value 28 days)
NZ label Environmental Choice	Floors containing additives with a formaldehyde content or formaldehyde-emitting substances must fulfil the of the following requirements a) control of formaldehyde from the finished floor <0.13mg/m ³ in air b) where wood-based materials (excluding raw timber) comprise more than 5 % w/w of the flooring product, the formaldehyde emissions from the wood-based components shall not exceed the following limits: <ul style="list-style-type: none"> - 1.5 mg/l for raw particleboard - 1.0 mg/l for other wood-based materials NOTE: these limits are met by E1 particleboard and MDF or other engineered wood material as defined by AS/NZS 1859
Korean label	- the emission quantity of formaldehyde shall not be more than 0.5mg/l - the emission quantity of formaldehyde after 7 days shall not be more than 0.125 mg/m ² h
BREF wooden based panels	Emissions from dryers: <ul style="list-style-type: none"> ▪ Particleboard: for direct heated dryers: 0.2-32 mg/m³; for indirect heated dryers: 6.2-7.7 mg/m³; ▪ OSB: for direct heated dryers: 0.6-15 mg/m³; ▪ MDF: for direct heated blowline dryers: 2.6-14 mg/m³; for indirect heated dryers: 5 and 10 mg/m³. Note: All emission data are given at 18.5 % O ₂ .

The proposed EU Ecolabel criterion aims at combining low-emission level requirements with low production and testing costs. For this reason, two different requirements are proposed depending on the nature of the panel which compliance can also be demonstrated by two different methods (EN 717-1 or EN 120). Additionally, exemptions are proposed for those panels which suppliers can certify their low-emission (lower than 50 % of the E1 emission level) and/or their manufacturing by using non-based formaldehyde resins.

The required formaldehyde emission level is proposed to be 50 % of E1 value for non-MDF panels and 60 % for MDF panels. These limits are in line with the strictest schemes while at the same time take into account the additional efforts required to decrease the formaldehyde emissions in the MDF panels.

Finally for flooring products where the only source of formaldehyde emissions is through board and/or surface coatings and the products met the criteria restricting the VOC and formaldehyde content in both surface treatments and panels (hazardous substances used in engineered wood, cork and bamboo products) no finished testing will be required.

Similarly to the previous table, a comparison of the methodologies and benchmarks set by the national schemes for limiting the emission of VOCs during the use phase of the product varies significantly. Some of these values and methods are summarized in Table 6. As seem, the new proposed revision of the Nordic Swam version 6.0 presents the strictest limit for TVOC emission after 28 days. This limit is around half of the benchmarks proposed by the previous version. The limit values for TSVOC are, however, rather homogeneous getting a value of 0.03 mg/m³

One of the questions arisen is the relevance of environmental and health requirements and the uncertainties about whether an additional requirement concerning emissions in finished products would bring greater health benefits, since this set of criteria already requires strict limits concerning constituent chemicals, individual substances and emissions of formaldehyde. In addition, VOC limits in chemical used in the products also entail a reduction in TVOC and SVOC emissions.

Even though this is a topic for discussion in the coming ad-hoc working group, the comparison of the values and methods proposed by the national schemes suggests that the current EU Ecolabel criteria could be stricter in limiting the TVOC after 28 days. In this sense, as alternative current values are proposed to be lowered to 0.16 mg/m³air for TVOC, 0.016 mg/m³air for TSVOC and remain constant for total VOC without LCI.

A second alternative of compliance with this criterion can be shown by fulfilling the emissions of TVOC, TSVOC, VOCs without LCI and formaldehyde from the finished wooden floor coverings.

Table 6: Emissions of VOCs during the use stage in different environmental national schemes

Label	Emissions of VOCs during the use stage
Current EU Ecolabel	The finished products must not exceed the following emission values (after 3 days): <ol style="list-style-type: none"> Total organic compounds within the retention range C₆ - C₁₆ (TVOC): 0.25 mg/m³air; Total semi volatile organic compounds within the retention range > C₁₆ - C₂₂ (TSVOC): 0.03 mg/m³ air; Total VOC without LCI *: 0.05 mg/m³ air.
NZ Environmental Choice label	For flooring products where the only source of VOC/formaldehyde emissions is through engineered wood and /or surface coatings the products must meet the criteria restricting the VOC and formaldehyde content in surface treatments and hazardous substances used in engineered wood, cork and bamboo products. No finished testing will be required.
Nordic Ecolabel version 5.2 (floor covering)	<ol style="list-style-type: none"> This requirement does not apply to floor coverings that comprise more than 75 % by weight of wood, and for which adhesives and surface treatment products contain a maximum of 1 % by weight of organic solvents. The emission of organic solvents must not exceed 2g/m² floor covering. The emission of organic solvents can be measured or calculated as a material ratio.
Nordic Ecolabel version 6.0 (floor covering)	<i>Alternative 1</i> The floor covering is to be tested in accordance with CEN/TS 16516, ISO 16000-3,-6,-9,-10 or equivalent method. Sampling is to be carried out by an accredited third party <ol style="list-style-type: none"> TVOC (C₆ - C₁₆) < 0.16 mg/m³ (final value (28 days)); Formaldehyde < 0.04 mg/m³ Carcinogenic substances < 0.004 mg/m³
Österreichisches Umweltzeichen	The finished products must not exceed the following emission values (after 3 days): <ol style="list-style-type: none"> Total organic compounds within the retention range C₆ - C₁₆ (TVOC): < 1 mg/m³ (3 day) and < 0.3 mg/m³ (final value (28 days)); Total semi volatile organic compounds within the retention range > C₁₆ - C₂₂ (TSVOC): 0.03 mg/m³air Total VOC without LCI (*): 0.05 ppm. R-value <1 Cancerigenous substances < 0.001mg/m³
Blue Angel RAL-UZ 176	The finished products must not exceed the following emission values: <ol style="list-style-type: none"> Total organic compounds within the retention range C₆ - C₁₆ (TVOC): < 3 mg/m³ (3 day) and < 0.3 mg/m³ (28 days); Total semi volatile organic compounds within the retention range > C₁₆ - C₂₂ (TSVOC): 0.1mg/m³air Total VOC without LCI (*): 0.1 mg/m³. R-value <1 Cancerigenous substances < 0.01mg/m³ (3 day total value) and < 0.001 mg/m³ (28 days, per single value); Tests to be performed in a chamber test in accordance with EN ISO 16000-9

Label	Emissions of VOCs during the use stage
Nature Plus	<p>The finished products must not exceed the following emission values (after 28 days)</p> <ul style="list-style-type: none"> a) Total organic compounds within the retention range C₆ - C₁₆ (TVOC): < 0.3 mg/m³ b) Total semi volatile organic compounds within the retention range C₁₇ - C₂₂ (TSVOC): < 0.1mg/m³air c) Total VOC without LCI (*): 0.1mg/m³. d) R-value <1 e) Cancerigenous substances < 0.001mg/m³ <p>Tests to be performed in a chamber test in accordance with EN ISO 16000-6,-9,-11</p>
Korean label	<p>- the emission quantity of a wood flooring material (except for products mainly made of lumber) of VOCs after 7 days shall not be more than 0.4 mg/m² h and</p> <p>- the emission quantity of toluene shall not be more than 0.080 mg/m²h</p>
Labelling of construction products (FR) (no standard)	<p>Classification of the construction products depending on the emission level in accordance with NF EN ISO 16000-6 for TVOC:</p> <ul style="list-style-type: none"> a) class A⁺ < 1mg/m³ (after 28 days) b) class A < 1.5mg/m³ (after 28 days)
BREF wooden based panels	<p>Emissions from dryers:</p> <ul style="list-style-type: none"> a) Particleboard: for direct heated dryers: 0.5-217 mg/m³; b) OSB: for direct heated dryers: 44-217 mg/m³; c) MDF: for direct heated blowline dryers: 4-227 mg/m³; for indirect heated dryers: 12 and 42 mg/m³. <p>Note: All emission data are given at 18.5 % O₂.</p>
<p>*Class E1 board panels reach the following free-formaldehyde emission levels;</p> <ul style="list-style-type: none"> a. 0.124 mg/m³ after 28 days in accordance with the chamber test or EN 120 b. 8mg/100g of dry board in accordance with the perforator test or EN 717-1. This standard is suitable for uncoated PB, MDF and OSB c. 3.5 mg/hm² in accordance with EN 717-2. This standard is appropriate for coated PB, MDF and plyboards 	

Points for discussion

1. Are formaldehyde limits (depending on the type of panel) appropriate and feasible to achieve?
2. Is it necessary to test all kinds of VOCs (TVOCs, SVOCs and VOC without LCI) and formaldehyde from the finished products to demonstrate that emissions are below the benchmarks? Which is the most appropriate type of VOC to be tested?
3. Are both alternative equivalents (equal level of strictness)?

3.10 CRITERION 5 - PACKAGING

Current criteria:

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.

Proposal for criterion 5

Criterion withdrawn

Rationale and discussion:

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.

On the other hand, packaging has an improvement potential in reducing its contribution to the overall environmental impact of the product if the EU Ecolabel criterion is fulfilled. Regarding materials, the main component of packaging is usually plastic wrappers, cardboard/cartons and PVC film to envelop all boxes on pallets. The use of single-use packaging in the flooring industry is much extended. In general, these packages have a very short lifespan, being discarded immediately after distribution. The main environmental problems related to packaging come from the consumption of raw materials and packaging waste. This environmental problem could be reduced by:

- Using packaging made from recycled or reusable materials and
- Using materials intended to be recyclable or reusable

Stakeholder consultation showed a positive support on reducing the resources use for packaging. However, it was pointed out that this fact is already mostly considered by the companies as it also reduces the production costs. The reduction and use of reused/recycled or to be reused/recycled materials is only technically possible when it ensures the protection required, being difficult to set up specific benchmarks.

Table 7: Packaging criterion on different environmental national schemes

Label	Packaging
Current EU Ecolabel	Packaging must be made out of one of the following: - easily recyclable material, - materials taken from renewable resources, - materials intended to be reusable.
NZ label Environmental Choice	a) all plastic packaging must be made of plastics that are able to be recycled in NZ (or the country to which the product is exported and sold) b) packaging shall not be impregnated, labelled, coated or otherwise treated in a manner, which would prevent recycling (i.e. sleeves, metallic labels) c) information shall be provided to ECNZ at application and thereafter reported annually on PVC and/or phthalates used in the packaging. This should include information from production records and/or suppliers on: - the percentages by weight of recycled and virgin PVC - the particular production processes (membrane cells, non-asbestos diaphragms, modified diaphragms, graphite anodes, mercury cells, closed-lid production etc. used to produce chlorine and VCM for the PVC being used in the packaging for ECNZ-licensed products (including the locations of the production) - information, where available, on waste disposal, wastewater treatment and emissions to air (occupational exposure, emissions from the factory and emissions from the final PVC resin) - information on any EMS for the production process, including requirements for waste, water, air and product-related requirements - the types of stabilisers used - the types and amounts of any phthalates plasticisers present in recycled content of the PVC (if the information is available) and/on added when manufacturing PVC -research and initiatives implemented on substitutes for phthalates identified as of concern by regulators, and - and product stewardship arrangements for the packaging.
Nordic Ecolabel version 5.2 (floor covering)	No requirements
Nordic Ecolabel version 6.0 (floor covering)	No requirements
Österreichisches Umweltzeichen	Plastics used must be free of halogenated organic compounds. Packaging should be minimized and reuse or prove its collection for, for example, taking part of a recycling process. Packaging regulations should be applied.
Blue Angel RAL-UZ 176	Where applicable, the products shall be packed for sale so as to allow post-manufacture outgassing of volatile elements
Nature Plus	No requirements
NF Environment	---

Points for discussion

1. Can be comparable recycled or reused materials to those that are intended to be recycled or reused?
2. Should the criterion be withdrawn?

3.11 CRITERION 6 - FITNESS FOR USE

Current criteria:

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.

Proposal for criterion 6

a) Wooden floor coverings shall achieve at least:

- class 22+ for floor coverings for private use
- class 33 for floor coverings for commercial use
- class 2 for bamboo flooring

In accordance with:

- 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

Assessment and verification: The applicant shall provide test reports from an independent testing institute that the requirement is fulfilled.

b) 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 and discussion:

Wooden floor coverings are products with a relatively long life span. According to a recent study of Life Expectancy of Home Components [16], the average life span of different wooden floor coverings varies between 15 and 50 years. Despite the long life, LCA studies and results presented in the Technical Background Report [2] 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 is limited to cleaning operations, although it depends on the type of flooring, material and application (domestic, office, etc.).

The highest environmental impacts caused by the wooden floor coverings are due to their production and end-of-use stages. These impacts, especially those on the resource consumption, can be minimized provided that the service life of the product is extended since a lower number of turn-over of this product is required. To guarantee a long durability of the finished products a design for durability, reparability, maintenance and fitness for use is needed. This criterion aims at ensuring these characteristics in the EU Ecolabel products.

There is also no unequivocal definition of how worn a flooring material has to be for its service life to the declared end. Wear varies considerably over the surface of the flooring. In doorways, aisles, at the bottom of stairs and at a workstation the material wears many times faster than in a corner where no foot traffic occurs. A basic rule for durability should be adapted to the environmental in which the flooring is intended to be used. The flooring should have generally good wear resistance, since the used of rooms in the home may change over the lifetime of the flooring. There are currently testing methods and product standards harmonized across Europe for the majority of flooring material types. Flooring manufacturers place their products in different usage classes with the help of the various testing methods. The usage classes given the user a quick overview of the flooring materials durability and suitability for different environments. The usage classes are divided into domestic, commercial and light industrial, with 3-4 level in each class.

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

Stakeholder's consultation provided a negative feedback in modifying the current criterion to include ergonomics criteria. They pointed out that the durability of the product is not just guarantee by an optimal design but that it also depends on the finishing applied and where and how it will be used.

According to other national standard, wooden flooring shall be fit for their intended use. As general requirement, a minimum compliance with class 22 or 22+ for private use and class 33 for commercial use in accordance with the appropriate standard is required.

Other labels require a minimum thickness of the flooring or refer to the wear resistance testing to prove their fitness for use.

Table 8: Overview of the fitness for use criterion in the national schemes under revision

Label	Fitness for use
Current EU Ecolabel	The product shall be fit for use. This evidence may include data from appropriate ISO, CEN or equivalent test methods, such as national procedures
Belgian GPP	--
NZ label Environmental Choice	<p>- factory varnished wooden flooring and parquet flooring that may be revarnished must achieve the following standards for the number of revolutions counted before varnish is worn through (measured in accordance with NS 3506/SS923509)</p> <ul style="list-style-type: none"> - class 1 >750 revolutions - class 2 >1 500 revolutions - class 3 >3 000 revolutions - class 4 >5 000 revolutions <p>- laminate flooring must as a minimum be classified as Class 2 (general). Wearing through of the abrasion surface shall be measured in accordance with EN 13329. The area of use of the floor must be classified in accordance with the standard</p> <p>- floor coverings made from other materials must be tested to demonstrate appropriate durability, based on the intended area of use</p>
Nordic Ecolabel version 5.2 (floor covering)	<p>Classification in accordance with EN 685:2007 for</p> <ul style="list-style-type: none"> - domestic: between class 21 and 23 depending on the intensity of the use - commercial/public: between class 31 and 34 depending on the intensity of the use - light industrial: between class 41 and 43 depending on the intensity of the use <p>Factory-varnished solid wood and parquet flooring: test according to NS3506/SS923551 (Frick-Taber test). Number of cycles until 50 % of the varnish has been abraded from the test area:</p> <ul style="list-style-type: none"> - class 2 ; less than 600 cycles - class 3: 600-1 000 cycles - class 4 ; 1 000-16 000 cycles - class 5: 1 600-2 400 cycles - class 6 ; 2 400-3 600 cycles - class 7: 3 600- 7 000 cycles - class 8 : at least 7 000 cycles <p>Laminate floor coverings: wear resistance shall be tested according to EN 13329:2008. The use area shall be classified in accordance with the standard, referring to EN 685:2007. The floor covering must be Class 22 (general/medium) or higher</p>
Nordic Ecolabel version 6.0 (floor covering)	<p>All Nordic Ecolabelled floor coverings must achieve at least:</p> <ul style="list-style-type: none"> - class 22+ for floor coverings intended for private use - class 33 for floor coverings intended for professional/public use <p>Tested in accordance with the standards:</p> <ul style="list-style-type: none"> - EN 14041 and ISO 10874 or EN 12104 for laminate flooring and cork tile flooring respectively - EN 14354, EN 335 or EN 438 for solid wood flooring, factory lacquered wood flooring and parquet flooring
Österreichisches Umweltzeichen	<ul style="list-style-type: none"> - Parquet flooring >2.5mm thickness in accordance with EN 13489 - Laminate flooring: depending on the type of use and the intensity, the flooring shall comply with the requirements of the associated stress classes in accordance with EN 13329, EN 14978, EN 15468 and EN 14354
Blue Angel RAL-UZ 176	The labelled products shall meet the usual quality requirements for serviceability. The product shall meet the serviceability requirements of the relevant product standards and rules in Appendix 1

3.12 CRITERION 7 - CONSUMER INFORMATION

Current criteria:

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:

- e) 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;
- f) 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;
- g) 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);
- h) 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.

Proposal for criterion 7

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:

- e) 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;
- f) 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;
- g) 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);
- h) 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/>'.

Proposal for criterion 7

<http://ec.europa.eu/environment/ecolabel/>’.

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

Rationale and discussion:

According to the information collected and summarized in the Technical Background Report [2], the information given to the consumers can play an important role in the overall environmental performance of the product. In this sense, if the supplier, installers and consumers follow these recommendations an outstanding performance of the product is expected fulfilling both technical and environmental expectations.

A revision of other national schemes summarized in Table 9 confirms this relevance. In general consumer information is based on the installation of the product including the recommended base or underlay, adhesives if needed, type of area to use the product or the moisture and temperature limits and on its maintenance including the cleaning agents and methods and the recommendations to extend the life of the product and finally recommendations.

Table 9: Overview of the Consumer information criterion in the national schemes under revision

Label	Consumer information
Current EU Ecolabel	<p>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:</p> <ul style="list-style-type: none"> - 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; - 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; - 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); - 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/’.
Belgian GPP	No applicable
NZ label Environmental Choice	<p>The floor covering product must be accompanied by the following information for product suppliers, installers and consumers:</p> <ul style="list-style-type: none"> - the recommended base or underlay for the floor covering - the recommended upper limit of the relative moisture in the underlying material and the recommended temperature - the recommended adhesive to glue flooring parts together and to glue to floor to the underlying surface - the recommended cleaning and maintenance agents/methods - in the case of oiled and untreated wooden flooring, a description of the treatment required (type/quality of oil or varnished) to achieve the intended abrasion resistance - the appropriate type of area to use the product (specific in accordance with the classes outlined in EN685) - how the duration of the floor can be prolonged by renovation e.g. by means of sanding and surface treatment

Label	Consumer information
Nordic Ecolabel version 5.2 (floor covering)	<p>The following product information must be supplied with the Nordic Ecolabelled floor covering:</p> <ul style="list-style-type: none"> - recommended subfloor (temperature and max relative humidity for laying the floor covering) - recommended adhesives for joining the floor covering and fixing it to the subfloor. If there are suitable Nordic Ecolabelled adhesives, these must be recommended. Methods of laying and joining the floor covering must also be recommended - recommended method of maintenance including cleaning agents. If there are suitable Nordic Ecolabelled cleaning agents, these must be recommended - recommended care instructions for oiled and untreated wood floor covering (type/quantity of oil and varnish) to achieve the intended wear resistance - the use area of the floor covering. Refer to the classes listed under EN 685:2007 - the floor covering manufacturer must inform the customer of how to extend the life of the floor covering through refurbishing such as sanding and polishing
Nordic Ecolabel version 6.0 (floor covering)	<p>The following product information is to be enclosed with the Nordic Ecolabelled floor covering:</p> <ul style="list-style-type: none"> - recommended subfloor for the floor covering - recommended upper limit for the subfloor's relative humidity and temperature when laying the floor covering - with adhesive is recommended for joining the flooring together and gluing to the subfloor. If there are suitable Nordic Ecolabelled adhesives, these are to be recommended. Recommended methods for laying and joining the flooring are also to be provided - recommended cleaning method including cleaning products. If there are suitable Nordic ecolabelled maintenance products, there are to be recommended - treatment is not to be recommended for oiled and untreated flooring (type/quantity of oil and lacquer) in order to achieve the intended durability - the flooring's areas of use are to be stated. - the flooring manufacturer is to inform the customer about how the service life of the flooring can be extended through renovation, e.g. sanding and surface treatment
Österreichisches Umweltzeichen	<p>The following product information is to be enclosed:</p> <ul style="list-style-type: none"> - recommended use of low-emission adhesives that meet the criteria requirements to be classified as class EC 1 according to GEV - recommended cleaning and maintenance method including cleaning and care products
Blue Angel RAL-UZ 176	<p>The declaration on laminate floor coverings and/or their packaging shall meet the requirement of EN 685. Besides, the individual floor coverings shall meet the relevant product standards</p> <p>the product shall be accompanied by a short version of the following instructions and recommendations. Such information shall include a note about how the customer may obtain a more detailed version (e.g. upon request to the manufacturer, reference to the manufacturer's website)</p> <ul style="list-style-type: none"> - installation instruction and recommendations for the use of low-emission adhesives, surfaces and fillers (for example, according to RAL-UZ 113) as well as primers the use of which will not increase the indoor air concentration of pollutants by releasing formaldehyde and solvents, etc (only applies to floor coverings which are also designed for being glued) - cleaning and care instructions - disposal instruction (e.g. return and recycling options) - instruction for disassembly for moving and future material recycling (does not apply to doors) - information on the serviceability (fields of application and material test results, if applicable)

3.13 CRITERION 8 - INFORMATION APPEARING ON THE ECOLABEL

Current criteria:

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.

Assessment and verification: The applicant shall provide an example of packaging that will be used for the product showing the label with abovementioned information.

Proposal for criterion 8

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.

Rationale and discussion:

Due to the importance of ensuring a long lifetime in the overall environmental impacts of the wooden floor coverings as well as the contribution to reduce the environmental impacts when materials are coming from renewable sources, recycled raw materials or are able to be recycled at the end of their use life, it seems useful to add two pieces of information: promoting renewable, recycled and recyclable materials and tested for durability.

Information given to the consumers also ensures that end-users adopt an environmentally friendlier behavior, since the customer who is interested in buying the EU ecolabel products is generally interested in knowing the environmental performance of the products s/he buys.

4 NEW/ADDITIONAL PROPOSED CRITERIA

Criteria should be defined to reduce the environmental impact in relation to the use of hazardous substances. Some considerations could be done also about energy embodied in materials that constituted wooden floor covering.

4.1 CRITERION 3.3: PRODUCTION PROCESS: ENERGY MANAGEMENT

Proposal for additional criterion number 3.3: Energy management

The producer must have effective energy management policies and procedures and/or energy management programme. This programme should annually report:

- total energy use
- breakdown of total energy use to type of energy used
- energy use related to production
- initiatives taken to reduce energy use and improve energy efficiency
- initiatives taken to calculate and reduce CO₂ emissions associated with energy use and
- initiatives or requirements for suppliers or contract manufacturers

Assessment and verification: the applicant shall provide in written documents that describes the energy management policies, procedures and programmes and includes annual reports on energy use and management.

Rationale and discussion:

Industrial energy efficiency is dependent on operational practices, which change in response to variations in production volume and product types. Due to this dependence, industrial energy efficiency cannot be fully realized through policies and programs that focus solely on equipment components and specific technologies. It must be addressed by actively management programs that seek out opportunities to upgrade efficiency of equipment and processes wherever cost effective.

Requiring technology-based improvements in the absence of energy management will not result in significant market shifts because there is no organizational context to respond to and integrate the opportunity into ongoing business practice. Therefore this criterion aims at complementing criterion 3.1 which sets up a maximum energy consumption during the production process. Generally speaking, an effective energy management program that combines energy reduction targets, energy efficiency standards, system optimization training and documenting can lead the company to the goal of sustainability, with opportunities for cost-effective energy reduction and industry's CO₂ eq emissions by 20-33 %.

WORKING DRAFT IN PROGRESS

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Authors: ALICIA BOYANO LARRIBA and OLIVER WOLF – IPTS

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