JRC Scientific and Technical Reports

Revision of the EU Ecolabel Criteria for Bed Mattresses

TECHNICAL REPORT and PROPOSAL FOR CRITERIA REVISION

Technical Report for THE REVISION OF THE EU ECOLABEL CRITERIA FOR BED MATTRESSES

August 2012

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ipts Institute for Prospective Technological Studies

OAKDENE HOLLINS RESEARCH & CONSULTING

Revision of the EU Ecolabel Criteria for Bed Mattresses

Technical Report

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Contents

1 Introduction

This technical report presents the proposed changes to the EU Ecolabel criteria for the bed mattress product group, as part of the on-going revision process to these criteria.

This report, produced by the Joint Research Centre's Institute for Prospective Technological Studies (JRC-IPTS) and Oakdene Hollins Research & Consulting (UK), provides a description of proposed changes, and outlines the rationale, costs-benefit analysis and necessary test procedures for these changes.

This report follows-on from earlier documents, including a stakeholder consultation document and background report which provide supporting information for the revision on bed mattress markets and discussions of potential changes.[a,b] The background document has been revised following the 1st Ad-hoc Working Group Meeting held in Seville in February 2012, updated with feedback from stakeholders and further technical data. These other documents contain greater detail on the proposed changes, and act as a reference for the changes outlined in this technical report. In all 19 changes are included within this document for consideration and discussion, these are a mixed of entirely new criteria and revisions or updates of existing versions.

1.1 EU Ecolabel and Revision of the Bed Mattresses Product Group Criteria

The EU Ecolabel is a voluntary scheme, regulated by the European Union[c], which is used to distinguish products and services with high environmental performances. The EU Ecolabel is awarded through an application process which demonstrates that the criteria specified for a particular product group have been met. Successful applicants are then allowed to use the EU Ecolabel logo (the 'Flower') and advertise their product as having been awarded the EU Ecolabel. The environmental criteria for a particular product group are designed in a way that, theoretically, the best 10-20% products on the market in terms of environmental performances can meet them. As technology, markets and legislation change over time, the criteria need to be updated to ensure they remain relevant, as well as strict enough to capture the top 10-20% of products. This approach should also assure that the overall environmental impact of a whole product group is improved.

The existing set of EU Ecolabel criteria for bed mattresses was adopted in July 2009.[d] Therefore to ensure that the EU Ecolabel product group criteria for bed mattresses meet these principles a revision processes is on-going, starting in late 2011. Other factors have also been taken into consideration in the process; such as the uptake of the scheme for this product group and changes in the legislative background.

To date, the EU Ecolabel appears to have been very limited interest and uptake within the bed mattress industry based on these old criteria, and only 3 active licences have been identified; Carpenter ApS (certified by Ecolabelling Denmark), Elite SA (certified by VKI Austria) and André Renault (certified by Afnor, France).

Industry stakeholder consultation indicated that that the industry is well informed of the existence of the EU Ecolabel for this product group, and this cannot be considered the reason for the limited uptake. Various other reasons were indicated for the limited uptake of the EU Ecolabel, with the following cited explicitly;

- lack of clarity and difficulties in meeting some of the existing criteria of the Commission Decision 2009/598/EC (e.g. flame retardants)
- cost and unclear benefits of applying,

[a] http://susproc.jrc.ec.europa.eu/mattresses/docs/BedMattresses_StakeholdersQuestionnaire.pdf
[b] http://susproc.jrc.ec.europa.eu/mattresses/docs/BackgroundReportCriteriaRevision_DRAFT.pdf
[c] Regulation (EC) No 66/2010
[d] Commission Decision 2009/598/EC

- lack of purchaser awareness/demand.

In addition to this, legislative changes have been made at the EU level since the last criteria revision, which need to be reflected in the updated criteria. In particular, the following elements have to be taken into due account:

- **Article 6.1** – Aligning the criteria with the strategic objectives of the Commission on the environmental performance of products.
- **Article 6.3** – Requiring scientific basis to define criteria, specifically through lifecycle analysis methodology.
- **Article 6.6** – To restrict the use of substances with are classified as toxic, hazardous to the environment, carcinogenic, mutagenic or toxic for reproduction
- **Article 6.7** – With respect to Article 6.6, allow the derogation of substances which have no alternative available.

These factors play a key role in the revision of the existing criteria for this product group. In addition, other ecolabelling schemes have similar product groups (see Table 1) which have had more recent revisions, providing further elements to consider when updating the existing EU Ecolabel criteria. This is particularly relevant as Article 6.3.f of the EU Ecolabel Regulation specifies that the EU Ecolabel should align with other schemes to enhance synergies.

Table 1: Summary of identified ecolabels applicable to mattresses

Ecolabel name	Region	Product group	Date of adoption of the latest version	Known licences/ companies awarded
EU Ecolabel	EU	Mattresses	July 2009[a]	3
Blue Angel	Germany	Mattresses	April 2010[b]	4
Austrian Ecolabel	Austria	Mattresses	Jan 2011[c]	4
Nordic Swan	Denmark, Finland, Iceland, Norway, Sweden	Furniture	March 2011 (version 4)[d]	5
Green Mark	Taiwan	Mattresses	September 2011 (version 1.0.1)[e]	14 (products)

This revision falls at an opportune time to include these factors, as well as include the revised criteria updates due to technical and market changes in the bed mattress sector.

1.1.1 The Revision Process

The revision of the EU Ecolabel criteria for the Bed Mattress product group has been on-going since late 2011, and has followed the pathway outlined below;

- Identification of potential issues, and consultation with stakeholders using a preliminary proposal document

[a] Commission Decision 2009/598/EC

[b] http://www.blauer-engel.de/de/produkte_marken/produktsuche/produkttyp.php?id=309, accessed 09/01/2012

[c] http://www.umweltzeichen.at/cms/upload/20%20docs/richtlinien-lf/uz55_r2a-matratzen_2010.pdf, accessed 09/01/2012

[d] http://www.nordic-ecolabel.org/Templates/Pages/CriteriaPages/CriteriaGetFile.aspx?fileID=128603001, accessed 09/01/2012

[e] http://greenliving.epa.gov.tw/GreenLife/eng/E_Criteria.aspx, accessed 09/01/2012

- Generation of a preliminary background report outlining the product group definition and criteria, with issues raised based on market survey and technical information (including lifecycle analysis data), as well as feedback from the preliminary proposal document.
- The preliminary background report and initial proposals for changes to scope and criteria were discussed at the 1st stakeholder Ad-hoc working group meeting (Seville, February 2012). Feedback and suggestions were made by attendees and others not able to attend.
- The background report was revised and updated in line with the feedback and suggestions received from stakeholders, as well as additional information added, to yield a strong evidence base for proposing final changes to the scope and criteria for the bed mattress product group.

This technical report draws on the information gathered to date summarising the work done. Following this the proposed revised scope and criteria will be examined. New scope and criteria are defined, and the rationale behind changes, additions or preservation of criteria will be discussed. A cost benefit analysis of changes, and a description and costing of required test procedures is also provided. This evidence will be used as the basis for discussions on the final set of revised criteria at the 2nd Ad-hoc Working Group Meeting, planned in Brussels in September 2012.

1.2 Technical Description of Bed Mattresses

Broadly bed mattresses can be viewed as products that provide a surface to sleep or rest upon. At present the EU Ecolabel defines this more closely to include whole products, generally with a cloth cover that is filled with materials, and that can be placed on an existing bed structure.

Mattresses falling into this definition are generally constructed of three components, each designed to provide the desired properties of the mattress;

- The **core** is the main component of a mattress used to provide support. Mattress cores are generally made from one of three materials; steel springs, latex foam, and polyurethane foam (PUR). These materials are the most common method of categorising mattresses.
- The **shell** (or padding/wadding) forms a layer around the core to refine the overall performance of the mattress. All spring mattress and many other types of mattress have this additional padding. Typical materials include: PUR foam, latex foam, horse or camel hair, coconut fibres, polyester, cotton, wool, flax, hemp, felt, jute and sisal. These materials are held together by glue or sewing.
- The **tick** is the outer cover of a mattress which provides a comfortable and protective top layer. Common materials used for the tick include cotton, polyester, silk, wool and viscose. The tick can be fixed to the mattress or removable.

Most mattresses fall within the categories defined by the core materials (i.e. springs, PUR and latex), a further category “other” includes mattresses such as airbeds and water beds, which are not included within the scope of the EU Ecolabel.

Within the existing EU Ecolabel provision is also made for bed bases, i.e. a type of mattress with a wooden/metal frame integrated. Wooden bed bases are typically sold in Scandinavian countries.

2 Revision of Product Group Definition

2.1 Existing EU Ecolabel Definition

Within the existing EU Ecolabel criteria document[a], mattresses are defined using the following wording:

1. *The product group 'bed mattresses' shall comprise:*
   a. *Bed mattresses, which are defined as products that provide a surface to sleep or rest upon for indoor use. The products consist of a cloth cover that is filled with materials, and that can be placed on an existing supporting bed structure;*
   b. *The materials filling the bed mattresses, which may include: latex foam, polyurethane foam and springs;*
   c. *Wooden bed bases that support the bed mattresses.*
2. *The product group shall include spring mattresses, which are defined as an upholstered bed base consisting of springs, topped with fillings, as well as mattresses fitted with removable and/or washable covers.*
3. *The product group shall not comprise inflatable mattresses and water mattresses, as well as mattresses classified under Council Directive 93/42/EEC (medical devices).*

As described above, this definition includes the most common mattress types (namely latex, PUR and sprung), as well some additional product such can be considered hybrid products, between mattresses and beds.

2.2 Revision of Product Group Definition

The wording below is proposed to revise the product group definition for Bed Mattresses, in this new definition section 1c is removed to omit wooden bed bases, and sections 1a and 1b rearranged. Section 2 is removed and replaced by an updated section 3, which now specifies that wooden and upholstered bed bases are also not eligible within this product group. Bed bases are proposed to be moved to the furniture product group, whose revision is about to start. A new section 3 could be added to clarify that bed frames and bases are considered in a different product group.

Proposal 1 – Revised wording for product group definition

1. *The product group 'bed mattresses' shall comprise products providing a surface to sleep or rest upon for indoor use. The products consist of a cloth cover that is filled with materials and that can be placed on an existing supporting bed structure or designed for free standing. Materials filling and covering the bed mattresses may include latex and polyurethane foam, metal parts, fibres and fabrics.*

2. *The product group shall not comprise wooden and upholstered bed bases, inflatable mattresses and water mattresses, as well as mattresses classified under Council Directive 93/42/EEC (medical devices).*

The rationale for this change is to remove any products which may be considered bed bases or hybrid type products. Though these function as mattresses, they are more closely linked to pieces of furniture, so are better considered within this EU Ecolabel product group. This provides a clearer and more precise and appropriate definition of which products are categorised within this product group, removing uncertainty. The products included within the definition have similar properties and functions, and this would provide a more consistent definition. Bed mattresses could be later considered for inclusion within the furniture product group, in analogy with Nordic Swan.

a Decision 2009/598/EC of 9 July 2009

3 Criteria Revision

This section outlines the revision of the criteria which are proposed based on data gathered during the revision process, feedback from stakeholders and insight gained through a lifecycle analysis.

3.1 Summary of Old Criteria

This summary provides as a guide to the existing criteria. The full criteria document (2009/598/EC: Commission Decision of 9 July 2009) should be consulted for a complete outline. The existing criteria is consists of 13 sections, categorised by material type, criteria areas, and other requirements.

1. Latex Foam – Only applicable if latex is greater than 5% of mattress weight. Concentrations must be below values stated.

Criterion number	Applicable to	Criteria	Compliance
1.1	**Extractable heavy metals**	Limits on concentrations of: Copper <2 ppm Chromium, Nickel <1 ppm Arsenic, Lead, Antimony, Cobalt <0.5 ppm Cadmium <0.1 ppm Mercury <0.02 ppm	Testing by atomic emission spectroscopy with inductively coupled plasma or with hydride or cold vapour technique
1.2	**Formaldehyde**	Extractable formaldehyde <20 ppm or <0.005 mg/m^3 (dependent on testing method)	EN ISO 14184-1 or chamber testing according to ENV 13419-1, with EN ISO 16000-3 or VDI 3484-1 for air sampling and analysis
1.3	**VOCs**	VOCs <0.5 mg/m^3	Chamber testing or DIN ISO 16000-6 for air sampling and analysis
1.4	**Dyes, pigments, flame retardants and auxiliary chemicals**	As Commission Decision 2009/567/EC of 9 July 2009 for textile products. (a) Limits on metal ion impurities in dyes (colour matter with fibre affinity). Exclusion made for metals which are integral part of the dye molecule. (b) Limits on metal ion impurities in pigments(insoluble colour matter without fibre affinity) (c) Chrome mordant dyeing is not allowed (d) Azo-dyes which may cleave any one of a selection of aromatic amines are banned (e) A list of specific dyes which are classed as carcinogens, mutagenic or toxic to reproduction. Limits are also placed on dyes or dye preparations which contain greater than 0.1% by weight of substances which have specified risk phrases associated with them. (f) Potentially sensitizing dyes (listed) are not allowed.	Declaration of non-use or compliance with relevant EU document
1.5	**Metal**	Metal complex dyes based on copper, lead,	Declaration of non-use

	complex dyes	chromium or nickel shall not be used.	
1.6	**Chlorophenols**	Chlorophenols (salts and esters) <0.1 ppm mono, di-chlorinated phenols (salts and esters) <1 ppm	Test through gas chromatography of an extracted sample
1.7	**Butadiene**	Concentration of butadiene <1 ppm	Tested through gas chromatography
1.8	**Nitrosamines**	Nitrosamines <0.0005 mg/m^3	Tested through chamber test

2. Polyurethane Foam – Only applicable if PUR foam is greater than 5% of mattress weight.

Criterion number	Applicable to	Criteria	Compliance
2.1	**Extractable heavy metals**	As 1.1 – Latex	As 1.1 – Latex
2.2	**Formaldehyde**	As 1.2 – Latex	As 1.2 – Latex
2.3	**VOCs**	As 1.3 – Latex	As 1.3 – Latex
2.4	**Dyes, pigments, flame retardants and auxiliary chemicals**	As 1.4 – Latex	As 1.4 – Latex
2.5	**Metal complex dyes**	As 1.5 – Latex	As 1.5 – Latex
2.6	**Organic tin**	Mono and di-organic, tri-organic tin compounds shall not be used.	Declaration of non-use
2.7	**Blowing agents**	Halogenated organic compounds shall not be used as blowing agents, or auxiliary blowing agents.	Declaration of non-use

3. Wires and springs – Only applicable if PUR foam contributes to more than 5% of the total weight of the mattress.

Criterion number	Applicable to	Criteria	Compliance
3.1	**Degreasing**	A closed system is required when degreasing wire or springs.	Self-declaration
3.2	**Galvanisation**	Wire and springs must not be coated with a galvanic metallic layer	Self-declaration

4. Coconut Fibres – Only applicable if coconut fibres contributes to more than 5% of the total weight of the mattress

Criterion number	Applicable to	Criteria	Compliance
4	**Coconut fibres**	If rubberised, latex used must comply with criteria for latex foam	As points 1(1) to 1(8)

5. Wooden Material

Criterion number	Applicable to	Criteria	Compliance
5.1	**Sustainable forest management**	Sustainable forest management: a) All virgin solid wood shall originate from forests which are sustainably managed (Sustainable Forest Management and UNCED Forest Principles) b) 60% of virgin solid wood shall originate from forests with certified third party forest certification schemes c) Wood not certified must not originate from • disputed land rights or primary old growth forests • illegal harvesting • uncertified high conservation value forests.	The applicant shall indicate types, quantities and origins of the wood used Certified sources – control chain of custody is required as proof of source Non-certified sources – species, quantity and origin of timber must be provided.
5.2	**Formaldehyde emissions from untreated raw wood.**	Formaldehyde emissions from untreated raw wood-based materials. Particle board – emissions of formaldehyde shall not exceed 50% of the threshold value that would allow it to be classified as E1 according to EN 312-1. Fibreboard – emissions of formaldehyde shall not exceed 50% of the threshold value that would allow it to be classified as A1 according to EN 622-1. Class A will be accepted if fibreboards represent less than 50% of wood or wood material in product.	Evidence that wood based materials comply with EN 312-1 Evidence that wood based materials comply with EN 13986

6. Textiles (fibres and fabric) – must meet following criteria for dyes and other chemical products, as well as fitness for use

Criterion number	Applicable to	Criteria	Compliance
6.1	**Biocides**	Chlorophenols (their salts and esters), PCB and organo-tin compounds shall not be used during transportation or storage of mattresses and semi-manufactured mattresses	Declaration o f non-use. Verification by standard test may be required
6.2	**Auxiliary chemicals**	Alkylphenolethoxylates (APEOs), linear alkylbenzene sulfonates (LAS), bis(hydrogenated tallow alkyl) dimethyl ammonium chloride (DTDMAC), distearyl dimethyl ammonium chloride (DSDMAC), di(hardened tallow) dimethyl ammonium chloride (DHTDMAC), ethylene diamine tetra acetate (EDTA), and diethylene triamine penta acetate (DTPA) shall not be used in any of the preparations or formulations used	Declaration of non-use

6.3	**Detergents, fabric softeners and complexing agents**	95% by weight of detergents, fabric softeners and complexing agents used at each wet processing site shall be "sufficiently degradable" or eliminable in wastewater treatment plants (see criterion related to auxiliaries and finishing agents for fibres and yarns). This is with the exception of surfactants in detergents at each wet processing site, which shall be "ultimately aerobically biodegradable" (see Regulation (EC) No 648/2004)	Appropriate documentation (safety data sheets, test reports and/or declarations, indicating the test methods and results)
6.4	**Bleaching agents**	Only for natural fibres, chlorine agents are excluded for bleaching yarns, fabrics and end products.	Declaration of non-use
6.5	**Impurities in dyes**	As 1.4 Latex	As 1.4 Latex
6.6	**Impurities in pigments**	As 1.4 Latex	As 1.4 Latex
6.7	**Chrome mordant dyeing**	As 1.4 Latex	As 1.4 Latex
6.8	**Metal complex dyes**	If metal complex dyes based on copper, chromium or nickel are used: – In case of cellulose dyeing, where metal complex dyes are part of the dye recipe, less than 20 % of each of those metal complex dyes applied (input to the process) shall be discharged to waste water treatment (whether on-site or off-site). – In case of all other dyeing processes, where metal complex dyes are part of the dye recipe, less than 7 % of each of those metal complex dyes applied (input to the process) shall be discharged to waste water treatment (whether on-site or off-site). – The emissions to water after treatment shall not exceed: Cu 75 mg/kg (fibre, yarn or fabric); Cr 50 mg/kg; Ni 75 mg/kg.	Declaration of non-use or documentation and test reports using the following test methods: ISO 8288 for Cu, Ni; EN 1233 for Cr.
6.9	**Azo dyes**	As 1.4 Latex	As 1.4 Latex
6.10	**Dyes that are carcinogenic, mutagenic or toxic to reproduction**	As 1.4 Latex	As 1.4 Latex
6.11	**Potentially sensing dyes**	As 1.4 Latex	As 1.4 Latex
6.12	**Colour fastness to**	The colour fastness to perspiration (acid/alkaline) must meet level 3-4. A level	Testing according to EN:ISO 105 E04

	perspiration (acid/alkaline)	of 3 is allowable when they are dark (standard depth > 1/1), and are made of regenerated wool or more than 20% silk. This does not apply to white products, or products which are neither dyed nor printed.	
6.13	**Colour fastness to wet rubbing**	Colour fastness to wet rubbing shall be at least 2-3. A level of 2 is allowable for indigo dyed denim. This does not apply to white products, or products which are neither dyed nor printed.	Testing according to EN:ISO 105 X12
6.14	**Colour fastness to dry rubbing**	The colour fastness to dry rubbing must be at least level 4. Level 3-4 is allowable for indigo dyed denim. This does not apply to white products, or products which are neither dyed nor printed.	Testing according to EN:ISO 105 X12

7. Glues

Criterion number	Applicable to	Criteria	Compliance
7	**Glues**	Glues containing organic solvents are not permissible. Glues shall not be used which at time of application which are classified as carcinogenic (R45, R49, R40), harmful to the reproductive system (R46, R40), genetically harmful (R60-R63), toxic (R23-R28). The corresponding list of Hazard Statements is also provided.	Declaration that the glues used comply with this criterion, together with supporting documentation**.**

8. VOCs and SVOCs on the entire mattress

Criterion number	Applicable to	Criteria	Compliance
8	**VOCs and SVOCs**	VOC emissions from entire mattress shall not exceed specified limits (for formaldehyde, other aldehydes, total organic compounds). This is made in analogy with the 'health risk assessment process for emissions of volatile organic compounds (VOC) from building products' developed in 2005 by the AgBB.	Chamber testing to be performed according to EN 13419-1, EN13419-2 and ISO 16000-6 (VOCs) standards

9. Flame retardants used in the entire mattress

Criterion number	Applicable to	Criteria	Compliance
9	**Flame retardants**	Only reactive flame retardants are permissible (i.e. additive flame retardants are non-permissible). If a flame retardant has any of the R-phrases specified in directive 67/548/EEC (see below), these must not apply once the flame retardant is in its applied form. **R40** (limited evidence of a carcinogenic effect), **R45** (may cause cancer), **R46** (may	Declaration that no additive flame retardants are present Declaration of which reactive flame retardants have been

		cause heritable genetic damage), **R49** (may cause cancer by inhalation), **R50** (very toxic to aquatic organisms), **R51** (toxic to aquatic organisms), **R52** (harmful to aquatic organisms), **R53** (may cause long-term adverse effects in the aquatic environment), **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) The corresponding list of Hazard Statements is also provided.	used, and their conformity with the criterion

10. Biocides in the final product

Criterion number	Applicable to	Criteria	Compliance
10	**Biocides in the final product**	Only biocidal products containing biocidal active substances defined in relevant EU Directives are allowed.	Declaration of non-use

11. Durability

Criterion number	Applicable to	Criteria	Compliance
11	**Durability of mattress**	The lifetime of a household mattress is expected to be 10 years; this will vary depending on application. Adult mattress – Loss of height <15%, loss of firmness <20% Baby mattress – Loss of height <15%, loss of firmness <20%	Test report verifying these criteria are met using EN1957 (100 vs. 30 000 cycles)

12. Packaging requirements

Criterion number	Applicable to	Criteria	Compliance
12	**Packaging**	Packaging shall be made from recyclable material, with plastic type marked according to ISO 11469. Specified text referring to the EU Ecolabel must appear	Declaration of compliance, along with sample of product packaging and information supplied

13. Information appearing on the Ecolabel

Criterion number	Applicable to	Criteria	Compliance
10	**Information appearing on the Ecolabel**	Box 2 of the Ecolabel shall contain specific text related: – 'Minimises indoor air pollution' – 'Hazardous substances restricted' – 'Durable and high quality'	Declaration of compliance, along with sample of packaging with label

3.2 *Proposed Changes to Criteria*

The issues listed in the table below were raised during the criteria revision process; they would represent either revisions to existing criteria or addition of new criteria. After the analysis summarised in the Preliminary Report (available at http://susproc.jrc.ec.europa.eu/mattresses/), it has been decided which changes to propose for inclusion in the current revision of the criteria (see last column of the table). They are explained in detail in the sections below. The proposed changes will also impact on the grouping and order of the criteria that will be rearranged to fit into the thematic areas shown in Table 2.

Table 2: Proposed reorganisation of existing new criteria

Criteria area	Issue	Revision/ New Element	Proposal/Comment
1. Materials	Consumption of materials		---
	a. Formulation of the mattress	New	Not considered
	Sourcing of materials		---
	b. Use of renewable-based materials	New	Refer to proposal 2
	c. Use of organic materials	New	Refer to proposal 2
	d. Use of recycled materials	New	Not considered
	e. Use of certified and sustainable materials	Revision for wood/ New for others	Proposal 2
	f. Energy and LCA requirements	New	Not considered
	Production of materials		---
	g. Latex and PUR foams	New	Proposal 3 & 4
	h. Springs	New	Proposal 5
	i. Textiles	New	Proposal 6
2. Manufacture and storage	a. Energy performance	New	Not considered
	b. Best industrial practices	New	Proposal 7
	c. EMS / CSR criteria for the industrial site	New	Not considered
3. Substances	a. Use of materials and substances of concern		---
	- Horizontal approach	New	Proposal 8
	- Raw materials	Revision	Proposal 9
	- Flame retardants	Revision	Proposal 10
	- Biocides	Revision	Proposal 11
	- Phthalates	New	Proposal 12
4. Fitness for use	a. Quality of the product		
	- Warranty coverage during the lifespan of the mattress	New	Proposal 13
	- Additional requirements on the technical performance	New	Proposal 14
5. Packaging	a. Criteria on packaging	Revision	Proposal 15
6. End of life	a. Diversion from landfill through a collection system	New	Proposal 16

	b. Design for disassembling and recovery of materials	**New**	**Proposal 17**
7. Environmental performance	**a. Energy and Life cycle performance of the product**	**New**	**Not considered**
8. Others	**a. Consistency of the criteria**	**New**	**Proposal 18**
	b. Information in the box 2 of the label	**Revision**	**Proposal 19**

3.3 Discussion of Proposed Changes to the Criteria

Each of the proposed changes is discussed below in more detail, as individual proposals.[a] For each the proposed alteration or addition is outlined, and the associated change to the current criteria. The rationale for each change is then discussed. Costs benefits, test procedures and economic burdens associated with such changes are even discussed where appropriate.

3.3.1 Criteria Area 1 - Materials

The preliminary background report for the revision of this product group highlighted raw materials as the main contributor to the overall lifecycle impacts. In particular, a significant role is played for all the mattresses by core materials and fibres. Particular environmental issues of concern include: energy consumption, climate change, eutrophication, ecotoxicity, land occupation and transformation, particulate emission, toxicity. These impacts are addressed, both directly and indirectly, through the actions reported below.

Proposal 2 – Use of Certified and Sustainable Materials (Sourcing more eco-friendly materials)

Proposal	**Revision /New**	**Impact on Current Criteria Document**
To specify proportions of sustainably sourced materials used in mattresses.	Revision for Wood/ New for others	If the scope is changed as proposed to exclude wooden mattress supports then the criteria for wood can be removed. If sustainable source criterion for wood is still required, then a similar wording to Criteria 3 for the EU Ecolabel for Copying and Graphic Paper could be adopted. For other materials the following proportions can be proposed: - Natural Latex – 10% sourced from FSC certified sources - Natural PUR foam – 10% of vegetable oils from sustainable sources

<u>Wood</u>

Proposed change:

A) Deletion of criteria 5 in its entirety if no longer required.

B) Replace criteria 5.1 with the following wording, taken from the EU Ecolabel Copying and Graphic Paper criteria.

Wood: sustainable forest management

[a] The suggested change in definition is Proposal 1

The wood used in the mattress may be from a recycled or virgin source.

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

However, where certification schemes allow mixing of certified material and uncertified material in a product or product line, the proportion of uncertified material shall not exceed 50 %. Such uncertified material shall be covered by a verification system which ensures that it is legally sourced and meets any other requirement of the certification scheme with respect to uncertified material.

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

Assessment and verification:
The applicant shall provide appropriate documentation indicating the types, quantities and origins of wood used in the mattress production.

Where virgin wood is used, the product shall be covered by valid forest management and chain of custody certificates issued by an independent third party certification scheme, such as PEFC, FSC or equivalent. If the product or product line includes uncertified material, proof should be provided that the uncertified material is less than 50 % and is covered by a verification system which ensures that it is legally sourced and meets any other requirement of the certification scheme with respect to uncertified material.

Where recycled wood is used, the applicant shall provide a declaration stating the average amount of recycled wood used for production of the mattress.

Rationale:
Removal of all criteria for wood is needed if wooden bases and similar items are removed from the scope. If these products remain within scope it the criteria will be aligned with the recently revised criteria for Copying and Graphic Paper Criteria.

Cost Benefit Analysis:
No impact if removed.

The existing criteria prescribes that 60% of wood is sourced from sustainable sources, whereas the new criteria specifies that all wood should be from certified or recycled sources. FSC certified lumber commands a price premium of between 15-25% over no FSC lumber.[a] This could have an effect on products containing wood. The benefits of adopting this criterion would be that it provides scope for the use of recycled material or, where virgin material is used, the criterion would ensure that:

- Wood sources are managed in an environmentally, socially, appropriate and economically viable manner.
- Forests are managed with respect to some basic criteria, if the origin of the virgin wood is not third party certified. However this can only comprise 50% of virgin wood. This would help exclude from the following sources:
    - Illegally harvested forests;
    - Wood harvested in violation of traditional and civil rights;
    - Wood harvested in forests in which High Conservation Values (areas particularly worth of protection) are threatened through management activities;
    - Wood harvested from conversion of natural forests;
    - Wood harvested from areas where genetically modified trees are planted.

[a] http://www.fsc-uk.org/?p=3569

Test Procedures and Economic Burdens:
No specific test procedures are associated with the implementing a change in criteria. However, relevant certificates and declarations will be needed to demonstrate the authenticity of certified or recycled wood, indicating types, quantities and origin. Documentation indicating that this is used in the Ecolabelled product will also be provided.

Some economic burden is associated with procurement of certified wood, which could increase the cost of the product. In addition, an extra burden will be placed on the manufacturing process, as procedures will be required to ensure that the correct wood is used in the EU Ecolabelled product, wood may thus need to be stored and processed separately.

Natural Latex

Proposed change:
It is proposed that a 10% of natural latex used in mattresses is obtained from certified sustainable sources.

The following text could be considered in the latex specific criteria (section 1 in the existing criteria):

Latex: certified sustainable sourcing of natural latex

At least 10% by weight of any naturally sourced latex in the product must be sourced from forests certified under the FSC's sustainable latex scheme.

Assessment and verification:
Declaration by applicant, with supporting documentation to verify source and quantity of sustainable natural latex used.

Rationale:
Latex is a key component for certain mattress types, and latex core mattresses comprise 13% of the market by sales. Latex may be produced from natural or synthetic sources, both used in mattresses. Natural latex is produced from the sap of the gum tree, and environmental considerations similar to wood can be applied to its sourcing. The FSC provide certification even for natural latex (rubber), therefore this could be implemented in a similar way to the sourcing of wood. As this is a new criteria and only small amounts of latex are produced under the FSC scheme, it is likely most appropriate to set a low value (10%), which can be increased in later revisions.

Cost Benefit Analysis:
A 10% limit is preliminarily set. It is considered important to introduce this issue at this stage and to revise this limit later. At present world supply of natural latex is estimated at 12 million tonnes,[a] and it is estimated that sustainably source latex accounts for around 0.2% of world supply of latex, however this only an estimate and no official figures exist.[b] However, this scale would provide enough volume for Ecolabel mattresses. The costs associated with procuring FSC certified latex are estimated to be higher than those for un-certified latex. However, this only represents 1/10th of the raw latex materials. Similarly, the environmental benefits will be small until a greater level is introduced in later revisions. Latex certified under the FSC scheme provides the benefits described above for lumber forests, but also include aspects such as;

- no International Labour Organisation core conventions breached (e.g. no child or forced labour),
- no genetically modified materials used,
- rubber harvested in a sustainable manner.

[a] http://www.rubber-foundation.org/docu/2575natural.pdf
[b] Personal communication with industry

Test Procedures and Economic Burdens:
No specific test procedures are associated with the implementation of this new criterion. However, relevant certificates (such as certificates of custody) and declarations will be needed to demonstrate the authenticity of certified latex.

PUR Foam
PUR foam is most commonly produced from petro-chemical feedstock (see additional information under proposal 4 below). However, production of foam using renewable natural oil precursors (such as castor oil or soya bean oil) is possible. It is suggested that sustainable sourcing of vegetable oils could be considered in the current revision. For instance, it can be required that 10% of any natural oils used in the production of PUR foam come from sustainable sources. For the time being, standards have been found for:
- Palm oil (Roundtable on Sustainable Palm Oil - RSPO), and
- Soy bean oil (Round Table on Responsible Soy Association – RTRS).

The following text could be considered in the PUR specific criteria (section 2 in the existing criteria):

PUR foam: certified sustainable sourcing of vegetable oils

A portion of the vegetable oils used for the production of PUR foams must be from sustainably sourced.

Vegetable oil	*Ratio of sustainable sourced material (% by weight)*	*Standards*
Palm oil	10%	RSPO
Soy bean oil	10%	RTRS

Assessment and verification:
Declaration by applicant, with supporting documentation to verify source and quantity of sustainable natural latex used.

Rationale:
PUR foam is available which uses natural oils obtained from renewable sources (specifically vegetable oils) as a precursor. At present these are typically a blend of natural vegetable oils (including castor oil and soy bean oil), though other substances derived from petrochemicals are still required to make up the majority of the foam. Where natural oils are used in the PUR foam it may be appropriate to include a criterion related to sustainability, similarly to that in place of wood and proposed for natural latex. Initially, it is proposed for palm oil and soy bean oil that 10% of these oils used in the production of PUR foam comes from sustainable sources. As previously discussed for natural latex, the limit could be raised in later revisions or extended to other oils.

Test Procedures and Economic Burdens:
No specific test procedures are associated with the implementation of this criterion. It is proposed that verification would be in the form of a declaration from the PUR foam manufacturer indicating the proportion of natural oils obtained through sustainable sourcing (where applicable).

Proposal 3 – Latex foams (Production)

Proposal	**Revision /New**	**Impact on Current Criteria Document**
To limit emissions in water from the latex foam production.	New	Insertion of a new criteria within the latex section to control emissions during production of this type of foams

Proposed change:

The following wording is proposed to be included in the latex specific criteria (section 1 in the existing criteria) referencing the production of latex.

Latex foam production: water emission limits

The wastewater from the processing of natural rubber and/or manufacturing of synthetic latex rubber shall not exceed the following values upon discharge into a water body;

- 2 mg/l for zinc,
- 0.5 mg/l for lead,
- 1 mg/l for AOX,
- 0.1 mg/l for benzene and its derivatives,
- COD of 150 mg/l or at least 90% reduction compared with the inflow on a monthly average,
- 20 mg/l for total nitrogen (N_{total}) and 2 mg/l for total phosphorous (P_{total}) as well as a value of 2 for the toxicity in fish eggs (GEi).

This requirement shall not apply to approved discharges into a municipal sewage treatment plant that meets at least the requirements of Council Directive 91/271/EEC concerning urban waste water treatment, dated 21st May 1991.

Assessment and verification:

Verification of waste water emission using the standard testing protocols for each of the relevant discharge types (described below or equivalent) from the latex foam supplier. Testing will occur every six months to ensure continuing compliance.

Rationale:

The proposed limits and wording are taken from the Blue Angel Scheme for footwear, and apply equally to synthetic latex and naturally produced latex.[a] This approach also conforms to Article 6.3.f of the EU Ecolabel regulation specifies the requirement to align with other ecolabelling schemes.

Information on Best Available Techniques and typical consumption-emission ranges are also available for synthetic rubber. However these are judged to be inappropriate for this criterion due to differences between the production of synthetic latex foams and the more general synthesis of rubber.

Cost Benefit Analysis:

This is reliant on the supplier of latex having these tests performed for the start of the process and every six months thereafter. The testing procedures should not place significant economic burden on applicants. However, if tests are failed the applicant may be required to find an alternative latex supplier depending on the willingness of the failing supplier to improve discharges. Some costs associated with improving discharges are likely to be high.

The benefits of specifying limits on discharges are dependent on the improvements that are made to discharges as a result of the required tests. However, this will provide a baseline for future revisions.

Test Procedures and Economic Burdens:

Within the Blue Angel following test methods may be used:

- Chemical oxygen demand: ISO 6060 or DIN 38409-41 or DIN-ISO 15705-45,
- AOX (chloride content < 5g/l): DIN EN ISO 9562 or DIN EN ISO 9562 or
- AOX (chloride content > 5g/l) DIN 38409-22, respectively
- Sulphides: DIN 38405-27 or ISO 10530,
- Chromium: ISO 9174 or EN 1233 or EN ISO 11885,
- Zinc: DIN EN ISO 11885,
- Lead: DIN EN ISO 11885,
- Benzene and derivatives: DIN 38407-9,

[a] RAL-UZ 155, Basic Criteria for Award of the Environmental Label – Footwear, Blue Angel, February 2011

- Toxicity in fish eggs: DIN EN ISO 15088.

In addition, the applicant shall submit a declaration from the natural rubber/synthetic rubber processing company stating that the discharge values of the wastewater treatment plant are checked at least every six months.

Proposal 4 – PUR Foams (Production)

Proposal	Revision /New	Impact on Current Criteria Document
To limit emissions and resources consumption from production of diisocyanates. To limit the use of certain diisocyanates.	New	Insertion of new criteria within the PUR section: 1. To prevent the use of some precursors and/or 2. To limit emissions of some precursors.

Proposed change:
To restrict the use of toluene diisocyanate as a PUR foam precursor and/or to set emission limit values for diisocyanates.

The following new criterion is proposed. This change would be appended to Section 2 for PUR foam within the existing criteria, which applies if PUR constitutes more than 5% of the mattress by weight. This will form part of the new criterion 2.9

PUR foam production: Precursors (criterion 2.9)

Toluene diisocyanate (TDI) shall not be used as a precursor for PUR foam. Emission values reported in the table below (limits to be discussed with stakeholders) shall be respected during the production of diisocyantes (values obtained from the Bref on Large Volume Organic Chemicals):

Wastewater	**TDI (20% threshold)**	**MDI (20% threshold)**	**TDI (Bref)**	**MDI (Bref)**
Volume (m^3/t)	3	0.3	1-10	0.1-1
COD (kg/t)	3	< 0.1	1-10	< 0.1
AOX (g/t)	30	0.3	10-100	0.1-1
Air emissions	**TDI (20% threshold)**	**MDI (20% threshold)**	**TDI (Bref)**	**MDI (Bref)**
NOx (mg/m^3)	49.6	NA	12-200	NA
SO_2 (mg/m^3)	<20	NA	<20	NA
CO (mg/m^3)	27.6	NA	<2-130	NA
Total C (mg/m^3)	7.8	NA	<1-35	NA
Dust (mg/m^3)	1.8	NA	<1-5	NA
PCDD/F (mg/m^3)	NA	NA	NA	NA

Assessment and verification:
Verification of waste water emission using the standard testing protocols for each of the relevant discharge types (described below or equivalent) from the supplier.

Rationale:
The production of polyurethane requires the combination of two main different types of precursor substances; a polyol and a diisocyanate. Diisocyanates typically have the largest hazards associated with them. Two different groups of diisocyanate are commonly used as precursors are; toluene diisocyanates (TDI) and methylene diphenyl diisocyanates (MDI). Comparison of LCA data suggests that there is no significant difference, in terms of environmental performance, between PUR foams produced from TDI or

MDI. However, TDI carries a larger number of risk phrases, including; fatal if inhaled (H330 - acutely toxic), suspected carcinogen (H351), skin and eye irritant (H315, H319), and harmful to aquatic life with long lasting effects (H412).[a] By contrast, MDI appears less hazardous, particularly with respect to the inhalation of the substance and to the environment. MDI does carry the following risk phrases: harmful (H332), suspected carcinogen (H351), and skin and eye irritant (H315, H319).[b]

Though these precursors are not present as separate substances in the final polyurethane, omitting the use of TDI would increase the inherent safety of the manufacture process.

Emission ranges related to the production of TDI and MDI are moreover reported in the Bref document on Large Volume Organic Chemicals. These ranges were used to set emission limit values for both TDI and MDI. Should the use of TDI be avoided, prescriptions on emission values would be applied only to MDI.

Cost Benefit Analysis:
Industry representatives indicated that most foam cores for mattresses use MDI as a precursor at present, and production of MDI in the EU is roughly double that of TDI.[c] Therefore implementing this change should not be problematic and a replacement of the PUR cores may be easily achieved if an applicant uses a TDI based foam. The cost impact of this change is uncertain, due to the fluctuating prices.

The main benefit of introducing this change would be to help reducing the inherent risk associated with the production of PUR foam, though it should be noted that strict controls are in place for the use of TDI.

The impact of water emissions associated with MDI is reliant on the supplier having these tests performed for the start of the process. The testing procedures should not place significant economic burden on applicants. However, if tests are failed the alternative supplies may be required, depending on the willingness of MDI and PUR foam supplier to implement changes to treatment. Improvement costs associated with improving discharges are likely to be high.

The benefits of specifying limits on discharges are dependent on the improvements that are made to discharges as a result of the required tests. However, this will provide a baseline for future revisions.

Test Procedures and Economic Burdens:
The applicant would provide a declaration from the producer of the PUR foam that no TDI was used in the production of the PUR foam, this will provide little economic burden associated with testing. Evidence suggests that MDI based foams already constitute the majority of the market, it can be assumed that economic impact for making this change is minimal in terms of foam cost.

The following testing standards are proposed for measuring the emissions for this criterion;
Water:

- Chemical oxygen demand: ISO 6060 or DIN 38409-41 or DIN-ISO 15705-45,
- AOX (chloride content < 5g/l): DIN EN ISO 9562 or DIN EN ISO 9562

A declaration of volume of water per tonne of product emitted will also be provided.

Proposal 5 – Springs (Production)

Proposal	Revision /New	Impact on Current Criteria Document
To exclude the use of stainless steel in mattresses being awarded	New	Insertion of new criteria within the spring and wire section to prevent the use of stainless steels in the mattress and

[a] ECHA REACH database – CAS 584-84-9
[b] ECHA REACH database – CAS 101-68-8
[c] Best Available Techniques in the Large Volume Organic Chemical Industry, February 2003

the EU Ecolabel. Demonstratee that Best Available Techniques are used in the production of the steel		to demonstrate that Best Available Techniques are used in the production of steel springs and wires.

Proposed changes:
It is proposed that steels are excluded based on their chromium content. Steels which contain above 10.5% chromium are defined as stainless steel, therefore the threshold for chromium could be set below this level.

The following wording is proposed, for inclusion in Section 3 – Wires and Springs of the existing criteria;

Springs and wires: selection of materials

Springs and wires shall not be made of stainless steel..

Assessment and verification:
Verification that the steel supplied to spring makers cannot be classified as stainless steel

In addition, it is also proposed to demonstrate that materials supplied should be produced using Best Available Techniques, identified in the BREF document for Iron and Steel Making[a]

The following wording is proposed;

Springs and wires: selection of materials

Where steel is used as material for springs and wires, it must be produced in accordance with the appropriate Best Available Technique for steel production, outlined in the EU BREF document for Iron and Steel Making.[b] This outlines techniques for;

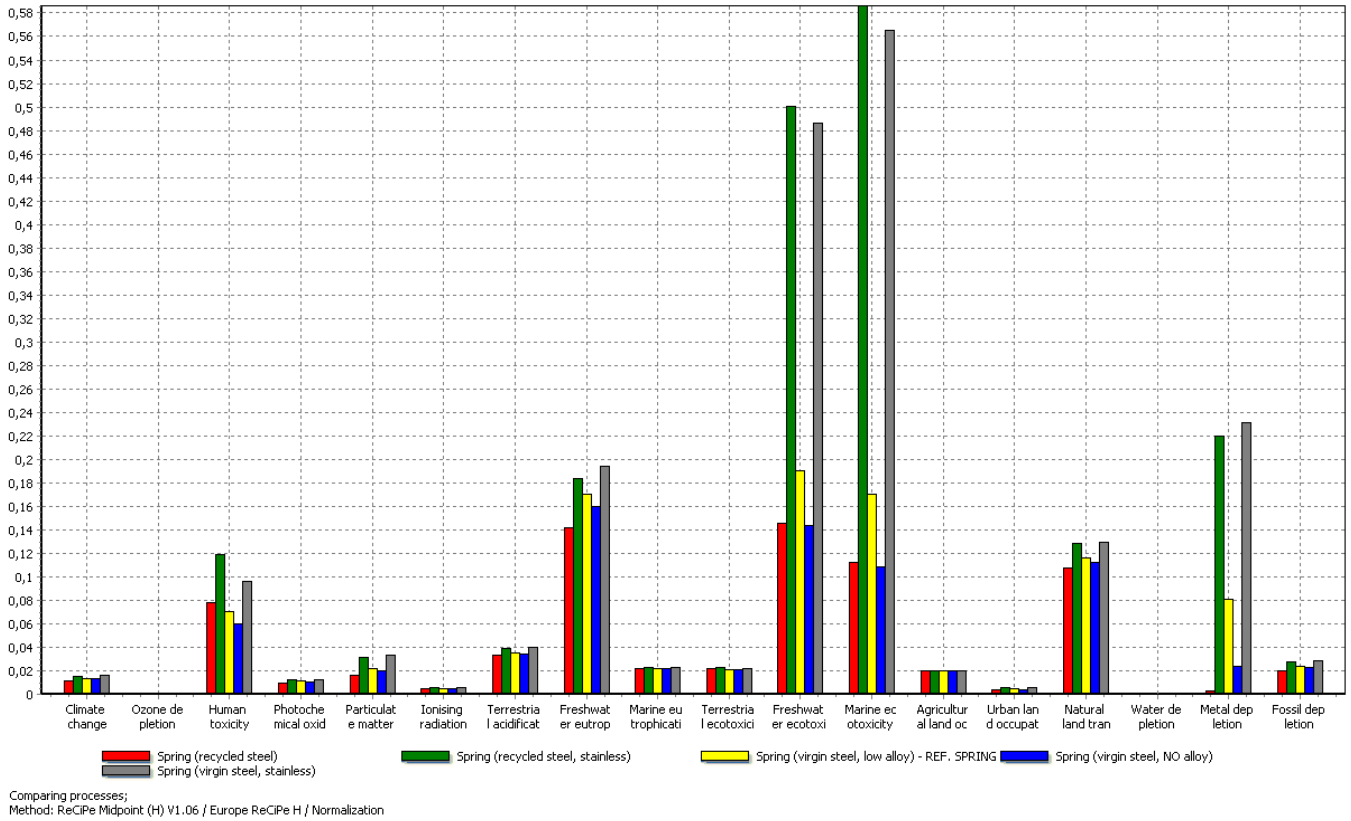
- loading, unloading and handling of bulk raw materials
- blending and mixing of raw materials
- coke production
- sintering and pelletisation of iron ore
- the production of molten iron by the blast furnace route, including slag processing
- the production and refining of steel using the basic oxygen process, including upstream ladle desulphurisation, downstream ladle metallurgy and slag processing
- the production of steel by electric arc furnaces, including downstream ladle metallurgy and slag processing

Assessment and verification:
Declaration from the steel supplier that techniques outlined in the BREF document are adhered to.

Rationale:
Stainless steels have much higher environmental impacts associated with them when compared to non-stainless steels. Based on an equivalent weight, using non-special steels would reduce the size of the largest impacts (freshwater ecotoxicity, marine ecotoxicity and metal depletion) by a factor of 10 and would reduce the majority of the other impacts calculated (see Figure 1).

[a] http://eippcb.jrc.es/reference/BREF/IS_Adopted_03_2012.pdf
[b] http://eippcb.jrc.es/reference/BREF/IS_Adopted_03_2012.pdf

Figure 1: Impacts of production and disposal of 1kg of materials used in springs



Cost Benefit Analysis:
The environmental benefits of using low-alloyed steel over stainless steel are fairly clear as described above. Though this assumes that other alloying agents are not required and similar quantities of metal are used.

The impact on cost is likely to be positive for producers already using non-stainless steel springs as the price of stainless steel is roughly 3 to 4 times higher than the average price of carbon steel (which contains some alloyed metals, but at lower and unspecified concentrations).[a] High carbon steel can be used for springs in mattresses and it seems likely that producers would already adopt the cheaper available options.

The cost benefit of requiring the use of BAT is uncertain. The BREF document remarks that the costs and benefits of applying a technique is highly situation specific, particularly to the installation and processes used, and cannot be fully evaluated. Therefore not attempt is made to quantify this here.

Test Procedures and Economic Burdens:
The applicant would provide a declaration from the producer of the steel or springs confirming the grade of steel used, and that the chromium content is below 10.5%. The potential impact on cost of materials is described above.

Similarly for declaring the use of Best Available Techniques for steel production, a declaration from the steel producer will be provided to demonstrate this is the case.

Proposal 6 – Textiles (Production of fibres and fabrics)

Proposal	Revision	Impact on Current Criteria Document

[a] http://www.worldsteelprices.com/

	/New	
To align structure of criteria with that used for Nordic Swan, EU Ecolabel and Blue Angel criteria for textiles	Revision	Alteration of structure, minor alterations of threshold values to align with other labels.

Proposed change:
The following rearrangement and additions is proposed for the new textiles criteria, the wording is provided below for new criteria. Elements highlighted in yellow are under discussion in the parallel revision of EU Ecolabel criteria for textiles. It is possible that this one will have an influence on the final criteria proposal for bed mattresses. It must be even observed that some of the criteria refer to both fibres and fabrics, while other applies only to the cover.

No.	Area	Summary
x.1	Biocides	**As existing criteria 6.1**
x.2	Chrome mordant dyeing	**As existing criteria 6.7**
x.3	Metal complex dyes	**As existing criteria 6.8** Addition of metal complex dyes based on cadmium and mercury in accordance with the Blue Angel criteria for mattresses
x.4	Azo dyes	**As existing criteria 6.9** Addition of Azo dyes releasing 4,4'-methylene-bis-(2-chloroaniline) (101-14-4) in accordance with the Blue Angel criteria for mattresses **The possibility to refer to a dye list is explored in the current criteria revision for Textiles**
x.5	Dyes that are carcinogenic, mutagenic or toxic to reproduction	**As existing criteria 6.10**
x.6	Potentially sensitising dyes	**As existing criteria 6.11** Addition of Disperse Yellow 3.C.I 11855 **The addition of Disperse Blue 1 is proposed in the current criteria revision for Textiles**
x.7	Impurities in dyes and pigments	**Merge of existing criteria 6.5 and 6.6**
x.8	Auxiliary chemicals	**As existing criteria 6.2** **The addition of Nitrilotriacetic acid (NTA) is proposed in the current criteria revision for Textiles**
x.9	Detergent fabric softeners and complexing agents	**As existing criteria 6.3**
x.10	Bleaching agents	**As existing criteria 6.14**
x.11	Formaldehyde	**Addition of criteria** in accordance with Nordic Swan for furniture which limits emissions of formaldehyde from textiles. Limits on formaldehyde are under discussion in the current criteria revision for Textiles
x.12	Wastewater discharges from wet processing	**Addition of criteria** in accordance with Nordic Swan for furniture which limits COD and pH values in effluent streams An alternative option is even explored in the current revision forTextiles.
x.13	Durability	**Addition of criteria** in accordance with Nordic Swan for furniture which provides guidelines for wear tests A new prescription on coating resistance is also proposed in the current

		revision for Textiles.
x.14	Dimensional changes during washing and drying	**Addition of criteria** in accordance with EU Ecolabel for textiles which provides limits of changes of dimension from washing
x.15	Colour fastness to washing	**Addition of criteria** in accordance with Nordic Swan for furniture, which provides colour fastness specifications for washing of textiles.
x.16	Colour fastness to wet rubbing	**As existing criteria 6.13**
x.17	Colour fastness to dry rubbing	**As existing criteria 6.14**
x.18	Colour fastness to perspiration (acid, alkaline)	**As existing criteria 6.12**

The following text is proposed;

x. Textiles (fibres and fabric) – must meet following criteria for dyes and other chemical products, as well as fitness for use.

x.1. **Biocides –** as existing
x.2. **Chrome Mordant dyeing** – as existing
x.3. **Metal complex dyes**– as existing, with the addition of metal complex dyes based on cadmium and mercury
x.4. **Azo dyes**– as existing, with addition of Azo dyes releasing 4,4'-methylene-bis-(2-chloroaniline) (101-14-4). **The possibility to refer to a dye list is explored in the current criteria revision for Textiles**
x.5. **Dyes that are carcinogenic, mutagenic or toxic to reproduction**– as existing
x.6. **Potentially sensitising dyes**– as existing, with addition of Disperse Yellow 3.C.I 11855. **The addition of Disperse Blue 1 is proposed in the current criteria revision for Textiles**
x.7. **Impurities in dyes and pigments** – merging of existing

i. Dyes

Colour matter with fibre affinity (soluble or insoluble).
The levels of ionic impurities in the dyes used shall not exceed the following: Ag 100 ppm; As 50 ppm; Ba 100 ppm; Cd 20 ppm; Co 500 ppm; Cr 100 ppm; Cu 250 ppm; Fe 2 500 ppm; Hg 4 ppm; Mn 1 000 ppm; Ni 200 ppm; Pb 100 ppm; Se 20 ppm; Sb 50 ppm; Sn 250 ppm; Zn 1 500 ppm.
Any metal that is included as an integral part of the dye molecule (e.g. metal complex dyes, certain reactive dyes, etc.) shall not be considered when assessing compliance with these values, which only relate to impurities.
Assessment and verification: The applicant shall provide a declaration of compliance.

ii. Pigments

Insoluble colour matter without fibre affinity.

The levels of ionic impurities for pigments used shall not exceed the following: As 50 ppm; Ba 100 ppm, Cd 50 ppm; Cr 100 ppm; Hg 25 ppm; Pb 100 ppm; Se 100 ppm Sb 250 ppm; Zn 1 000 ppm.

Assessment and verification: The applicant shall provide a declaration of compliance.

x.8. **Auxiliary Chemicals –** as existing. **The addition of Nitrilotriacetic acid (NTA) is proposed in the current criteria revision for Textiles**
x.9. **Detergents and softeners –** as existing
x.10. **Bleaching agents –** as existing
x.11. **Formaldehyde –** new, in accordance with the Nordic Swan furniture criteria

Emissions of formaldehyde must not exceed 20 ppm for textiles according to EN ISO 14184-1. Alternatively, evaporation must not exceed 0.005 mg/m3 measured in a climate chamber test according to ENV 13419-1. Limits on formaldehyde are under discussion in the current criteria revision for Textiles

Assessment and verification: The applicant shall provide a test report, using the following test method: EN ISO 14184-1. Sample of 1 g with 100 g water heated to 40 °C for 1 hour. Formaldehyde in extract analysed with acetylacetone, photometric.

Alternatively, the emission chamber test may be used: ENV 13419-1, with EN ISO 16000-3 or VDI 3484-1 for air sampling and analysis. The sample shall be taken less than one week after production of the textiles. Packaging of sample: air tight wrapped, individually, in aluminium foil and PE foil. Conditioning: The wrapped sample shall be stored at room temperature for at least 24 hours, after which the sample is unwrapped and immediately transferred into the test chamber. Testing conditions: sample placed on sample holder which allows access of air from all sides; climatic factors as in ENV 13419-1; for comparison of test results the area specific ventilation rate (q = n/l) shall be 1; the ventilation rate shall be between 0,5 and 1; the air sampling shall be started 24 hours after chamber loading and finished at the latest 30 hours after loading.

x.12. **Waste water discharges from wet processing –** new, in accordance with the Nordic Swan furniture criteria

The chemical oxygen demand in the emission water discharged from wet processes (except greasy wool scouring sites and flax retting sites) shall when discharged after treatment (whether onsite or offsite) be less than 20 g COD/kg textile, expressed as an annual average.

If the effluent is treated onsite and released directly to nature, it must also have a pH value between 6 and 9 (unless the pH values in the recipients are higher or lower) and a temperature of less than 40°C (unless the temperature in the recipient environment is higher).

An alternative option is even explored in the current revision forTextiles

x.13. **Durability** – new, in accordance with the Nordic Swan furniture criteria

External textiles must have abrasive resistance corresponding to the rupture of the maximum of two threads at a minimum of 20,000 wear revolutions for domestic use and 40,000 for public use. A new prescription on coating resistance is also proposed in the current revision for Textiles.

Assessment and verification: The applicant shall provide test reports following the standard EN ISO 12947 (abrasion).

x.14. **Dimensional Change** – new, in accordance with the EU Ecolabel Textiles criteria

The dimensional changes after washing and drying shall not exceed:

- plus or minus 2 % for curtains and for furniture fabric that is washable and removable,

This criterion does not apply to:

- fibres or yarn,
- products clearly labelled "dry clean only" or equivalent (insofar as it is normal practice for such products to be so labelled),
- furniture fabrics that are not removable and washable.

Assessment and verification: The applicant shall provide test reports using the following standards EN ISO 63 30, ISO 5077 as follows: 3 washes at temperatures as indicated on the product, with tumble drying after each washing cycle unless other drying procedures are indicated on the product,

x.15. **Colour fastness to washing** – new, in accordance with the Nordic Swan furniture criteria
The colour fastness to washing shall be at least level 3 to 4 for colour change and at least 3 to 4 for staining. This criterion does not apply to products clearly labelled "Dry clean only" or equivalent (insofar as it is normal practice for such products to be so labelled), to white products or products that are neither dyed nor printed, or to non-washable furniture fabrics.

Assessment and verification: The applicant shall provide test reports using the following standard ISO-105-E01(colour fastness to water).

x.16. **Colour fastness to wet rubbing** – as existing criteria

x.17. **Colour fastness to dry rubbing**– as existing criteria

x.18. **Colour fastness to perspiration (acid, alkaline)** – as existing criteria

Rationale:
Alignment with other ecolabels is outlined as part of Article 6.3.f of the EU Ecolabel, and it is also desirable for products within the EU Ecolabel scheme to have similar criteria.

Cost Benefit Analysis:
The overall impact associated with these change appears minimal and this change is related to bringing the criteria into line with similar criteria.

Test Procedures and Economic Burdens:
Assessment and verification procedures have been identified within the changes outlined above. Overall, six additional standardised tests are required for formaldehyde emissions, COD and pH in waste water, durability, and colour fastness. Indicative prices for each of these range from €30 for some simple textiles testing to €100 for some of the effluent tests.

3.3.2 Criteria Area 2 - Manufacture and Storage

Manufacture, storage and transport of the product to the customers is a source of additional environmental concern, as suggested by LCA data.

Proposal 7 – Industry Best Practice

Proposal	Revision /New	Impact on Current Criteria Document
Introduce a criterion on the promotion of best practices for delivery and storage of mattress	New	Addition of a new criterion (and a new section) which requires applicants to report space used during transport and storage.

Proposed change:
A new criterion is proposed to promote best practice for storage and transport, this will require the reporting of strategies and indicators as part of the application process. The following wording is proposed for the criterion (adapted from the French NF Environment Ameublement Scheme);

Industry best practice for transport and storage
The applicant must demonstrate that logistics (transport and storage of the finished mattress) are

monitored, for example through;

- loading and delivery plans,
- product design plans,
- storage capacity utilisation

The applicant must be able to prove the reasoning behind these using a number of monitoring indicators (such as loading of transport vs. maximum capacity, the ratio of number of orders vs. number of lorries, storage capacity used in warehousing (actual vs. maximum).

Assessment and verification:
The applicant must supply the assessor with proof of logistical monitoring strategies and provide indicators to measure this, these include loading of lorries, average warehouse storage capacities and ratio of orders vs number of lorries).

Rationale:
Decreasing the impact of storage (including transport) was highlighted as an issue of concern in the lifecycle analysis due to the contribution to environmental impacts.

This approach proposed is inspired for by the French NF Environment Ameublement Scheme in their criteria for furniture. In the existing criteria no provision is made for best practice in storage and transport, therefore it is proposed that in this revision factors influencing the impact of these lifecycle stages are only reported. This puts a baseline in place which could even allow further steps such as defining specific parameters in future revisions. This avoids placing additional and uncertain burdens on applicants.

Cost Benefit Analysis:
Assuming that strategies and schemes for monitoring logistics are already in place within the company there will be little additional cost associated with this criterion.

The aim of this criterion is to increase attention of producers on aspects related to logistics and storage. On a medium-long term, it could even provide baseline data and input for storage and transport to more accurately define best practice for this product, which can then be used in future revisions.

Test Procedures and Economic Burdens:
Verification will be made through a declaration by the applicant, describing how both transport and storage are managed for mattresses, and providing reasoning for these choices. Values will be provided for the loading of lorries (based on mattress capacity), average warehouse storage capacities for mattresses and ratio of orders vs. number of lorries.

3.3.3 Criteria Area 3 – Hazardous Substances

A new approach for restricting the use of certain substances has to be reflected in the criteria because of recent changes to the EU Ecolabel legislation (EC/66/2010). In addition, stakeholders have indicated that some changes are required to criteria to provide better clarity and remove obstructive burdens placed on applicants.

Proposal 8 – Horizontal approach to restrict hazardous substances and preparations in the final product

Proposal	Revision /New	Impact on Current Criteria Document
Alignment of criteria with horizontal approach to restrictions on hazardous substances and	New	Addition of new criteria restricting the use of hazardous substances in mattresses, with appropriate derogations made.

preparations contained in the product.		

Proposed Change:
Two new criteria are proposed, using the following wording;

Substances contained in the final product

1 - Hazardous substances and mixtures:
In accordance with Article 6(6) of Regulation (EC) No 66/2010, the product or any homogeneous part of it shall not contain substances referred to in Article 57 of Regulation (EC) No 1907/2006 nor substances or mixtures meeting the criteria for classification in the following hazard classes or categories in accordance with Regulation (EC) No 1272/2008 of the European Parliament and of the Council.

Relevant hazard statements are listed in appendix I

The use of substances or mixtures in the final product which upon processing change their properties in a way that the identified hazard no longer applies is exempted from the above requirement.

Concentration limits for substances or mixtures meeting the criterion for classification in the hazard classes or categories listed in the table above, and for substances meeting the criterion of Article 57 (a), (b) or (c) of Regulation (EC) No 1907/2006, shall not exceed the generic or specific concentration limits determined in accordance with the Article 10 of Regulation(EC) No1272/2008. Where specific concentration limits are determined, they shall prevail against the generic ones.

Concentration limits for substances meeting criteria of Article 57 (d), (e) or (f) of Regulation (EC) No 1907/2006 shall not exceed 0.01 % weight by weight. Components are considered to be individual items or parts used to form the mattress, for example springs or a textile layer comprised of a single textile type.

The following substances/uses of substances are specifically derogated from this requirement;

- Natural latex when used in the mattress core. (H317 – May cause allergic skin reaction)
- Nickel when used in stainless steel springs. (H351 - Limited evidence of a carcinogenic effect, H317 - May cause sensitization by skin contact, H372 - Toxic: danger of serious damage to health by prolonged exposure through inhalation). **Only if relevant - see proposal 5**

Assessment and verification:
The applicant shall provide the exact formulation of the product and of each part of it. Compliance with this criterion will be demonstrated by providing a declaration on the non-classification of each substances into any of the hazard classes associated to the hazard statements listed above in accordance with Regulation (EC) 1272/2008, as far as this can be determined, as a minimum, from the information meeting the requirements listed in Annex VII of the Regulation (EC) 1907/2006. This declaration shall be supported by summarized information on the relevant characteristics associated to the hazard statements referred to in the above list, to the level of detail specified in section 10, 11 and 12 of Annex II of Regulation (EC) 1907/2006 (Requirements for the Compilation of Safety Data Sheets).
Information on intrinsic properties of substances may be generated by means other than tests, for instance through the use of alternative methods such as in vitro methods, by quantitative structure activity models or by the use of grouping or read-across in accordance with Annex XI of Regulation (EC) 1907/2006. The sharing of relevant data is strongly encouraged.
The information provided shall relate to the forms or physical states of the substance or mixtures as used in the final product.
For substances listed in Annexes IV and V of REACH, exempted from registration obligations under Article 2(7) (a) and (b) of Regulation 1907/2006 REACH, a declaration to this effect will suffice to comply with the requirements set out above.
Concentration limits shall be specified in accordance with Article 31 of Regulation (EC) No 1907/2006 for

substances and mixtures. These declarations should cover the materials used in the mattress (e.g. cotton, steel, wool) and any additional substances which are present as a result of processing which remain in the materials in the finished product (e.g. dyes).

2 - Substances listed in accordance with article 59(1) of Regulation (EC) No 1907/2006:
No derogation from the exclusion in Article 6(6) shall be given concerning substances identified as substances of very high concern and included in the list foreseen in Article 59 of Regulation (EC) No 1907/2006, present in mixtures, in an article or in any homogenous part of a complex article in concentrations higher than 0.010% w/w. When the specific concentration limit of substances determined in accordance with Article 10 of Regulation (EC) No1272/2008 are lower than 0.010%, they should apply.

Assessment and verification:
The list of substances identified as substances of very high concern and included in the candidate list in accordance with Article 59 of Regulation (EC) No 1907/2006 can be found here: http://echa.europa.eu/chem_data/authorisation_process/candidate_list_table_en.asp

Reference to the list shall be made on the date of application.

Moreover, two additional sub-criteria are under discussion in the parallel revision of the EU Ecolabel criteria for textiles:

Criteria X1: Supplier recipe and substance screening
Manufacturer would be required to screen the Hazard Statements of their production recipes based primarily on Safety Data Sheet information, but supplementing this where required (e.g. with test data for biodegradability). Using a combination of the approaches used by TEGEWA, GOTS and Blue Angel, the Hazard Statement list would be grouped into hazards related to occupational health (i.e. in the factory) and to the environment (i.e. relating to air and water emissions) in order to identify risks due to potential exposure at source . Some of these H Statements would be completely restricted (e.g. R50/53) and others may be derogated under certain conditions (e.g. hardly boiodegradable substances if there is an adequate wastewater treatment plant, dyes if there is automatic dispensing to reduce dust exposure and wastewater colour removal, since most dyes carry R53). Stakeholders of the textiles product group have also provided IPTS with some derogations.

These elements will be discussed with the stakeholders in order to understand their appropriateness and need within this specific product group.

Rationale:
Changes to EU Ecolabel legislation require that a horizontal approach across the EU Ecolabel scheme is taken for restricting the use of hazardous substances, leading to the two criteria proposed above. The two criteria have been written to match similar product group revisions which take into account this legislation (e.g. imaging equipment). Trace concentration limits have been set accordingly based on similar concentrations, but taking into account the different components of the mattress.

Derogation is necessary for natural latex foam and potentially for nickel (dependent on the outcome of other proposals). Latex is used as a core material, and does not come into contact with the skin. Nickel may be used in some stainless steel used in springs. When it is present as an alloy the associated hazard statements do not apply.

The threshold on trace concentration of 0.01% for SVHC has been set in alignment with other EU Ecolabel product groups.

Cost Benefit Analysis:

One of the requirements of the revision process is to align the new criteria with the Ecolabel legislation. Within the revision process no concerns have been raised about the inclusion of this criteria and the impact this might have on mattresses or materials used in mattresses, provided trace concentrations are acceptable (particularly biocides in cotton) and derogations are made for a small number of materials. The benefit of this is clear as it reduces potential exposure to hazardous substances through a blanket criterion based of hazard statements rather than identifying substances individually.

Test Procedures and Economic Burdens:
Verification is achieved through declarations and materials data safety sheets, therefore no testing should be needed. Gathering this data is likely to require applicants to contact suppliers to outline the composition of materials used and identify from any substances which are added during processing.

Proposal 9 – Restriction on specific substances for Latex and PUR

Proposal	Revision /New	Impact on Current Criteria Document
Restriction on specific substances	Revision	Updating existing criteria related to hazardous substances contained in Latex and PUR

The changes proposed for latex and PUR are addressed individually below;

Proposed changes

Latex foam

Based on the euroLATEX ECO-Standard the following changes are proposed;
Criterion 1.3 – Addition of limits on individual VOC emissions, specifically;

Toluene <0.1 mg/m^3
Vinyl cyclohexane <0.002 mg/m^3
Styrene < 0.01 mg/m^3
4-Phenylcyclohexane <0.02 mg/m^3
1,1,1 – trichloroethane <0.2 mg/m^3
Tetrachloroethylene < 0.15 mg/m^3
Trichlorethylene <0.05 mg/m^3

With total cumulative emissions of aromatic hydrocarbons <0.3 mg/m^3 and VOCs <0.5 mg/m^3

Criteria 1.6 and 1.7 - Allowable concentrations of pentachlorophenol and butadiene set to 0.1ppm

Criterion 1.9 – A threshold limit of 0.1µg/m^3 set for vinyl chloride emissions

The Blue Angel scheme for mattresses also includes a criterion limiting carbon disulphide in latex foam.[a] Carbon disulphide is a gas and has the following hazard statements associated with it;

- 48/23 – Harmful: danger of serious damage to health by prolonged exposure through inhalation
- R62 - Possible risk of impaired fertility
- R63 - Possible risk of harm to the unborn child

Based on this information an addition to criterion 1.3 VOCs is based on the Blue Angel criteria.
The emissions for carbon disulphide must be less than < 0.02 mg/m^3

[a] http://www.blauer-engel.de/en/products_brands/vergabegrundlage.php?id=140

Verification through existing method (DIN ISO-16000-6.)

PUR foam

Based on the CentiPUR certification scheme the following changes are proposed.[a]

Lower limits on concentrations for several substances are proposed, these would impact on existing criteria 2 – PUR foam. Changes include;

Criterion 2.1 - Reducing the allowable concentrations of Arsenic and Lead from 0.5ppm to 0.2ppm, and the addition of selenium at a concentration of 0.5ppm.

Criterion 2.3 – Addition of limits on individual VOC emissions, specifically;

Toluene <0.1 mg/m^3
Styrene < 0.005 mg/m^3
Each CMR substance class 1a or 1b < 0.005 mg/m^3
Sum of all CMR substances class 1a and 1b* < 0.04mg/m^3
Aromatic hydrocarbons* < 0.5 mg/m^3
Total VOCs < 0.5 mg/m^3

*According to EU legislation - http://www.dguv.de/ifa/de/fac/kmr/kmr_neue_bezeichnungen.pdf

Criterion 2.6 – Addition of Tetra-organic tin compounds to banned tin organic compounds

Two additional sections are proposed for new criteria for precursors (2.9).

Criteria 2.9ii – Limit on the emissions of the MDI precursor 4,4'-diaminodiphenylmethane (101-77-9) to <5.0ppm. (Should the use of TDI be allowed, a 5.0ppm limit must be set also with respect to 2,4-toluenediamine (95-80-7)).

Tested by extraction with 1 % aqueous acetic acid solution. The sample must be a composite of 6 pieces to be taken from beneath each samples face (to a maximum of 2 cm from the surface). Four repeat extractions of the same foam sample must be performed maintaining the sample weight to volume ratio of 1:5 in each case. The extracts are combined, made up to a known volume, filtered and analysed by HPLC-UV or HPLC-MS. If HPLC-UV is performed and interference is suspected, reanalysis with HPLC-MS should be performed.

Criterion 2.9iii – A limit of 0.7% total chlorine content in the isocyanates used to produce the PUR. Verified by declaration.

An additional criterion (2.10) is also proposed which prohibits the use of specific substances. The following wording is suggested:

[a] http://www.europur.com/

The following substances are prohibited for use in PUR foam

- Chlorinated or brominated dioxines or furans
- Chlorinated hydrocarbons (1,1,2,2-Tetrachloroethane, Pentachloroethane, 1,1,2-Trichloroethane, 1,1-Dichloroethylene)
- Chlorinated phenols (PCP, TeCP) – 87-86-5
- Hexachlorocyclohexane - 58-89-9
- Monomethyldibromo – Diphenylmethane - 99688-47-8
- Monomethyldichloro-Diphenylmethane -81161-70-8
- Nitrites
- Polybrominated Biphenyls (PBB) - 59536-65-1
- Pentabromodiphenyl Ether (PeBDE)- 32534-81-9
- Octabromodiphenyl Ether (OBDE) - 32536-52-0
- Polychlorinated Biphenyls (PCB) - 1336-36-3
- Polychlorinated Terphenyls (PCT) - 61788-33-8
- Tri-(2,3-dibromo-propyl)-phosphate (TRIS) - 126-72-7
- Trimethylphosphate- 512-56-1
- Tris-(aziridinyl)-phosphinoxide (TEPA) - 5455-55-1
- Tris(2-chloroethyl)-phosphate (TCEP) -115-96-8
- Dimethyl methylphosphonate (DMMP) - 756-79-6

Declaration by applicant with supporting documentation from supplier if necessary.

Rationale:

Article 6.3.f of the EU Ecolabel Regulation states that the EU Ecolabel should seek to align with other ecolabels to enhance synergies between schemes. The criteria from other ecolabel schemes for mattresses and product groups which contain similar materials have been reviewed and changes made to reflect these other criteria. For example, other schemes have adopted "blacklists" for substances associated with certain materials, which are proposed to be included here. Recent revisions of for some schemes have placed stricter limits on emissions and concentrations of certain substances (e.g VOCs and heavy metals), therefore the EU Ecolabel criteria have been updated to reflect these updated values.

Cost Benefit Analysis:
The changes made do not substantially alter the criteria, but simply update limits on emissions and substances concentrations to reflect current practice. Some additional substances have been prohibited however the evidence from the other Ecolabel schemes indicates that this should not create complications to producers of mattresses and components of mattresses.

Test Procedures and Economic Burdens:
The revisions suggested require no additional testing as these are already required by the existing criteria. Additional declarations of non-use will be required from some suppliers and manufacturers. Again, these should not present significant burdens on applicants assuming the information from suppliers is available.

Proposal 10 – Flame retardants (sub-criterion of horizontal approach to use of materials and substances of concern)

Proposal	Revision /New	Impact on Current Criteria Document
Update of existing criteria on flame retardants	Revision	Update of existing Criterion 9 for flame retardants to solve apparent limitations of this prescription and to reflect the

		horizontal approach to hazardous substances

Proposed Change:
The existing criteria for flame retardants will be replaced with a list of specifically prohibited flame retardant substances. This will form Criterion 8.3 in the revised criteria document. Where substances are added to improve the flame retarding properties of the mattress are incorporated into the mattress they should be declared and their risk associated hazard statements reported.

The following substances are prohibited from use in any materials used in the mattress;

Name	CAS	Acronym
Polybrominated biphenyls	59536-65-1	PBB
Tri-(2,3-dibromopropyl)-phosphate	126-72-7	TRIS
Tris-(aziridinyl)-phosphinoxide)	545-55-1	TEPA
Pentabromodiphenylether	32534-81-9	pentaBDE
Octabromodiphenylether	32536-52-0	octaBDE
Decabromdiphenlyether	1163-19-5	decaBDE
Hexabromcyclododecane	25637-99-4	HBCDD
Short chain chlorinated paraffins (C10-C13)	85535-84-8	SCCP
Tris(2-chloroethyl)phosphate	115-96-8	TCEP

The applicant shall provide a declaration supported by declarations from manufacturers of substances, as appropriate, confirming that the listed substances have not been included in the product. A list of substances added to enhance the flame retarding properties of the mattress is to be provided with concentrations and related H statements / R phrases.

Rationale:
Two main factors influence the update of this criterion. Firstly it was necessary to remove the differentiation of additive and non-additive flames retardants as this was impeding manufacturers from applying. Secondly, the horizontal criteria for hazardous substances extend the list of risk phrases which were included in the existing criterion. However, flame retardants are substances for which there is general concern over, and specific exclusion of substances is required. The list of banned substances mirror that used by the Oeko-Tex 100 scheme which adopts this approach.[a]

Gathering further data on the actual flame retardants present will allow monitoring of substances added and provide evidence for further revisions in the future.

Cost Benefit Analysis of addition of criterion for flame retardants, biocides and phthalates:
The substances highlighted are already indirectly banned through the new criteria on hazardous substances. However, the concerns over flame retardants, biocides and phthalates led to include them in separate criteria. There should be no additional costs associated with this criterion over those incurred already through the new horizontal ban. The declaration of substances included and associated hazard statements requires gathering data from materials suppliers. This information should be readily available from suppliers.

Test Procedures and Economic Burdens:
No test procedures are foreseen as suppliers should be aware of (or can identify) which substances are included in materials. Limiting the use of certain substances may impact on costs to manufacturers, however further feedback is required to quantify the extent of this.

[a] http://www.oeko-tex.com/OekoTex100_PUBLIC/content1.asp?area=hauptmenue&site=grenzwerte&cls=02#10

Proposal 11 – Biocides (sub-criterion of horizontal approach to use of materials and substances of concern)

Proposal	Revision /New	Impact on Current Criteria Document
Update of existing criteria on biocides	Revision	Update of existing Criterion 10 for biocides to reflect horizontal approach to hazardous substances.

Proposed Change:
The existing criteria for biocides will be replaced with a list of specifically prohibited biocides substances, this will be Criterion 8.4 in the revised criteria.

The biocides listed in appendix II are prohibited in the finished mattress.

The applicant shall provide a declaration supported by declarations from manufacturers of substances, as appropriate, confirming that the listed substances have not been included in the product. A list of biocidal products added is to be provided with concentrations and related H statements / R phrases.

Rationale:
The inclusion of the horizontal criteria for hazardous substances limits the presence of these substances. However, biocides are substances for which there is wide concern over, and specific exclusion of substances is required. The list of banned substances mirror that used by the Oeko-Tex 100 scheme which adopts this approach.[a]

Cost Benefit Analysis of addition of criterion for flame retardants, biocides and phthalates:
The substances highlighted are already indirectly banned through the new criteria on hazardous substances. However, the concerns over flame retardants, biocides and phthalates led to include them in separate criteria. There should be no additional costs associated with this criterion over those incurred already through the new horizontal ban. The declaration of substances included and associated hazard statements requires gathering data from materials suppliers. This information should be readily available from suppliers.

Test Procedures and Economic Burdens:
No test procedures are foreseen as suppliers should be aware of (or can identify) which substances are included in materials. Limiting the use of certain substances may impact on costs to manufacturers, however further feedback is required to quantify the extent of this.

Proposal 12 – Phthalates (sub-criterion of horizontal approach to use of materials and substances of concern)

Proposal	Revision /New	Impact on Current Criteria Document
Addition of criterion restricting the use of phthalates	New	Addition of a new criterion 8.4 within the hazardous substances area which restricts the use of some phthalates

Proposed Change:
The following wording is proposed for Criterion 8.5

[a] http://www.oeko-tex.com/OekoTex100_PUBLIC/content1.asp?area=hauptmenue&site=grenzwerte&cls=02#10

The following phthalates are prohibited in the finished mattress.

Name	CAS-Nr.	Acronym
Di-iso-nonylphtalate	28553-12-0 68515-48-0	DINP
Di-n-octylphthalate	117-84-0	DNOP
Di(2-ethylhexyl)-phthalate	117-81-7	DEHP
Diisodecylphthalate	26761-40-0 68515-49-1	DIDP
Butylbenzylphthalate	85-68-7	BBP
Dibutuylphthalate	84-74-2	DBP
Di-iso-butylphthalate	84-69-5	DIBP
Di-C6-8-branched alkyphthalates	71888-89-6	DIHP
Di-C7-11-branched alkylphthalates	68515-42-4	DHNUP
Di-n-hexylphthalate	84-75-3	DHP
Di-(2-methoxyethyl)-phthalate	117-82-8	DMEP

The applicant shall provide a declaration supported by declarations from manufacturers of substances, as appropriate, confirming that the listed substances have not been included in the product. A list of plasticizers added is to be provided with concentrations and related H statements / R phrases.

Rationale:
The inclusion of the horizontal criteria for hazardous substances limits the presence of many of these substances. However, phthalates are a class of substances for which there is wide concern over, and specific exclusion of substances is required. The list of banned substances mirror that used by the Oeko-Tex 100 scheme which adopts this approach.[a] In addition this criterion set limits based on total phthalates present through the whole mattresses and on the single components that compose the mattress itself.

Cost Benefit Analysis of addition of criterion for flame retardants, biocides and phthalates:
The substances highlighted are already indirectly banned through the new criteria on hazardous substances. However, the concerns over flame retardants, biocides and phthalates led to include them in separate criteria. There should be no additional costs associated with this criterion over those incurred already through the new horizontal ban. The declaration of substances included and associated hazard statements requires gathering data from materials suppliers. This information should be readily available from suppliers.

Test Procedures and Economic Burdens:
No test procedures are foreseen as suppliers should be aware of (or can identify) which substances are included in materials. Limiting the use of certain substances may impact on costs to manufacturers, however further feedback is required to quantify the extent of this.

3.3.4 Criteria Area 4 - Fitness for use

Proposal 13 –Warranty coverage during the lifespan of the mattress

Proposal	Revision /New	Impact on Current Criteria Document
Inclusion of requirement for extended warranty	New	A new criteria specifying an extended warranty period

[a] http://www.oeko-tex.com/OekoTex100_PUBLIC/content1.asp?area=hauptmenue&site=grenzwerte&cls=02#10

Proposed Change:
The following new criteria is proposed

Criteria 10 – Extended Warranty
Mattresses must have an extended warranty period of at least 7 years which must be included as part of the sale of the mattress. This prescription shall not be applied to baby mattresses.

Assessment and Verification
Declaration and documentation of extended warranty scheme.

Rationale:
The technical lifespan of a mattress can be 7-10 years and more. For hygienic reasons, it would be recommended that a mattress should not be used after 7 years[a]. By implementing an extended warranty period to 7 years manufacturers will seek to ensure the technical performance of the mattress covers the full lifespan of the mattress.

Cost Benefit Analysis:
It is difficult to quantify the costs associated with implementing this requirement. Costs for mattress construction and for mattress replacement are both likely to increase. The benefit that implementing this change will have is to ensure the durability of the mattress for an appropriate length of time. The consumer will have confidence that quality of the product is ensured by fulfilling the EU Ecolabel criteria for bed mattresses. The quality of materials is supposed to be increased. This is likely to increase the environmental impact of the mattress but impacts are off-set by ensuring an extended lifespan of the product.

Test Procedures and Economic Burdens:
The testing requirements are relatively simple as only declaration and documented evidence is required; the cost of this will be minimal. The greater economic burdens will be associated with maintaining the extended warranty period.

Proposal 14 – Requirements on the technical performance

Proposal	Revision /New	Impact on Current Criteria Document
Inclusion of criteria to ensure that the lifespan of the product is appropriate and that the EU Ecolabel is assigned to a high quality product	New /Revision	Addition of a new criteria addressing the quality assurance of the product Revision of existing criteria on the durability of the mattress.

Proposed Changes:

A new criterion will be added to provide confidence in the quality of the product,
Criterion 11 – Quality assurance

Applicants will provide a report describing the approach and actions taken by the mattress manufacturer to describe how quality issues are taken into due account during the design of the product. This should cover aspects such as selection of materials, internal testing and verification procedures, and details of research and development.

1 [a] Bain, D. (2006) A review of the bio-hazards presented by dust mites in older mattresses. Report from EBIA

Assessment and Verification:
Inclusion of a report detailing the approach and actions taken to assure the quality of the product.

It is even proposed that performance testing is added to this criterion to ensure that the performance is maintained throughout the lifespan of the mattress. This could be achieved using the LGA-Rating system from TUV Rheinald, which sets values of 50 points for minimum performance of mattresses, and 70 for a good quality. It is suggested that a minimum value for the EU Ecolabel is 80 points to ensure higher performances.

Criterion 12.2 – Mattress performance
The performance of the mattress must be assessed using the LGA-Rating system. Mattresses must score a rating of 80 points or more using this system.

Assessment and Verification:
Test report verifying that the mattress has or exceeds the LGA-rating of 80.

Rationale:
Including evidence of quality assurance and testing for durability and performance will demonstrate that these mattresses continue to be fit for purpose over several years. Consequently this will provide confidence to the consumer, and help to prevent premature replacements (thus limiting the impacts associated with new mattress purchase).

Cost Benefit Analysis:
The determination of the costs associated with these criteria is uncertain. However, such prescriptions are supposed to increase the attention towards quality aspects which should ultimately increase the appeal of the EU Ecolabel for producers of bed mattresses.

Test Procedures and Economic Burdens:
No test procedures are required for the quality assurance declaration as this will involve the generation of a report based on internal information. Additional testing will be required for implementing the new performance criterion, which is available through the TÜV Fraunhofer Rhineland group.

3.3.5 Criteria Area 5 - Packaging

Proposal 15 – Appropriateness of a criterion on packaging

Proposal	Revision /New	Impact on Current Criteria Document
Removing requirement for recycled materials in packaging	Revision/ New	The existing criterion on packaging will be removed

Proposed Change:
Criterion number 13 on packaging will be removed
Rationale:
The impacts of packaging are found to be small when compared to the rest of the mattresses lifecycle. Therefore, prescribing requirements for the use of recycled materials in packaging would place a disproportionate burden on applicants.

Cost Benefit Analysis:

There is little cost associated with this change, some reduction in cost maybe associated with the change in packaging requirement.

Test Procedures and Economic Burdens:
There is little cost associated with this change, some reduction in cost maybe associated with the change in packaging requirement.

3.3.6 Criteria Area 6 - End of life

Proposal 16 – Implementing a collection system to divert from landfill

Proposal	Revision /New	Impact on Current Criteria Document
Diversion of waste mattresses from landfill via a bonus scheme to consumers	New	Addition of a new criterion which requires manufacturers to start a bonus scheme for customers returning mattresses. These returned mattresses should be disposed of via alternatives to landfill.

Proposed Change:
A new criterion is proposed to implement this change, the following wording is proposed.

Criterion 13 – Collection Scheme
The applicant will put in place a bonus scheme for customers who return end-of-life mattresses. This scheme will provide a 5% discount or refund for purchasers of a new mattress which has been awarded the EU Ecolabel.

Alternative mattress disposal routes to landfill should be used, for instance recycling or energy recovery from waste.

Assessment and Verification:
The applicant should provide a document outlining the details of this scheme, including how the collection and refund system operates, details of how the mattresses are disposed of, and a declaration that none of these mattresses are sent to landfill.

Rationale:
Disposal of mattresses has been shown to be of significant concern as most of them are sent to landfill at present. Reuse could be an option, however hygiene and performance issues prevent widespread application. Diversion of the product from landfill appears more applicable. By implementing an extended producer responsibility scheme through this criterion, the EU Ecolabel will influence the end of life practices. This is a similar approach taken by the Austrian Ecolabel.

Cost Benefit Analysis:
The major costs associated with this criterion are associated with setting up and running the scheme, with using alternative disposal routes to landfill, and with loss of income associated with refunding 5% of a mattresses value.

The costs associated with these actions will be non-trivial compared to the price of the mattress; for instance for a €500 mattress 5% of the value is €25 euros. The cost of alternative routes will vary from country to country; for example mattress recycling was not found to be commonly occurring across the EU, and general requires a gate fee to be paid. New logistics systems may be required for transport and storage of waste mattresses. All these present burdens for the mattress producer, but it is likely the cost of this will be passed onto the consumer.

In addition, different legislation across the EU may influence how these schemes operate. For instance, mattresses are already subject to extended producer responsibility in France, and in some areas recycling may also be in place.

Test Procedures and Economic Burdens

The burdens associated with demonstrating that this criterion has been met are low, as simple declarations and documentation are required.

Proposal 17 – Design for disassembling and recovery of materials

Proposal	Revision /New	Impact on Current Criteria Document
Improve the design of the mattress and provide information about mattress construction	New	New criterion requiring applicants to provide evidence that the mattress is designed to enhance disassembling and recovery of materials. A layout of the mattress and component data are to be reported .

Proposed Change:

The following criterion is proposed

Criterion 14 – Design for disassembly and recovery

The applicant will provide the layout and design of the main components of the mattress, as well as construction details (e.g. how components are joined to each other). In addition details will be provided that design of the mattress considered aspects related to maintenance, end of life, disassembly and potential recovery of materials.

Assessment and Verification:

Applicants shall provide a diagram of the mattress, clearly identifying the major components and materials they are made from. Details of the method used to connect materials together will also be provided.

A report will be provided which outlines any design considerations related to end-of-life, deconstruction, and maintenance which were used in the design of the mattress.

Rationale:

Mattresses are difficult to disassemble and repair due to their construction. Making information available may help spur on these activities.

Cost Benefit Analysis:

Little cost is associated with this action as this information should be available to the manufacturer. This may provide some benefit for the disassembly and materials recovery market as it will provide a clearer idea of the composition and materials used mattress. However, it is possible that this will only form a small proportion of the mattress market. This information may also benefit repair markets if the mattress is damaged, helping to encourage repair rather than disposal.

Test Procedures and Economic Burdens

The information required is in the form of annotated drawings and descriptions and short document outlining design considerations. These documents will be relatively straightforward, and should not present significant burdens on the applicant.

3.3.7 Criteria Area 7 - Others

Proposal 18 – Consistency of the criteria

Proposal	Revision /New	Impact on Current Criteria Document
Update criteria to ensure consistency	Revision	Minor alterations to wording, no impact on scope, assessment or limits of the criteria

Proposed Changes:

- Criteria 3 on wire and springs refer to PUR, this will be corrected.
- Criterion 5.1 on sustainable forest management includes the sentence “If degreasing and/or cleaning of wire and/or springs is carried out with organic solvents, use shall be made of a closed cleaning/degreasing system". This refers to the wire and springs criteria. If criteria for wood remain, then this sentence will be deleted.
- References to hazardous substances will be correctly referenced to Regulation (EC) No 1272/2008 throughout the document.

Rationale:
Minor alterations to wording are needed. No impact on scope, assessment or limits of the criteria.

Cost Benefit Analysis:
Not Applicable

Test Procedures and Economic Burdens
Not applicable

Proposal 19 – Information on the label

Proposal	Revision /New	Impact on Current Criteria Document
Revised wording in Box 2 Ecolabel	Revision	Minor changes to wording required to more accurately report information about the EU Ecolabel for this product.

Proposed Change:

1. “Durable and high quality” statement moved at the top of the list.
2. Air pollution and hazardous substances could be merged into one point indicating impacts on human health are minimised.
3. A third point could state that environmental issues are taken into due account in the design of the product.

The following revised text is proposed:

Criterion 15 – Information appearing on the Ecolabel

Box 2 of the Ecolabel shall contain specific text related:

– ‘Durable and high quality product’
– 'Restricts hazardous substances and minimises indoor air pollution'
– ‘Environmental issues taken into account in the design stage’

Assessment and Verification
Declaration of compliance, along with sample of the cover with the label

3.4 *Summary of Revised Criteria*

The revised criteria including all proposed changes are summarised below. Criteria marked with a '*' have been altered or added.

Criteria Area 1 –Materials

1. Latex Foam – Only applicable if latex is greater than 5% of mattress weight. Concentrations must be below values stated.

Criterion number	Applicable to	Criteria	Compliance
1.1	**Extractable heavy metals**	Limits on concentrations of: Copper <2 ppm Chromium, Nickel <1 ppm Arsenic, Lead, Antimony, Cobalt <0.5 ppm Cadmium <0.1 ppm Mercury <0.02 ppm	Testing by atomic emission spectroscopy with inductively coupled plasma or with hydride or cold vapour technique
1.2	**Formaldehyde**	Extractable formaldehyde <20 ppm or <0.005 mg/m^3 (dependent on testing method)	EN ISO 14184-1 or chamber testing according to ENV 13419-1, with EN ISO 16000-3 or VDI 3484-1 for air sampling and analysis
1.3*	**VOCs**	VOCs <0.5 mg/m^3 Specific limits for: Toluene <0.1 mg/m^3 Vinyl cyclohexane <0.002 mg/m^3 Styrene < 0.01 mg/m^3 4-Phenylcyclohexane <0.02 mg/m^3 1,1,1 – trichloroethane <0.2 mg/m^3 Tetrachloroethylene < 0.15 mg/m^3 Trichlorethylene <0.05 mg/m^3 Carbon Disulphide < 0.02 mg/m^3 Aromatic hydrocarbons <0.3 mg/m^3	Chamber testing or DIN ISO 16000-6 for air sampling and analysis
1.4	**Dyes, pigments, flame retardants and auxiliary chemicals**	As Commission Decision 2009/567/EC of 9 July 2009 for textile products. (g) Limits on metal ion impurities in dyes (colour matter with fibre affinity). Exclusion made for metals which are integral part of the dye molecule. (h) Limits on metal ion impurities in pigments(insoluble colour matter without fibre affinity) (i) Chrome mordant dyeing is not allowed (j) Azo-dyes which may cleave any one of a selection of aromatic amines are banned (k) A list of specific dyes which are classed as carcinogens, mutagenic or toxic to reproduction. Limits are also placed on dyes or dye preparations which contain	Declaration of non-use or compliance with relevant EU document

		greater than 0.1% by weight of substances which have specified risk phrases associated with them. (l) Potentially sensitizing dyes (listed) are not allowed.	
1.5	**Metal complex dyes**	Metal complex dyes based on copper, lead, chromium or nickel shall not be used.	Declaration of non-use
1.6*	**Chlorophenols**	Chlorophenols (salts and esters) <0.1 ppm mono, di-chlorinated phenols (salts and esters) <1 ppm. Pentachlorophenol (salts and esters) <0.1ppm	Test through gas chromatography of an extracted sample
1.7*	**Butadiene**	Concentration of butadiene <0.1 ppm	Tested through gas chromatography
1.8	**Nitrosamines**	Nitrosamines <0.0005 mg/m^3	Tested through chamber test
1.9*	**Vinyl Chloride**	Vinyl chloride emissions should be <0.1µg/m^3	Chamber testing or DIN ISO 16000-6 for air sampling and analysis
1.10*	**Sustainable Materials**	At least 10% by weight of any naturally sourced latex in the product must be sourced from forests certified under the FSC's sustainable latex scheme.	Declaration by applicant, with supporting documentation to verify source and quantity of sustainable natural latex used.
1.11*	**Emissions from Production**	The wastewater from the processing of natural rubber and/or manufacturing of synthetic latex rubber shall not exceed the following values upon discharge into a water body; • 2 mg/l for zinc, • 0.5 mg/l for lead, • 1 mg/l for AOX, • 0.1 mg/l for benzene and its derivatives, • COD of 150 mg/l or at least 90% reduction compared with the inflow on a monthly average, • 20 mg/l for total nitrogen (N_{total}) and 2 mg/l for total phosphorous (P_{total}) as well as a value of 2 for the toxicity in fish eggs (GEi). This requirement shall not apply to approved discharges into a municipal sewage treatment plant that meets at least the requirements of Council Directive 91/271/EEC concerning urban waste water treatment, dated 21st May 1991.	Verification of waste water emission using the standard testing protocols for each of the relevant discharge types from the latex foam supplier. • Chemical oxygen demand: ISO 6060 or DIN 38409-41 or DIN-ISO 15705-45, • AOX (chloride content < 5g/l): DIN EN ISO 9562 or DIN EN ISO 9562 or • AOX (chloride content > 5g/l) DIN 38409-22, respectively • Sulphides: DIN 38405-27 or ISO 10530, • Chromium: ISO 9174 or EN 1233 or EN ISO 11885, • Zinc: DIN EN ISO 11885, • Lead: DIN EN ISO 11885, • Benzene and derivatives: DIN 38407-9, • Toxicity in fish eggs: DIN EN ISO 15088. Testing will occur every six months to ensure continuing compliance.

2. Polyurethane Foam – Only applicable if PUR foam is greater than 5% of mattress weight.

Criterion number	Applicable to	Criteria	Compliance
2.1	**Extractable heavy metals**	As 1.1 – Latex	As 1.1 – Latex
2.2	**Formaldehyde**	As 1.2 – Latex	As 1.2 – Latex
2.3*	**VOCs**	Total VOCs < 0.5 mg/m^3 Toluene <0.1 mg/m^3 Styrene < 0.005 mg/m^3 Each CMR substance class 1a or 1b* < 0.005 mg/m^3 Sum of all CMR substances class 1a and 1b* < 0.04mg/m^3 Aromatic hydrocarbons < 0.5 mg/m^3 *According to EU legislation - http://www.dguv.de/ifa/de/fac/kmr/kmr_neue_bezeichnungen.pdf	Chamber testing or DIN ISO 16000-6 for air sampling and analysis
2.4	**Dyes, pigments, flame retardants and auxiliary chemicals**	As 1.4 – Latex	As 1.4 – Latex
2.5	**Metal complex dyes**	As 1.5 – Latex	As 1.5 – Latex
2.6	**Organic tin**	Mono-organic, di-organic, tri-organic and tetra-organic tin compounds shall not be used.	Declaration of non-use
2.7	**Blowing agents**	Halogenated organic compounds shall not be used as blowing agents, or auxiliary blowing agents.	Declaration of non-use
2.8*	**Sustainable materials**	Where vegetable or other natural oils are used as precursors in the production of PUR foam at least 10% must come from certified sustainable sources, e.g. the Round Table on Sustainable Palm Oil or the Round Table on Responsible Soy Association	Declaration by applicant, with supporting documentation to verify source and quantity of sustainable natural latex used.
2.9*	**Precursors**	i)The precursor Toluene diisocyanate (TDI) shall not be used as a precursor for PUR foam. ii)The wastewater from the production of diisocyanates used in the production of PUR foam shall not exceed the following values upon discharge into a water body; • 0.3 m^3/t for volume, • 0.1 kg/t for COD,	Declaration by applicant, with supporting documentation to verify that TDI is not used. The following testing standards are proposed for measuring the emissions for this criteria; Water: • Chemical oxygen

		• 0.3 g/t for AOX iii) The concentration of 4,4'-diaminodiphenylmethane (11-77-9) shall not exceed 5.0ppm iv) The isocyanates used in the production of the PU foam have a maximum limit of 0.07% total chlorine	demand: ISO 6060 or DIN 38409-41 or DIN-ISO 15705-45, • AOX (chloride content < 5g/l): DIN EN ISO 9562 or DIN EN ISO 9562 A declaration of volume of water per tonne of product emitted will also be provided. Tested according to the protocol set out in the CentiPUR technical document. Declaration of compliance
2.10*	**Prohibited Substances**	The following substances are prohibited for use in PUR foam: • Chlorinated or brominated dioxines or furans • Chlorinated hydrocarbons (1,1,2,2-Tetrachloroethane, Pentachloroethane, 1,1,2-Trichloroethane, 1,1-Dichloroethylene) • Chlorinated phenols (PCP, TeCP) – 87-86-5 • Hexachlorocyclohexane - 58-89-9 • Monomethyldibromo – Diphenylmethane - 99688-47-8 • Monomethyldichloro-Diphenylmethane -81161-70-8 • Nitrites • Polybrominated Biphenyls (PBB) - 59536-65-1 • Pentabromodiphenyl Ether (PeBDE)-32534-81-9 • Octabromodiphenyl Ether (OBDE) - 32536-52-0 • Polychlorinated Biphenyls (PCB) - 1336-36-3 • Polychlorinated Terphenyls (PCT) - 61788-33-8 • Tri-(2,3-dibromo-propyl)-phosphate (TRIS) - 126-72-7 • Trimethylphosphate- 512-56-1 • Tris-(aziridinyl)-phosphinoxide (TEPA) - 5455-55-1 • Tris(2-chloroethyl)-phosphate (TCEP) - 115-96-8	Declaration by applicant, with supporting documentation from supplier

		• Dimethyl methylphosphonate (DMMP) - 756-79-6	

3. Wires and springs – Only applicable if wires and springs contribute to more than 5% of the total weight of the mattress.

Criterion number	Applicable to	Criteria	Compliance
3.1	**Degreasing**	A closed system is required when degreasing wire or springs.	Self-declaration
3.2	**Galvanisation**	Wire and springs must not be coated with a galvanic metallic layer	Self-declaration
3.3*	**Stainless Steel**	Springs and wires shall not be made of stainless steel	Verification that the steel supplied cannot be classified as stainless steel
3.4*	**Steel manufacture**	Where steel is used as material for springs and wires, it must be produced in accordance with the appropriate Best Available Technique for steel production, outlined in the EU BREF document for Iron and Steel Making.[a] This outlines techniques for; • loading, unloading and handling of bulk raw materials • blending and mixing of raw materials • coke production • sintering and pelletisation of iron ore • the production of molten iron by the blast furnace route, including slag processing • the production and refining of steel using the basic oxygen process, including upstream ladle desulphurisation, downstream ladle metallurgy and slag processing • the production of steel by electric arc furnaces, including downstream ladle metallurgy and slag processing	

4. Coconut Fibres – Only applicable if coconut fibres contributes to more than 5% of the total weight of the mattress

Criterion number	Applicable to	Criteria	Compliance

[a] http://eippcb.jrc.es/reference/BREF/IS_Adopted_03_2012.pdf

4	**Coconut fibres**	If the coconut fibre material is rubberised, it shall comply with the criteria applicable to latex foam.	As points 1(1) to 1(8)

5. Textiles (fibres and fabric) – must meet following criteria for dyes and other chemical products, as well as fitness for use. Some of the criteria refer to both fibres and fabrics, while other applies only to the cover.

Criterion number	Applicable to	Criteria	Compliance
5.1	**Biocides**	Chlorophenols (their salts and esters), PCB and organo-tin compounds shall not be used during transportation or storage of mattresses and semi-manufactured mattresses	Declaration of non-use. Verification by standard test may be required
5.2	**Chrome mordant dyeing**	As 1.4 Latex	As 1.4 Latex
5.3*	**Metal complex dyes**	If metal complex dyes based on copper, chromium or nickel are used: – In case of cellulose dyeing, where metal complex dyes are part of the dye recipe, less than 20 % of each of those metal complex dyes applied (input to the process) shall be discharged to waste water treatment (whether on-site or off-site). – In case of all other dyeing processes, where metal complex dyes are part of the dye recipe, less than 7 % of each of those metal complex dyes applied (input to the process) shall be discharged to waste water treatment (whether on-site or off-site). – The emissions to water after treatment shall not exceed: Cu 75 mg/kg (fibre, yarn or fabric); Cr 50 mg/kg; Ni 75 mg/kg. No metal complex dyes based on cadmium and mercury shall be used.	Declaration of non-use or documentation and test reports using the following test methods: ISO 8288 for Cu, Ni; EN 1233 for Cr.
5.4*	**Azo dyes**	Azo dyes shall not be used that may cleave to any one of the following aromatic amines: 4,4'-methylene-bis-(2-chloroaniline) (101-14-4) (others listed) **The possibility to refer to a dye list is explored in the current criteria revision for Textiles**	Assessment and verification: The applicant shall provide a declaration of non-use of these dyes. Should this declaration be subject to verification the following standard shall be used = EN 14 362-1 and 2. (Note: false positives may be possible with respect to the presence of 4-aminoazobenzene, and confirmation is therefore

			recommended.)
5.5	**Dyes that are carcinogenic, mutagenic or toxic to reproduction**	As 1.4.Latex	As 1.4 Latex
5.6*	**Potentially sensing dyes**	As 1.4 f Latex with addition of Disperse Yellow 3.C.I 11855 **The addition of Disperse Blue 1 is proposed in the current criteria revision for Textiles**	As 1.4 Latex
5.7*	**Impurities in dyes and pigments**	i. Dyes Colour matter with fibre affinity (soluble or insoluble). The levels of ionic impurities in the dyes used shall not exceed the following: Ag 100 ppm; As 50 ppm; Ba 100 ppm; Cd 20 ppm; Co 500 ppm; Cr 100 ppm; Cu 250 ppm; Fe 2 500 ppm; Hg 4 ppm; Mn 1 000 ppm; Ni 200 ppm; Pb 100 ppm; Se 20 ppm; Sb 50 ppm; Sn 250 ppm; Zn 1 500 ppm. Any metal that is included as an integral part of the dye molecule (e.g. metal complex dyes, certain reactive dyes, etc.) shall not be considered when assessing compliance with these values, which only relate to impurities. ii. Pigments Insoluble colour matter without fibre affinity. The levels of ionic impurities for pigments used shall not exceed the following: As 50 ppm; Ba 100 ppm, Cd 50 ppm; Cr 100 ppm; Hg 25 ppm; Pb 100 ppm; Se 100 ppm Sb 250 ppm; Zn 1 000 ppm.	The applicant shall provide a declaration of compliance.
5.8	**Auxiliary chemicals**	Alkylphenolethoxylates (APEOs), linear alkylbenzene sulfonates (LAS), bis(hydrogenated tallow alkyl) dimethyl ammonium chloride (DTDMAC), distearyl dimethyl ammonium chloride (DSDMAC), di(hardened tallow) dimethyl ammonium chloride (DHTDMAC), ethylene diamine tetra acetate (EDTA), and diethylene triamine penta acetate (DTPA) shall not be used in any of the preparations or formulations used **The addition of Nitrilotriacetic acid (NTA) is proposed in the current criteria revision for Textiles**	Declaration of non-use
5.9	**Detergents, fabric softeners and**	95% by weight of detergents, fabric softeners and complexing agents used at each wet processing site shall be	Appropriate documentation (safety data sheets, test reports and/or declarations,

	complexing agents	"sufficiently degradable" or eliminable in wastewater treatment plants (see criterion related to auxiliaries and finishing agents for fibres and yarns). This is with the exception of surfactants in detergents at each wet processing site, which shall be "ultimately aerobically biodegradable" (see Regulation (EC) No 648/2004)	indicating the test methods and results)
5.10	**Bleaching Agents**	As existing criteria 6.14	
5.11*	**Formaldehyde**	Emissions of formaldehyde must not exceed 20 ppm for textiles according to EN ISO 14184-1. Alternatively, evaporation must not exceed 0.005 mg/m3 measured in a climate chamber test according to ENV 13419-1. Limits on formaldehyde are under discussion in the current criteria revision for Textiles	The applicant shall provide a test report, using the following test method: EN ISO 14184-1. Sample of 1 g with 100 g water heated to 40 °C for 1 hour. Formaldehyde in extract analysed with acetylacetone, photometric. Alternatively, the emission chamber test may be used: ENV 13419-1, with EN ISO 16000-3 or VDI 3484-1 for air sampling and analysis. The sample shall be taken less than one week after production of the textiles. Packaging of sample: air tight wrapped, individually, in aluminium foil and PE foil. Conditioning: The wrapped sample shall be stored at room temperature for at least 24 hours, after which the sample is unwrapped and immediately transferred into the test chamber. Testing conditions: sample placed on sample holder which allows access of air from all sides; climatic factors as in ENV 13419-1; for comparison of test results the area specific ventilation rate (q = n/l) shall be 1; the ventilation rate shall be between 0,5 and 1; the air sampling shall be started 24 hours after chamber loading and finished at the latest 30 hours after loading.

5.12*	**Waste water discharges from wet processing**	The chemical oxygen demand in the emission water discharged from wet processes (except greasy wool scouring sites and flax retting sites) shall when discharged after treatment (whether onsite or offsite) be less than 20 g COD/kg textile, expressed as an annual average. If the effluent is treated onsite and released directly to nature, it must also have a pH value between 6 and 9 (unless the pH values in the recipients are higher or lower) and a temperature of less than 40°C (unless the temperature in the recipient environment is higher). An alternative option is even explored in the current revision for Textiles	Figures and supporting information shall be provided by the applicant
5.13*	**Durability**	External textiles must have abrasive resistance cor¬responding to the rupture of the maximum of two threads at a minimum of 20,000 wear revolutions for domestic use and 40,000 for public use. A new prescription on coating resistance is also proposed in the current revision for Textiles.	The applicant shall provide test reports following the standard EN ISO 12947 (abrasion).
5.14*	**Dimensional Change**	The dimensional changes after washing and drying shall not exceed: - plus or minus 2 % for curtains and for furniture fabric that is washable and removable, This criterion does not apply to: - fibres or yarn, - products clearly labelled "dry clean only" or equivalent (insofar as it is normal practice for such products to be so labelled), - furniture fabrics that are not removable and washable.	The applicant shall provide test reports using the following standards EN ISO 63 30, ISO 5077 as follows: 3 washes at temperatures as indicated on the product, with tumble drying after each washing cycle unless other drying procedures are indicated on the product,
5.15*	**Colour fastness to washing**	The colour fastness to washing shall be at least level 3 to 4 for colour change and at least 3 to 4 for staining. This criterion does not apply to products clearly labelled ”Dry clean only” or equivalent (insofar as it is normal practice for such products to be so labelled), to white products or products that are neither dyed nor printed, or to non-washable furniture fabrics.	The applicant shall provide test reports using the following standard ISO-105-E01(colour fastness to water).
5.16	**Colour fastness to wet rubbing**	Colour fastness to wet rubbing shall be at least 2-3. A level of 2 is allowable for indigo dyed denim. This does not apply to white products, or products which are neither dyed nor printed.	**Testing according to EN:ISO 105 X12**
5.17	**Colour fastness to**	The colour fastness to dry rubbing must be at least level 4. Level 3-4 is allowable for	**Testing according to EN:ISO 105 X12**

	dry rubbing	indigo dyed denim. This does not apply to white products, or products which are neither dyed nor printed.	
5.18	**Colour fastness to perspiration (acid, alkaline)**	The colour fastness to perspiration (acid/alkaline) must meet level 3-4. A level of 3 is allowable when they are dark (standard depth > 1/1), and are made of regenerated wool or more than 20% silk. This does not apply to white products, or products which are neither dyed nor printed.	**Testing according to EN:ISO 105 E04**

6. Glues

Criterion number	Applicable to	Criteria	Compliance
6	**Glues**	Glues containing organic solvents are not permissible. Glues shall not be used which at time of application which are classified as carcinogenic (R45, R49, R40), harmful to the reproductive system (R46, R40), genetically harmful (R60-R63), toxic (R23-R28). The corresponding list of Hazard Statements is also provided.	Declaration that the glues used comply with this criterion, together with supporting documentation.

Criteria Area 2 – Manufacture and Storage

7. Industry best practice

Criterion number	Applicable to	Criteria	Compliance
7*	**Transport and Storage**	The applicant must demonstrate that logistics (transport and storage of the finished mattress) are monitored, for example through; • loading and delivery plans, • product design plans, • storage capacity utilisation The applicant must be able to prove the reasoning behind these using a number of monitoring indicators (such as loading of transport vs. maximum capacity, the ratio of number of orders vs. number of lorries, storage capacity used in warehousing (actual vs. maximum).	The applicant must supply the assessor with proof of logistical monitoring strategies and provide indicators to measure this, these include loading of lorries, average warehouse storage capacities and ratio of orders vs number of lorries).

Criteria Area 3 – Hazardous substances

8. Use of materials and substances of concern

Criterion number	Applicable to	Criteria	Compliance

8.1*	**Restriction of hazardous substances and preparations**	In accordance with Article 6(6) of Regulation (EC) No 66/2010, the product or any homogeneous part of it shall not contain substances referred to in Article 57 of Regulation (EC) No 1907/2006 nor substances or mixtures meeting the criteria for classification in the following hazard classes or categories in accordance with Regulation (EC) No 1272/2008 of the European Parliament and of the Council. Relevant hazard statements are listed in appendix I The use of substances or mixtures in the final product which upon processing change their properties in a way that the identified hazard no longer applies is exempted from the above requirement. Concentration limits for substances or mixtures meeting the criterion for classification in the hazard classes or categories listed in the table above, and for substances meeting the criterion of Article 57 (a), (b) or (c) of Regulation (EC) No 1907/2006, shall not exceed the generic or specific concentration limits determined in accordance with the Article 10 of Regulation(EC) No1272/2008. Where specific concentration limits are determined, they shall prevail against the generic ones. Concentration limits for substances meeting criteria of Article 57 (d), (e) or (f) of Regulation (EC) No 1907/2006 shall not exceed 0.01 % weight by weight. Components are considered to be individual items or parts used to form the mattress, for example springs or a textile layer comprised of a single textile type. The following substances/uses of substances are specifically derogated from this requirement; o Natural latex when used in the mattress core. (H317 – May cause allergic skin reaction) o Nickel when used in stainless steel springs. (H351 - Limited evidence of a carcinogenic effect, H317 - May cause sensitization by skin contact, H372 - Toxic: danger of serious damage to health by prolonged exposure through inhalation). Two additional sub-criteria are under discussion in the parallel revision of the EU Ecolabel criteria for textiles: *Criteria X1: Supplier recipe and substance screening*	The applicant shall provide the exact formulation of the product and of each part of it. Compliance with this criterion will be demonstrated by providing a declaration on the non-classification of each substances into any of the hazard classes associated to the hazard statements listed above in accordance with Regulation (EC) 1272/2008, as far as this can be determined, as a minimum, from the information meeting the requirements listed in Annex VII of the Regulation (EC) 1907/2006. This declaration shall be supported by summarized information on the relevant characteristics associated to the hazard statements referred to in the above list, to the level of detail specified in section 10, 11 and 12 of Annex II of Regulation (EC) 1907/2006 (Requirements for the Compilation of Safety Data Sheets). Information on intrinsic properties of substances may be generated by means other than tests, for instance through the use of alternative methods such as in vitro methods, by quantitative structure activity models or by the use of grouping or read-across in accordance with Annex XI of Regulation (EC) 1907/2006. The sharing of relevant data is

		Manufacturer would be required to screen the Hazard Statements of their production recipes based primarily on Safety Data Sheet information, but supplementing this where required (e.g. with test data for biodegradability). Using a combination of the approaches used by TEGEWA, GOTS and Blue Angel, the Hazard Statement list would be grouped into hazards related to occupational health (i.e. in the factory) and to the environment (i.e. relating to air and water emissions) in order to identify risks due to potential exposure at source . Some of these H Statements would be completely restricted (e.g. R50/53) and others may be derogated under certain conditions (e.g. hardly boiodegradable substances if there is an adequate wastewater treatment plant, dyes if there is automatic dispensing to reduce dust exposure and wastewater colour removal, since most dyes carry R53). Stakeholders of the textiles product group have also provided IPTS with some derogations.	strongly encouraged. The information provided shall relate to the forms or physical states of the substance or mixtures as used in the final product. For substances listed in Annexes IV and V of REACH, exempted from registration obligations under Article 2(7) (a) and (b) of Regulation 1907/2006 REACH, a declaration to this effect will suffice to comply with the requirements set out above. Concentration limits shall be specified in accordance with Article 31 of Regulation (EC) No 1907/2006 for substances and mixtures. These declarations should cover the materials used in the mattress (e.g. cotton, steel, wool) and any additional substances which are present as a result of processing which remain in the materials in the finished product (e.g. dyes).
8.2*	**Substances of Very High Concern**	No derogation from the exclusion in Article 6(6) shall be given concerning substances identified as substances of very high concern and included in the list foreseen in Article 59 of Regulation (EC) No 1907/2006, present in mixtures, in an article or in any homogenous part of a complex article in concentrations higher than 0.010% w/w. In case the concentration of the substance is lower than 0.01%, specific concentration limits determined in accordance with Article 10 of Regulation (EC) No1272/2008 shall apply.	The list of substances identified as substances of very high concern and included in the candidate list in accordance with Article 59 of Regulation (EC) No 1907/2006 can be found on the European Chemical Agency's website.[a]
8.3*	**Flame Retardants**	The following substances are prohibited from use in any materials used in the mattress; Name / CAS / Acronym Polybrominated / 59536- / PBB	The applicant shall provide a declaration supported by declarations from manufacturers of

[a] http://echa.europa.eu/chem_data/authorisation_process/candidate_list_table_en.asp

		biphenyles / 65-1 /	substances, as appropriate, confirming that the listed substances have not been included in the product. A list of substances added to enhance the flame retarding properties of the mattress is to be provided with concentrations and related H statements / R phrases.
		Tri-(2,3-dibromopropyl)-phosphate / 126-72-7 / TRIS	
		Tris-(aziridinyl)-phosphinoxide) / 545-55-1 / TEPA	
		Pentabromodiphenylether / 32534-81-9 / pentaBDE	
		Octabromodiphenylether / 32536-52-0 / octaBDE	
		Dekabromdiphenlyether / 1163-19-5 / decaBDE	
		Hexabromcyclododecane / 25637-99-4 / HBCDD	
		Short chain chlorinated paraffins (C10-C13) / 85535-84-8 / SCCP	
		Tris(2-chloroethyl)phosphate / 115-96-8 / TCEP	
8.4*	**Biocides in finished product**	The pesticides listed in <u>appendix II</u> are prohibited for inclusion in the final mattress.	The applicant shall provide a declaration supported by declarations from manufacturers of substances, as appropriate, confirming that the listed substances have not been included in the product. A list of biocidal products added is to be provided with concentrations and related H statements / R phrases
8.5*	**Phthalates**	The following phthalates are prohibited from the finished mattress.	The applicant shall provide a declaration supported by declarations from manufacturers of substances, as appropriate, confirming that the listed substances have not been included in the product. A list of plasticizers added is to be provided with concentrations and related H statements / R phrases

Name	CAS-Nr.	Acronym
Di-iso-nonylphtalate	28553-12-0 68515-48-0	DINP
Di-n-octylphthalate	117-84-0	DNOP
Di(2-ethylhexyl)-phthalate	117-81-7	DEHP
Diisodecylphthalate	26761-40-0 68515-49-1	DIDP
Butylbenzylphthalate	85-68-7	BBP
Dibutuylphthalate	84-74-2	DBP
Di-iso-butylphthalate	84-69-5	DIBP
Di-C6-8-branched alkyphthalates	71888-89-6	DIHP
Di-C7-11-branched alkylphthalates	68515-42-4	DHNUP

		Di-n-hexylphthalate	84-75-3	DHP	
		Di-(2-methoxyethyl)-phthalate	117-82-8	DMEP	

9. VOCs and SVOCs on the entire mattress

Criterion number	Applicable to	Criteria	Compliance
9	**VOCs and SVOCs**	VOC emissions from entire mattress shall not exceed specified limits (for formaldehyde, other aldehydes, total organic compounds). This is made in analogy with the 'health risk assessment process for emissions of volatile organic compounds (VOC) from building products' developed in 2005 by the AgBB.	Chamber testing to be performed according to EN 13419-1, EN13419-2 and ISO 16000-6 (VOCs) standards

Criteria Area 4 – Fitness for Use

10. Warranty coverage during the lifespan of the mattress

Criterion number	Applicable to	Criteria	Compliance
10*	**Extended Warranty**	Mattresses must have an extended warranty period of at least 7 years which must be included as part of the sale of the mattress. This prescription shall not be applied to baby mattresses.	Declaration and documentation of extended warranty scheme

11. Quality of the product

Criterion number	**Applicable to**	**Criteria**	**Compliance**
11*	**Quality Assurance**	Applicants will provide a report describing the approach and actions taken by the mattress manufacturer to ensure that the quality of the mattress is not diminished by adherence to the EU Ecolabel criteria. This should cover aspects such as design consideration, selection of materials, internal testing and verification procedures, and details of research and development.	Inclusion of a report detailing the approach and actions taken to ensure product quality

12. Technical performance

Criterion number	Applicable to	Criteria	Compliance
12.1	**Durability of mattress**	The lifetime of a household mattress is expected to be 10 years; this will vary depending on application. Adult mattress – Loss of height <15%, loss of firmness <20% Baby mattress – Loss of height <15%, loss of firmness <20%	Test report verifying these criteria are met using EN1957 (100 vs. 30 000 cycles)

12.2*	**Performance**	The performance of the mattress must be assessed using the LGA-Rating system. Mattresses must have a rating of 80 points or more using this system.	Test report verifying this criterion is met according to the LGA Rating system

Criteria Area 5 – End of Life

13. Diversion from landfill

Criterion number	Applicable to	Criteria	Compliance
13*	**Collection Scheme**	The applicant will put in place a bonus scheme for customers who return end-of-life mattresses. This scheme will provide a 5% discount or refund for purchasers of a new mattress which has been awarded the EU Ecolabel. Alternative mattress disposal routes to landfill should be used, for instance recycling or energy recovery from waste.	The applicant should provide a document outlining the details of this scheme, including how the collection and refund system operates, details of how the mattresses are disposed of, and a declaration that none of these mattresses are sent to landfill.

14. Eco-Design

Criterion number	Applicable to	Criteria	Compliance
14*	**Design for disassembly and recovery**	The applicant will provide the layout and design of the main components of the mattress, as well as construction details (e.g. how components are joined to each other). In addition details will be provided that design of the mattress considered aspects related to maintenance, end of life, disassembly and potential recovery of materials.	Applicants shall provide a diagram of the mattress, clearly identifying the major components and materials they are made from. Details of the method used to connect materials together will also be provided. A report will be provided which outlines any design considerations related to end-of-life, deconstruction, and maintenance which were used in the design of the mattress.

Criteria Area 6 – Others

15. Information appearing on the Ecolabel

Criterion number	Applicable to	Criteria	Compliance
15*	**Information appearing**	Box 2 of the Ecolabel shall contain specific text related:	Declaration of compliance, along with sample of the

	on the Ecolabel	– ‘Durable and high quality’ – 'Restricts hazardous substances and minimises indoor air pollution' – ‘Design and marketing take into account environmental issues’	cover with the label

3.5 Issues to be considered in Next Revision

Within the revision process several issues and actions have been outlined which should be considered within the next revision. These include, for instance:

- **LCA Data –** Changes to the existing criteria include the supply of data for LCA work. This will allow a more robust LCA analysis to be conducted as part of the next revision, and provide scope for inclusion criteria based on energy and LCA requirements
- **Sustainably sourced materials** – In this revision, low limits were set on the use of sustainably source materials (e.g. natural oils). The intention is that these limits could be increased in following revisions to increase the impact of these criteria.
- **Storage** – The proposed new criteria require that applicants supply information about warehousing and storage. This information will be used in the next revision to provide guidance about setting criteria in this area.
- **Hazardous Substances** – Applicants are now required to declare the use of certain substance types. This information will allow further characterisation and discussion of these substances
- **Plastic Springs –** Plastic springs are a potential alternative to metal springs. At present they are a niche part of the market, however this may change before the next revision. Therefore it may be appropriate to consider these in the next revision.
- **Performance** – One aspect of performance which has not been addressed is humidity and temperature control due to the lack of relevant test procedure. This could be revisited as part of the next revision.
- **Eco-design** – An Eco-design criterion has been introduced in this revision, however this relates to making information about the design available. Criteria relating to this area could be introduced in follow-up revision to further address aspects of Eco-design, e.g. facilitation of recycling.

Appendix I – List of Hazard and Risk Phrases

Hazard statement	Associated risk phrase(s)
H300 Fatal if swallowed	**R28**
H301 Toxic if swallowed	**R25**
H304 May be fatal if swallowed and enters airways	**R65**
H310 Fatal in contact with skin	**R27**
H311 Toxic in contact with skin	**R24**
H330 Fatal if inhaled	**R23; R26**
H331 Toxic if inhaled	**R23**
H340 May cause genetic defects	**R46**
H341 Suspected of causing genetic defects	**R68**
H350 May cause cancer	**R45**
H350i May cause cancer by inhalation	**R49**
H351 Suspected of causing cancer	**R40**
H360F May damage fertility	**R60**
H360D May damage the unborn child	**R61**
H360FD May damage fertility. May damage the unborn child	**R60/61/60--61**
H360Fd May damage fertility. Suspected of damaging the unborn child	**R60/63**
H360Df May damage the unborn child. Suspected of damaging fertility	**R61/62**
H361f Suspected of damaging fertility	**R62**
H361d Suspected of damaging the unborn child	**R63**
H361fd Suspected of damaging fertility. Suspected of damaging the unborn child.	**R62-63**
H362 May cause harm to breast-fed children	**R64**
H370 Causes damage to organs	**R39/23/24/25/26/27/28**
H371 May cause damage to organs	**R68/20/21/22**
H372 Causes damage to organs through prolonged or repeated exposure	**R48/25/24/23**
H373 May cause damage to organs through prolonged or repeated exposure	**R48/20/21/22**
H400 Very toxic to aquatic life	**R50/50-53**
H410 Very toxic to aquatic life with long-lasting effects	**R50-53**
H411 Toxic to aquatic life with long-lasting effects	**R51-53**
H412 Harmful to aquatic life with long-lasting effects	**R52-53**
H413 May cause long-lasting harmful effects to aquatic life	**R53**
EUH059 Hazardous to the ozone layer	**R59**
EUH029 Contact with water liberates toxic gas	**R29**
EUH031 Contact with acids liberates toxic gas	**R31**
EUH032 Contact with acids liberates very toxic gas	**R32**
EUH070 Toxic by eye contact	**R39-41**
H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled	**R42**
H317: May cause allergic skin reaction	**R43**

Appendix II – List of banned substances

Prohibited pesticides

Name	CAS No.	CAS No.	CAS No.
2,4,5-T	93-76-5	Fenvalerate	51630-58-1
2,4-D	94-75-7	Heptachlor	76-44-8
Azinophosmethyl	86-50-0	Heptachloroepoxide	1024-57-3
Azinophosethyl	2642-71-9	Hexachlorobenzene	118-74-1
Aldrine	309-00-2	Hexachlorcyclohexane, α-	319-84-6
Bromophos-ethyl	4824-78-6	Hexachlorcyclohexane, β-	319-85-7
Captafol	2425-06-1	Hexachlorcyclohexane, δ-	319-86-8
Carbaryl	63-25-2	Isodrine	465-73-6
Chlordane	57-74-9	Kelevane	4234-79-1
Chlordimeform	6164-98-3	Kepone	143-50-0
Chlorfenvinphos	470-90-6	Lindane	58-89-9
Coumaphos	56-72-4	Malathion	121-75-5
Cyfluthrin	68359-37-5	MCPA	94-74-6
Cyhalothrin	9 1465-08-6	MCPB	94-81-5
Cypermethrin	52315-07-8	Mecoprop	93-65-2
DEF	78-48-8	Metamidophos	10265-92-6
Deltamethrin	52918-63-5	Methoxychlor	72-43-5
DDD	53-19-0, 72-54-8	Mirex	2385-85-5
DDE	3424-82-6, 72-55-9	Monocrotophos	6923-22-4
DDT	50-29-3, 789-02-6	Parathion	56-38-2
Diazinon	333-41-5	Parathion-methyl	298-00-0
Dichlorprop	120-36-2	Phosdrin/Mevinphos	7786-34-7
Dicrotophos	141-66-2	Perthane	72-56-0
Dieldrine	60-57-1	Propethamphos	31218-83-4
Dimethoate	60-51-5	Profenophos	41198-08-7
Dinoseb and salts	88-85-7	Quinalphos	13593-03-8
Endosulfan, -	959-98-8	Strobane	8001-50-1
Endosulfan, -	33213-65-9	Telodrine	297-78-9
Endrine	72-20-8	Toxaphene	8001-35-2
Esfenvalerate	66230-04-4	Trifluralin	1582-09-8