

EN
ANNEX

FRAMEWORK

Assessment and verification requirements

The specific assessment and verification requirements are indicated within each criterion.

Where the applicant is required to provide declarations, documentation, analyses, test reports, or other evidence to show compliance with the criteria, these may originate from the applicant and/or his supplier(s) and/or their suppliers, etc., as appropriate.

Competent Bodies shall preferentially recognise tests which are carried out by laboratories or institutions accredited according to ISO 17025 and verifications performed by bodies which are accredited under the EN 45011 standard or an equivalent international standard.

Where appropriate, test methods other than those indicated for each criterion may be used if the Competent Body assessing the application accepts their equivalence.

Where appropriate, competent bodies may require supporting documentation and may carry out independent verifications.

As a pre-requisite, the product must meet all respective legal requirements of the country (countries) in which the product is intended to be placed on the market. The applicant shall declare the product's compliance with this requirement.

EU ECOLABEL CRITERIA

Criteria for awarding the EU Ecolabel to furniture:

1. Product description
2. General hazardous substance requirements
3. Wood and wood-based materials
4. Plastics
5. Metals
6. Upholstery covering materials
7. Upholstery padding materials
8. Glass
9. Final Product
10. Information appearing on the EU Ecolabel

The EU Ecolabel criteria reflect the best environmental performing products on the furniture market. The criteria are focussed on a "per material" basis for ease of assessment given that many furniture products will only contain one or two of the above listed materials.

Whilst the use of chemicals and release of pollutants is part of the production process, the use of hazardous substances are excluded whenever possible or limited to the minimum necessary to provide an adequate function and at the same time strict quality and safety standards for furniture products. For this purpose, derogation conditions for specific substances/groups of substances are granted in exceptional circumstances, in order not to shift the environmental burden to other life cycle phases or impacts and only when there are no viable alternatives existing on the market.

CRITERION 1. PRODUCT DESCRIPTION

Technical drawings that illustrate the assembly of components in the product and its dimensions shall be provided to the Competent Body along with a bill of materials for the product that shall state the total weight of the product itself and how this is split between the following different materials: solid wood / wood-based materials, plastics, metals, leather, coated fabrics, textiles, glass and padding/filling materials. A similar bill of materials shall also be presented for packaging.

Assessment and verification:

The applicant shall provide documentation to the Competent Body containing:

- Technical drawings that illustrate the different components and sub-components used in the assembly of the product;

- An overall bill of materials stating the total weight of the product unit and how the weight is split amongst solid wood/wood-based materials, plastics, metals, leather, textiles, coated fabrics, glass and padding/filling materials. Weights of different materials shall be expressed as grams or kilograms and as a percentage of the total product unit weight.
- A similar bill of materials shall also be provided for packaging and the overall contribution of packaging mass to the total mass of the packaged product shall be expressed.

Applications that go into further detail, for example expressing the type of metal, the type or plastic polymer, recycled contents and/or distinguishing between solid wood, bamboo and wood-based panels for example shall be encouraged but are optional.

CRITERION 2. GENERAL HAZARDOUS SUBSTANCE REQUIREMENTS

Note: Any articles or homogenous parts of complex articles used in the final furniture product that: (i) weigh less than 25 g and that (ii) do not come into direct contact with users during normal use shall be considered exempt from the requirements set out in this criterion.

The final product shall not contain functional substances meeting the criteria for classification with the group 1, 2 or 3 hazard statements as specified in Table 1 in accordance with Regulation (EC) No 1272/2008 of the European Parliament and of the Council or substances referred to in Article 57 of Regulation (EC) No 1907/2006.

The most recent classification rules adopted by the European Union shall take precedence over the listed hazard classification and risk phrases. The hazard classifications generally refer to substances however, if information on substances cannot be obtained, the classification rules for mixtures apply. The applicant shall therefore ensure that any classifications are based on the most recent classification rules.

Table 1. Grouping of Candidate List SVHCs and CLP hazards

<p>Group 1 hazards</p> <p><i>Hazards that identify a substance as being within Group 1:</i></p> <ul style="list-style-type: none"> ○ Substances that appear on the Candidate List for Substances of Very High Concern (SVHC)
<p>Group 2 hazards</p> <p><i>Hazards that identify a substance as being within Group 2:</i></p> <ul style="list-style-type: none"> ○ Category 2 Carcinogenic, Mutagenic or toxic to reproduction (CMR): H341, H351, H361f, H361d, H361fd, H362 ○ Category 1 aquatic toxins: H400, H410 ○ Category 1 and 2 acute toxins: H300, H310, H330, H304 ○ Category 1 Specific Target Organ Toxicity (STOT): H370, H372
<p>Group 3 hazards</p> <p><i>Hazards that identify a substance as being within Group 3:</i></p>

- Category 2, 3 and 4 aquatic toxins: H411, H412, H413
- Category 3 acute toxins: H301, H311, H331, EUH070
- Category 2 Specific Target Organ Toxicity: H371, H373
- Category 1 Skin Sensitiser H317
- Category 1 Respiratory Sensitiser H334

2.1 Group 1 hazards - Substances of very high concern

Substances that have been identified as substances of very high concern and included in the list provided in Article 59(1) of Regulation (EC) No 1907/2006, shall not be present in the final product or homogenous parts thereof, above the generic concentration limit of 0.10% w/w (weight by weight). Specific concentration limits determined in accordance with Article 10 of Regulation (EC) No 1272/2008 shall apply in cases where those specific limits are lower than 0.10% w/w of the final product, article or homogenous part thereof.

Reference to the latest list of substances of very high concern shall be made on the date of application.

The use of substances or mixtures which change their properties upon processing (e.g. become no longer bioavailable or undergo chemical modification) so that the identified hazards no longer apply in the final product or homogenous part thereof, may be exempted from the above requirements.

Assessment and verification:

The applicant shall provide a declaration of compliance signed by the material supplier and copies of relevant Safety Data Sheets for substances or mixtures in accordance with Annex II to Regulation (EC) No 1907/2006. Substances and formulations used at each production stage shall be screened against the latest version of the candidate list published by ECHA. The applicant shall compile declarations of compliance from each production stage supported by screening documentation.

If substances or mixtures used in the manufacture of the furniture product, article or homogenous parts thereof, contain substances of very high concern, the applicant shall provide satisfactory evidence that the substances undergo chemical modification such that they are no longer bioavailable or undergo chemical modification and that any impurities do not amount to more than 0.10% w/w of the final furniture product, article or homogenous part thereof.

Suitable evidence of such chemical modification may be provided by: toxicological studies by ECHA Peer Agencies or other Governmental regulatory bodies; an expert review of the scientific literature and test data; new test data using methods approved by ECHA and carried out by independent laboratories or a report prepared by a toxicologist accredited to an independent hazard assessment scheme based on the GHS or CLP hazard classification scheme in accordance with the guidelines in Annexes I and II of ISO 17065.

No assessment and verification for this criterion shall be required for any textile based component parts of the furniture product if the applicant can provide a copy of the EU Ecolabel certification with a proof that this was awarded in accordance with Commission Decision 2014/350/EU.

2.2. Group 2 and 3 hazardous substances and mixtures

a) Minimum screening requirements

As a minimum, the applicant shall verify the non-presence in the final product of restricted hazardous substances, with hazard statements listed in Groups 2 and 3 of Table 1, that fall under the scope of following functional groups.

- Biocides and preservatives
- Flame retardants
- Dyestuff (including pigments and varnishes);
- Auxiliary carriers, stabilisers, levelling, blowing and dispersing agents;
- Plasticisers;
- Water, dirt, and stain repellents.

The non-presence of these substances or mixtures shall be considered as them not being present in the final furniture product or homogenous parts thereof as follows:

- Substances meeting the criteria set out in points (a), (b) or (c) of Article 57 of Regulation (EC) No 1907/2006, shall not exceed the generic or specific concentration limits determined in accordance with Article 10 of Regulation (EC) No 1272/2008. Where specific concentration limits are determined, they shall prevail over the generic ones.
- Concentration limits for substances meeting the criteria set out in points (d), (e) or (f) of Article 57 of Regulation (EC) No 1907/2006 shall not exceed 0.10% w/w.
- For substances listed in Annexes IV and V to Regulation (EC) No 1907/2006, which are exempted from registration obligations under points (a) and (b) of Article 2(7) of that Regulation, no maximum threshold limit shall apply.

b) Derogation from the restrictions in part a)

Based on assessment that reflects the technical progress to ensure product functionality and quality and in accordance with Article 6(7) of Regulation (EC) No 66/2010, the substance groups listed in Table 2 are derogated from the requirements specified in part a), subject to compliance with the respective specific derogation conditions also set out in Table 2. For each group of functional substances all derogation conditions shall be met for the specified hazard classifications.

Table 2. Derogations to the hazard restrictions in Table 1 and applicable conditions

Functional substance group	Applicability	Derogated classification(s)	Derogation conditions
(a) Biocides / Preservatives	Treatment of wooden materials and components to be used directly in the final product	All group 2 and group 3 hazards as listed in Table 1	Only permitted when the following conditions apply: <ul style="list-style-type: none"> i. That the furniture product is clearly marketed for outdoor use. ii. That the untreated wood does not meet durability class I or II according to EN 350 requirements. iii. That any wood preservation formula and active substance(s) are approved for use under Product Type 8 or 18 as per the requirements of the Biocidal Products Regulation (EU) No 528/2012.
(b) Biocides / Preservatives	Storage and transport of raw hides and semi-finished leather products	All group 2 and group 3 hazards as listed in Table 1	Only permitted when the following conditions apply: <ul style="list-style-type: none"> i. When the raw hides or semi-finished leather need to be transported during periods of more than 3 days between sites. ii. That the biocide or preservative formulas and active substance(s) have been approved for use under Product Type 9 as per the requirements of the Biocidal Products Regulation (EU) No 528/2012. iii. That no further preservatives are added during finishing operations to the leather material for a final disinfective effect.
(c) Biocides / Preservatives	Use in textiles or coated fabrics used in outdoor furniture	All group 2 and group 3 hazards as listed in Table 1	Only permitted when the following conditions apply: <ul style="list-style-type: none"> i. The furniture product is clearly marketed for outdoor use. ii. The the biocide or preservative formulas and active substance(s) have been approved for use under Product Type 6 (for polymers and plastics) or Product Type 9 (for textiles).
(d) Biocides / Preservatives	In-can preservatives in paints and varnishes	H317, H331, H400, H410, H411, H412	Only permitted when condition i. or conditions ii. and iii. apply: <ul style="list-style-type: none"> i. The effective concentration of the active substances can be considered to be below 0.10% w/w of the coated article. ii. The formulation and any active substance(s) present are approved under Product Type 6 as per the requirements of the Biocidal Products Regulation (EU) No 528/2012. iii. Any H400 or H410 preservatives shall be non-bioaccumulative, with a Log Kow \leq3.2 or a bioconcentration factor \leq100.
(e) Biocides / Preservatives	Dry-film preservatives in coatings for wooden components in outdoor furniture	H317, H400, H410, H411, H412	Only permitted when condition i. or conditions ii., iii. Iv and v. apply: <ul style="list-style-type: none"> i. That the effective concentration of the active substances can be considered to be below 0.10% w/w of the coated article. or ii. That the furniture product is clearly marketed for outdoor use. iii. That the uncoated wood does not meet the durability class I or II according to EN 350

			<p>requirements.</p> <p>iv. That the coating substance shall have a score of 0 for fungal resistance and 0 for algal resistance according to the requirements of EN 15457 and EN 15458 respectively.</p> <p>v. The formulation and any active substance(s) present are approved under Product Type 7 as per the requirements of the Biocidal Products Regulation (EU) No 528/2012.</p>
(f) Flame retardants		H317(1B), H373, H411, H412, H413	The product must be intended to be used in applications in which it is required to meet fire protection requirements for ISO, EN, Member State or public sector procurement standards and regulations.
(g) Flame retardants / Antimony Trioxide (ATO)	Furniture upholstery materials*	H351	<p>The product must be intended to be used in applications in which it is required to meet fire protection requirements in ISO, EN, Member State or public sector procurement standards and regulations.</p> <p>Emissions to air in the workplace where the flame retardant is applied to the textile product shall meet an eight hour occupational exposure limit value of 0,50 mg/m³.</p>
(h) Heavy metals / Nickel	Metal components	H317, H351, H372	Only permitted when used in stainless steel components and where the Nickel release rate from the stainless steel is shown to be less than 0.5µg/cm ² /week according to EN 1811.
(i) Heavy metals / Zinc and zinc compounds		H412	Only permitted when used in the electroplating or hot-dip galvanising of metal components which are not considered to come into prolonged skin contact*
(j) Dyestuff for dyeing and non-pigment printing	Textiles, leather and coated fabrics in furniture upholstery covering materials.	H301, H311, H331, H317, H334	Dust free dye formulations or where automatic dosing and dispensing of dyes shall be used by dye houses and printers to minimise worker exposure.
		H411, H412, H413	<p>Dyeing processes using reactive, direct, vat, sulphur dyes with these classifications shall meet a minimum of one of the following conditions:</p> <ul style="list-style-type: none"> Use of high affinity dyes; Achievement of a reject rate of less than 3,0 % Use of colour matching instrumentation; Implementation of standard operating procedures for the dyeing process; Use of colour removal to treat wastewater** <p>The use of solution dyeing and/or digital printing are exempted from these conditions.</p>
(k) Optical brighteners	Textiles, leather and coated fabrics in furniture upholstery covering materials.	H411, H412, H413	<p>Optical brighteners may only be applied in the following cases:</p> <ul style="list-style-type: none"> In white coloured printing;

			<ul style="list-style-type: none"> As additives during the production of acrylic, polyamide or polyester with a recycled content.
(l) Water, dirt and stain repellents	Use in any surface treatments of furniture components	H412, H413	The repellent or varnish and its degradation products shall be readily biodegradable and non-bioaccumulative ¹ in the aquatic environment, including aquatic sediment.
(m) Stabilisers and varnishes	Use in coated fabric production	H411, H412	Automatic dosing and/or personal protective equipment must be used to minimise worker exposure. At least 95% of these additives must be eliminable in wastewater treatment systems according to the OECD 303A/B and/or ISO 11733 standards.
(n) Auxiliaries (comprising carriers, levelling agents, dispersing agents, surfactants, thickeners and binders)	Use in treatment of furniture upholstery covering materials (textiles, leather or coated fabrics).	H301, H371, H373, H334, H411, H412, H413, EUH070	Only permitted when recipes shall be formulated using automatic dosing systems and processes shall follow standard operating procedures.
		H311, H331, H317(1B)	Only permitted when it can be shown that substances classified with H311, H331 or H317(1B) are not present in the final product at concentrations greater than 1.0% w/w.

**prolonged skin contact is currently defined by CARACAL¹ as 10 minutes on three or more occasions within a two week period or 30 minutes on one or more occasions during a two week period.

**Colour removal in wastewater treatment shall be considered as taking place when effluents from the dyehouse meets the following spectral coefficients: (i) 7m⁻¹ at 436nm, 5m⁻¹ at 525nm and 3m⁻¹ at 620nm.

Assessment and verification:

Applicants shall provide evidence of screening of materials or component parts in the furniture product by means of declarations from suppliers that state that none of the functional substances listed in part a) and that possess any of the hazard statements lists in groups 2 or 3 of Table 1 have been intentionally added to those materials or component parts and that in any case are not present in concentrations above those limits stated in part a).

The applicant shall further declare that during final manufacture and assembly of the furniture product, none of the functional substances listed in part a) and that possess any of the hazard statements lists in groups 2 or 3 of Table 1 have been intentionally added.

Where functional substances that fall under the list of categories defined in part a) are used, the following technical information shall be provided to support declarations of the hazard classification or non-classification for each substance identified as being used:

- (i) The substance's CAS number;
- (ii) Harmonised CLP hazard classifications;
- (iii) Self-classification entries in ECHA's REACH register.

¹ See: http://ec.europa.eu/enterprise/sectors/chemicals/reach/caracal/index_en.htm .

Where a classification is recorded as ‘data lacking’ or ‘inconclusive’ according to ECHA’s REACH register database, or where the substance has not yet been registered under the REACH system, toxicological data shall be provided that is sufficient to support conclusive self-classifications in accordance with Annex II of the CLP Regulation and ECHA’s supporting guidance. In the above mentioned cases self-classifications shall be verified, with the following information sources being accepted:

(i) A Safety Data Sheet fully completed in accordance with Section 2,3,9,10, 11 and 12 of Annex I of the CLP Regulation;

(ii) Toxicological studies by ECHA Peer Agencies or other Governmental regulatory bodies;

(iii) An expert review of scientific literature and existing testing data, where necessary supported by results from new testing using methods approved by ECHA and carried out by independent laboratories;

(iv) A report prepared by a toxicologist accredited to an independent hazard assessment scheme in accordance with the guidelines in Annexes I and II of ISO 17065. Schemes shall be based on the GHS or CLP hazard classification system;

Information on the hazardous 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 to the REACH Regulation.

Where derogated hazardous substances are present in the product, the applicant shall provide supporting evidence showing how the derogation conditions have been met.

No assessment and verification for this criterion shall be required for any textile based component parts of the furniture product if the applicant can provide a copy of the EU Ecolabel certification with a proof that this was awarded in accordance with Commission Decision 2014/350/EU.

CRITERION 3. WOOD AND WOOD-BASED MATERIALS

Note: Sub-criteria 3.1, 3.2e) and 3.3 shall only apply when the content of wood or wood-based materials in the final furniture product (excluding packaging) exceeds 5% w/w.

Criterion 3.1 Sustainable wood

Solid wood, wood chips and wood fibres may originate from virgin or recycled material.

Virgin material shall be covered by valid sustainable forest management and chain of custody certificates issued by an independent third party certification scheme.

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

Uncertified material shall be covered by a verification system which ensures that it is legally sourced and meets any other requirements 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 valid, independently certified chain of custody certificates and demonstrate that the at least 70% of the wood material originates from forests managed according to Sustainable Forestry Management principles and/or from recycled sources that meet the requirements set out by the relevant independent chain of custody scheme. FSC, PEFC or equivalent schemes shall be accepted as independent third party certification.

If the product or product line includes uncertified material, proof should be provided that the content of uncertified material does not exceed 30 % and is covered by a verification system which ensures that it is legally sourced and meets any other requirement of the certification scheme with respect to uncertified material.

Criterion 3.2 Restricted substances

In addition to the general conditions on hazardous substances set out in criterion 2, the following conditions shall specifically apply to any furniture components made of wood or wood-based materials:

a) Contaminants in recycled wood

Any recycled wood fibres used in the manufacture of wood based panels included in the final furniture product must have been tested in accordance with the EPF standard for delivery conditions of recycled wood² and comply with the limits for contaminants as listed in Table 3 below.

Table 3. Restricted substances in recycled wood

Chemical contaminant	Limit value (mg/kg recycled wood)
Arsenic (As)	25
Cadmium (Cd)	50
Chromium (Cr)	25
Copper (Cu)	40
Lead (Pb)	90
Mercury (Hg)	25
Fluorine (F)	100
Chlorine (Cl)	1000
Pentachlorophenol (PCP)	5
Creosote (Benzo(a)pyrene)	0.5

² "EPF Standard for delivery conditions of recycled wood", October 2002. Can be viewed online at: <http://www.europanel.org/upload/EPF-Standard-for-recycled-wood-use.pdf>

Assessment and verification:

The applicant shall provide either:

- a declaration from the wood-based panel manufacturer that no recycled wood fibres were used in the panel, or
- a declaration that all recycled wood fibres used have been tested in accordance with the 2002 "EPF Standard conditions for the delivery of recycled wood", supported by appropriate test reports that demonstrate compliance of the recycled wood samples with the limits specified in Table 3.

b) Polyvinyl chloride foils

If PVC foils are used in the coating of wood-based panels, compliance with the vinyl chloride monomer (VCM) emission limits set out in Table 4 shall be demonstrated via independent third party auditing.

Table 4. VCM emission limits for PVC production

	Suspension process (S-PVC)	Emulsion process (E-PVC)	Combined process (E+S PVC)*
Total VCM emissions	< 100g / ton S-PVC	-	-
Total VCM air emissions	-	< 1000g / ton E-PVC	-
VCM concentration in aqueous effluents	< 1g / m ³ effluent	< 1g / m ³ effluent and < 10g / ton E-PVC	< 1g / m ³ effluent and < 5g / ton E+S-PVC
VCM concentration in final regular product	< 1g / ton S-PVC	< 1g / ton E-PVC	-

* The combined process applies to where aqueous effluents from separate emulsion and suspension processes are combined prior to any treatment and final discharge.

Assessment and verification:

The following declarations shall be provided to the Competent Body:

- A declaration from the applicant stating that PVC foils have not been used in wood-based panels in the furniture product;

or

- A declaration from the applicant stating that PVC foils have been used in wood-based panels, together with a declaration from the PVC producer stating that the PVC was produced in accordance with the VCM emission limits set out in Table 4. The declaration of the PVC producer shall:

- Specify whether PVC was produced using the Emulsion Process or the Suspension Process and if aqueous effluent is treated for single or combined plants.

- Include third party verified evidence of compliance with the relevant VCM emission limits specified in Table 4.
- Include third party verified evidence of compliance with the limit for residual VCM in the final PVC material via independent laboratory test reports of representative samples following the EN ISO 6401 standard or equivalent methodology.

c) Plasticisers in plastic foils

Any plastic foils on wood-based panels shall not have been produced using any phthalate plasticisers that are REACH classified with any of the hazards listed in Article 57 of the REACH Regulation (EU) No 1907/2006.

Assessment and verification:

The following declarations shall be provided to the Competent Body:

- A declaration from the manufacturer of the wood-based panel stating that plastic foils were not used.

or

- A declaration from the manufacturer of the wood-based panel stating that plastic foils were used and that none of the phthalates plasticisers classified with group 1 or 2 hazards as listed in Table 1 have been used in the plastic foil.

In the absence of a suitable declaration and where plastic foils are used, the foil materials can be tested for phthalates according to the ISO 14389 or ISO 8214-6 standards. In either case, non-use of the phthalates shall be considered as the total sum of the listed phthalates amounting to less than 0.10 % of the plastic foil weight (1000 mg/kg).

d) Heavy metals in paints and varnishes

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

Assessment and verification:

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

e) VOC content in paints and varnishes

If coated wood or wood-based materials account for more than 5% w/w of the final furniture product (excluding packaging), any paints or varnishes used shall have a total VOC content (in-can concentration) ≤ 5%.

If higher VOC content coatings are used, it shall be demonstrated that either:

- The total quantity of VOCs applied is less than 30g/m² of the coated surface area, or
- The final coated panel component, or entire assembled furniture product complies with the VOC emission limits as specified in criterion 9.3.

Assessment and verification:

The applicant shall provide the SDS of any coating substances used on wood-based materials and state the proportion of the total furniture product that consists of coated wood-based materials as % w/w.

If the furniture product consists of at least 5% w/w of coated wood-based materials and the VOC content of the coating substance exceeds 5%, then the applicant shall either:

- Provide calculations demonstrating that the effective quantity of VOCs applied to the coated surface area of the final assembled furniture product is < 30g/m², in accordance with the guidance provided in Appendix I.
- Provide a test report demonstrating compliance with criterion 9.3 for the coated wood-based materials or for the entire assembled product.

Criterion 3.3 Formaldehyde emissions

All wood-based panels used in the final furniture product using formaldehyde-based resins or finishing agents shall either:

- Have formaldehyde emissions that are lower than 50% of the threshold value allowing them to be classified as E1³. In the case of MDF (Medium Density Fibreboard) panels, formaldehyde emissions shall be lower than 65% of the E1 threshold limit.

- Have formaldehyde emissions that are lower than the limits set out in the CARB Phase II or the Japanese F-3 star or F-4 star standards.

Assessment and verification:

The assessment and verification of low formaldehyde emission panels shall vary depending on the certification scheme it falls under. The different requirements are included in Table 5.

Table 5. Assessment and verification of low formaldehyde emission panels

Certification scheme	Assessment and verification
50% or 65% E1 (EU)	A declaration from the wood-based panel supplier, stating that the panel is compliant with 50% of E1 emission limits or, in the case of MDF panels, with 65% of E1 emission limits, supported by test reports carried out according to either EN 717-1, EN 717-2 or EN 120

³ E1 is a threshold emission limit originally introduced in 1985 in the EU due to concerns over adverse health effects due to formaldehyde exposure. The emission limits are defined in Annex B of EN 13986 and correspond to steady state background levels of 0.1ppm formaldehyde after 28d in a chamber test according to EN 717-1.

CARB Phase II (US)	<p>a declaration from the wood-based panel supplier, supported by third party verified test results according to ASTM E1333 or ASTM D6007, demonstrating panel compliance with the formaldehyde Phase II emission limits defined in the California Composite Wood Products Regulation 93120⁴.</p> <p>Optionally, the wood-based panel may be labelled in accordance with Section 93120.3(e), containing details in respect of the manufacturer's name, the product lot number or batch produced, and the CARB assigned number for the third party certifier (this part is not required if the products were made using no-added formaldehyde or certain ultra-low emitting formaldehyde-based resins).</p>
F-3 or 4 star (Japan)	<p>the applicant shall provide a declaration from the panel supplier of compliance with the formaldehyde emission limits as per JIS A 5905 (for fibreboard) or JIS A 5908:2003 (for particleboard and plywood), supported by third party verified test data according to the JIS A 1460 desicator method.</p>

In all cases, the furniture manufacturer should also declare that no further formaldehyde-based surface treatment was applied to supplied panels and that the panels were not modified in any other way that would compromise compliance with the formaldehyde emission limits set out in the European, American or Japanese schemes.

CRITERION 4. PLASTIC PARTS

The requirements set out in the present criterion only apply to components that are made entirely of plastic and not to foils, thermosetting resins or materials used in upholstery, which are covered by criteria 3.2b) and c), 3.3, 6.2, 6.3, 7.1, and 7.2.

4.1 Marking of plastic components

All plastic parts with a weight >100g shall be visibly marked according to ISO 1043-1.

Additionally, plastic parts with a weight >100g shall be visibly marked according to ISO 1043 parts 2, 3 and 4 if they meet the following conditions:

- consist of at least 10% w/w of fillers or other additives
- and/or
- are based on halogenated polymers.

Assessment and verification:

The applicant shall provide a declaration listing all the plastic components >100g in weight in the final furniture product and stating whether or not any of these components meet the requisites for labelling only according to ISO 1043-1 or also according to parts 2, 3 and 4. The declaration shall be supported by SDS or other information provided by the plastic component supplier(s).

⁴ Regulation 93120 "Airborne toxic control measure to reduce formaldehyde emissions from composite wood products" California Code of Regulations.

In cases of doubt regarding the nature of the plastic for components >100g in weight and when suppliers do not provide information, laboratory test data using Infra-red or Raman spectroscopy or any other suitable analytical techniques to identify the nature of the plastic polymer and the quantity of fillers or other additives may be provided as evidence supporting the need or lack of need for marking according to parts 2, 3 and 4 of ISO 1043.

The marking of any plastic components shall be clearly visible upon visual examination of the plastic component.

Criterion 4.2 Restricted substances

In addition to the general requirements for hazardous substances stated in Criterion 2, the conditions listed below shall apply for plastic components of >25g weight.

a) Heavy metals in plastic additives

Bulk plastic components and any surface layers shall not be manufactured using compounds containing cadmium (Cd), chromium VI (CrVI), lead (Pb), mercury (Hg) or tin (Sn).

Assessment and verification:

The assessment and verification of compliance with this criterion shall be achieved either by the provision of suitable declarations or by representative testing of the plastic components. The testing requirements are set out in Table 6 below.

Table 6. Assessment and verification of heavy metal impurities in plastics.

Plastic type	Assessment and verification	Testing (if required)			
		Metal	Method	Limit (mg/kg)	
Virgin material only or combined with pre-consumer recyclates from known sources and/or post-consumer PET, PP or PE from kerbside collection schemes.	The applicant shall provide a declaration from the supplier of the plastic component(s) that no additives containing cadmium, chromium VI, lead, mercury, tin or their compounds have been used in the manufacture of the plastic component(s) or were used with pre-consumer recyclates, supported by any relevant SDSs. If no suitable declaration is supplied, then the applicant shall provide test reports demonstrating compliance with the relevant limits set out in this table.			Virgin	Recyc.
		Cd	XRF or digestion followed by ICP or AA or other adequate method for measuring total metal content.	100	1000
		Pb		100	1000
		Sn		100	1000
		Hg	100	1000	
CrVI*	EN 71-3	0.020	0.20		
With pre-consumer or post-consumer recyclates from mixed sources	The applicant shall provide test reports demonstrating compliance with the relevant limits set out in this table.	XRF – X-Ray Fluorescence, testing can be destructive or non-destructive. ICP – Inductively coupled plasma spectroscopy. AA – Atomic absorption spectroscopy (especially suitable method for mercury measurement using cold vapour process) *limits refer to extractable CrVI only.			

Where testing is required as proof of compliance, test reports of representative samples from independent laboratories that state the analytical method used and demonstrate compliance with the limits set out in Table 6 shall be provided.

b) Polyvinyl chloride

If PVC components are used in the final furniture product, compliance of vinyl chloride monomer (VCM) emission limits set out in Table 4 shall be demonstrated via independent third party auditing.

Assessment and verification:

The following shall be provided to the Competent Body:

- A declaration from the applicant stating that PVC components have not been used in the final furniture product;

or

- A declaration from the applicant stating that PVC components have been used in the final furniture product, together with a declaration from the PVC producer stating that the PVC was produced in accordance with the VCM emission limits set out in Table 4. The declaration of the PVC producer shall:

- Specify whether PVC was produced using the Emulsion Process or the Suspension Process and if aqueous effluent is treated for combined plants.
- Include third party verified evidence of compliance with the relevant VCM emission limits specified in Table 4.
- Include third party verified evidence of compliance with the limit for residual VCM in the final PVC material via independent laboratory test reports of representative samples following the EN ISO 6401 standard or equivalent methodology.

Criterion 4.3 Recycled plastic content

If the total plastic content of the final furniture product (not including packaging) accounts for >20% of the product weight (not including packaging), then the following criteria shall apply:

- The average recycled content of plastic parts (not including packaging) shall be at least 30% w/w.
- Recycled plastic material may come from pre-consumer or post-consumer sources. However wastes that are or can be reused within the same processes that generated them shall not be considered as recycled material.
- Traceability of the recycled plastic material should extend to the sorting centre(s) for any post-consumer plastic recyclates and to the waste plastic producer for any pre-consumer plastic recyclates.

Assessment and verification:

The applicant shall provide a declaration from the plastic manufacturer(s) stating the average recycled content in the final furniture product. Where plastic components come from different sources or manufacturers, the average recycled content shall be stated for each plastic source

and the overall average recycled plastic content in the final furniture product shall be calculated.

The declaration of recycled content from the plastic manufacturer(s) shall be supported by traceability documentation for plastic recyclates. An example approach would be to provide batch delivery information as per the framework set out in Table 1 of EN 15343.

CRITERION 5. METALS – RESTRICTED SUBSTANCES

In addition to the general requirements for hazardous substances stated in Criterion 2, the conditions listed below shall apply for metal components in the furniture product.

5.1 Electroplating restrictions

Only components subject to heavy physical wear (i.e. nuts, bolts, nails, screws, hinges, brackets, runners, gas lifts and wheels) or components not subject to prolonged skin contact may be electroplated.

Chromium VI or cadmium compounds shall not be used for electroplating operations of any metal components used in the final furniture product. Zinc may be used for electroplating or hot-dip galvanising so long as the derogation conditions in Table 2 are respected.

Assessment and verification:

The applicant shall provide a declaration from the supplier of the metal component(s) that no plating treatments involving chromium VI or cadmium substances have been used. Where the furniture manufacturer has used zinc coated components, either electroplated or hot-dip galvanised, evidence of compliance with the relevant derogation conditions in Table 2 shall be provided.

5.2 Heavy metals in paints and primers

Paints or primers used on metal components shall not contain additives based on cadmium, lead, chromium VI, mercury, arsenic or selenium, at concentrations exceeding 0,010% w/w for each individual metal in the in-can paint or primer formulation.

Assessment and verification:

The applicant shall declare that the paint or primer formulation does not contain cadmium, lead, chromium VI, mercury, arsenic or selenium in concentrations > 0,010% w/w and provide the respective SDS from the suppliers of the coating substances used.

5.3. VOC content in paints and primers

If coated metal components account for more than 5 w/w of the final furniture product (excluding packaging), any paints or varnishes used shall have a total VOC content (in-can concentration) ≤ 5%.

If higher VOC content coatings are used then it shall be demonstrated that either:

- The total quantity of VOCs applied shall be less than 30g/m² of the coated surface area, or
- The final coated panel components, or entire assembled furniture product, shall comply with the VOC emission limits as specified in criterion 9.3.

Assessment and verification:

The applicant shall provide the SDS of any coating substances used on metal components and state the proportion of the final furniture product that consists of coated metal components as % w/w. If the VOC content of the coating substance exceeds 5% and the furniture product consists of at least 5% w/w of coated metal components, then the applicant shall either:

- Provide calculations demonstrating that the effective quantity of VOCs applied in the coated surface area of the final assembled furniture product is < 30g/m², in accordance with the guidance provided in Appendix I.
- Provide a test report demonstrating compliance with criterion 9.3 for the coated metal components or for the entire assembled product.

CRITERION 6. UPHOLSTERY COVERING MATERIALS

6.1 Physical quality requirements

Any leather used as upholstery covering material shall comply with the physical quality requirements stated in Appendix II.

Any textiles used as upholstery covering material shall comply with the physical quality requirements stated in Table 7.

Any coated fabrics used as upholstery covering material shall comply with the physical quality requirements stated in Table 8.

Table 7. Physical requirements for textile fabric covering materials in furniture upholstery.

Test factor	Method	Removable and washable coverings	Non-removable and washable coverings
Dimensional changes during washing and drying	Domestic washing: ISO 6330 + EN ISO 5077 (three washes at temperatures as indicated in the product with tumble drying after each washing cycle) Commercial washing: ISO 15797 + EN ISO 5077 (at minimum of 75 °C)	+/- 3.0% for woven fabrics +/- 6.0% for non-woven fabrics	N/A
Colour fastness to washing	Domestic washing: ISO 105-C06 Commercial washing: ISO 15797 + ISO 105-C06 (at minimum of 75 °C)	≥ level 3-4 for colour change ≥ level 3-4 for staining	N/A
Colour fastness to wet rubbing*	ISO 105 X12	≥ level 2-3	≥ level 2-3

Colour fastness to dry rubbing*	ISO 105 X12	≥ level 4	≥ level 4
Colour fastness to light	ISO 105 B02	≥ level 5**	≥ level 5**
Fabric resistance to pilling and abrasion	Knitted and non-woven products: ISO 12945-1 Woven fabrics: ISO 12945-2	ISO 12945-1 result >3 ISO 12945-2 result >3	ISO 12945-1 result >3 ISO 12945-2 result >3

* does not apply to white products or products that are neither dyed nor printed

** A level of 4 is nevertheless allowed when furniture covering fabrics are both light coloured (standard depth < 1/12) and made of more than 20 % wool or other keratin fibres, or more than 20 % linen or other bast fibres.

Table 8. Physical requirements for coated fabric covering materials in furniture upholstery

Property	Method	Requirement
Tensile strength	ISO 1421	CH ≥ 35daN and TR ≥ 20daN
Tear resistance of plastic film and sheeting by the trouser tear method	ISO 13937/2	CH ≥ 2,5daN and TR ≥ 2daN
Colour fastness to artificial weathering – Xenon arc fading lamp test	EN ISO 105-B02	Indoor use ≥ 6; Outdoor use ≥ 7
Textiles – abrasion resistance by the Martindale method	ISO 5470/2	≥ 75,000
Determination of coating adhesion	EN 2411	CH ≥ 1,5daN and TR ≥ 1,5daN

Where: daN = deca Newtons, CH = Warp and TR = Weft

Assessment and verification:

The applicant shall provide a declaration from the leather supplier, textile fabric supplier or coated fabric supplier as appropriate, supported by relevant test reports, that the upholstery covering material meets the physical requirements for leather, textile fabrics or coated fabrics as specified in Appendix II, Table 7 or Table 8 respectively.

If textile fabrics have been awarded the EU Ecolabel, as established in Commission Decision 2014/350/EU, it will be considered as compliant with the present requirement on physical quality of textile fabric covering material.

6.2 Chemical testing requirements

This criterion applies to the upholstery covering materials in the final treated form that they are to be used in the furniture product. In addition to the general conditions on hazardous substances set out in criterion 2, the following conditions listed in Table 9 shall specifically apply to upholstery covering materials:

Table 9. Testing requirements for hazardous substances in final leather, textiles and coated fabrics covering material.

Chemical	Test Method	Conditions for compliance
Restricted arylamines from cleavage of azodyes*	EN ISO 17234-1 (for leather)	Results ≤ 30 mg/kg for each amine* (see Table 19 in Appendix III for a full listed of the arylamines to be tested)
	EN ISO 14362-1 and 14362-3 (for textiles and coated fabrics)	
Chromium VI	EN ISO 17075 (for leather)	Results < 3 mg/kg**

	only)	
Free formaldehyde	EN ISO 17226-1 (for leather)	Results ≤ 75 mg/kg
	EN ISO 14184-1 (for textiles and coated fabrics)	
Extractable heavy metals	EN ISO 17072-1 (for leather)	Results: Arsenic ≤ 1.0 mg/kg; Antimony ≤ 30.0 mg/kg; Chromium ≤ 200 mg/kg ; Nickel ≤ 1.0 mg/kg; Cadmium ≤ 0.1 mg/kg, Cobalt ≤ 4.0 mg/kg; Lead ≤ 1.0 mg/kg, Copper ≤ 50.0 mg/kg; and Mercury ≤ 0.02 mg/kg
	EN ISO 105-E04 (for textiles and coated fabrics)	Results: Arsenic ≤ 1.0 mg/kg; Antimony ≤ 30.0 mg/kg; Chromium ≤ 2.0 mg/kg; Nickel ≤ 1.0 mg/kg; Cadmium ≤ 0.1 mg/kg; Cobalt ≤ 4.0 mg/kg; Lead ≤ 1.0 mg/kg; Copper ≤ 50.0 mg/kg and Mercury ≤ 0.02 mg/kg
Chlorophenols	EN ISO 17070 (for leather)	Pentachlorophenol ≤ 1 mg/kg Tetrachlorophenol ≤ 1 mg/kg
Alkylphenols	EN ISO DIS 18218-1 (for leather)	Nonylphenol, mixed isomers (CAS No. 25154-52-3); 4-Nonylphenol (CAS No. 104-40-5) 4-Nonylphenol, branched (CAS No. 84852-15-3) Octylphenol (CAS No. 27193-28-8) 4-Octylphenol (CAS No. 1806-26-4) 4-tert-Octylphenol (CAS No. 140-66-9)
	Solvent extraction followed by LCMS (for textiles and coated fabrics)	<u>Alkylphenoethoxylates (APEOs) and their derivatives:</u> Polyoxyethylated octyl phenol (CAS No. 9002-93-1) Polyoxyethylated nonyl phenol (CAS No. 9016-45-9) Polyoxyethylated p-nonyl phenol (CAS No. 26027-38-3) Sum Total limit value ≤ 25mg/kg - textiles /coated fabric ≤ 100mg/kg - leathers
Polycyclic Aromatic Hydrocarbons	ZEK 01.2-08 (for coated fabrics or leather treated with plastic coatings)	Naphthalene (CAS No. 91-20-3) Acenaphthylene (CAS No. 208-96-8) Acenaphthene (CAS No. 83-32-9) Fluorene (CAS No. 86-73-7) Phenanthrene (CAS No. 85-1-8) Anthracene (CAS No. 120-12-7) Fluoranthene (CAS No. 206-44-0) Pyrene (CAS No. 129-00-0) Chrysene (CAS No. 218-01-9) Benzo[a]anthracene (CAS No. 56-55-3) Benzo[b]fluoranthene (CAS No. 205-99-2) Benzo[k]fluoranthene (CAS No. 207-08-9) Benzo[a]pyrene (CAS No. 50-32-8) Dibenzo[a,h]anthracene (CAS No. 53-70-3) Indeno[1,2,3-c,d]pyrene (CAS No. 193-39-5) Benzo[g,h,i]perylene (CAS No. 191-24-2) Benzo[j]fluoranthene (CAS No. 205-82-3) Benzo[e]pyrene (CAS No. 192-97-2) Sum Total limit = 10 mg/kg Individual limit = 1 mg/kg for Benzo[a]pyrene
N,N-Dimethylacetamide (CAS No. 127-19-5)	Solvent extraction followed by GCMS or LCMS (for elastane and/or acrylic based textile fabrics only)	Result ≤ 0.005% w/w (≤ 50mg/kg)
Chloralkanes	EN ISO DIS 18219 (for	C10-C13 (SCCP) chloralkanes ≤not detectable

	leather)	C14-C17 (MCCP) chloralkanes ≤ 1000 mg/kg;
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*A total of 22 arylamines listed in Entry 43 of Annex XVII of REACH plus two other compounds are listed also in Appendix III. Not detectable is considered as values lower than 30mg/kg according to the EN ISO 17234-1 method.

** The detection limit for the EN ISO 17075 is generally assumed to be 3mg/kg.

Assessment and verification:

The furniture manufacturer shall provide a declaration that the leather, textile fabric or coated fabric upholstery covering material complies with the above limits, supported by results from the relevant referred test methods either commissioned by the manufacturer themselves or the material supplier.

If textile fabrics have been awarded the EU Ecolabel, this shall be considered as sufficient evidence of compliance with this criterion for textile fabric chemical testing requirements.

6.3 Restricted substance list during production processes

If the upholstery covering materials account for more than 1.0% w/w of the total furniture product weight (excluding packaging) the supplier of the material shall comply with the following restrictions on the use of hazardous substances during production.

Table 10. Restrictions for substances used in production stages

1-Hazardous substances used in different production stages	
a) Surfactants, softeners and complexing agents	
Applicability: To dyeing and finishing process stages in textile, leather or coated fabric production.	All non-ionic and cationic surfactants must be readily biodegradable under anaerobic conditions. Assessment and verification: The applicant shall provide a declaration from the leather, textile or coated fabric producer, supported by a declaration from their chemical supplier(s) and by relevant SDSs and results of EN ISO 11734 or ECETOC No 28 OECD 311 tests. The latest revision of the Detergents Ingredients Database should be used as a reference point for biodegradability and may, at the discretion of the Competent Body, be accepted as an alternative to providing test reports. http://ec.europa.eu/environment/ecolabel/documents/did_list/didlist_part_a_en.pdf
	Long chain perfluoroalkyl sulfonates (≥C6) and perfluorocarboxylic acids (≥C8) shall not be used in the production processes. Assessment and verification: The applicant shall provide a declaration from the leather, textile or coated fabric producer, supported by a declaration from their chemical supplier(s) and by relevant SDSs of the non-use of these substances for each production stage.
b) Auxiliaries (used in preparations, formulations and adhesives)	
Applicability: Intermediate materials and final leather, textile or coated fabric	The following substances shall not be used in any preparations or formulations within the supply chain: <ul style="list-style-type: none"> • bis(hydrogenated tallow alkyl) dimethyl ammonium chloride (DTDMAC) • distearyl dimethyl ammonium chloride (DSDMAC) • di(hardened tallow) dimethyl ammonium chloride (DHTDMAC)

product.	<ul style="list-style-type: none"> • ethylene diamine tetra acetate (EDTA), • diethylene triamine penta acetate (DTPA) • 4-(1,1,3,3-tetramethylbutyl)phenol • Nitritriacetic acid (NTA) <p>Assessment and verification: The applicant shall provide a declaration from the leather, textile or coated fabric supplier, supported by declarations from chemical supplier(s) and relevant SDSs, that these compounds have not been used in any of the production stages for leather, textiles or coated fabrics, ..</p>
c) Solvents	
<p>Applicability:</p> <p>Intermediate materials and final leather, textile or coated fabric product.</p>	<p>The following substances shall not be used in any preparations or formulations during leather, textile or coated fabric production or any part thereof</p> <ul style="list-style-type: none"> • 2-Methoxyethanol • N,N-dimethylformamide • Bis(2-methoxyethyl) ether • 4,4' - Diaminodiphenylmethane • 1,2,3-trichloropropane • 1,2-Dichloroethane; ethylene dichloride • 2-Ethoxyethanol • Benzene-1,4-diamine dihydrochloride • Bis(2-methoxyethyl) ether • Formamide • N,N-dimethylacetamide (DMAC) • N-methyl-2-pyrrolidone; 1-methyl-2-pyrrolidone • Trichloroethylene • 1-Methyl-2-pyrrolidone <p>Assessment and verification: The applicant shall provide a declaration from the leather, textile or coated fabric producer, supported by declarations from chemical suppliers and relevant SDSs, stating that these solvents have not been used in any of the leather, textile or coated fabric production processes.</p>
2-Dyes used in dyeing and printing processes	
<p>i. Carriers used in dyeing process</p> <p>Applicability:</p> <p>Dyeing and printing processes</p>	<p>Where disperse dyes are used, halogenated dyeing accelerants (carriers) shall not be used (Examples of carriers include: 1,2-dichlorobenzene, 1,2,4-trichlorobenzene, chlorophenoxyethanol).</p> <p>Assessment and verification: The applicant shall provide a declaration, supported by declarations of leather, textile or coated fabric producers, their chemical supplier(s) and any relevant SDSs, that states the non-use of any halogenated carriers during the dyeing process of any leather, textiles or coated fabrics used in the furniture product.</p>
<p>ii. Chrome mordant dyes</p> <p>Applicability:</p> <p>Dyeing and printing</p>	<p>Chrome mordant dyes shall not be used.</p> <p>Assessment and verification: The applicant shall provide a declaration, supported by declarations of leather, textile or coated fabric producers, their chemical supplier(s) and any relevant SDSs, that states the non-use of any chrome mordant dyes during the dyeing process of any leather, textiles or coated fabrics used in the furniture product.</p>

processes	
iii. Pigments Applicability: Dyeing and printing processes	Pigments based on cadmium, lead, chromium VI, mercury, arsenic and antimony shall not be used. Assessment and verification: The applicant shall provide a declaration, supported by declarations of leather, textile or coated fabric producers, their chemical supplier(s) and any relevant SDSs, that states the non-use of any pigments based on the mentioned heavy metals during dyeing or printing processes with any leather, textiles or coated fabrics used in the furniture product.
3-Fluorinated Compounds	
Applicability: Upholstery covering materials with integrated water or stain repellent function	(i) Fluorinated water, stain and oil repellent treatments shall not be impregnated into furniture covering material finishes. This restriction includes treatments with perfluorinated and polyfluorinated substances. Only non-fluorinated treatments using substances that are readily biodegradable and non-bioaccumulative in the aquatic environment shall be permitted. Assessment and verification: The applicant shall provide a declaration, supported by declarations from leather, textile or coated fabric producers, declarations from chemical suppliers and any relevant SDSs, that state non-use of perfluorinated or polyfluorinated substances in leather, textile or coated fabric finishing operations. In the absence of an acceptable declaration, the Competent Body may further request testing of the covering material according to the methods defined by CEN/TS 15968:2010. For non-fluorinated treatments, readily biodegradability properties may be demonstrated by tests conducted according to the following methods: (OECD 301 A, ISO 7827, OECD 301 B, ISO 9439, OECD 301 C, OECD 301 D, ISO 10708, OECD 301 E, OECD 301 F, ISO 9408). Non-bioaccumulative properties may be demonstrated by tests that show partition coefficients (Log Kow) of ≤ 3 or Bioconcentration Factors (BCF) ≤ 100 according. With non-fluorinated treatments, the latest revision of the Detergents Ingredients Database should be used as a reference point for biodegradability and may, at the discretion of the Competent Body, be accepted as an alternative to providing test reports. http://ec.europa.eu/environment/ecolabel/documents/did_list/didlist_part_a_en.pdf

Assessment and verification:

The applicant shall compile all relevant declarations, SDSs and optional supporting test reports from leather, textile or coated fabric producers, or their suppliers, that are relevant to demonstrate compliance with the requirements for non-use of the hazardous substances listed in Table 10.

If upholstery covering materials are made of textiles that have been awarded the EU Ecolabel as established in Decision 2014/350/EU, it will be considered compliant with this criterion for non-use of the listed hazardous substances during production processes.

6.4 Cotton and other natural cellulosic seed fibres

If the total content of cotton and other natural cellulosic seed fibres (hereinafter referred to as cotton) used in the textile covering materials accounts for more than 1.0% of the total weight of the furniture product (excluding packaging), then conditions a,b&d, a,c&d or a,b,c&d shall be complied with for the cotton material:

- a) All cotton shall be of non genetically modified varieties.
- b) A minimum of 10% of the cotton shall consist of traceable organic cotton grown according to the requirements laid down in Council Regulation (EC) No 834/2007⁵, the US National Organic Programme (NOP) or equivalent legal obligations set by trade partners of the EU. The organic cotton content may include organically grown cotton and transitional organic cotton. Organic cotton shall be traceable from the point of verification of the production standard up until, as a minimum, greige fabric production
- c) A minimum of 20 % of the cotton shall consist of traceable cotton grown according to Integrated Pest Management (IPM) principles as defined by the UN Food and Agricultural Organisation (FAO) IPM programme or Integrated Crop Management (ICM) systems incorporating IPM principles. IPM cotton shall be traceable from the point of verification of the production standard up until, as a minimum, greige fabric production
- d) Conventional or IPM cotton shall be grown without the use of the following pesticides: Alachlor, aldicarb, aldrin, campheclor (toxaphene), captafol, chlordane, 2,4,5-T, chlordimeform, chlorobenzilate, cypermethrin, DDT, dieldrin, dinoseb and its salts, endosulfan, endrin, glyphosulfate, heptachlor, hexachlorobenzene, hexachlorocyclohexane (total isomers), methamidophos, methyl-o-dematon, methylparathion, monocrotophos, neonicotinoids (clothianidine, imidacloprid, thiametoxam), parathion, phosphamidon, pentachlorophenol, thiofanex, triafanex, triazophos. The total combined content of the pesticides listed shall not exceed 0.5 mg/kg in any IPM, ICM or conventional cotton.

Assessment and verification:

If upholstery covering materials are made of textiles that have been awarded the EU Ecolabel, (Decision 2014/350/EU) this shall be considered as sufficient evidence of compliance with this criterion for cotton.

Otherwise:

- a) Compliance with the requirements for non-genetically modified varieties shall be verified in conformity with Regulation (EC) No 1830/2003 of the European Parliament and of the Council⁶.
- b) Compliance with the organic content requirement should be certified by an independent control body to have been produced in conformity with the production and inspection requirements laid down in Regulation (EC) No 834/2007 the US

⁵ Council Regulation (EC) No 834/2007 of 28 June 2007 on organic production and labelling of organic products and repealing Regulation (EEC) No 2092/91 (OJ L 189, 20.7.2007, p. 1).

⁶ Regulation (EC) No 1830/2003 of the European Parliament and of the Council of 22 September 2003 concerning the traceability and labelling of genetically modified organisms and the traceability of food and feed products produced from genetically modified organisms and amending Directive 2001/18/EC (OJ L 268, 18.10.2003, p.24)

National Organic Programme (NOP) or those set by other trade partners.. Verification shall be provided on an annual basis for each country of origin.

The applicant shall demonstrate compliance with the minimum cotton content requirement either for the annual volume of cotton purchased or for the blend of cotton used to manufacture the final product(s) and according to each product line:

(i) On an annualised basis: Transaction records and/or invoices shall be provided that document the quantity of cotton purchased on an annual basis from farmers or producer groups, and/or the total weight of certified bales, up until greige fabric production, or

(ii) On a final product basis: Documentation shall be provided from the spinning and/or fabric production stages. All documentation shall reference the Control Body or certifier of the different forms of cotton.

- c) Compliance with the IPM content requirement shall be demonstrated by providing evidence that the cotton has been grown by farmers that have participated in formal training programmes of the UN FAO or Government IPM and ICM programmes and/or that have been audited as part of third party certified IPM schemes. Verification shall either be provided on an annual basis for each country of origin or on the basis of certifications for all IPM cotton bales purchased to manufacture the product.

The applicant shall demonstrate compliance with the minimum cotton content requirement either for the annual volume of cotton purchased or for the blend of cotton used to manufacture the final product(s) and according to each product line:

(i) On an annualised basis: Transaction records and/or invoices shall be provided that document the quantity of cotton purchased on an annual basis from farmers or producer groups, and/or the total weight of certified bales, up until greige fabric production, or

(ii) On a final product basis: Documentation shall be provided from the spinning and/or fabric production stages. All documentation shall reference the Control Body or certifier of the different forms of cotton.

- d) Compliance with the pesticide restriction shall not be required for schemes that prohibit use of the substances listed in part iv. and where either testing is carried out or declarations of non-use are obtained from farmers and/or farmer producer groups that are verified by site visits carried out by control bodies accredited by either national governments or recognised organic or IPM certification schemes.

Cotton shall be tested for the listed substances. A test report shall be provided based on the following test methods, as appropriate:

— US EPA 8081 B (organo-chlorine pesticides, with ultrasonic or Soxhlet extraction and apolar solvents (iso- octane or hexane)),

— US EPA 8151 A (chlorinated herbicides, using methanol),

— US EPA 8141 B (organophosphorus compounds),

— US EPA 8270 D (semi-volatile organic compounds).

Tests shall be made on samples of raw cotton from each country of origin and before it passes through any wet treatment. For each country of origin testing shall be carried out on the following basis:

(i) Where only one lot of cotton is used per year a sample shall be taken from a randomly selected bale;

(ii) If two or more lots of cotton are used per year composite samples shall be taken from 5 % of the bales. Cotton is not required to be tested where it has been certified as organic or by an IPM scheme that prohibits the use of the listed substances.

6.5 PVC-based coated fabrics

If PVC is used in coated fabrics, compliance of vinyl chloride monomer (VCM) emission limits set out in Table 4 shall be demonstrated via independent third party auditing.

Assessment and verification:

The following declarations shall be provided to the Competent Body:

- A declaration from the applicant stating that PVC-based coated fabrics have not been used in the final furniture product;

or

- A declaration from the applicant stating that PVC-based coated fabrics have been used in the furniture product, together with a declaration from the producer of the PVC-based coated fabric stating that the PVC-based coated fabric was produced in accordance with the VCM emission limits set out in Table 4. The declaration of the PVC producer shall:

- Specify whether PVC was produced using the Emulsion Process or the Suspension Process and if aqueous effluent is treated for combined plants..
- Include third party verified evidence of compliance with the relevant VCM emission limits specified in Table 4.
- Include third party verified evidence of compliance with the limit for residual VCM in the final PVC material via independent laboratory test reports of representative samples following the EN ISO 6401 standard or equivalent methodology.

CRITERION 7. UPHOLSTERY PADDING MATERIALS

Criterion 7.1 Latex foam

a) Restricted substances

The concentrations in the latex foam of the substances listed below shall not exceed the values shown in Table 11.

Table 11. Restricted substances in latex foams used in furniture upholstery

Group of substances	Substance	Limit value (ppm)	Assessment and verification conditions
Chlorophenols	mono- and di-chlorinated phenols (salts and esters)	1	A
	Other chlorophenols	0.1	A
Heavy metal	As (Arsenic)	0.5	B
	Cd (Cadmium)	0.1	B
	Co (Cobalt)	0.5	B
	Cr (Chromium), total	1	B
	Cu (Copper)	2	B
	Hg (Mercury)	0.02	B
	Ni (Nickel)	1	B
	Pb (Lead)	0.5	B
	Sb (Antimony)	0.5	B
Pesticides*	Aldrin	0.04	C
	o,p-DDE	0.04	C
	p,p-DDE	0.04	C
	o,p-DDD	0.04	C
	p,p-DDD	0.04	C
	o,p-DDT	0.04	C
	p,p-DDT	0.04	C
	Diazinone	0.04	C
	Dichlorfenthion	0.04	C
	Dichlorvos	0.04	C
	Dieldrin	0.04	C
	Endrin	0.04	C
	Heptachlor	0.04	C
	Heptachlorepoxyde	0.04	C
	Hexachlorobenzene	0.04	C
	Hexachlorocyclohexane	0.04	C
	α-Hexachlorocyclohexane	0.04	C
	β-Hexachlorocyclohexane	0.04	C
	γ-Hexachlorocyclohexane (Lindane)	0.04	C
	δ-Hexachlorocyclohexane	0.04	C
	Malathion	0.04	C
	Methoxichlor	0.04	C
	Mirex	0.04	C
Parathion-ethyl	0.04	C	
Parathion-methyl	0.04	C	
Other specific substances that are restricted	Butadiene	1	D

* Only for foams composed of natural latex for at least 20 % by weight.

Assessment and verification:

A. For chlorophenols the applicant shall provide a report presenting the results of the following test procedure. 5 g of sample shall be milled and chlorophenols shall be extracted in the form of phenol (PCP), sodium salt (SPP) or esters. The extracts shall be analysed by means of gas

chromatography (GC). Detection shall be made with mass spectrometer or electron capture detector (ECD).

B. For heavy metals the applicant shall provide a report presenting the results of the following test procedure. Milled sample material is eluted in accordance with DIN 38414-S4 or equivalent in a ratio of 1:10. The resultant filtrate shall be passed through a 0.45 µm membrane filter (if necessary by pressure filtration). The solution obtained shall be examined for the content of heavy metals by inductively coupled plasma optical emission spectrometry (ICP-OES), also known as inductively coupled plasma atomic emission spectrometry (ICP-AES), or by atomic absorption spectrometry using a hydride or cold vapour process.

C. For pesticides the applicant shall provide a report presenting the results of the following test procedure: 2 g of sample is extracted in an ultrasonic bath with a hexane/dichloromethane mixture (85/15). The extract is cleaned up by acetonitrile agitation or by adsorption chromatography over florisil. Measurement and quantification are determined by gas chromatography with detection on an electron capture detector or by coupled gas chromatography/mass spectrometry. The testing on pesticides is requested for latex foams with a content of at least 20 % natural latex.

D. For butadiene the applicant shall provide a report presenting the results of the following test procedure. Following milling and weighing of the latex foam, headspace sampling shall be performed. Butadiene content shall be determined by gas chromatography with detection by flame ionisation.

b) 24 hour VOC emissions

Chamber concentrations of the substances reported below shall not exceed the following values after a period of 24 hours shown in Table 12.

Table 12. 24-hour VOC emission limits for latex foams

Substance	Limit value (mg/m³)
1,1,1 – trichloroethane	0.2
4-Phenylcyclohexene	0.02
Carbon Disulphide	0.02
Formaldehyde	0.005
Nitrosamines*	0.0005
Styrene	0.01
Tetrachloroethylene	0.15
Toluene	0.1
Trichlorethylene	0.05
Vinyl chloride	0.0001
Vinyl cyclohexene	0.002
Aromatic hydrocarbons (total)	0.3
VOCs (total)	0.5
* N-nitrosodimethylamine (NDMA), N-nitrosodiethylamine (NDEA), N-nitrosomethylethylamine (NMEA), N-nitrosodi-i-propylamine (NDIPA), N-nitrosodi-n-propylamine (NDPA), N-nitrosodi-n-butylamine (NDBA), N-nitrosopyrrolidinone (NPYR), N-nitrosopiperidine (NPIP), N-nitrosomorpholine (NMOR).	

Assessment and verification:

The applicant shall provide a report presenting the results of chamber test analysis carried out by an accredited laboratory in accordance with ISO 16000-9.

The wrapped sample shall be stored at room temperature at least for 24 hours. After this period the sample shall be unwrapped and immediately transferred into the test chamber. The sample shall be placed on a sample holder, which allows air access from all sides. The climatic factors shall be adjusted according to ISO 16000-9. 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 done 24 ± 1 h after loading of the chamber during 1 hour on DNPH cartridges for the analysis of formaldehyde and other aldehydes and on Tenax TA for the analysis of other volatile organic compounds. Sampling duration for other compounds may be longer but shall be completed before 30 hours.

The analysis of formaldehyde and other aldehydes shall comply with the standard ISO 16000-3. Unless specified differently, the analysis of other volatile organic compounds shall comply with the standard ISO 16000-6.

Testing following the standard CEN/TS 16516 shall be considered as equivalent to those of the ISO 16000 series of standards.

The analysis of nitrosamines shall be done by means of gas chromatography in combination with a thermal energy analysis detector (GC-TEA), in accordance with the BGI 505-23 method (formerly: ZH 1/120.23) or equivalent.

Criterion 7.2 Polyurethane (PUR) foam

a) Restricted substances

The concentrations in the PUR foam of the substances listed below shall not exceed the values shown in Table 13.

Table 13. List of restricted substances in PUR foams

Group of substances	Substance (acronym, CAS number, element symbol)	Limit value	Method
Biocides		Not added intentionally	A
Flame retardants		Not added intentionally	A
Heavy Metals	As (Arsenic)	0.2 ppm	B
	Cd (Cadmium)	0.1 ppm	B
	Co (Cobalt)	0.5 ppm	B
	Cr (Chromium), total	1.0 ppm	B
	Cr VI (Chromium VI)	0.01 ppm	B
	Cu (Copper)	2.0 ppm	B
	Hg (Mercury)	0.02 ppm	B
	Ni (Nickel)	1.0 ppm	B
	Pb (Lead)	0.2 ppm	B
	Sb (Antimony)	0.5 ppm	B
	Se (Selenium)	0.5 ppm	B
Plasticizers	Di-iso-nonylphthalate (DINP, 28553-12-0)	0.01 % w/w (sum)	C
	Di-n-octylphthalate (DNOP, 117-84-0)		
	Di (2-ethylhexyl)-phthalate (DEHP, 117-81-7)		
	Di-iso-decylphthalate (DIDP, 26761-40-0)		
	Butylbenzylphthalate (BBP, 85-68-7)		
	Dibutylphthalate (DBP, 84-74-2)		

	Phthalates	Not added intentionally	A
TDA and MDA	2,4 Toluenediamine (2,4-TDA, 95-80-7)	5.0 ppm	D
	4,4'-Diaminodiphenylmethane (4,4'-MDA, 101-77-9)	5.0 ppm	D
Tinorganic substances	Tributyltin (TBT)	50 ppb	E
	Dibutyltin (DBT)	100 ppb	E
	Monobutyltin (MBT)	100 ppb	E
	Tetrabutyltin (TeBT)	-	-
	Monooctyltin (MOT)	-	-
	Diocetyl tin (DOT)	-	-
	Tricyclohexyltin (TcyT)	-	-
	Triphenyltin (TPhT)	-	-
	Sum	500 ppb	E
Other specific substances that are restricted	Chlorinated or brominated dioxins or furans	Not added intentionally	A
	Chlorinated hydrocarbons: (1,1,2,2-Tetrachloroethane, Pentachloroethane, 1,1,2-Trichloroethane, 1,1-Dichloroethylene)	Not added intentionally	A
	Chlorinated phenols (PCP, TeCP, 87-86-5)	Not added intentionally	A
	Hexachlorocyclohexane (58-89-9)	Not added intentionally	A
	Monomethyldibromo-Diphenylmethane (99688-47-8)	Not added intentionally	A
	Monomethyldichloro-Diphenylmethane (81161-70-8)	Not added intentionally	A
	Nitrites	Not added intentionally	A
	Polybrominated Biphenyls (PBB, 59536-65-1)	Not added intentionally	A
	Pentabromodiphenyl Ether (PeBDE, 32534-81-9)	Not added intentionally	A
	Octabromodiphenyl Ether (OBDE, 32536-52-0)	Not added intentionally	A
	Polychlorinated Biphenyls (PCB, 1336-36-3)	Not added intentionally	A
	Polychlorinated Terphenyls (PCT, 61788-33-8)	Not added intentionally	A
	Tris(2,3-dibromopropyl) phosphate (TRIS, 126-72-7)	Not added intentionally	A
	Trimethylphosphate (512-56-1)	Not added intentionally	A
	Tris-(aziridinyl)-phosphin oxide (TEPA, 545-55-1)	Not added intentionally	A
	Tris(2-chloroethyl)-phosphate (TCEP, 115-96-8)	Not added intentionally	A
Dimethyl methylphosphonate (DMMP, 756-79-6)	Not added intentionally	A	

Assessment and verification:

For methods B, C, D and E where analysis is required, 6 composite samples shall be taken from up to a maximum depth of 2 cm from the surface faces of the material sent to the relevant accredited laboratory. Where testing is required, the applicant shall provide the test results and demonstrating compliance with the limits in Table 13.

A. For biocides, phthalates and other specific substances that are restricted the applicant shall provide a declaration supported by declarations from manufacturers of the foam confirming that the listed substances have not been added intentionally to the foam formulation.

B. For heavy metals the applicant shall provide a report presenting the results of the following test procedure. Milled sample material is eluted in accordance with DIN 38414-S4 or equivalent in a ratio of 1:10. The resultant filtrate shall be passed through a 0.45 µm membrane filter (if necessary by pressure filtration). The solution obtained shall be examined for the content of heavy metals by atomic emission spectrometry with inductively coupled plasma (ICP-AES or ICP-OES) or by atomic absorption spectrometry using a hydride or cold vapour process.

C. For the total amount of plasticizers the applicant shall provide a report presenting the results of the following test procedure. Extraction shall be performed using a validated

method such as the subsonic extraction of 0.3 g of sample in a vial with 9 ml of t-Butylmethylether during 1 hour followed by the determination of phthalates by GC using a single ion monitoring mass selective detector (SIM Modus).

D. For TDA and MDA the applicant shall provide a report presenting the results of the following test procedure. Extraction of a 0.5 g composite sample in a 5 ml syringe shall be performed with 2.5 ml of 1 % aqueous acetic acid solution. The syringe is squeezed and the liquid returned to the syringe. After repeating this operation 20 times, the final extract is kept for analysis. A new 2.5 ml of 1% aqueous acetic acid is then added to the syringe and another 20 cycles repeated. After this, the extract is combined with the first extract and diluted to 10 ml in a volumetric flask with acetic acid. The extracts shall be analysed by high-performance liquid chromatography (HPLC-UV) or HPLC-MS. If HPLC-UV is performed and interference is suspected, reanalysis with high performance liquid chromatography–mass spectrometry (HPLC-MS) shall be performed.

E. For tinorganic substances the applicant shall provide a report presenting the results of the following test procedure. A composite sample of 1-2 g weight shall be mixed with at least 30 ml of extracting agent during 1 hour in an ultrasonic bath at room temperature. The extracting agent shall be a mixture composed as it follows: 1750 ml methanol + 300 ml acetic acid + 250 ml buffer (pH 4.5). The buffer shall be a solution of 164 g of sodium acetate in 1200 ml of water and 165 ml acetic acid, to be diluted with water to a volume of 2000 ml. After extraction the alkyl tin species shall be derivatized by adding 100 µl of sodium tetraethylborate in tetrahydrofuran (THF) (200 mg/ml THF). The derivative shall be extracted with n-hexane and the sample shall be submitted to a second extraction procedure. Both hexane extracts shall be combined and further used to determine the organotin compounds by gas chromatography with mass selective detection in SIM modus.

b) 72 hour VOC emissions

Chamber concentrations of the substances reported below shall not exceed the following values after a period of 72 hours shown in Table 14.

Table 14. 72-hour VOC emission limits for PUR foams

Substance (CAS number)	Limit value (mg/m³)
Formaldehyde (50-00-0)	0.005
Toluene (108-88-3)	0.1
Styrene (100-42-5)	0.005
Each detectable compound classified as categories C1A or C1B according to the Regulation (EC) No 1272/2008 of the European Parliament and of the Council	0.005
Sum of all detectable compound classified as categories C1A or C1B according to Regulation (EC) No 1272/2008	0.04
Aromatic hydrocarbons	0.5
VOCs (total)	0.5

Assessment and verification:

The applicant shall provide test results that show compliance with the limits stated in Table 14. The test sample/chamber combination shall be either:

- 1 sample of 25x20x15 cm dimensions is placed in a 0.5 m³ test chamber, or
- 2 samples of 25x20x15 cm dimensions are placed in a 1.0 m³ test chamber.

The foam sample shall be placed on the bottom of an emission test chamber and conditioned for 3 days at 23 °C and 50 % relative humidity, applying an air exchange rate n of 0.5 per hour and a chamber loading L of 0.4 m²/m³ (= total exposed surface of sample in relation to chamber dimensions without sealing edges and back) in accordance with ISO 16000-9 and ISO 16000-11.

Sampling shall be done 72 ± 2 h after loading of the chamber during 1 hour via Tenax TA and DNPH cartridges for VOC and formaldehyde analysis respectively. The emissions of VOC are being trapped on Tenax TA sorbent tubes and subsequently analysed by means of thermo-desorption-GC-MS in accordance to ISO 16000-6.

Results are semi-quantitatively expressed as toluene equivalents. All specified individual components are reported from a concentration limit $\geq 1 \mu\text{g}/\text{m}^3$. Total VOC value is the sum of all components with a concentration $\geq 1 \mu\text{g}/\text{m}^3$ and eluting within the retention time window from n-hexane (C6) to n-hexadecane (C16), both included. The sum of all detectable compounds classified as categories C1A or C1B according to Regulation (EC) No 1272/2008 is the sum of all these substances with a concentration $\geq 1 \mu\text{g}/\text{m}^3$. In case the test results exceed the standard limits, substance specific quantification needs to be performed. Formaldehyde can be determined by collection of the sampled air onto DNPH cartridge and subsequent analysis by HPLC/UV in accordance to ISO 16000-3.

Testing following the standard CEN/TS 16516 shall be considered as equivalent to those of the ISO 16000 series of standards.

7.3. Other padding materials

Other materials may be permitted to be used as padding in furniture upholstery so long as the following conditions are met:

- That the general requirements for hazardous substances set out in criterion 2 and the restricted substances conditions set out in Appendix III are respected.
- Feathers or down shall not be used as padding/filling material either alone or in blends.
- Criteria 7.1 for latex foam shall apply if the padding/filling material uses coconut fibre rubberised using latex.

Assessment and verification:

The applicant shall provide a declaration stating:

- The nature of the padding/filling material used and any other blended materials;
- That the material does not contain any SVHCs or other hazardous substances with functional properties that are not specifically derogated in Table 2.

- That down or animal feathers have not been used in the filling/padding material, either alone or in blends.
- If coconut fibres have been rubberised with latex, then compliance with criterion 7.1 for restricted substances and VOC emissions shall be demonstrated.

CRITERION 8. GLASS

This criterion applies to any glass material included in the final furniture product, regardless of the weight fraction it presents.

8.1 Heavy metals in glass

Any glass used in the final furniture product shall comply with the following conditions:

- Not contain leaded glass.
- Not contain lead, mercury or cadmium impurities at levels ≥ 100 mg/kg per metal.
- For mirror glass, any coatings or varnishes used on the backing shall have a lead content < 2000 mg/kg on an as metal basis (of the in-can substance).

Assessment and verification

- The applicant shall provide a declaration from the glass supplier stating that no leaded glass is present in the final furniture product. In the absence of a suitable declaration, the Competent Body may request analysis of glass in the final furniture product via a non-destructive method using a portable X-Ray Fluorescence instrument.
- The applicant shall declare that the glass present in the furniture product does not contain lead, mercury or cadmium impurities at levels exceeding 100 mg/kg (0,01% w/w). In the absence of a suitable declaration, the Competent Body may request testing of the lead content in the glass by X-Ray Fluorescence according to the principles of the ASTM F2853-10 standard or equivalent.
- The applicant shall provide a declaration from the manufacturer of the varnish formulation used on any mirror backing and that the formulation is lead-free or contains less than 2000 mg/kg lead (0.2 % w/w). The declaration shall be supported by a relevant SDS or similar documentation.

8.2. Information to the consumer

The applicant shall provide information about the type of glass used within any user manual or similar literature that is supplied to the customer along with the product. This information shall include any relevant safety information as well as its suitability for contact with other hard materials such as glass, metal or stone. Where the glass type is not suitable for disposal along with post-consumer glass containers (such as drinks bottles and glass jars), this shall be clearly and explicitly stated.

Assessment and verification:

The applicant shall provide a copy of any user manual or similar literature to be supplied to the customer, highlighting the text that refers to the type of glass used, relevant safety

information, its suitability for contact with other hard materials and how it should be disposed of.

8.3. Glass safety

Any glass used in the furniture product shall meet the minimum requirements for safety glass and any minimum EN standard requirements relevant to particular uses of glass in specific types of furniture.

Assessment and verification:

The applicant shall provide test reports as requested under the general requirements of EN 14072 or 12600 which demonstrate that the mode of breakage of any glass used in the furniture is either as Type B (numerous cracks appear, but the fragments hold together and do not separate) or Type C (disintegration occurs, leading to a large number of small particles that are relatively harmless).

Where the furniture product is a table, the applicant shall provide test reports demonstrating compliance with any relevant drop test requirements for safety glass in:

- EN 12521 for domestic tables (140 or 180 mm depending on size of glass used)
- EN 15372 for non-domestic tables (240 mm – considered adequate for severe⁷ uses)

CRITERION 9. FINAL PRODUCT REQUIREMENTS

This requirement refers to the final assembled furniture product. For furniture that is sold disassembled where the customer is responsible for subsequent assembly, the manufacturer must still demonstrate compliance with these requirements for correctly assembled products.

9.1 Fitness for use

EU Ecolabel furniture shall be considered as fit for use if it meets at least one of the following requirements:

- a) Complies with the minimum requirements of the applicable EN standard listed in Appendix IV related to the durability, strength or ergonomic performance of the particular furniture product or component thereof. Where the standard is not simply pass or fail, the minimum limit specified in Appendix IV shall be complied with.
- b) The furniture producer shall provide a 5 year guarantee of product performance under normal use and the provision of a repair service and/or replacement part service during the guarantee period and at a cost that is proportional to the part of the furniture product being repaired or replaced. .

Assessment and verification

⁷ Examples include in night clubs, police stations, transport terminals, hospital public areas, casinos, homes for the elderly, sports changing rooms, prisons and barracks.

- a) The applicant shall provide a declaration stating compliance with any relevant EN standards, supported, as appropriate, by test reports from either the furniture manufacturer or component part suppliers. Any requirements for ergonomics only apply to office chairs, office tables/desks (EN 1335-1 and EN 527-1) and chairs/tables for use in educational institutions (EN 1729-1).
- b) The applicant shall provide a written guarantee for product performance under normal use for a period of at least 5 years from the date of purchase. The written text for consumers shall clearly include information on the company contact and details of any other relevant parties in relation to the repair or replacement part service. The guarantee text shall comply with any minimum requirements of national laws in the country or countries where the product is to be marketed..

9.2 Design for Disassembly

- a) For furniture consisting of multiple components, the product shall be designed for disassembly and simple and illustrated instructions regarding the disassembly and replacement of damaged component parts shall be provided. Disassembly and replacement operations should be capable of being carried out using common and basic manual tools and unskilled labour.
- b) The furniture manufacturer shall make spare parts available to customers for a period of at least 5 years after the purchase of the furniture item. The cost (if any) of spare parts shall be proportional to the total cost of the furniture product.

Assessment and verification

- a) The applicant shall provide technical drawings that illustrate how the furniture item can be assembled/disassembled using basic tools and unskilled labour. In the case of upholstery, such disassembly may include the use of zip fastenings and velco to attach/detach sofa cushions from the frame and interior padding from covering materials. If necessary, provision must be made for screw fittings that go directly into wood-based panels so that the screw can be re-inserted during reassembly at a different point than where it was removed from during disassembly.
- b) The applicant shall provide a declaration that spare parts shall be available for a period of at least 5 years from the date of purchase of the product. The parts shall be available for free during the guarantee period if the goods are found to be faulty during normal use or at a proportionate cost if the goods were damaged by misuse.

Criterion 9.3. VOC emissions

If the furniture product contains any of the materials or components listed below, VOC emission testing shall be required.:

- Upholstery coverings made of leather

- Upholstery coverings made of coated fabrics
- Any components that account for > 5% of the total furniture product weight (excluding packaging) and that have been treated with high VOC content (> 5%) coating formulations that have been applied at rates > 30g/m² of coated surface area or whose application rates have not been calculated.

Sample packaging, handling and conditioning, test chamber requirements and gas analysis methods shall follow the procedures described in the ISO 16000 set of standards.

Testing may be carried out on the entire furniture product (see conditions and limits in Table 15) or in smaller test chambers specifically for the component parts listed above (see conditions and limits in Table 16).

Table 15. Maximum VOC emission limit values for specific furniture products

Test parameter	Armchairs and Sofas		Office chairs		Other furniture items
Chamber volume	In the range of 2-10m ³				
Loading rate	Product should occupy approximately 25% of chamber volume				*0.5-1.5m ² /m ³
Ventilation rate	4.0 m ³ /h		2.0 m ³ /h		*0.5-1.5h ⁻¹
Substance	3d	28d	3d	28d	28d
TVOC*	≤ 3.0 mg/m ³	≤ 0.4 mg/m ³	-	≤ 450 µg/m ³	≤ 450 µg/m ³
TSVOC	-	≤ 0.1 mg/m ³	-	≤ 80 µg/m ³	≤ 80 µg/m ³
C-substances†	≤ 10 µg/m ³ (total limit)	≤ 1 µg/m ³ (per substance)	≤ 10 µg/m ³ (total limit)	≤ 1 µg/m ³ (per substance)	≤ 1 µg/m ³ (per substance)
R-value for LCI substances‡	-	≤ 1	-	≤ 1	≤ 1

*although there is scope to vary the loading rate and ventilation rate, the ratio between the loading rate (m²/m³) and the ventilation rate (h⁻¹) shall be maintained at 1.0.

Table 16. Maximum VOC emission limit values for targeted furniture materials/parts

Test parameter	Coated components		Leather or coated fabric upholstery coverings	
Minimum allowed chamber volume	200L for wood-based components 20L for other components		20L	
Ventilation rate	0.5h ⁻¹		1.5 m ³ /m ² .h	
Substance	3d	28d	3d	28d
TVOC*	≤ 3.0 mg/m ³	≤ 0.4 mg/m ³	-	≤ 450 µg/m ³
TSVOC	-	≤ 0.1 mg/m ³	-	≤ 80 µg/m ³
C-substances†	≤ 10 µg/m ³ (total limit)	≤ 1 µg/m ³ (per substance)	≤ 10 µg/m ³ (total limit)	≤ 1 µg/m ³ (per substance)
R-value for LCI substances‡	-	≤ 1	-	≤ 1

* TVOC – Total Volatile Organic Compounds, defined as those compounds eluting within the retention range of C₆ to C₁₆ (inclusive) on a capillary column coated with 5% phenyl / 95% methyl-poly-siloxane..

** TSVOC – Total Semi-Volatile Organic Compounds, defined as those compounds eluting within the retention range of >C₁₆ to C₂₂ (inclusive) on a capillary column coated with 5% phenyl / 95% methyl-poly-siloxane.

† Carcinogenic VOC substances (see list in Appendix V)

†† R value = total of all quotients (C_i / LCI_i) < 1 (where C_i = substance concentration in the chamber air, LCI_i = LCI value of the substance as defined by the latest data defined under the European Collaborative Action "Urban air, indoor environment and human exposure". (see list of the VOC substances that have been allocated LCI values in Appendix V).

Assessment and verification:

Where the furniture product is deemed to require final product VOC emission testing the applicant shall provide a test report or reports from an accredited laboratory from chamber tests carried according to the ISO 16000 series of standards. Tests carried out according to CEN/TS 16516 shall be considered as equivalent to ISO 16000.

Test data from up to 12 months prior to the Ecolabel application shall be valid for products or components so long as no changes to the manufacturing process or chemicals used have been made that would be considered to increase VOC emissions from the final product or relevant component parts.

Test data demonstrating compliance with the limits in Table 16 for relevant components that is provided directly by component suppliers, shall also be accepted if they are accompanied by a declaration from the component supplier.

CRITERION 10. INFORMATION APPEARING ON THE EU ECOLABEL

Box 2 of the Ecolabel may contain, where relevant, the following information:

- Wood from sustainable managed forests
- Restricted hazardous substances
- Low formaldehyde emission product
- Low VOC emission product
- Product designed for disassembly and ease of repair

APPENDIX I: GUIDANCE FOR CALCULATING VOC USED IN SURFACE COATINGS

The calculation method requires the following information:

- Total coated surface area of final assembled product
- The VOC content of the coating compound (in g/L).
- The volume of coating compound present before the coating operation.
- The number of identical units processed during the coating operation.
- The volume of coating compound remaining after the coating operation.

An example calculation is as follows:

- Total coated surface area of final assembled product = 1.5m².
- The VOC content of the coating compound (in g/L) = 120g/L.
- The volume* of coating compound present before coating operation = 18.5L.
- The number of identical units processed during the coating operation = 4.
- The volume* of coating compound remaining after coating operation = 12.5L

Total area coated	= 4 x 1.5m ²	= <u>6m²</u> .
Total volume of coating compound used	= 18.5 – 12.5	= <u>6L</u> .
Total VOC applied to surface	= 3.9L x 120g/L	= <u>468g</u>
Total VOC applied per m ²	= 468g/6m ²	= <u>78g/m²</u> .

*note that weight measurements can be used instead of volume so long as the density of the coating compound is known and accounted for in the calculation.

Where more than one coating compound is applied, such as primers or finishing coats, the volumetric consumption and VOC contents should also be calculated and added together.

Options to lower the VOC content used in coatings can be improved by using more efficient techniques. Indicative efficiencies of different coating techniques are shown below.

Table 17. Indicative efficiency factors for coating techniques:

Coating technique	Effectiveness	Efficiency factor
Spraying device without recycling	50%	0.5
Electrostatic spraying	65%	0.65
Spraying device with recycling	70%	0.7
Spraying bell/disk	80%	0.8
Roller varnishing	95%	0.95
Blanket varnishing	95%	0.95
Vacuum varnishing	95%	0.95
Dipping	95%	0.95
Rinsing	95%	0.95

*these factors are standard values but other degrees of effectiveness may be used if they can be proven.

APPENDIX II: EN 13336 REQUIREMENTS FOR FURNITURE LEATHER

Table 18. Physical requirements of leather used in Ecolabel furniture (taken from Tables 1 and 2 in EN 13336)

Fundamental characteristics	Test method		Recommended values		
			Nubuck, Suede and Aniline*	Semi-aniline*	Coated, pigmented and other*
pH and ΔpH	EN ISO 4045		≥ 3.5 (if the pH is <4.0, ΔpH shall be ≤ 0.7)		
Tear load, average value	EN ISO 3377-1		> 20 N		
Colour fastness to to-and-fro rubbing	EN ISO 11640. Total mass of finger 1000g.	Aspects to be evaluated	Change of leather colour and felt staining	Change of leather colour and felt staining No destruction of finish	
		using dry felt	50 cycles, ≥ 3 grey scale	500 cycles, ≥ 4 grey scale	
	Perspiration alkaline solution as defined in EN ISO 11641.	using wet felt	20 cycles, ≥ 3 grey scale	80 cycles, ≥ 3/4 grey scale	250 cycles, ≥ 3/4 grey scale
		using felt wetted with artificial perspiration	20 cycles, ≥ 3 grey scale	50 cycles, ≥ 3/4 grey scale	80 cycles, ≥ 3/4 grey scale
Colour fastness to artificial light	EN ISO 105-B02 (method 3)		≥ 3 blue scale	≥ 4 blue scale	≥ 5 blue scale
Dry finish adhesion	EN ISO 11644		--	≥ 2N / 10mm	
Dry flex resistance	EN ISO 5402-1		For aniline leather with non-pigmented finish only, 20 000 cycles (no finish damage cracks)	50 000 cycles (no finish damage cracks)	50 000 cycles (no finish damage cracks)
Colour fastness to water spotting	EN ISO 15700		≥ 3 grey scale (no permanent swelling)		
Cold crack resistance of finish	EN ISO 17233		--	-15°C (no finish crack)	
Fire resistance	EN 1021 or relevant national standards		Pass		

*Definitions of these leather types are according to EN 15987.

APPENDIX III: PROHIBITED ARYLAMINE COMPOUNDS IN FINAL LEATHER AND TEXTILE MATERIALS

Included here are the substances listed in Entry 43 that should be tested for in any dyed leather (using EN 17234 approach) or textiles (using EN 14362 approach).

Table 19. Carcinogenic arylamines to be tested for by EN 14362-1 and -3 for textiles or EN 17234-1 for leather.

Aryl amine	CAS Number	Aryl amine	CAS Number
4-aminodiphenyl	92-67-1	4,4'-oxydianiline	101-80-4
Benzidine	92-87-5	4,4'-thiodianiline	139-65-1
4-chloro-o-toluidine	95-69-2	o-toluidine	95-53-4
2-naphthylamine	91-59-8	2,4-diaminotoluene	95-80-7
o-amino-azotoluene	97-56-3	2,4,5-trimethylaniline	137-17-7
2-amino-4-nitrotoluene	99-55-8	4-aminoazobenzene	60-09-3
4-chloroaniline	106-47-8	o-anisidine	90-04-0
2,4-diaminoanisol	615-05-4	2,4-Xylidine	95-68-1
4,4'-diaminodiphenylmethane	101-77-9	2,6-Xylidine	87-62-7
3,3'-dichlorobenzidine	91-94-1	p-cresidine	120-71-8
3,3'-dimethoxybenzidine	119-90-4	3,3'-dimethylbenzidine	119-93-7
3,3'-dimethyl-4,4'-diaminodiphenylmethane	838-88-0	4,4'-methylene-bis-(2-chloro-aniline)	101-14-4

A number of dye compounds, although not directly restricted themselves, are known to cleave to form some of the prohibited substances listed in Table 19 above. Thus it is strongly recommended that their use be avoided in leather and textile dyeing processes in order to comply with the requirements for carcinogenic arylamines.

As a guide to applicants, the following dyes should not be used:

Table 20. Indicative list of dyes that may cleave to form carcinogenic arylamines

Disperse dyes		Basic dyes	
Disperse Orange 60	Disperse Yellow 7	Basic Brown 4	Basic Red 114
Disperse Orange 149	Disperse Yellow 23	Basic Red 42	Basic Yellow 82
Disperse Red 151	Disperse Yellow 56	Basic Red 76	Basic Yellow 103
Disperse Red 221	Disperse Yellow 218	Basic Red 111	
Acid dyes			
CI Acid Black 29	CI Acid Red 4	CI Acid Red 85	CI Acid Red 148
CI Acid Black 94	CI Acid Red 5	CI Acid Red 104	CI Acid Red 150
CI Acid Black 131	CI Acid Red 8	CI Acid Red 114	CI Acid Red 158
CI Acid Black 132	CI Acid Red 24	CI Acid Red 115	CI Acid Red 167
CI Acid Black 209	CI Acid Red 26	CI Acid Red 116	CI Acid Red 170
CI Acid Black 232	CI Acid Red 26:1	CI Acid Red 119:1	CI Acid Red 264
CI Acid Brown 415	CI Acid Red 26:2	CI Acid Red 128	CI Acid Red 265
CI Acid Orange 17	CI Acid Red 35	CI Acid Red 115	CI Acid Red 420
CI Acid Orange 24	CI Acid Red 48	CI Acid Red 128	CI Acid Violet 12
CI Acid Orange 45	CI Acid Red 73	CI Acid Red 135	
Direct dyes			
Direct Black 4	Direct Blue 192	Direct Brown 223	Direct Red 28
Direct Black 29	Direct Blue 201	Direct Green 1	Direct Red 37
Direct Black 38	Direct Blue 215	Direct Green 6	Direct Red 39
Direct Black 154	Direct Blue 295	Direct Green 8	Direct Red 44

Direct Blue 1	Direct Blue 306	Direct Green 8.1	Direct Red 46
Direct Blue 2	Direct Brown 1	Direct Green 85	Direct Red 62
Direct Blue 3	Direct Brown 1:2	Direct Orange 1	Direct Red 67
Direct Blue 6	Direct Brown 2	Direct Orange 6	Direct Red 72
Direct Blue 8	Basic Brown 4	Direct Orange 7	Direct Red 126
Direct Blue 9	Direct Brown 6	Direct Orange 8	Direct Red 168
Direct Blue 10	Direct Brown 25	Direct Orange 10	Direct Red 216
Direct Blue 14	Direct Brown 27	Direct Orange 108	Direct Red 264
Direct Blue 15	Direct Brown 31	Direct Red 1	Direct Violet 1
Direct Blue 21	Direct Brown 33	Direct Red 2	Direct Violet 4
Direct Blue 22	Direct Brown 51	Direct Red 7	Direct Violet 12
Direct Blue 25	Direct Brown 59	Direct Red 10	Direct Violet 13
Direct Blue 35	Direct Brown 74	Direct Red 13	Direct Violet 14
Direct Blue 76	Direct Brown 79	Direct Red 17	Direct Violet 21
Direct Blue 116	Direct Brown 95	Direct Red 21	Direct Violet 22
Direct Blue 151	Direct Brown 101	Direct Red 24	Direct Yellow 1
Direct Blue 160	Direct Brown 154	Direct Red 26	Direct Yellow 24
Direct Blue 173	Direct Brown 222	Direct Red 22	Direct Yellow 48

APPENDIX IV: FURNITURE PRODUCT DURABILITY, STRENGTH & ERGONOMICS STANDARDS

Table 21. Indicative list of EN furniture standards produced by CEN TC 207 relevant to criterion 9.1

EN No.	Title	Type of testing required: (D)–durability, (St)–Strength, (E)-Ergonomics, (Sa)-Safety
Upholstered furniture		
1021-1	Furniture - Assessment of the ignitability of upholstered furniture - Part 1: Ignition source smouldering cigarette	(Sa) – non-ignition required in all replicate tests
1021-2	Furniture - Assessment of the ignitability of upholstered furniture - Part 2: Ignition source match flame equivalent	(Sa) – non-ignition required in all replicate tests
Office furniture		
527-1	Office furniture - Work tables and desks - Part 1: Dimensions	(E). - Type A dimensions and adjustability required. For EU Ecolabel
527-2 527-3	Office furniture - Work tables and desks - Part 2: Mechanical safety requirements Tests – Strength under vertical force; Strength under horizontal force; Fatigue under horizontal force; Fatigue under vertical force; Drop test	(St) + (Sa) – Pass is considered as: no fracture of any member, joint or component; no loosening of joints intended to be rigid; no major structural element is significantly deformed; the table fulfils its functions after removal of test loads; any adjusting screws fulfil their functions.
1023-2 1023-3	Office furniture - Screens - Part 2: Mechanical safety requirements Office furniture - Screens - Part 3: Test methods Tests: Stability test; dislodgement test; strength test	(Sa) – Pass for non-load bearing screens = not overturning (test 6.1. in EN 1023-3) (Sa) – Pass for load bearing screens = not overturning (test 6.2 in EN 1023-3) (Sa + St) – Pass for screen mounted components = no dislodgement of any component and no structural failure. (test 6.3 in EN 1023-3) (St) – Pass for load bearing screens = no adverse effect on screen stability, with or without add-on elements; no fracture of any member, joint or component; no deformation or loosening that would affect safety of function (test 6.4 in EN 1023-3)
1335-1	Office furniture - Office work chair - Part 1: Dimensions - Determination of dimensions	(E) – Type A dimensions and adjustability required for EU Ecolabel

<p>1335-2 1335-3</p>	<p>Office furniture - Office work chair - Part 2: Safety requirements Office furniture - Office work chair - Part 3: Test methods Tests: General design requirements; Stability; Rolling Resistance;; Strength and Durability</p>	<p>(Sa) Pass for safe design = accessible corners, seat edges, back rest, arm rest and handle edges are rounded with a minimum 2mm radius; safety distance of accessible movable parts is $\leq 8\text{mm}$ or $\geq 25\text{mm}$; all other edges are free from burrs and rounded or chamfered; the ends of accessible hollow components are closed or capped; adjusting devices can be operated from seating position; load bearing parts of the chair cannot unintentionally come loose; users are protected from soiling from lubricated parts</p> <p>(Sa) Pass for stability = Chair does not overbalance using tests 7.1.1-7.1.7 of EN 1335-3 using forces and number of cycles defined in Table A.1 of EN 1335-2.</p> <p>(Sa) Pass for rolling resistance = castors are of identical construction; the rolling resistance is $\geq 12\text{ N}$ (according to test 7.4. of EN 1335-3).</p> <p>(St + D) Pass for strength & durability = no fractures of any member, joint or component; no loosening of joints intended to be rigid; no major structural element deformation or loss of functionality after tests 7.21, 7.22, 7.26, 7.3.1 and 7.3.2 of EN 1335-3 using forces and number of cycles defined in Table A.2 of EN 1335-2 and when there is no fracture of arm rests after test 7.2.3 in EN 1335-3 using forces and cycles defined in table A.2 of EN 1335-2.</p>
<p>14073-2 14073-3 14074</p>	<p>Office furniture - Storage furniture - Part 2: Safety requirements Office furniture - Storage furniture - Part 3: Test methods for the determination of stability and strength of the structure Office furniture - Tables and desks and storage furniture - Test methods for the determination of strength and durability of moving parts Tests: maximum content loads; general safety; extra safety concerns if mass of unit is $> 10\text{kg}$ and centre of gravity is higher than 650mm above the floor or when the potential energy is $> 65\text{Nm}$.</p>	<p>(St) – Pass for loads on storage parts = $\geq 1,5\text{kg/dm}^2$ for shelves, $\geq 5,0\text{kg/dm}$ for clothes rails, $\geq 0,5\text{kg/dm}^3$ for extension elements and $\geq 4,0\text{kg/dm}$ for suspended pocket files.</p> <p>(Sa) – Pass for general safety requirements = accessible edges and corners are rounded or chamfered; no open ended tubes; all moveable parts with safety distances of $\leq 8\text{mm}$ or $\geq 25\text{mm}$; roll fronts shall not close by themselves from positions $> 200\text{mm}$ from closed position; extension elements shall have effective open stops;</p> <p>(Sa) – Pass for extra safety tests for floor standing units = no fracture, other damage or change of function that affects safety and: the shelf shall remain in the unit (test 5.3.1 of EN 14073-3); no slide under applied force (test 5.2 of EN 14073-3); door remains attached to unit (test 6.3.1 of EN 14074); the extension element does not fall out of unit (test 6.2.3 of EN 14074); the extension element remains closed (test 6.2.4 of EN 14074); the unit remains attached to the building (test 5.7 of EN 14073-3) and the unit does not overturn (tests 5.5.1 and 5.5.2 of EN 14073-3).</p> <p>(Sa) – Pass for extra safety tests for screen and wall hanging units = no fracture, other damage or change of function that affects safety and: the shelf shall remain in the unit (test 5.3.1 of EN 14073-3); the door remains attached to the unit (test 6.3.1 of EN 14074); the extension element does not fall out of the unit (test 6.2.3 of EN 14074) and the extension element shall remain closed (test 6.2.4 of EN 14074).</p>
<p>Hardware for furniture</p>		

EN 15570	Hardware for furniture - Strength and durability of hinges and their components - Hinges pivoting on a vertical axis Tests: Overload tests; ;Functional tests; Corrosion resistance	(St + D) Pass Overload test = no fracture of any component of joint, no loosening of any joint or fixing component, no impairment of function of any component or part after vertical tests where doors open within 3-5secs and close within 3-5secs and (where relevant) after horizontal overload tests. (D) – Pass of the functional test = the closing force of hinges with self-closing spring mechanisms shall not be less than 0,5N before and after durability tests; deflection sagging shall not be more than 0,5% of the width of the door after durability tests (D) – Pass of the corrosion resistance test = 3 cycles AHT when measured according to EN ISO 6270-2.
EN 15706	Hardware for furniture - Strength and durability of slide fittings for sliding doors and roll fronts Tests: Overload tests; Functional tests; Corrosion resistance	(St + D) Pass Overload test = no fracture of any component of joint, no loosening of any joint or fixing component, no impairment of function of any component or part after slam test, pull out test or horizontal static load test. (D) – Pass of the functional test = doors weighing <40kg shall not sag more than 2mm and doors weighting >40kg shall not exceed 0,05mm per (extra?) 1kg mass up to a maximum of 5mm after durability tests (1 st slam, cycles, 2 nd slam). (D) - Pass of the corrosion resistance test = 3 cycles AHT when measured according to EN ISO 6270-2.
EN 15828	Hardware for furniture - Strength and durability of hinges and their components - Stays and hinges pivoting on a horizontal axis Tests: Overload tests; Functional tests; Corrosion resistance	(St + D) Pass Overload test = no fracture of any component of joint, no loosening of any joint or fixing component, no impairment of function of any component or part after horizontal overload test or slam test (as relevant). (D) Pass Functional test = opening force <50N if flap <10kg or force <70N if flap >10kg.. Sagging shall be less than 0,5% of the width of the flap after durability tests (D) - Pass of the corrosion resistance test = 3 cycles AHT when measured according to EN ISO 6270-2.
EN 15939	Hardware for furniture - Strength and loading capacity of wall attachment devices Tests: loading capacity (various); Corrosion Resistance	(St) Pass loading capacity = frame remains attached to mountings, supports test load and top panel does not touch test frame after: static load test, door swing test and overload test. (D) - Pass of the corrosion resistance test = 3 cycles AHT when measured according to EN ISO 6270-2.

EN 16014	Hardware for furniture - Strength and durability of locking mechanisms Tests: Overload tests; functional tests; durability tests	(St + D) Pass Overload test = no fracture of any component of joint, no loosening of any joint or fixing component, no impairment of function of any component or part after Lock; Bolt; Shooting Bar and Locking Hook tests using forces and cycles specified in Table B.1. (D) Pass Functional test = no fracture of any component of joint, no loosening of any joint or fixing component, no impairment of function of any component or part after Lock; Bolt; Shooting Bar, Locking Hook and Torque tests using forces and cycles specified in Table B.2. (D) Pass Durability test = no fracture of any component of joint, no loosening of any joint or fixing component, no impairment of function of any component or part after: Locks test according to forces and cycles specified in Table B.3; Cylinder and key test after 20000 cycles at 5 cycles/min. (D) - Pass of the corrosion resistance test = 3 cycles AHT when measured according to EN ISO 6270-2.
EN 16337	Hardware for furniture – Strength and loading capacity of shelf supports Tests:: Loading Capacity (Impact and sustained load tests); Corrosion Resistance	(St) Pass Loading capacity = No damage shown or impaired functionality after or have inclined downwards by more than 2° after the test. (D) - Pass of the corrosion resistance test = 3 cycles AHT when measured according to EN ISO 6270-2.
EN 15338	Hardware for furniture - Strength and durability of extension elements and their components Tests: Overload, Functional (various); Corrosion Resistance	(St + D) Pass Overload test = no fracture of any component of joint, no loosening of any joint or fixing component, no impairment of function of any component or part after: vertical downwards or horizontal sideways static overloads; Outwards static overload; slam-shut/open tests. (D) Pass functional test = Deflection of element bottom by less than 1/75 of shortest inner dimension in the deflection test; that the bottom does not fall out or lose function after deformation test. Opening and closing forces <50N if loading capacity is <40kg or <12.5% of loading capacity if loading capacity >40kg; element still fulfills function after 1 st vertical and 1 st horizontal static load tests; (D) Pass durability function test = deflection of less than 4% of extension length after front deflection test; still functions correctly after 2 nd vertical and 2 nd horizontal static load tests and after slam-shut/open test. (D) - Pass of the corrosion resistance test = 3 cycles AHT when measured according to EN ISO 6270-2.
Outdoor furniture		
581-1	Outdoor furniture - Seating and tables for camping, domestic and contract use - Part 1: General safety requirements	(Sa)

581-2	Outdoor furniture - Seating and tables for camping, domestic and contract use - Part 2: Mechanical safety requirements and test methods for seating	(Sa + St)
581-3	Outdoor furniture - Seating and tables for camping, domestic and contract use - Part 3: Mechanical safety requirements and test methods for tables	
Seating furniture		
1022	Domestic furniture - Seating - Determination of stability	(Sa)
1728	Furniture - Seating - Test methods for the determination of strength and durability	(St + D)
12520	Furniture - Strength, durability and safety - Requirements for domestic seating	(St + D)
12727	Furniture - Ranked seating - Test methods and requirements for strength and durability	(St + D)
13759	Furniture - Operating mechanisms for seating and sofa-beds - Test methods	
14703	Furniture - Links for non-domestic seating linked together in a row - Strength requirements and test methods	(St)
16139	Furniture - Strength, durability and safety - Requirements for non-domestic seating	(St + D + Sa)
Tables		
1730	Furniture - Tables - Test methods for the determination of stability, strength and durability	(Sa + D + St)
12521	Furniture - Strength, durability and safety - Requirements for domestic tables	(St + D + Sa)
15372	Furniture - Strength, durability and safety - Requirements for non-domestic tables	(St + D + Sa)

Kitchen furniture		
1116	Kitchen furniture - Co-ordinating sizes for kitchen furniture and kitchen appliances	
14749	Domestic and kitchen storage units and worktops - Safety requirements and test methods	(Sa)
Beds		
597-1	Furniture - Assessment of the ignitability of mattresses and upholstered bed bases - Part 1: Ignition source: Smouldering cigarette	(Sa) – non-ignition required in all replicate tests
597-2	Furniture - Assessment of the ignitability of mattresses and upholstered bed bases - Part 2: Ignition source: Match flame equivalent	(Sa) – non-ignition required in all replicate tests
716-1 716-2	Furniture - Children's cots and folding cots for domestic use - Part 1: Safety requirements Furniture - Children's cots and folding cots for domestic use - Part 2: Test methods	(Sa)
747-1 747-2	Furniture - Bunk beds and high beds - Part 1: Safety, strength and durability requirements Furniture - Bunk beds and high beds - Part 2: Test methods	(Sa)
1725	Domestic furniture - Beds and mattresses - Safety requirements and test methods	(Sa)
1957	Furniture - Beds and mattresses - Test methods for the determination of functional characteristics and assessment criteria	(St + D)
12227	Playpens for domestic use - Safety requirements and test methods	(Sa)
Storage furniture		

16121	Non-domestic storage furniture - Requirements for safety, strength, durability and stability	(St + D + Sa)
16122	Domestic and non-domestic storage furniture - Test methods for the determination of strength, durability and stability	(St + D + Sa)
Surface resistance and characteristics		
12720	Furniture - Assessment of surface resistance to cold liquids	(D)
12721	Furniture - Assessment of surface resistance to wet heat	(D)
12722	Furniture - Assessment of surface resistance to dry heat	(D)
13721	Furniture - Assessment of the surface reflectance	
13722	Furniture - Assessment of the surface gloss	
15185	Furniture - Assessment of the surface resistance to abrasion	(D)
15186	Furniture - Assessment of the surface resistance to scratching	(D)
15187	Furniture - Assessment of the effect of light exposure	(D)
Other types of furniture		
1729-1	Furniture - Chairs and tables for educational institutions - Part 1: Functional dimensions	(E)
1729-2	Furniture - Chairs and tables for educational institutions - Part 2: Safety requirements and test methods	(Sa)
13150	Workbenches for laboratories - Dimensions, safety requirements and test methods	(Sa)
14434	Writing boards for educational institutions - Ergonomic, technical and safety requirements and their test methods	(E + D + St + Sa)

APPENDIX V: LIST OF VOCs OF CONCERN

VOCs with ascribed EU-LCI values

These substances should be measured when determining the "R value" of VOC emissions from a particular furniture product or component that is being tested in a chamber.

When calculating the R-value, for each substance that is identified, the concentration should be compared to its EU-LCI value and a quotient calculated. For example, if 50ug/m³ of toluene were detected, which has an EU-LCI value of 2900ug/m³, this would equate to a quotient of $(50 / 2900) = \mathbf{0.017}$. If another VOC with an EU-LCI value was also detected, for example ethylbenzene at say, 100ug/m³, then this quotient would also be calculated $(100 / 850) = \mathbf{0.117}$. If these were the only VOCs with EU-LCI values detected, the R-Value would be **0.134**, i.e. well below the threshold of 1.

Table 22. List of VOCs that have been assigned EU-LCI values

EU-LCI no.	CAS No.	Compound name	EU-LCI limit (ug/m ³)
1-AROMATIC HYDROCARBONS			
1-1	108-88-3	Toluene	2900
1-2	100-41-4	Ethylbenzene	850
1-3	1330-20-7, 106-42-3, 108-38-3, 95-47-6	Xylene (o-, m-, p-) and mixes of these isomers	500
1-5	103-65-1	n-Propylbenzene	950
1-6	108-67-8, 95-63-6, 526-73-8	Trimethylbenzene (1,2,3-; 1,2,4-; 1,3,5-)	450
1-8	527-84-4, 535-77-3, 99-87-6, 25155-15-1	Cymene (o-,m-,p-) (1-Isopropyl-2(3,4)-methylbenzene) and mix of o-, m- and p-cymene	1000
1-11	99-62-7, 100-18-5	Diisopropybenzene (1,3-;1,4-)	750
1-12	2189-60-8	Phenyl octane and isomers	1100
1-16	100-42-5	Styrene	250
1-25	95-13-6	Indene	450
2-SATURATED ALIPHATIC HYDROCARBONS			
2-2	110-82-7	Cyclohexane	6000
2-3	108-87-2	Methyl cyclohexane	8100
2-6		Other saturated aliphatic hydrocarbons higher than C9	6000
3-TERPENES			
3-1	498-15-7	3-Carene	1500
3-3	127-91-3	B-Pinene	1400
3-5		Other terpene hydrocarbons	1400
4-ALIPHATIC ALCOHOLS			
4-1	75-65-0	2-Methyl-2-propanol (tert-butanol)	620
4-3	71-36-3	1-Butanol	3000
4-4	71-41-0, 30899-19-5, 94624-12-1, 6032-29-7, 584-02-1, 137-32-6, 123-51-3, 598-75-4, 75-85-4, 75-84-3	1-Pentanol (all isomers)	730

4-5	111-27-3	1-Hexanol	2100
4-6	108-93-0	Cyclohexanol	2000
4-8	111-87-5	1-Octanol	1100
4-9	123-42-2	4-Hydroxy-4-methyl-pentane-2-on (diacetone alcohol)	960
5-AROMATIC ALCOHOLS			
5-2	128-37-0	BHT (2,6-di-tert-butyl-4-methylphenol)	100
5-3	100-51-6	Benzyl alcohol	440
6-GLYCOLS, GLYCOETHERS			
6-4	111-46-6	Diethylene glycol	440
6-8	110-98-5, 25265-71-8	Dipropylene glycol	670
6-9	110-63-4	1,4-Butanediol	2000
6-11	6846-50-0	2,2,4-Trimethylpentanediol diisobutyrate (TXIB)	450
6-15	111-96-6	Diethylene glycol dimethyl ether (1-Methoxy-2-(2-methoxy-ethoxy)-ethane)	28
6-16	25265-77-4	2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate (Texanol)	600
6-17	109-59-1	Ethylene glycol isopropylether (2-Methylethoxyethanol)	220
6-22	111-90-0	Diethylene glycol monoethyl ether (2-(2-ethoxyethoxy) ethanol)	350
6-23	2807-30-9	Ethylene glycol monoisopropyl ether (2-Propoxyethanol)	860
6-24	111-76-2	Ethylene glycol monobutylether (2-butoxyethanol)	1100
6-26	112-34-5	Diethylene glycol monobutylether	670
6-27	124-17-4	Diethylene glycol monomethyl ether acetate (Butyldiglykolacetate, 2-(2-butoxyethoxy) ethyl acetate)	850
6-28	122-99-6	2-Phenoxyethanol	1100
6-32	1589-47-5	1-Propylene glycol 2-methyl ether (2-methoxy-1-propanol)	19
6-33	70657-70-4	1-Propylene glycol 2-methyl ether acetate (2-methoxy-1-propyl acetate)	28
6-35	34590-94-8	Dipropylene glycol monomethyl ether	3100
6-40	63019-84-1, 89399-28-0, 111109-77-4	Dipropylene glycol dimethyl ether	1300
7-ALDEHYDES			
7-2	75-07-0	Acetaldehyde	1200
7-4	123-72-8	Butanal	650
7-5	110-62-3	Pentanal	800
7-6	66-25-1	Hexanal	900
7-7	111-71-7	Heptanal	900
7-8	123-05-7	2-Ethyl-hexanal	900
7-9	124-13-0	Octanal	900
7-10	124-19-6	Nonanal	900
7-11	112-31-2	Decanal	900

8-KETONES			
8-1	78-93-3	2-Butanone (ethylmethylketone)	5000
8-2	563-80-4	3-Methyl-2-butanone	7000
8-4	120-92-3	Cyclopentanone	900
8-5	108-94-1	Cyclohexanone	410
8-7	583-60-8	2-Methylcyclohexanone	2300
8-8	98-86-2	Acetophenone	490
9-ACIDS			
9-2	79-09-4	Propionic acid	310
10-ESTERS			
10-1	108-21-4	Propyl acetate (n-, iso-)	4200
10-2	108-65-6	2-Methoxy-1-methylethyl acetate	2700
10-3	107-31-3	Methylformiate	1200
10-7	110-19-0	Isobutyl acetate	4800
10-8	123-86-4	n-butyl acetate	4800
10-10	96-33-3	Methyl acrylate	180
10-11	140-88-5	Ethyl acrylate	200
10-12	141-32-2	n-Butyl acrylate	110
10-13	103-11-7	2-Ethylhexyl acrylate	380
10-14		Other acrylates (acrylic acid esters)	110
10-15	627-93-0	Dimethyl adipate	50
10-16	106-65-0	Dimethyl succinate	50
10-17	1119-40-0	Dimethyl glutarate	50
10-20	105-75-9	Dibutyl fumarate	50
10-21	105-76-0	Maleic acid dibutylester	50
10-22	13048-33-4	Hexamethylene diacrylate	10
11-CHLORINATED HYDROCARBONS			
11-3	106-46-7	1,4-Dichlorobenzene	150
12-OTHERS			
12-2	105-60-2	?-caprolactan	300
12-3	872-50-4	N-methyl-2-pyrrolidon	400
12-4	556-67-2	Octamethylcyclotetrasiloxane (D4)	1200
12-7	100-97-0	Hexamethylenetetramine	30
12-11	26172-55-4	5-chloro-2-methyl-2H-isothiazol-3-one (CIT)	1
12-12	2682-20-4	2-Methyl-4-isothiazolin-3-one (MIT)	100
7-ALDEHYDES			
7-2	75-07-0	Acetaldehyde	1200
7-4	123-72-8	Butanal	650
7-5	110-62-3	Pentanal	800
7-6	66-25-1	Hexanal	900
7-7	111-71-7	Heptanal	900

7-8	123-05-7	2-Ethyl-hexanal	900
7-9	124-13-0	Octanal	900
7-10	124-19-6	Nonanal	900
7-11	112-31-2	Decanal	900
8-KETONES			
8-1	78-93-3	2-Butanone (ethylmethylketone)	5000
8-2	563-80-4	3-Methyl-2-butanone	7000
8-4	120-92-3	Cyclopentanone	900
8-5	108-94-1	Cyclohexanone	410
8-7	583-60-8	2-Methylcyclohexanone	2300
8-8	98-86-2	Acetophenone	490
9-ACIDS			
9-2	79-09-4	Propionic acid	310
10-ESTERS			
10-1	108-21-4	Propyl acetate (n-, iso-)	4200
10-2	108-65-6	2-Methoxy-1-methylethyl acetate	2700
10-3	107-31-3	Methylformiate	1200
10-7	110-19-0	Isobutyl acetate	4800
10-8	123-86-4	n-butyl acetate	4800
10-10	96-33-3	Methyl acrylate	180
10-11	140-88-5	Ethyl acrylate	200
10-12	141-32-2	n-Butyl acrylate	110
10-13	103-11-7	2-Ethylhexyl acrylate	380
10-14		Other acrylates (acrylic acid esters)	110
10-15	627-93-0	Dimethyl adipate	50
10-16	106-65-0	Dimethyl succinate	50
10-17	1119-40-0	Dimethyl glutarate	50
10-20	105-75-9	Dibutyl fumarate	50
10-21	105-76-0	Maleic acid dibutylester	50
10-22	13048-33-4	Hexamethylene diacrylate	10
11-CHLORINATED HYDROCARBONS			
11-3	106-46-7	1,4-Dichlorobenzene	150
12-OTHERS			
12-2	105-60-2	?-caprolactan	300
12-3	872-50-4	N-methyl-2-pyrrolidon	400
12-4	556-67-2	Octamethylcyclotetrasiloxane (D4)	1200
12-7	100-97-0	Hexamethylenetetramine	30
12-11	26172-55-4	5-chloro-2-methyl-2H-isothiazol-3-one (CIT)	1
12-12	2682-20-4	2-Methyl-4-isothiazolin-3-one (MIT)	100

Carcinogenic VOCs

An indicative list of carcinogenic VOCs that are expected to be of relevance to construction products are included in in table below. Although not all VOCs may be of direct relevance it should serve as a useful guide as to what VOCs to look for in test results. The limits for these substances are much stricter than those of VOCs with assigned EU-LCI values.

Table 23. List of carcinogenic VOCs.

no.	CAS	Name	no.	CAS	Name
1.	79-06-1	Acrylamide	31.	79-46-9	2-Nitropropane
2.	107-13-1	Acrylonitrile	32.	924-16-3	N-Nitrosodibutylamine
3.	106-92-3	Allyl glycidyl ether	33.	55-18-5	N-Nitrosodiethylamine
4.	71-43-2	Benzene	34.	621-64-7	Nitrosodipropylamine
5.	1464-53-5	2,2'-Bioxirane	35.	601-77-4	N-Nitrosodiisopropylamine
6.	542-88-1	Bis (chloromethyl) ether	36.	612-64-6	N-Ethyl-N-nitrosoaniline
7.	101-90-6	Resorcinol diglycidyl ether	37.	1116-54-7	2,2'- (Nitrosoimino)bisethanol
8.	106-47-8	4-Chloroaniline	38.	10595-95-6	N-Methyl-N-nitroso- ethylamine
9.	106-89-8	Epichlorohydrine	39.	59-89-2	N-Nitrosomorpholine
10.	51594-55-9	(R)-(-)-Epichlorohydrine	40.	100-75-4	N-Nitrosopiperidine
11.	95-69-2	4-Chloro-2-methylaniline	41.	930-55-2	N-Nitrosopyrrolidine
12.	100-44-7	Benzyl chloride	42.	88-72-2	2-Nitrotoluene
13.	14977-61-8	Chromyl chloride	43.	122-60-1	Phenyl glycidyl ether
14.	96-12-8	1,2-Dibromo-3- chloropropane	44.	1120-71-4	1,3-Propansultone
15.	106-93-4	1,2-Dibromoethane	45.	91-22-5	Quinoline
16.	764-41-0	1,4-Dichlorobut-2-ene	46.	94-59-7	5-Allyl-1,3-benzodioxole
17.	505-60-2	Bis(2-chloroethyl) sulfide	47.	96-09-3	Styrene oxide
18.	107-06-2	Ethylene dichloride	48.	95-06-7	Sulfallate
19.	96-23-1	1,3-Dichloro-2-propanol	49.	5216-25-1	4-Chlorobenzotrichloride
20.	542-75-6	1,3-Dichloropropene, isomers	50.	509-14-8	Tetranitromethane
21.	79-44-7	Dimethylcarbamoyl chloride	51.	95-53-4	o-Toluidine
22.	540-73-8	N,N'-Dimethylhydrazine; 1,2-Dimethylhydrazine	52.	2431-50-7	2,3,4-Trichlorobut-1-ene
23.	106-87-6	Vinylcyclohexane diepoxide	53.	79-01-6	Trichloroethylene
24.	680-31-9	Hexamethylphosphoric triamide	54.	96-18-4	1,2,3-Trichloropropane
25.	90-04-0	2-Methoxyaniline	55.	98-07-7	Benzotrichloride
26.	120-71-8	6-Methoxy-m-toluidine	56.	137-17-7	2,4,5-Trimethylanilin
27.	592-62-1	Methyl azoxy methyl acetate	57.	51-79-6	Urethane
28.	51-75-2	N-Methylbis(2- chloroethyl)amine			
29.	838-88-0	4,4-Methylenedi-o-toluidine			
30.	15159-40-7	Morpholine-4-carbonyl chloride			