Issuer
Björn Frithiof
Product Requirements & Compliance/
Laws & Standards

Signature

Authorised by
Anders Gårlin
IKEA of Sweden/
Deputy Manager

Signature

Replaces:
AA-10911-8

Chemical compounds and substances

Contents

This specification describes IKEA bans and restrictions on certain chemical compounds and substances due to national or international regulations and/or health and environmental concerns.

About this specification

The purpose of IKEA requirements concerning chemical substances in IKEA products is to:

- Minimise harmful effects to customers' health and to the environment from IKEA products.
- Ensure compliance of IKEA articles with health and environmental regulations in all IKEA markets.

This specification concerns chemical substances in all materials and components in IKEA articles, except:

- Surface coatings and coverings that are included in the scope of *IOS-MAT-0066*.
- Leather that is in the scope of *IOS-MAT-0011*.
- Artificial leather that is in the scope of *IOS-MAT-0079*.
- Candle raw materials ,see instead *IOS-MAT-0049*.
- Adhesives used in wood-based materials that are in the scope of *IOS-MAT-0069*.
- Electrical materials/components as defined in *IOS-PRG-0027*.
- According to other exceptions to the scope that may be made in the Technical Description (TED) for a particular article or in other, material-specific IKEA specifications.

Unless otherwise stated, requirements in *section 4 Complete product – emissions and odou*r, are valid for the complete product including any materials that otherwise are outside the scope of this specification.

The requirements in this specification are valid for each separate homogeneous material in the article.

“Not allowed to be used” means that a substance shall not be added to or used to manufacture, treat or process a material for an IKEA article, in any step of the manufacturing process of material and article, unless otherwise specified.

“Not allowed to be used” does not include the use of organic compounds used for chemical synthesis if the original substance disappears (i.e. is chemically transformed) during a chemical manufacturing process. Nor does it include the use, for manufacturing polymers (including synthetic textile fibres), of Polymerization Production Aids (PPA), i.e. substances used in the medium in which the polymerization takes place (surfactants, solvents).

Note: If a substance that is not allowed to be used according to this specification is used for chemical synthesis or as a PPA, the residue shall be less than the specified contamination limit value.

In cases where IKEA does not allow the use of chemical substances according to certain lists established by government authorities, the ban on new substances added to the cited list shall enter into force within four months of the substance being added to the cited list, unless otherwise specified.

The requirements stated in *section 2,* are valid for all materials and all complete products. This includes all material categories not specifically listed in the different sections of this specification; but it does not include the exceptions to *IOS-MAT-0010* listed above.

Further chemical and documentation requirements for the product or constituent materials can be specified in the individual technical description or in other IKEA specifications (for instance children's articles and food-contact products).

Note that the requirements apply to materials in products. This means that it is not sufficient to secure compliance for a material as it is used in production; avoiding contamination during the manufacturing process and during storage and transport is also necessary.

Table of contents

1 Requirements for testing and self declaration/documentation

Verifying tests shall only be made at IKEA approved test laboratories. Contact IKEA for a list of approved laboratories.

The test report shall, in addition to the test result, state a full identification of the tested sample including batch number or equivalent.

For a test on complete IKEA article, the identification is:
- IKEA supplier number and name.
- Article number and name.
- Date stamp (or production date).

For a material sample the identification is:
- Material producer.
- Material description (type of material such as physical characteristics, colour etc) and its identification code.
- Material batch number or equivalent.

This information shall be provided to the laboratory in the test order.

When the IKEA supplier orders verifying tests, they shall inform the laboratory that IKEA has permission to receive copies of the test report from the laboratory.

Minimum requirement: Self-declarations shall be confirmed and tests carried out at least yearly, and always when changes are made, which may influence the content of any restricted chemical (e.g. change of glue, lacquer, etc.).

Samples of articles for testing shall be representative of produced articles, and samples of materials shall be representative of the material when ready for use. The IKEA supplier shall follow any specific instructions from IKEA that may be given, in order to secure that the sample is representative

Test reports and self-declarations shall not be older than 12 months. The IKEA supplier shall within the next working day be able to present upon request the required documentation (translated into English) if not otherwise stated in this document or in the individual technical description.

These required documents (Test Reports and Self Declarations) shall be entered in the IKEA Connect Database within three months after supplier has received training in Connect[1].

When purchasing raw materials, semi-finished goods, components or chemical products, the IKEA requirements shall be quoted. The material producer/supplier shall confirm fulfilment e.g. on the invoice. It shall be possible to trace used raw materials/semi-finished goods, components for each date stamp via records connecting raw material batches etc to production weeks.

[1] Any document from before they were uploaded in Connect Database and for other reasons have not been filed into this Database, are to be retained by the supplier for at least 15 years from the date of delivery to IKEA.

The documentation requirements (test reports and self-declarations) indicated in this specification are the minimum requirements. When appropriate, IKEA may require a higher frequency of verifying testing, or testing when verifying test is not the minimum requirement. Furthermore, IKEA reserves the right to carry out or request random tests outside regular testing schedule, IKEA pays the cost if the result is a pass, and the supplier pays if it is a fail, unless otherwise agreed.

The IKEA supplier shall have Safety Data Sheet (SDS) available for all chemicals used to produce IKEA products. By chemicals we mean chemical substances and products, e.g. glue, lacquer, solvents, paints, dyes, additives, etc. SDS do not have to be available in English, though upon request, an English translation of the composition part of the SDS shall be made available to IKEA latest three days after request.

Exception: Documentation requirements do not apply (however bans on use and limit values do still apply) to material components (separate homogenous materials) of an article, which fulfil all the following criteria:

- Constitute less than 2 % by weight of the product, and weigh less than 50 g.
- Constitute less than 2 % of the outside surface area of the product and less than 5 dm^2 of area.

Note: This exception does not apply:

- To fittings (i.e. components on fitting list).
- Knobs and handles.
- If there is a specific requirement in the technical description for documentation of that particular component.

2 General requirements for all materials

Note: The requirements in this section are valid for all materials. This includes all material categories listed in *section 3* below as well as those materials not specifically listed.

Table 1. General requirements for all materials

Substance	Requirements	Test method	Documentation
Biocides of all kinds	Biocides added in order to impart properties to the final product are allowed only with approval from IKEA. This includes any addition of biocides for preservation/protection during transport or storage of the final IKEA product (e.g. antimould treatment).[2] This requirement is not relevant for the materials glass, ceramics and metal.		SD
Cadmium and its compounds	Not allowed to be used. Contamination limit value: 50 mg cadmium/kg. Additionally, for glass, ceramic glazes and enamel: Maximum contamination level in stains or pigment is 600 mg/kg (calculated on the raw stain or pigment before it is mixed into glaze, glass or used for decoration).	Total digestion (e.g. hydrofluoric acid) and AAS (Atomic Absorption Spectroscopy) or ICP (Inductively Coupled Plasma).	SD
CMR substances categories 1 or 2 (Carcinogens, Mutagens and Reprotoxins).	CMR substances are not allowed to be used. Contamination limit value: 0.10 %. Exception: boron compounds in heat-resistant glass.	Screening test. Different extraction and analysis methods depending on which materials and substances to be tested.	SD
Fragrances	Fragrances, perfumes and masking agents are not allowed to be used without approval from IKEA.		SD
Hazardous waste in recycled materials	It is not allowed to use any hazardous waste in any materials for IKEA articles unless this is in accordance with permits for the recycling of such hazardous waste. Waste is defined as hazardous if it is classified as hazardous either in the country of production of the IKEA article (or components thereof) or in the country from which such waste material may have been exported.		SD

[2] Specifically, the biocide dimethylfumarate (CAS No 624-49-7) is not allowed to be used. Contamination limit value: 0.1 mg/kg.

Table 1. General requirements for all materials

Substance	Requirements	Test method	Documentation
Lead and its compounds	Not allowed to be used. Contamination limit value: 90 mg lead/kg. Additionally, for glass, ceramic glazes and enamel: Maximum contamination level in stains or pigment is 600 mg/kg (calculated on the raw stain or pigment before it is mixed into glaze, glass or used for decoration).	Total digestion (e.g. hydrofluoric acid) and AAS (Atomic Absorption Spectroscopy) or ICP (Inductively Coupled Plasma).	SD
Other SVHC (Substances of Very High Concern)	Other SVHC are not allowed to be used. Contamination limit value: 0.10 %. This demand becomes valid for any new substance 3 months after publication date on the ECHA-list.	Screening test. Different extraction and analysis methods depending on which materials and substances to be tested.	SD
PBT-substances (Persistent, Bioaccumulating and Toxic substances) and **vPvB-substances** (very Persistent very Bioaccumulating substances)	PBT and vPvB substances are not allowed to be used. Contamination limit value: 0.10 %.	Screening test. Different extraction and analysis methods depending on which materials and substances to be tested.	SD

3 Specific requirements

3.1 Solid wood, wood-based, and natural materials

Table 2. Solid wood, wood-based, and natural materials

Substance	Requirements	Test method	Documentation
Lead and its compounds in particleboard and wet- and dry-process fibreboard	Requirement as stated in *section 2*. Here: extra documentation requirement due to risk of contamination in boards made of recycled materials from post-consumer waste.	• Materials containing >30 % recycled wood material from post-consumer waste. • Others.	SD and TR SD
Lindane	Not allowed to be used. Contamination limit value: 1.0 mg/kg.	Extraction and GC-MS • Rubber wood and board materials that contain >30 % recycled wooden material from post-consumer waste. • Others.	SD and TR SD
Organotin compounds	No kind of organotin compounds are allowed to be used. Contamination limit value: Sum of all compounds listed in *Appendix C*: 2.5 mg/kg (2500 µg/kg).	Extraction and GC/MS	SD
Pentachlorophenol (PCP) including salts and esters of PCP	Not allowed to be used. Contamination limit value: 3.0 mg/kg.	CEN/TR 14823:2004 • Rubber wood and board materials that contain >30 % recycled wooden material from post-consumer waste. • Others.	SD and TR SD

Table 2. Solid wood, wood-based, and natural materials

Substance	Requirements	Test method	Documentation
Post-consumer recycled material in particleboard and wet- and dry-process fibre-board.	Boards produced with any proportion of post-consumer recycled materials shall be produced with a documented quality assurance program for recycled material with respect to heavy metals and other hazardous substances that might occur. If >30 % post-consumer recycled material is used in the production of board for IKEA products, the Q.A. program shall involve monitoring by a third party quality control organisation.		SD from the board manufacturer
Radioactivity	Maximum level: 300 Bq/kg.	Gamma spectroscopy.	For wood (solid wood, veneer and other raw material for wood-based boards) that comes from areas of Ukraine, Belarus, Russia, Austria, Poland, Finland and Sweden (countries affected by the Chernobyl fall-out) with >1 Curie Cesium-137 fallout per km^2: • TR (testing frequency as per agreement between IKEA and supplier).[3] For all other such material: • SD that material does not come from areas with fall-out >1 Curie per km^2.

[3] For information about areas affected by the Chernobyl fall-out see Atlas of Caesium Deposition on Europe after the Chernobyl Accident. At present available at: http://rem.jrc.ec.europa.eu/Atlas/TEXT/ENGLISH.PDF.

Table 2. Solid wood, wood-based, and natural materials			
Substance	**Requirements**	**Test method**	**Documentation**
Wood preservatives in rubberwood and fruit-tree wood	Not allowed to be used without approval from IKEA. Contamination limit value migration of boron and its compounds: 100 mg boron/kg.	If the wood is coated, the coating shall be removed before testing. DIN 53160 (extraction with synthetic perspiration solution, 16h, 23 °C) followed by EN ISO 11885 (ICP/AES analysis).	SD

Note: Formaldehyde - for requirements on glued solid wood and wood-based materials, see specification *IOS-MAT-0003*.

3.2 Paper and cardboard materials

Note: Includes solid paper board.

Table 3. Requirements for paper and cardboard materials			
Substance	**Requirement**	**Test method**	**Documentation**
Azodyes capable of releasing carcinogenic arylamines (see *Appendix A*) in dyed or printed materials	Not allowed to be used. Contamination limit values for each arylamine: 20 mg/kg product.	EN 14362-1 and EN 14362-2	SD
Elemental chlorine bleaching	Pulp that has been bleached with elemental chlorine is not allowed to be used in the manufacturing of paper and cardboard.		SD
Primary aromatic amines (PAA)	PAA according to *Appendix B* are not allowed to be used. Contamination limit value: 5 mg/kg for each PAA.	EN 71-10 and EN 71-11	SD

Note: These requirements are not valid for recycled paper raw material, i.e. the requirements are not applied to the original paper that became the recycled raw material. However, the requirements do apply to the reprocessing of the recycled raw material to make new paper material.

3.3 Textile materials

Note: Including fabrics, non-woven, and fibre wadding.

Table 4. Textile materials

Substance	Requirements	Test method	Documentation
Alkylphenolethoxy-lates (APEO)	Not allowed to be used. Contamination limit value: 100 mg/kg for all skin-contact materials 250 mg/kg for all other (non-skin-contact) materials	Extraction (methanol and ammonium acetate) and HPLC • All materials except filling materials • Filling materials	 SD and TR SD
Antimoth agents in wool	Treatment of wool with antimoth agents is not allowed unless otherwise stated in the TED. Contamination limit value: 5.0 mg/kg.	Extraction followed by GC-MS	SD
Azodyes capable of releasing carcinogenic Arylamines in dyed, printed or otherwise coloured materials (see *Appendix A*)	Not allowed to be used. Contamination limit values for each arylamine in textiles: 20 mg/kg.	EN 14362-1 and EN 14362-2	SD
Chlorinated aromatic dye carriers/levelling agents used for batch dyeing of polyester and polyester-containing blends	Not allowed to be used. Contamination limit value: 2.0 mg/kg for each compound.	Solvent extraction and GC-MS	SD
Chlorine bleaching agents (e.g. sodium hypochlorite, sodium chlorite)	Not allowed to be used. Exceptions: denim, linen (i.e. flax-based textile materials) or if allowed according to the TED.		SD
Dimethyl formamide (CAS. no 68-12-2) in polyurethane-containing textiles including coatings	Not allowed to be used without approval from IKEA. In case of approved use, contamination limit value: 50 µg/m^3 (48 hours)	ISO 16000-9 and ISO 16000-6. Conditions according to *section 4*.	SD

Table 4. Textile materials			
Substance	**Requirements**	**Test method**	**Documentation**
Dyestuffs classified as carcinogenic or allergenic in dyed, printed or otherwise coloured materials.	Not allowed to be used. List of dyestuffs and contamination limit values: See *Appendix E*.	DIN 54231	SD
Flame retardants	Flame retardants are not allowed to be used without approval by IKEA. For any approved usage, the data concerning flame retardant used is to be documented (SDS). See *Appendix F* for further requirements if flame retardants are used, as well as for contamination limit values.	See Appendix F	SD unless otherwise specified
Formaldehyde	Limit value (16, 20, 75 or 300 ppm) according to reference in TED. Other textiles including non-woven and fibre wadding/filling: Limit 300 ppm.	ISO 14184-1	SD and TR for materials with test requirements according to reference in TED. SD for all other materials
Lindane	Not allowed to be used. Contamination limit value: 1.0 mg/kg.	Extraction and GC-MS	SD
Optical brightening agents (OB)	For skin-contact materials with optical brighteners, migration test shall fulfill Grade 5 (i.e. no transfer detected). **Note:** For some materials, OB is not allowed to be used according to the article's TED.	Qualitative test to determine presence/absence of optical brighteners: UV-fluorescence (light cabinet) Migration test if OB are present: Preparation of synthetic perspiration solution and extraction according to German legislation LMBG B 82-10-1 Analysis of solution according to EN 648	Skin contact materials with OB: SD and TR Skin contact materials without OB: SD. For materials with ban on OB stated in TED: SD.

Table 4. Textile materials			
Substance	**Requirements**	**Test method**	**Documentation**
Organic solvents in printing paste	Solvent-borne printing paste is not allowed to be used. Water-borne printing paste may contain maximum 7 % organic solvent (VOC) by weight as ready-to-use mixture. Kerosene is not allowed to be used.	Content of solvent (VOC): ISO 11890-2 Odour of kerosene can be assessed according to IoS odour test as described in *section 4*, test for "Emissions of VOCs".	For printed textile materials: SD
Organotin compounds	No kind of organotin compounds are allowed to be used. Contamination limit values: for individual compounds DBT and TBT: 0.10 mg/kg each (100 µg/kg). for sum of all compounds listed in *Appendix C*, maximum 2.5 mg/kg (2500 µg/kg).	Extraction and GC-MS • Synthetic materials (or blends with more than 30 % synthetic) • Any fabric with PU-containing coating • Others	SD and TR SD and TR SD
Pentachlorophenol (PCP) including salts and esters of PCP	Not allowed to be used. Contamination limit value: 3.0 mg/kg.	ISO 17070	SD
PFOA/PFOS/PFOSA and their derivatives **Other perfluorinated or partially perfluorinated organic compounds**	PFOA/PFOS/PFOSA and their derivatives are not allowed to be used. Contamination limit value: 1 µg/m² of the coated material. Other perfluorinated or partially perfluorinated organic compounds are only allowed to be used after approval from IKEA.	LC/MS-analysis	Materials treated for stain repellency: SD Other materials: SD not required.
Phthalates	Not allowed to be used: DEHP (CAS No. 117-81-7), DINP (CAS No. 28553-12-0), DBP (CAS No. 84-74-2), DIDP (CAS No. 26761-40-0), DNOP (CAS No. 117-84-0), BBP (CAS No. 85-68-7), DIBP (CAS No. 84-69-5). Contamination limit value for each phthalate: 100 mg/kg.	Extraction and GC-MS	SD

Table 4. Textile materials			
Substance	**Requirements**	**Test method**	**Documentation**
Polyvinylchloride (PVC)	Not allowed to be used as a material for textiles. This ban also includes usage as printing binders and in coatings.	If verifying test is needed: Beilstein test	SD
Primary aromatic amines (PAA)	PAA according to *Appendix B* are not allowed to be used. Contamination limit value: 5 mg/kg for each PAA.	EN 71-10 and EN 71-11	SD
Recycled material from external source	Use of recycled material from external source is allowed only after approval by IKEA. **Note:** Approval is not needed for the use of recycled plastic drink bottles to produce new polyester fibre used in filling/wadding.		SD

3.4 Polymerics including plastics, silicone and rubber/elastomers/latex

Note: Excluding PU foam (see *section 3.5*). For latex used as filling material in mattresses: See *IOS-MAT-0012*.

Table 5. Polymerics incl. plastics, silicone, and rubber/elastomers/latex			
Substance	**Requirements**	**Test method**	**Documentation**
Azodyes capable of releasing carcinogenic arylamines (see *Appendix A*)	Not allowed to be used. Contamination limit value for each arylamine: 30 mg/kg. This requirement only applies to materials to which colouring agents have been added.	EN 14362-1 and EN 14362-2	SD
Bisphenol A (CAS no. 80-05-7) in plastic material	Migration limit value: 0.60 mg/l.	EN 14372 • Polycarbonate plastics • Others	 SD and TR SD
Cadmium, lead and their compounds	Requirement as stated in *section 2*. **Note:** Extra documentation requirement	• Yellow to orange to red shades • Material containing external recycled plastics • Others	SD and TR SD and TR SD
CFCs (chlorofluorocarbons) and **HCFCs (hydrochlorofluorocarbons)** in foamed plastic	CFCs and HCFCs are not allowed to be used.		SD

Table 5. Polymerics incl. plastics, silicone, and rubber/elastomers/latex

Substance	Requirements	Test method	Documentation
Flame retardants	Flame retardants are not allowed to be used without approval by IKEA. For any approved usage, the data concerning flame retardant used is to be documented (SDS). See *Appendix F* for further requirements if flame retardants are approved for use, as well as for contamination limit values.	See Appendix F	SD unless otherwise specified
Hexavalent chromium (Cr-VI) compounds	Not allowed to be used. Contamination limit value: 100 mgCr-VI /kg	Alkaline digestion and colorimetric analysis • Virgin polymerics and internally recycled material. • Material containing external recycled polymerics.	SD SD and TR
Lindane in materials consisting wholly or partly of natural latex/rubber	Not allowed to be used. Contamination limit value: 1.0 mg/kg.	Extraction and GC-MS	SD
Mercury (Hg) and its compounds	Not allowed to be used. Contamination limit value: 10 mg Hg/kg.	Total metal content by microwave digestion and cold vapour AAS • Virgin polymerics and internally recycled material. • Material containing external recycled polymerics.	SD SD and TR
Organotin compounds	No kind of organotin compounds are allowed to be used. Contamination limit value for individual compounds DBT and TBT: 0.10 mg/kg each (100 µg /kg). Sum of all compounds listed in *Appendix C*, maximum 2.5 mg/kg (2500 µg/kg).	Extraction and GC-MS	SD
Pentachlorophenol (PCP) including salts and esters of PCP in materials consisting wholly or partly of natural latex/rubber	Not allowed to be used. Contamination limit value is 3.0 mg/kg.	ISO 17070	SD

Table 5. Polymerics incl. plastics, silicone, and rubber/elastomers/latex			
Substance	**Requirements**	**Test method**	**Documentation**
Phthalates	Not allowed to be used: DEHP (CAS No. 117-81-7), DINP (CAS No. 28553-12-0), DBP (CAS No. 84-74-2), DIDP (CAS No. 26761-40-0), DNOP (CAS No. 117-84-0), BBP (CAS No. 85-68-7), DIBP (CAS No. 84-69-5). Contamination limit value for each phthalate: 100 mg/kg.	Extraction and GC-MS	SD
Polycyclic aromatic hydrocarbons (PAH)	Not allowed to be used. Contamination limit values for total of 16 polycyclic aromatic hydrocarbons (see list in Appendix D): • 200 mg/kg for non-skin contact materials • 10 mg/kg total limit for skin-contact materials Contamination limit values for benzo(a)pyrene: • 20 mg/kg for non-skin contact materials, • 1.0 mg/kg for skin contact materials.	Extraction and GC-MS ISO 18287 • Black rubber, black latex or other black elastomers. • Others.	SD and TR SD
Polyvinyl-chloride (PVC)	Not allowed to be used. Limit for PVC contamination in recycled plastic materials: 300 mg total chlorine per kg.	Screening test for chlorine: Beilstein test. Test for PVC contamination: Wickbold combustion or alternatively sintering and dissolving and ICP-SFMS.	SD
Recycled material from external source	Use of recycled material from external source is allowed only after approval by IKEA.		SD

3.5 Polyurethane foam

Table 6. Polyurethane foam

Substance	Requirements	Test method	Minimum documentation requirement
Arylamines: 2,4-Toluene-diamine (2,4-TDA); **4,4'-Diamino-diphenyl-methane (4,4'-MDA)**	Limit value: Max 5.0 mg/kg for each substance relevant for foam made of TDI- or MDI-isocyanate respectively.	Reference method: Lund University method (Extraction and HPLC or GC-MS; Analytica Chimica Acta 510 (2004) 109-119). Alternatively, Europur method is allowed to be used provided correlation-factor to reference method is taken into account.	SD and TR
CFCs (chlorofluoro-carbons) and **HCFCs (hydro-chlorofluoro-carbons).**	Not allowed to be used.		SD
Chlorine in isocyanate raw material	Isocyanate raw material: Max limit of 0.07 % total chlorine content. (This requirement regarding the purity of the raw material used aims at avoiding the risk of formation of foul-smelling dichlorobenzene compound in the produced foam).	ASTM D4661-09	SD
Flame retardants	Flame retardants are not allowed to be used without approval by IKEA. For any approved usage, the data concer-ning flame retardant used is to be documented (SDS). See *Appendix F* for further requirements if flame retardants are used, as well as for contamination limit values.	See Appendix F	SD unless otherwise specified.
Organotin compounds	No kind of organotin compounds are allowed to be used. Contamination limit value for individual compounds DBT and TBT: 0.10 mg/kg each. (100 µg /kg). Sum of all compounds listed in *Appendix C,* maximum 2.5 mg/kg (2500 µg/kg).	Extraction and GC-MS.	SD and TR

Table 6. Polyurethane foam			
Substance	**Requirements**	**Test method**	**Minimum documentation requirement**
Phthalates	Not allowed to be used: DEHP (CAS No. 117-81-7), DINP (CAS No. 28553-12-0), DBP (CAS No. 84-74-2), DIDP (CAS No. 26761-40-0), DNOP (CAS No. 117-84-0), BBP (CAS No. 85-68-7), DIBP (CAS No. 84-69-5). Contamination limit value for total sum: 100 mg/kg.	Extraction and GC-MS	SD and TR for filling mattresses and pillows. SD for others

Note: In cases when the same supplier manufactures a range of different densities of foam, it is sufficient that testing is performed of a representative selection of densities - to be agreed upon between supplier and IKEA. As a guideline, the lowest and highest density in the range should be included in the selection.

Note: The requirements of *section 3.5* are equivalent to those of the CertiPUR system of Europur (apart from flame retardants). Therefore a test report showing compliance with the CertiPUR requirements is sufficient as a test report for verification of compliance with the requirements in this section (except flame retardants). Note however, that IKEA requirements on test frequency, number of foams tested, IKEA approved test laboratory, and content of test report are to be adhered to.

3.6 Metals

Requirements on lead and lead compounds, and cadmium and cadmium compounds, apply for metal as for all other materials, but with the following exceptions:

Exception to the **chemical** requirements:

a. If a specific material standard is quoted in the TED for the article (or in the equivalent product description[4] of the fitting), and this standard contains a limit value for lead or cadmium, then the limit stated in the standard applies.
b. Lead in free-cutting copper-based alloys (limit instead 4.0 %)
c. Lead in aluminium alloys (limit instead 0.40 %)

Exceptions to the **documentation** requirement: Documentation is only needed for metals with exceptions according to *a* to *c* above from the general lead and cadmium requirements in *section 2*. Documentation can consist of any of the following:

- SD
- A declaration of compliance with material standard if such standard is quoted in the Technical Description/Product description[4] for the article
- Material analysis certificate (from the metal supplier)
- TR.

[4] I.e. document listing the requirements for a fitting, including references to relevant specifications.

4 Complete product – emissions and odour

Note: The requirements in *Table 7* are valid for the complete product as delivered, with all its constituent parts and materials.

Table 7. Complete product – emissions and odour

Substance	Requirements	Test method	Documentation
Emissions of VOCs: **TVOC (= Total Volatile Organic Compounds)** **CMR substances categories 1 or 2 according to EU-official classification** **Toxic (T or T+) substances** **Formaldehyde** **Odour**	If any shipment of goods emits an unpleasant or unexpected smell or deviates from earlier shipments and/or from reference sample in terms of emissions/odour, which by IKEA is deemed to involve a risk of discomfort or negative health effects for customers, this is to be considered a valid cause for claim of said shipment.[5] Evaluation to be made by IoS test by a group of at least three persons. In case of verifying emission testing: Minimum requirements: 1. Assessment based on evaluation of individual substances emitted, including limit after 48 hours for: • Each individual CMR-substance: 10 µg/m³ • Each individual T-substance: 30 µg/m³, • The sum of all CMR-substances: 50 µg/m³. • Formaldehyde: 120 µg/m³ (applies to all products except those only containing materials covered by specification *IOS-MAT-0003).* 2. TVOC <1200 µg/m³ after 48 hours. 3. TVOC <600 µg/m³ after 28 days. **Note:** For leather/artificial leather upholstery products, any testing done on a sample involving the cover material (wholly or partly), the requirements according to *IOS-MAT-0011*and *IOS-MAT-0079* apply respectively.	VOC-test method: ISO 16000-9 Default loading factor: 1:1 m²/m³ and air exchange rate: 1 time/h. Analysis according to ISO 16000-6 (Tenax and GC). Test result recorded after 48 hours and, when deemed necessary, after 28 days. When testing for formaldehyde and other lower aldehydes. Analysis acc. to ISO 16000-3 (DNPH and LC). When sampling: The taking of a sample from production should reflect a realistic worst case in comparison to when the product could reach a customer (i.e. normal handling in factory, storage time, packaging and transport to the nearest destination).	No general test requirement for each product, but test reports are required in case of: • Emission test requirement stated in TED • A dispute concerning odour. Emission assessment (reference laboratory WKI, Braunschweig, Germany) • First delivery of a mattress article[6]

[5] A neutral smell is expected from materials such as glass, plastic, lacquer, textile and foam. Smell from rubber, leather and wood is expected – e.g. "normal" rubber smell is expected, whereas a rubber and solvent smell from a rubber material is considered unexpected. Comparison with a representative reference sample (e.g. sample from an accepted batch) is always to be recommended. In case of neutral smell, cleaned conditioned air can be used as reference.

[6] This also includes test after any change of ingredients in any material.

Table 7. Complete product – emissions and odour			
Substance	**Requirements**	**Test method**	**Documentation**
	Terpene emissions that originate from solid wood: • For individual mono-terpenes, a background concentration of max 1400 µg/m3 after 48 hours is subtracted from the measured TVOC- emission value. The corresponding subtraction value after 28 days is 700 µg/m³. This applies to each of: • 3-Carene • α-Pinene • β-Pinene • Limonene • Sum of other terpenes Maximum total subtraction of terpenes is 2800 µg/m³ after 48 h, and 1400 µg/m³ after 28 days. Acetic acid emissions that originate from solid wood: • A background concentration of max 500 µg/m3 after 48 hours is subtracted from the measured TVOC-emission value. The corresponding subtraction value after 28 days is 250 µg/m³. This extra tolerance for acetic acid is allowed provided that a pronounced odour is not present.		
Methyl bromide, Ethyleneoxide and other fumigation chemicals classified as hazardous according to EU classification of chemical substances (Directive 67/548/EEC).	Fumigation (gassing of products/ containers with the purpose of eliminating insects, vermin or larvae) is only allowed to be performed after agreement with IKEA. If fumigation is approved, it shall be performed according to the "IKEA Fumigation Requirements" (available from IKEA) and the above requirements for emissions of VOCs and odour shall be complied with.	Test method: VDI 2100/2 (Headspace Analysis) and ISO 16000-9.	SD of compliance with IKEA Fumigation Requirements in case fumigation is carried out. Otherwise SD is not required.

5 Definitions

Term	Description
Alkylphenolethoxylates (APEO)	Sum of NPEO (Nonylphenolethoxylates) and OPEO (Octylphenolethoxylates). (Surface active agents. Examples of use: Wetting agents, dispersing agents, detergents, emulsifiers.)
Biocides added in order to impart properties to the final product	Biocides are chemical substances that are intended to kill living organisms. Examples are bactericides, fungicides, insecticides, herbicides. Preservatives can be biocides. Biocides added in order to impart properties to the final product are biocides which are contained in a material in order to have some kind of biocidal (organism-killing) effect in that material in the final article. There is no absolute ban on such additions, but in each case approval by IKEA is needed concerning the addition and the substance used. Typical examples of what is meant are biocides used: a) Against smell in skin-contact fabrics. b) To preserve wood that is to be used in damp environments. c) In impregnated mosquito nets. d) To prevent mould during transport/storage of final product. e) Anti-bacterial treatments. The following are examples of what are not "biocides added in order to impart properties to the final product": • Biocides/preservatives to preserve raw materials or components during production, storage and transport – prior to assembly of the article at the IKEA supplier. • Biocides/preservatives to preserve chemical products (in order to lengthen their shelf life, "in-can preservatives") that are subsequently used in the manufacture of the final product.
CFCs (Chlorofluoro-carbons) and **HCFCs (hydrochloro-fluorocarbons)**	CFCs are organic (carbon-based) compounds consisting of carbon, chlorine and fluorine. They are listed in the Montreal *Protocol*[6] *on Substances that Deplete the Ozone Layer, in Group I of Annex A and Group I of Annex B.* HCFCs are organic (carbon-based) compounds consisting of carbon, hydrogen, chlorine and fluorine. They are listed in the *Montreal Protocol on Substances that Deplete the Ozone Layer, in Group I of Annex C.*
Chlorinated aromatic dye carriers/levelling agents	Dye carriers/levelling agents are used in low-temperature dyeing of polyester. Typical chlorinated aromatic dye carriers are: • Chlorobenzenes • Chloronaphthalenes • Chlorotoluenes • Chloroxylenes

[6] http://ozone.unep.org/Publications/MP_Handbook/Section_1.1_The_Montreal_Protocol/

Term	Description
CMR substances	Substances that according to European Union classification are: • C: Carcinogenic substances classified as category 1 or 2 (risk phrases R45 or R49) or according to the CLP-regulation 1272/2008 Carc.1A or 1B (hazard statements H350 or H350i); or • M: Mutagenic substances classified as category 1 or 2 (R46), or according to the CLP-regulation 1272/2008 Muta. 1B (hazard statement H340); or • R: Substances toxic to reproduction ('repro-toxic') classified as category 1 or 2 (R60 or R61), or according to the CLP-regulation 1272/2008 Repr. 1A or 1B (hazard statements H360). These classifications are defined in the *EU Directive 67/548/EEC* on dangerous substances, and listed in the *EU REACH regulation 1907/2006*: • *Annex XVII, Point 28 (C).* • *Annex XVII, Point 29 (M).* • *Annex XVII, Point 30 (R).*
Contamination limit value (CLV)	Most requirements in this specification are that certain substances should not be used. However, when following up compliance by testing, there is always a level of uncertainty in the testing, and moreover there may occur a low level of contamination in materials and process chemicals used in manufacturing - therefore the contamination limit value sets the level for what is allowed in the test result. If recycled material is used, limits stated in this specification and in the respective TED shall still be fulfilled, unless otherwise stated. **Note:** The contamination limit value does not mean that it is allowed to consciously use the substance up to this limit. Instead, when a test result confirms presence of a banned substance (e.g. 60% of the CLV), the source of this contamination shall be investigated. Unless otherwise specified, contamination limit values are given as a proportion (e.g. mg/kg) of each separate homogeneous material.
ECHA	European Chemicals Agency
Fittings	Components on fitting list.
Natural materials	In this specification, this includes materials such as rattan, bamboo, straw, water hyacinth, willow as well as natural fibres (excluding textile applications for which the requirements for textile materials apply) such as banana fibres, cactus fibres, maize fibres, palm leaves, sisal, and sea grass. Linoleum also belongs to this category.
NPEO	Nonylphenolethoxylates

Term	Description
Organotin compounds	A group of compounds composed of the metal tin covalently bonded with an organic (carbon-containing) molecule/radical, for instance butyl, octyl or phenyl. (These radicals are collectively know as alkyls and aryls.) The tin is in the tetravalent state - Sn (IV). Organotin compounds may also be known as tinorganic compounds. Each kind of organotin, e.g. dibutyltin (DBT), is actually several different substances. DBT, MBT, TBT, DOT etc are positive ions, cations, and they can have many different negative counter-ions (anions), e.g. chloride, oxide, laurate. **Note:** The limit values in the requirements refer to the alkyl-/aryl-tin cation, without the counter-ion. An example list of organotin compounds, those that are included in standard tests, is given in *Appendix C*. Note that organic salts of divalent tin (Sn(II)), stannous salts, are not organotins compounds. Example: tin (di)octoate (tin 2-ethylhexanoate) is not banned. In this substance the octoate (ethylhexanoate) is the anion; it is not the same substance as dioctyltin, where the octyl is part of the cation.
OPEO	Octylphenolethoxylates
Other SVHC (Substances of Very High Concern)	Substance having properties as defined in the *EU REACH regulation, (EC) No. 1907/2006, Article 57(f)* and listed in any candidate list published by the European Chemical Agency in accordance with *REACH article 59*. The word "other" refers to the fact that PBT and vPvB substances, as well as some CMR, also are classified by the EU as "SVHC".
PBT-substances	Substances that are Persistent (do not easily degrade in the environment) and Bioaccumulating (easily increase in concentration in living organisms, especially in fatty tissues) and Toxic, as defined in the *EU REACH regulation 1907/2006 REACH Art. 57(d) & Annex XIII(i)* and listed in any candidate list published by the European Chemical Agency in accordance with *REACH article 59*.
Perfluorinated or partially perfluorinated organic compounds	For the purpose of this specification, means: Organic compounds that contain at least three carbon atoms that each are bonded to six fluorine atoms (a C_3F_6-group).
PFOA/PFOS/PFOSA and their derivatives	PFOA = Perfluorooctanoic acid PFOS = Perfluorooctane sulfonic acid and perfluorosulfonates PFOSA = Perfluorooctane sulphonamide Their derivatives: Compounds that contain any of the following groups: $C_8F_{17}SO_2$, $C_8F_{17}SO_3$ and $C_8F_{17}SO_2N$
Post-consumer recycled material	A material that has been used by a consumer (i.e. not including production waste). In the case of wood chips, it would mean, for instance, chips made from scrapped furniture or scrap wood from housing, e.g. after pulling down a house and sorting out the wood waste.
Recycled material from external source	Production waste from different factory/factories than that of the manufacturer of the article as well as post-consumer recycled material.

Term	Description
Reference laboratory	A laboratory in the group of laboratories approved by IKEA, which by IKEA is considered the most authoritative for a certain kind of test. This laboratory is therefore used by IKEA in interlaboratory trials as the reference point against which other laboratories are compared and is also made use of in cases of dispute (e.g. conflicting test results from other approved laboratories).
Self declaration (SD)	A declaration issued by supplier and sub-supplier (e.g. chemical or coating supplier) to confirm that a requirement is fulfilled.
Skin-contact polymerics	For the determination of if the skin-contact requirement for PAH is applicable: if the product in usage involves an estimated skin contact of a duration of more than 30 seconds, it is deemed a skin-contact item. Example: latex-backings of rugs are not considered as skin-contact.
Skin-contact textile	The following categories of textile are skin-contact textiles as applied in this specification (in general corresponding to any textile category for which a formaldehyde-requirement of 75 pm or lower applies – note that filling materials are not considered as skin-contact materials): • Bedlinen, quilt cover • Bumper pad • Mattress protector • Quilt and pillow tickings • Bath sheet, beach towel • Other towels and bibs • Outdoor cushion • Fabric for soft toys • Mattress ticking • Bathrobes • Garments worn next to the skin
Solid wood	Pure natural wood and glued solid wood (solid wood panel).
Synthetic textile materials	Textile materials made of man-made fibre material. Most synthetic fibres are based on petroleum as a raw material - the most well known ones are polyester, nylon (polyamide) and polyacrylic fibres. **Note:** "Synthetic textile" does not include regenerated fibres, i.e. materials which are based on natural, renewable materials that are broken down to monomers and then reconstituted, e.g. viscose, lyocell and acetate fibres.
Technical description (TED)	Document listing the requirements of a specific IKEA article, including references to relevant specifications.
Test report (TR)	A report of one or several tests performed by an IKEA approved laboratory.
Textile	Fibres, filaments and yarns and materials made of these such as woven, knitted and non-woven fabrics. Filling materials made of non-woven, fibre fillings, fibre wadding are also included in the requirements listed under the heading textile; whereas feathers and down-fillings are however not counted as "textile" in this specification. Coatings on textile materials are seen as part of the textile material.

Term	Description
Total Volatile Organic Compounds (TVOC)	Sum of the concentrations of VOC's (Volatile Organic Compounds) covering the range between and including n-hexane and n-hexadecane (often indicated as C6-C16 in the test reports). This sum does not include SVOC's (Semivolatile Organic Compounds) or VVOC's (Very Volatile Organic Compounds).
Toxic substances	Substances, which according to *EU Dangerous Substances Directive 67/548/EEC* are classified as toxic (T) or very toxic (T+).
vPvB-substances	very Persistent and very Bioaccumulating substances, as defined in the *EU REACH regulation 1907/2006 REACH Art. 57(e) & Annex XIII(ii)* and listed in any candidate list published by the European Chemical Agency in accordance with *REACH article 59*.
Wood-based materials	Materials made from wooden particles or layers, e.g. particleboards, fibreboards, plywood, layer-glued materials, or veneer.

Appendix A: Prohibited arylamines

Table A. Prohibited arylamines

Substance		CAS no.
1.	**4-aminodiphenyl**	92-67-1
2.	**Benzidine**	92-87-5
3.	**4-chloro-o toluidine (2-amino-5-chloro-toluene)**	95-69-2
4.	**2-naphtylamine(2-amino-naphtalene)**	91-59-8
5.	**2-amino-azotoluene**	97-56-3
6.	**2-amino-4-nitrotoluene**	99-55-8
7.	**4-chloroaniline**	106-47-8
8.	**2,4-diaminoanisole**	615-05-4
9.	**4,4'-diaminodiphenylmethane**	101-77-9
10.	**3,3'-dichlorobenzidine**	91-94-1
11.	**3,3'-dimethoxybenzidine**	119-90-4
12.	**3,3'-dimethylbenzidine**	119-93-7
13.	**3,3'-dimethyl-4,4'-diaminodiphenylmethane**	838-88-0
14.	**p-cresidine (2 methoxy-5-methylaniline)**	120-71-8
15.	**4,4'-methylene bis-(2-chloroaniline)**	101-14-4
16.	**4,4'-oxydianiline**	101-80-4
17.	**4,4'-thiodianiline**	139-65-1
18.	**o-toluidine (2-amino-toluene)**	95-53-4
19.	**2,4- toluenediamine *(2,4-diamino-toluene*)**	95-80-7
20.	**2,4,5-trimethylaniline**	137-17-7
21.	**2-methoxyaniline**	90-04-0
22.	**4-amino azobenzene**	60-09-3
23.	**2,4-xylidine**	95-68-1
24.	**2,6-xylidine**	87-62-7

Appendix B: Primary aromatic amines (PAA)

Table B. Primary aromatic amines (PAA)

Compound	CAS no.	Health effects
Benzidine	92-87-5	Carcinogenic
2-Naphthylamine	91-59-8	Carcinogenic
4-Chloroaniline	106-47-8	Carcinogenic
3,3-Dichlorobenzidine	91-94-1	Carcinogenic
3,3-Dimethoxybenzidine	119-90-4	Carcinogenic
3,3-Dimethylbenzidine	119-93-7	Carcinogenic
o-Toluidine	95-53-4	Carcinogenic
2-Methoxyaniline (o-Anisidine)	90-04-0	Carcinogenic
Aniline and salts of aniline	62-53-3 and various	Carcinogenic

Appendix C: List of organotin compounds included in standard tests

Table C. List of organotin compounds

Compounds	Abbreviation
Dibutyltin compounds	DBT
Dioctyltin compounds	DOT
Monobutyltin compounds	MBT
Monooctyltin compounds	MOT
Tetrabutyltin compounds	TeBT
Tributyltin compounds	TBT
Tricyclohexyltin compounds	TCyT (TCHT)
Triphenyltin compounds	TPhT

Appendix D: List of polycyclic aromatic hydrocarbons (PAH)

Table D. List of polycyclic aromatic hydrocarbons (PAH)

Compounds	CAS no.
Acenaphthene	83-32-9
Acenaphtylene	208-96-8
Anthracene	120-12-7
Benzo(a)anthracene	56-55-3
Benzo(a)pyrene	50-32-8
Benzo(b)fluoranthene	205-99-2
Benzo(ghi)perylene	191-24-2
Benzo(k)fluoranthene	207-08-9
Chrysene	218-01-9
Dibenz(a)anthracene	53-70-3
Fluoranthene	206-44-0
Fluorene	86-73-7
Indeno(1,2,3-cd)pyrene	193-39-5
Naphthalene	91-20-3
Phenanthrene	85-01-8
Pyrene	129-00-0

Appendix E: List of banned textile dyestuffs

Table E. List of banned textile dyestuffs

Disperse dyestuffs	Colour index no.	CAS no.	Contamination limit (DIN 54231) mg/l in extract
Disperse Blue 1	64500	2475-45-8	1 mg/l
Disperse Blue 3	61505	2475-46-9	5 mg/l
Disperse Blue 7	62500	3179-90-6	5 mg/l
Disperse Blue 26	63305	3860-63-7	5 mg/l
Disperse Blue 35	--	12222-75-2	5 mg/l
Disperse Blue 102	--	12222-97-8	5 mg/l
Disperse Blue 106	--	12223-01-7	5 mg/l
Disperse Blue 124	--	61951-51-7	5 mg/l
Disperse Brown 1	--	23355-64-8	5 mg/l
Disperse Red 1	11110	2872-52-8	5 mg/l
Disperse Red 11	62015	2872-48-2	5 mg/l
Disperse Red 17	11210	3179-89-3	5 mg/l
Disperse Orange 1	11080	2581-69-3	5 mg/l
Disperse Orange 3	11005	730-40-5	5 mg/l
Disperse Orange 11	60700	82-28-0	5 mg/l
Disperse Orange 37	--	12223-33-5	5 mg/l
Disperse Orange 76[7]	--	51811-42-8	5 mg/l
Disperse Yellow 1	10345	119-15-3	1 mg/l
Disperse Yellow 3	11855	2832-40-8	5 mg/l
Disperse Yellow 9	10375	6373-73-5	5 mg/l
Disperse Yellow 23	26070	6250-22-3	5 mg/l
Disperse Yellow 39	--	12236-29-2	5 mg/l
Disperse Yellow 49	--	54824-37-2	5 mg/l
Acid Red 26	16150	3761-53-3	1 mg/l
Acid Violet 49	42640	1694-09-3	1 mg/l
Basic Red 9	42500	569-61-9	1 mg/l
Basic Violet 1	42535	8004-87-3	1 mg/l
Basic Violet 3	42555	548-62-9	1 mg/l
Basic Violet 14	45510	632-99-5	1 mg/l
Direct Black 38	30235	1937-37-3	1 mg/l
Direct Blue 6	22610	2602-46-2	1 mg/l
Direct Red 28	22120	573-58-0	1 mg/l
Solvent Yellow 2	11020	60-11-7	1 mg/l

[7] **Note:** Disperse Orange 76 was previously designated as Disperse Orange 37.

Appendix F: Flame retardant requirements

The overall rule is that no flame retardants are allowed to be used without approval from IKEA. When such permission is given, the respective flame retardant treatment agreed upon shall be documented (minimum information: SDS).

Totally banned flame retardants

The following flame retardants are never allowed to be used, even when permission is given for use of some flame retardant:

- Organic brominated compounds
- Antimony compounds; **exception**: antimony is allowed (when permission is given) as a flame retardant when present inside a filling fibre (e.g. Kanecaron and similar fibres) as opposed to addition of antimony as a finish to the material.
- Chlorinated paraffins (alkanes) with 10-13 carbon atoms and a degree of chlorinating exceeding 48 % by weight
- TEPA (tris-(aziridinyl)phosphine oxide)
- TDCP (tris(1,3-dichloro-2-propyl) phosphate, CAS no. 13674-87-8)
- TCEP (Tris-(2-chloroethyl) phosphate, CAS no. 115-96-8)
- TPP (Triphenyl phosphate, CAS no. 115-86-6)

Contamination limit values

- Antimony: 200 mg/kg. Note: This limit value refers to antimony when added as a finish.
- Brominated flame retardants: 100 mg Br/kg
- Chlorinated paraffins: 100 mg Cl/kg
- Other flame retardants (TEPA, TDCP, TCEP, TPP as well any other flame retardant unless specifically allowed in the TED): 200 mg/kg

Test methods

- Antimony: Total digestions and AAS or ICP
- Organic brominated compounds and chlorinated paraffins:
  Total bromine/chlorine content may be screened by XRF or comparable method when appropriate. Pass if total bromine or chlorine content each below 100 mg/kg.
  When verifying by test (e.g. when screening test indicates Cl/Br-value above 100 mg/kg): Extraction (with acetone or alternatively toluene depending on material) followed by GC-MS as a qualitative test to identify type of bromine/chlorine compound present.
- Other flame retardant substances: (for instance typical phosphorous-based flame retardants), extraction and GC-MS.

Allowed substances with flame retardant effect

The following substances with flame retardant effect are allowed without approval from IKEA (unless otherwise banned or restricted):

- Melamine
- Chalk
- Graphite
- Kaolin
- Modacrylic fibre

Appendix G: References

Table G. References related to specification

Related standards	Name
ASTM D4661-09	Standard Test Methods for Polyurethane Raw Materials: Determination of Total Chlorine in Isocyanates
CEN/TR 14823:2004	Durability of wood and wood based products – Quantitative determination of Pentachlorophenol in wood – Gas chromatographic method
DIN 53160	Determination of the colourfastness of articles for common use – Part 1: Resistance to artificial saliva
DIN 54231	Textiles – Detection of disperse dyestuffs
EN 71-10	Safety of toys - Part 10: Organic chemical compounds – Sample preparation and extraction
EN 71-11	Safety of toys – Part 11: Organic chemical compounds - Methods of analysis
EN 648	Paper and board intended to come into contact with foodstuffs - Determination of the fastness of fluorescent whitened paper and board
EN 14362-1	Textiles – Methods for the determination of certain aromatic amines derived from azocolorants - Part 1: Detection of the use of certain azo colorants accessible without extraction
EN 14362-2	Textiles - Methods for determination of certain aromatic amines derived from azo colorants - Part 2: Detection of the use of certain azo colorants accessible by extracting the fibres
EN 14372	Child use and care articles - Cutlery and feeding utensils - Safety requirements and tests
ISO 11885	Water quality - Determination of 33 elements by inductively coupled plasma atomic emission spectroscopy
ISO 11890-2	Paint and varnishes – Determination of volatile organic compound (VOC) content – part 2: Gas-chromatographic method
ISO 16000-3	Indoor air - Part 3: Determination of formaldeyhde and other carbonyl compounds - Active sampling method
ISO 16000-6	Indoor air - Part 6: Determination of volatile organic compounds in indoor and test chamber air by active sampling on Tenax TA® sorbent, thermal desorption and gas chromatography using MS/FID
ISO 16000-9	Indoor air - Part 9: Determination of the emission of volatile organic compounds from building products and furnishing - Emission test chamber method
ISO 17070	Leather – Chemical tests – Determination of pentachlorophenol content. Note: also applied to other materials in this specification.
ISO 18287	Soil quality -- Determination of polycyclic aromatic hydrocarbons (PAH) -- Gas chromatographic method with mass spectrometric detection (GC-MS)
ISO 14184-1	Textiles - Determination of formaldehyde - Part 1: Free and hydrolysed formaldehyde (water extraction method)
LMBG B 82-10-1	The German Foodstuff and Consumer Product legislation
Montreal Protocol	http://ozone.unep.org/Publications/MP_Handbook/Section_1.1_The_Montreal_Protocol/
VDI 2100/2	Determination of gaseous compounds in ambient air Determination of indoor air pollutants Gas chromatographic determination of organic compounds