Chemical's guidance:

Information on authorization and restrictions of substances used in textile and leather processes and products including packagaing (Edition: January 2023)

The Textile Importers' Association in Sweden

TEXTILIMPORTÖRERNA
Vi förenklar för dig som bedriver handel med textil, läder och skor

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Preface

This guide is developed in cooperation between The Textile Importers' Association in Sweden and Stefan Posner to facilitate for companies that are users of this guidance, to comply with chemical legislations in force and applied recommendations in the fields of textiles, clothes, leather goods, shoes and packaging materials.

By requiring that suppliers to users of this guidance to follow its guidelines, and thereby prevent their products from containing unwanted and regulated substances, human health and the environment are protected in the whole value chain from production, to import and distribution. Import of products means primarily from countries outside the European Economic Area (EEA) that include the European Union (EU).

The guide covers United Nations (UN) global treaties such as the Stockholm Convention on Persistent Organic Pollutants (POPs), harmonized chemicals EU-regulation affecting textile and leather products but also EU/EEA states national regulations and additionally regulations in other parts of the world such as USA and the state of California.

The distinguishing properties of the chemicals and the processes in which they are used are described in the guide.

The latest updates of European Standard (EN) and ISO (International Standard Organisation) latest published chemicals test methods are listed in annex 1 but also chemicals test methods in progress. Indicative quantification limits (LOQ) are mentioned, but it is always important to ask those laboratories used by the company with support of "Checklist for lab" in annex 2, since LOQ are laboratory specific.
Please note that when indicative limit values are provided, possible contamination by the external environment and inaccuracy in the measurement of very low concentration must be taken into consideration.

Recommended substitutes to the guidance listed hazardous regulated chemicals, that are less harmful while providing the desired effect and performance.

The guide exists in several languages. To facilitate communication, the contents on each page are identical in each linguistic version. The English version of this guide is preferential for interpretation.

Explanatory section

Required limit value:

Limit value required by law or agreed in business sectors. Note that the limit value refers to the content in products. Weight percent shall be calculated from the weight of the whole product if nothing else is stated.

CSN RN:

Chemical Abstracts Service is a globally recognized and used system that provide a unique numeric identifier, CAS RN, for chemical substances. CAS RN stands for CAS Registry Number.

Properties:

Human toxicological and Environmental toxicological and impact properties.

Use:

Identified uses on the market.

Alternatives:

Information on known alternatives and recommendations on how to avoid unwanted chemicals.

Test method:

Standardized European Standards (EN) and ISO (international Standardisation Organisation) test methods, if such exists, are listed in annex 1. EN and ISO standards are prioritized over national or commercial standards, such as in-house methods, Öko-Tex test methods etc.

Detection limit:

Limit of detection (LOD). Lowest concentration the test equipment can detect. This can vary between different test laboratories. Note that detection limit is not relevant as required limit values for all substances as the background concentrations can be notably higher.

Quantificiation limit:

Limit of quantification (LOQ). The lowest concentration of an analyte that can be reliably measured by an analytical procedure. Indicative LOQs are available in this guide, which means that individual contracted laboratories can use other LOQs in their tests. Use annex 2 "checklist for lab" to get these lab-specific LOQ.

Precaution:

Assure strict and safe work environment measures in the process.

Legal background:

Current legal international and national framework and requirements of regulated chemicals.

UN global treaties on certain hazardous chemicals Stockholm Convention on Persistent Organic Pollutants is an international environmental treaty, signed in 2001 and effective from May 2004, that aims

to eliminate or restrict the production and use of persistent organic pollutants (POPs).

The Rotterdam Convention (formally, the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade) is a multilateral treaty to promote shared responsibilities in relation to import of hazardous chemicals.

The Minamata Convention on Mercury is a global treaty to protect human health and the environment from the adverse effects of mercury.

The Basel Convention is an international treaty that was designed to reduce the movements of hazardous waste between nations, and specifically to prevent transfer of hazardous waste from developed to less developed countries (LDCs). It does not, however, address the movement of radioactive waste.

Restrictions (EU/EEA)

Restrictions are regulatory measures to protect human health and the environment from unacceptable risks posed by chemicals. Restrictions may limit or ban the manufacture, placing on the market or use of a substance. A restriction can apply to any substance on its own, in a mixture or in an article, including those that do not require registration. Restrictions setting out conditions for the placing on the market of substances apply to both domestic production and imports.

Chemical's legislation in EU/EEA

There is a range of chemicals regulations in EU/EEA that cover requirements of articles and/or chemical products depending on to what extent certain hazardous chemicals pose possible unacceptable risk to users and the environment under normal foreseeable conditions/use.

<u>High risk hazardous chemicals focused chemicals legislation</u>

- REACH (EU Regulation 1907/2006) and related amendments
- EU POP regulation (EU Regulation 850/2004 and 519/2012) and related amendments
- Biocide Product regulation (EU Regulation 528/2012) and related amendments.
- Regulation (EC) No 1272/2008 on the classification, labelling and packaging of substances and mixtures (CLP Regulation) and related amendments,

High risk products focused chemicals legislation

- EU directive concerning packaging materials (94/62/EC) and related amendments.
- The Toy Safety Directive 2009/48/EC
- Regulation (EC) 1223/2009 on cosmetic products
- RoHS Directive (2011/65 / EU) restricting the presence of hazardous chemical substances in electrical and electronic equipment.
- And more....

Duty to inform your customer on substances for authorisation (EU/EEA)

Substances of **V**ery **H**igh **C**oncern (SVHC) are listed on Candidate List for authorization of the Regulation (EC) No 1907/2006 (REACH). All professional actors have an obligation to inform their consumers about the content of SVHC (as a minimum the name of the substance(s)) exceeding 0.1 % weight by weight (= 1000 mg/kg) in individual parts of an article, that are defined as articles. If the consumers are professional actors, there is an immediate information duty, but within 45 days for private consumers.

SCIP (Substances of Concern In articles, as such or in complex objects (Products)

Background

When articles become waste, the presence of hazardous substances can make the waste unsuitable for recycling. Within the EU, there is a goal of non-toxic material cycles. To promote such a development, the European Chemicals Agency, ECHA, has been commissioned to create the SCIP database where suppliers of articles must report the presence of Substances of Very High Concern (SVHC). This information of SVHC will then be available during the entire life cycle of the article, including in the waste phase. This rule is new and is found in the Waste Directive 2008/98/EC.

Enforcement from 5 January 2021

Every manufacturer, importer or distributor of an article, which is placed on the market in the EU / EEA that contains a SVHC on the candidate list in REACH in a content of more than 0.1% by weight must provide information to the SCIP database at ECHA. It applied from 5 January 2021.

This does not apply to

- Retailers, who are not EU-importers or EU-producers, that only sell articles directly to private consumers, such as stores.
- companies that import articles for their own use.

[1] https://echa.europa.eu/sv/scip

Provision of data to SCIP

The manufacturer, importer or distributor of an article that contains more than 0.1 percent of a SVHC that is on the candidate list must send the following information to ECHA:

- information on the identity of the article
- the SVHC chemical name, concentration range and where in the article the SVHC is found
- other information on how to handle the product safely.

United States (USA)

The Toxic Substances Control Act (TSCA) of 1976 is a US Federal law that provides US EPA with authority to require reporting, record-keeping and testing requirements, and restrictions relating to chemical substances and/or mixtures. Certain substances are generally excluded from TSCA, including, among others, food, drugs, cosmetics and pesticides.

The official text of TSCA as amended by the Frank R. Lautenberg Chemical Safety Act of the 21st Century is available in the United States Code, from the U.S. Government Printing Office.

TSCA addresses the production, import, use, and disposal of specific chemicals including polychlorinated biphenyls (PCBs), asbestos, radon and lead-based paint.

California Proposition 65

Proposition 65, officially known as the Safe Drinking Water and Toxic Enforcement Act of 1986, was enacted as a ballot initiative in November 1986. The proposition protects the state's drinking water sources from being contaminated with chemicals known to cause cancer, birth defects or other reproductive harm, and requires businesses to inform Californians about exposures to such chemicals.

Proposition 65 requires the state of California to maintain and update a list, called the Sea harbor list , of chemicals known to the state to cause cancer (MADL) or reproductive toxicity (NSRL).

[2] https://oehha.ca.gov/proposition-65/proposition-65-list

[3] Maximum Allowable Dose Levels. Safe harbor levels for chemicals causing reproductive toxicity in Proposition 65.

[4] No Significant Risk Levels. Safe harbor levels for cancer-causing chemicals in Proposition

Primarily applied test methods:

Only fully transparent and publicly available test methods should be accepted. The latest published CEN/ISO test standards by year are listed in annex 1: "Overview of latest by year published and not yet published CEN/ISO test methods for textile, leather, and accessories."

Use "Checklist for lab" in annex 2 if no standardized test method exists.

All substances in a chemical group may not be legally regulated, but still included as a chemical group in this guide. As it can distinguish between different laboratories which substances besides the legal restricted, they offer test for, this should be confirmed before ordering.

Test equipment abbreviations

ANALYSES OF ORGANIC COMPOUNDS

- **Gas chromatography: GC**

Detectors used together with GC:

- MS: Mass selective detector: GC-MS
- DAD: Diode array detector: GC-DAD
- ECD: Electron capture detector: GC-ECD

- **Liquid chromatography: LC**

Note: Sometimes the abbreviation HPLC is used. It stands for High Performance Liquid Chromatography.

Detectors used together with LC:

- MS: Mass selective detector: LC.MS
- DAD: Diode array detector: LC-DAD
- ECD: Electron capture detector: LC-ECD
- UV/VIS: Ultraviolet/visible spectrophotometric detector: LC-UV/VIS

ANALYSES OF METALS

- **Inductively Coupled Plasma Spectrometry: ICP**

Detectors together with ICP:

- OES: Optical emission spectrometer: ICP-OES
- MS: Mass selective detector: ICP-MS

- Atomic absorption spectrophotometer: AAS

SCREENING ANALYSES OF ELEMENTS

- **X-ray fluorescence, XRF**

Relationship between units used in the guide

1000	mg/kg	equals	1000	ppm	(parts per million)
			1 000 000	ppb	(parts per billion)
			1 000 000	µg/kg	(microgram per kilogram)
			0.1	% (by weight)	
			x	µg/m2	x depends on the thickness of the fabric (kg/m2)
			x	µg/cm2/week	x is a measure of the release of a substance from a surface, and is only partially dependent on the concentration of the substance

Relationship between surface concentration and total concentration (relevant for the PFOS restriction)

PFOS [µg/m2]	Surface weight [g/m2]		PFOS [ppb = µg/kg]
1	40	equals	25
2.5	100	equals	25
5	200	equals	25

PFOS [ppb = µg/kg]	Surface weight [g/m2]		PFOS [µg/m2]
25	40	equals	1
25	100	equals	2.5
25	300	equals	7.5

Product and material categories concerned

All chemicals are not used in all materials. A general division into the categories listed below has therefore been made that may be applicable to several kinds of articles due to their material composition

Textile

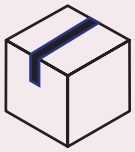
Textile material, both natural and synthetic fibres

Leather

Leather, both natural and leather imitation

Accessories

Metal, plastics, rubber etc. used in e.g. buckles, buttons, jewellery, and zippers.



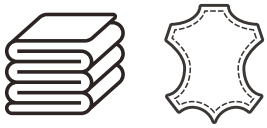
Packaging

Packaging material in accordance with the Packaging Directive 94/62/EC. Paper cardboard, plastic bags, tags, labels, plastic sleeves etc.

Process chemicals

Process chemicals are used in the manufacturing process of textile and leather goods but have no function in the finished product. Remains of the process chemicals may however be found in the finished product and cause health or environmental problems.

Alkylphenol ethoxylates (APEO) and derivatives



The most common APEOs are Nonylphenol ethoxylates (NPEO) and Octylphenol ethoxylates (OPEO).

Required limit value: Should not be used in processes. Occurrence in products below 100 mg/kg (0.01%) for total APEO is regarded as unintended residues (contaminants) which cannot be controlled.

CAS RN: Several

Properties: Irritating to skin. The metabolites affect the respiratory system, have endocrine disruptive effect (hormones) and are dangerous for the environment. Nonylphenol ethoxylates are rapidly degraded to 4-nonylphenol, which is even more dangerous for the environment. A similar environmental danger is the degradation of octylphenol ethoxylate into 4-octylphenol.

Use: Dispersing and emulsifying agents in textile chemicals as well as impregnation agents in printing pastes. Occurs in leather lubricants. Manufacturing of coatings.

Alternatives: The main alternatives for NPEOs include aliphatic alcohol ethoxylates, both linear and branched, and glucose-based carbohydrate derivatives such as alkylpolyglucoside, glucamides, and glucamine oxides.

Legal background:

Restrictions (EU/EEA)

NPEOs shall not be placed on the market after 3 February 2021 in textile articles, which can reasonably be expected to be washed in water during their normal lifecycle, in concentrations equal to or greater than 0.01 % by weight of that textile article or of each part of the textile article. Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 46a.

Norway restricts manufacture, import, export, sale and use of octylphenol and octylphenol ethoxylates, and mixtures containing these substances, FOR 2004-06-01-922.

Duty to inform your customer on substances for authorisation (EU/EEA)

APEO/AP are listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).

Overview of regulated APEO/AP

Substances	CAS RN	Legal status
4-(1,1,3,3-tetramethylbutyl)phenol (4-tert-OP)	140-66-9	SVHC
4-(1,1,3,3-tetramethylbutyl)phenol, ethoxylated (4-tert-OPnEO)	Several	SVHC
4-(1,1,3,3-tetramethylbutyl)phenol, ethoxylated (4-tert-OPnEO, UVCB substance)	Several	SVHC
4-Nonylphenol, branched and linear (4-NP)	Several	SVHC
4-Nonylphenol, branched and linear, ethoxylated (4-NPnEO)	Several	SVHC and Restricted
4-tert-butylphenol	98-54-4	SVHC
Phenol, alkylation products (mainly in para position) with C12-rich branched alkyl chains from oligomerisation, covering any individual isomers and/ or combinations thereof (PDDP)	Several	SVHC
tris(4-nonylphenyl, branched and linear) phosphite (TNPP)	Several	SVHC
Phenol, alkylation products (mainly in para position) with C12-rich branched alkyl chains from oligomerisation, covering any individual isomers and/ or combinations thereof (PDDP)	Several	SVHC

Test method:

Prop 65: APEOs are not listed under Proposition 65.

See annex 1

Indicative LOQ: 10 mg/kg

Arsenic compounds

Required limit value: Should not be present in products.

CAS RN: Several

Properties: May cause cancer. Toxic by inhalation and toxic if swallowed. Persistent, bio accumulative and toxic.

Use: Fining agent in glass, pigment in metal alloy, preservative.

Alternatives: Apply feasible arsenic free compounds.

Legal limit:

Restrictions (EU/EEA)
As wood preservatives regulated in Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 19 (limit level; no intentionally added content).

From 1 November 2020, arsenic and its compounds have a restriction limit of 1 mg/kg (extractable content) in clothing, related accessories, textiles other than clothing in skin contact, or footwear (CMR fast track) according to Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 72. The CMR fast track restriction does not apply to clothing, related accessories, textiles other than clothing, or footwear within the scope of Regulation (EU) 2016/425 (PPE).

Duty to inform your customer on substances for authorisation (EU/EEA)
Arsenic compounds are listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH)

Overview of regulated arsenic compounds

Substance	CAS RN	Legal status
Arsenic acid	7778-39-4	SVHC and restricted
Calcium arsenate	7778-44-1	SVHC and restricted
Diarsenic Pentoxide	1303-28-2	SVHC and restricted
Diarsenic Trioxide	1327-53-3	SVHC and restricted
Triethyl arsenate	15606-95-8	SVHC and restricted

Prop 65: Inorganic arsenic compounds are known to the State of California to cause cancer. Safe Harbor Limit: NSRL 0.06 µg/day (inhalation), 10 µg/day (except inhalation). No information on settlements. Inorganic arsenic oxides are known to the State of California to cause birth defects or other reproductive harm. Safe Harbor Limit: None. No information on settlements.

Test method: See annex 1

Indicative LOQ: 0.1 mg/kg (extractable content)

Bisphenols


Required limit value: Should not be present in products.

CAS RN: Several

Properties: Toxic for reproduction. Endocrine disrupting (hormone disturbing) properties

Use: Mainly used in manufacture of polycarbonate epoxy resins and chemicals, hardener in epoxy resins and in thermal prints. May be used as catalyst and antioxidant for processing PVC but also used in the production of flame retardants, and as intermediates in the manufacture of fungicides and dyes.

Alternatives: These substances can be found in products with material based on plastic and paper. Replace BPA with other bisphenols could be regrettable substitution since these other bisphenols may well be endocrine disrupting as well.

Legal background:

Restrictions (EU/EEA)
Bisphenol A (BPA) content in thermal paper (0.02 % by weight), is restricted from January 2020 according to Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 66.

Duty to inform your customer on substances for authorisation (EU/EEA)
Bisphenols are listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).

Overview of regulated bisphenols

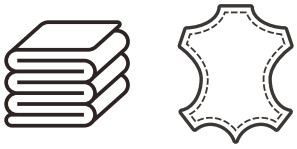
Substances	CAS RN	Legal status
(4,4'-isopropylidenediphenol (BPA)	80-05-7	SVHC and restricted
2,2-bis(4'-hydroxyphe-nyl)-4-methylpentane	6807-17-6	SVHC
4,4'-(1-methylpropylidene)bisp-henol (BPB)	77-40-7	SVHC
4,4'-sulphonyldiphenol	80-09-1	SVHC

Prop 65: BPA is known to the State of California to cause birth defects or other reproductive harm. Safe Harbor Limit: MADL 3 µg/day (dermal exposure from solid materials). Settlements agreed at 3 ppm, 20 ppm or zero limit for Several products.

Test method: See annex 1.

Indicative LOQ: 10 mg/kg

Bis(2-(2-methoxyethoxy)ethyl)ether



Required limit value: Should not be used in processes or present in products.

CAS RN: 143-24-8

Properties: Toxic for reproduction.

Use: Processing aid for the production of e.g. leather and textiles.

Legal background: Duty to inform your customer on substances for authorisation (EU/EEA)
Bis(2-(2-methoxyethoxy)ethyl)ether is listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).

Test method: No standardised test method available.

Use checklist for lab, annex 2.

Indicative LOQ: 200 mg/kg

C,C'-azodi(formamide) (ADCA)

Required limit value: Should not be used in processes or present in products.

CAS RN: 123-77-3

Properties: Respiratory sensitizer

Use: Azodicarbonamide, or azodiformamide is mainly used as a chemical blowing agent in the rubber and plastics industry. Blowing agent in especially EVA and PVC.

Alternatives: Use physical blowing agents such as carbondioxide or nitrogen instead of these chemical blowing agents. Can leave residues of formamide in the material. ADCA may decompose into semicarbazide, a suspected carcinogen.

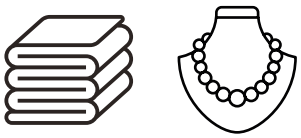
Legal background: Duty to inform your customer on substances for authorisation (EU/EEA)
ADCA is listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).

Test method: No standardised test method available.

Use checklist for lab, annex 2.

Indicative LOQ: 200 mg/kg

Ethylenediamine (EDA)



Required limit value: Should not be present in products.

CAS RN: 107-15-3

Properties: Respiratory and skin sensitizer

Use: Used in the production of many industrial chemicals. Used in the production of polyurethane and polyamide fibres but also to produce detergents and textile auxiliary's chemicals.

Legal background: Duty to inform your customer on substances for authorisation (EU/EEA)
Ethylenediamine is listed on the Candidate list of Substances of Very High Concern (SVHC) for the authorization of the Regulation (EC) No 1907/2006 of the European Parliament of the Council (REACH).

Test method: No standardised test method available.

Use checklist for lab, annex 2.

Indicative LOQ: 100 mg/kg

Ethylenethiourea also called Imidazolidine-2-thione (2-imidazoline-2-thiol)

Required limit value: Should not be present in products.

CAS RN: 96-45-7

Properties: Toxic for reproduction.

Use: Used primarily as an accelerator for vulcanizing rubber

Legal background: Duty to inform your customer on substances for authorisation (EU/EEA)
Ethylenethiourea is listed on the Candidate list of Substances of Very High Concern (SVHC) for the authorization of the Regulation (EC) No 1907/2006 of the European Parliament of the Council (REACH).

Prop 65: Ethylenethiourea is known to the State of California to cause cancer and birth defects or other reproductive harm Safe Harbor Limit: NSRL 20 µg/day. None for reproductive harm. No information on settlements.

Test method: No standardised test method available.

Use checklist for lab, annex 2.

Indicative LOQ: 20 mg/kg

2-Ethoxyethanol

Required limit value: Should not be used in processes and present in products.

CAS RN: 110-80-5

Properties: Toxic for reproduction.

Use: Used primarily as an accelerator for vulcanizing rubber

2-Ethoxyethanol is widely used as an industrial solvent and production intermediate. It is produced by the reaction of ethylene oxide with ethanol. The glycol ethers are miscible in polar and nonpolar solutions, which make them useful solvents in paints and surface coatings, stains, lacquers, inks, and dyes.

Legal background: Duty to inform your customer on substances for authorisation (EU/EEA)
2-Ethoxyethanol is listed on the Candidate list of Substances of Very High Concern (SVHC) for the authorization of the Regulation (EC) No 1907/2006 of the European Parliament of the Council (REACH).

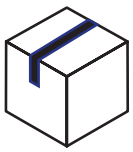
Prop 65: 2-Ethoxyethanol is known to the State of California to cause cancer and birth defects or other reproductive harm

Test method: No standardised test method available.

Use checklist for lab, annex 2.

Indicative LOQ: 200 mg/kg

Formamide



Required limit value: Should not be present in products.

CAS RN: 75-12-7

Properties: Toxic for reproduction.

Use: Formamide is used as solvent for example in the production of synthetic leather and inks. Furthermore, formamide is used as a solvent and plasticizer in consumer products. It can be an ingredient as softener for paper, water soluble glues and wood stains. During processing of foam, formamide is formed as a by-product at higher temperatures. Especially tosyl-semicarbazide and azodicarbonamide (see ADCA) are responsible for the presence of formamide in EVA and other plastic foamed products.

Alternatives: For the application as solvent, formamide might be replaced by other solvents like dipropylene glycol (CAS no.: 25265-71-8) and ethylene carbonate (CAS 96-49-1).

Potential alternatives as *N, N*-dimethylformamide, *N*-methylformamide or ethylene glycol ethers are not considered to be adequate substitutes due their similar toxicity to reproduction.

Legal background: Restrictions (EU/EEA)
Formamide is restricted in puzzle mats in Belgium and France and will be included in the Toy Safety Directive in 2017 (limit value 200 mg/kg).

Duty to inform your customer on substances for authorisation (EU/EEA)
Formamide is listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).

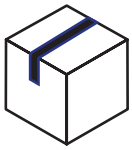
Test method: No standardised test method available.

Use checklist for lab, annex 2.

Indicative LOQ: 50 mg/kg

5 https://echa.europa.eu/documents/10162/4359a048-0988-4338-becc-6c0a3d411073

Hydrazine



Required limit value: Should not be used in processes or present in products.

CAS RN: 302-01-2 and 7803-57-8

Properties: Carcinogenic, allergenic, toxic.

Use: Mainly used as a chemical blowing agent in preparing polymer foams.

Alternatives: Use physical blowing agents such as carbon dioxide or nitrogen instead of these chemical blowing agents.

Legal background: Duty to inform your customer on substances for authorisation (EU/EEA)
Candidate list of Substances of Very High Concern (SVHC) for the authorization of the Regulation (EC) No 1907/2006 (REACH).

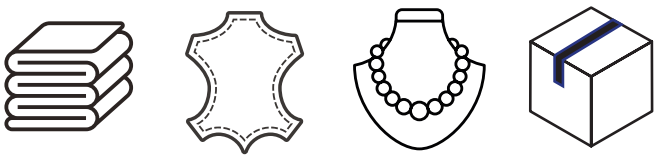
Prop 65: Hydrazine is known to the State of California to cause cancer. Safe Harbor Limit: NSRL 0.04 µg/day. No information on settlements.

Test method: No standardised test method available.

Use checklist for lab, annex 2.

Indicative LOQ: 200 mg/kg

Isocyanates



Required limit value: Should not be present in products.

CAS RN: Several

Properties: Carcinogenic, allergenic, toxic.

Use: Isocyanates are a family of highly reactive, low molecular weight chemicals. They are widely used in the manufacture of flexible and rigid foams, fibers, coatings such as paints and varnishes, and elastomers, and are increasingly used in the automobile industry, autobody repair, and building insulation materials

Precaution: Assure strict and safe work environment measures in the process. Manufacturers in the EU/EEA are required to follow the Industry Emissions Directive (IED), 2010/75/EU.

Legal background: Several isocyanates are restricted in annex XVII (EC) No 1907/2006 (REACH) as chemicals and in chemical products, see below.

Overview of restricted isocyanates in EU/EEA as chemicals.

Substances	CAS RN	Legal status
2,2'-Methylenediphenyl diisocyanate (MDI)	2536-05-2	Restricted
2,4'-Methylenediphenyl diisocyanate (MDI)	5873-54-1	Restricted
4,4'-Methylenediphenyl diisocyanate (MDI)	101-68-8	Restricted
Methylenediphenyl diisocyanate (MDI)	26447-40-5	Restricted
2,4-Toluene diisocyanate (2,4 TDI)	584-84-9	Restricted
m-tolylidene diisocyanate (TDI)	26471-62-5	Restricted
Hexane, 1,6-diisocyanato (HDI)	822-06-0	Restricted
Isophorone diisocyanate (IPDI)	4098-71-9	Restricted
Tetramethylxylene diisocyanate (TMXDI)	2778-42-9	Restricted
Benzene, 1,3-diisocyana-to-2-methyl	91-08-7	Restricted

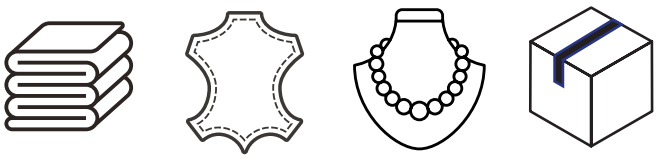
Prop 65: Isocyanates are known to the State of California for developmental toxicity.

Test method: No standardised test method available.

Use checklist for lab, annex 2.

Indicative LOQ: 200 mg/kg

Imidazoles



Required limit value: Should not be used in processes or present in products.

CAS RN: Several

Properties: Toxic for reproduction

Use: Mainly used in formulations and as a monomer in the production of polymers and as a catalyst in the production of coating products. Imidazoles can be used as the curing agent of adhesives, epoxy resin and dye auxiliaries of textile fibres, as well as additives for the preparation of foam plastics.

Legal background: Duty to inform your customer on substances for authorisation (EU/EEA)
Candidate list of Substances of Very High Concern (SVHC) for the authorization of the Regulation (EC) No 1907/2006 (REACH).

Overview of regulated imidazoles

Substances	CAS RN	Legal status
1-vinylimidazole	1072-63-5	SVHC
2-methylimidazole	693-98-1	SVHC
4-methylimidazole	822-36-6	Prop 65

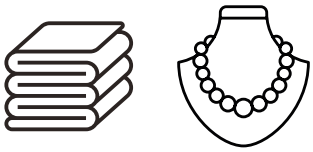
Prop 65: 2-methylimidazole and 4-methylimidazole is are known to the State of California to cause cancer. Safe Harbor Limit: None. No information on settlements.

Test method: No standardised test method available.

Use checklist for lab, annex 2.

Indicative LOQ: 200 mg/kg

2-methoxyethyl acetate



Required limit value: Should not be present in products.

CAS RN: 110-49-6

Properties: Toxic for reproduction

Use: Solvent for nitrocellulose, cellulose acetate, Several gums, resins, waxes, oils; textile printing; photographic film; lacquers; dopes. Used in screen print inks and as an industrial solvent.

Legal background: Duty to inform your customer on substances for authorisation (EU/EEA)
2-methoxyethyl acetate is listed on the Candidate list of Substances of Very High Concern (SVHC) for the authorization of the Regulation (EC) No 1907/2006 (REACH).

Prop 65: 2-methoxyethyl acetate is known to the State of California for developmental toxicity

Test method: No standardised test method available.

Use checklist for lab, annex 2.

Indicative LOQ: 100 mg/kg

PAH - Polycyclic aromatic hydrocarbons


Required limit value: Should not be used in processes or present in products.

CAS RN: Several

Properties: Carcinogenic, allergenic, toxic.

Use: PAHs are not synthesized chemically for industrial purposes. The major source of PAHs is the incomplete combustion of organic material such as coal, oil, and wood.
They are mostly used as intermediaries in pharmaceuticals, agricultural products, photographic products, thermosetting plastics, lubricating materials, and other chemical industries.
May be found as impurities in rubber materials and leather.

Alternatives: Avoid critical sources for PAH such as Carbon Black and contaminated mineral oil-based lubricants in rubber.

Legal background:

Restrictions (EU/EEA)
Eight PAHs are listed in annex XVII, entry 50 of the Regulation (EC) No 1907/2006 (REACH).

Materials in toys or childcare articles that come into direct contact with the human skin shall not include of any of the listed PAHs in amounts more than 0.5 mg/kg. For rubber or plastic materials with skin contact in other product categories the limit value is 1 mg/kg.

From 1 November 2020, PAHs have a restriction limit of 1 mg/kg in clothing, related accessories, textiles other than clothing in skin contact, or footwear (CMR fast track) according to Annex XVII, entry 72 of Regulation (EC) No 1907/2006 (REACH)

The CMR fast track restriction does not apply to clothing, related accessories, textiles other than clothing, or footwear within the scope of Regulation (EU) 2016/425 (PPE).

The compulsory German GS standard for protective gloves has requirements for the sum of 15 PAH (all included in the 16 U.S. EPA listed compounds) and also specifically benzo [a] pyrene, that most products in the German market follows.

Duty to inform your customer on substances for authorisation (EU/EEA)
PAHs are included in the Candidate list of Substances of Very High Concern (SVHC) for the authorization of the Regulation (EC) No 1907/2006 (REACH).

Overview of regulated PAHs

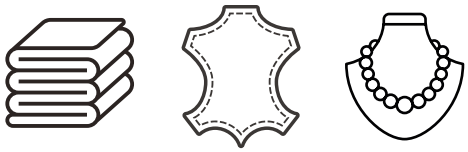
Substances	CAS RN	Legal status
Benzo(a)anthracene	56-55-3	SVHC and restricted
Benzo(a)phenanthrene (chrysene)	218-01-9	SVHC and restricted
Benzo(a)pyrene	50-32-8	SVHC and restricted
Benzo(b)fluoranthene	205-99-2	SVHC and restricted
Benzo(j)fluoranthene	205-82-3	SVHC and restricted
Benzo(k)fluoranthene	207-08-9	SVHC and restricted
Dibenzo(a,h)anthracene	53-70-3	SVHC and restricted
Benzo[e]pyrene	192-97-2	SVHC and restricted
Benzo[ghi]perylene	191-24-2	SVHC
Anthracene	120-12-7	SVHC
Fluoranthene	206-44-0	SVHC
Phenanthrene	85-01-8	SVHC
Pyrene	129-00-0	SVHC
Anthracene oil	90640-80-5	SVHC
Anthracene oil fraction (a complex combination of the distillation of Anthracene)	91995-17-4	SVHC
Anthracene oil, Athracene paste, Anthracene fraction	91995-15-2	SVHC
Anthracene oil, Anthracene-low	90640-82-7	SVHC
Anthracene oil, Anthracene paste	90640-81-6	SVHC

Prop 65: Several PAH are known to the State of California to cause cancer. Safe Harbor Limit: NSRL 0.033-0.35 µg/day. No information on settlements.

Test method: See annex 1

Indicative LOQ: 0.2 mg/kg

Quinoline



Required limit value: Should not be present in products.

CAS RN: 91-22-5

Properties: Carcinogenic and mutagenic.

Use: Quinoline is used mainly as an intermediate in the manufacture of other products. Quinoline is also used as a catalyst or vulcanisation accelerator in rubber, a corrosion inhibitor, in metallurgical processes, in the manufacture of dyes, in polymers, and as a solvent for resins and terpenes. Many disperse and vat dyes may contain quinoline as a contaminate in their dispersing agents.

Alternatives: Isoquinoline (CAS RN 119-65-3) with similar structure as quinoline, and other quinoline derivates have similar area of use. However, isoquinoline is assessed as a carcinogen by several hazard self-assessments according to the EU CLP regulation and may therefore be a regrettable substitution to quinoline from a hazard perspective.

Legal background: Restrictions (EU/EEA)
From 1 November 2020, quinoline has a restriction limit of 50 mg/kg in clothing, related accessories, textiles other than clothing in skin contact, or footwear (CMR fast track) according to Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 72. The CMR fast track restriction does not apply to clothing, related accessories, textiles other than clothing, or footwear within the scope of Regulation (EU) 2016/425 (PPE).

Prop 65: Quinoline is known to the State of California to cause cancer. Safe Harbor Limit: None. No information on settlements.

Test method: No standardised test method available.

Use checklist for lab, annex 2.

Indicative LOQ: 10 mg/kg

Solvents - Aliphatic organic solvents

Required limit value: Should not be present in products.

CAS RN: Several

Properties: Liquids or gases. Inhalation can affect the nervous system and cause headache, fatigue, and nausea, as well as chronic effects. Cause irritation on skin, eyes, and mucous membranes.

Use: Solvents for dyeing and printing.

Alternatives: If possible, apply water-based systems based on easily degradable surfactants.

Precaution: Assure strict and safe work environment measures in the process. Manufacturers in the EU/EEA are required to follow the Industry Emissions Directive (IED), 2010/75/EU.

Legal background: Restrictions (EU/EEA)
Cyclohexane (CAS RN 110-82-7) is restricted according to Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 57.

Neoprene-based contact adhesives containing cyclohexane shall not be placed on the market for the first time after 27 June 2010, for supply to the general public in concentrations equal to or greater than 0,1 % by weight in package sizes greater than 350g.

Test method: No standardised quantitative test method available.

Use checklist for lab, annex 2.

Solvents - Aromatic organic solvents

Required limit value: Should not be present in products.

CAS RN: Several

Properties: Liquids or gases. Inhalation can affect the nervous system and cause headache, fatigue, and nausea, as well as chronic effects. Cause irritation on skin, eyes, and mucous membranes. Kerosene and diesel odour in finished products. Some aromatic organic compounds are carcinogenic.

Use: Solvents for dyeing and printing textile and leather. Stain removal. Coatings and binders.

Alternatives: To avoid problems with organic solvents, switching to water-based dyeing and printing processes, based on easily degradable surfactants, is recommended. Many but not all aromatic organic solvents are volatile organic compounds (VOC).

Alternatives are solvents of higher quality with lower levels of aromatic hydrocarbons or synthetic thickeners based on polycarboxylic acids. Replace simple aromatic hydrocarbons (petrol) with low-molecular-weight aliphatic hydrocarbons.

Precaution: Assure strict and safe work environment measures in the process. Manufacturers in the EU/EEA are required to follow the Industry Emissions Directive (IED), 2010/75/EU.

Legal background: Restrictions (EU/EEA)
From 1 November 2020, benzene (CAS RN 71-43-2) has a restriction limit of 5 mg/kg in clothing, related accessories, textiles other than clothing in skin contact, or footwear (CMR fast track) according to Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 72.
The CMR fast track restriction does not apply to clothing, related accessories, textiles other than clothing, or footwear within the scope of Regulation (EU) 2016/425 (PPE).

Prop 65: Benzene is known to the State of California to cause cancer and birth defects or other reproductive harm. Safe Harbor Limit: NSRL 6.4 µg/day (oral), 13 µg/day (inhalation). MADL: 24 µg/day (oral), 49 µg/day (inhalation). No information on settlements.

Test method: SNV 195 651, screening method. Panel odour test.
Detection limit: No odour.

No standardised quantitative test method available.
Use checklist for lab, annex 2.

Indicative LOQ: 0.5 mg/kg

Solvents - Chlorinated organic solvents

Required limit value: Should not be used in processes and present in products.

CAS RN: Several

Properties: Liquid or gas. Affect the nervous system. Irritating to skin and mucous membranes. Many chlorinated organic solvents are dangerous for the environment.

Use: Solvents used in the manufacture of rubber, metal paint and fur industry used for grease and oil, e.g. in stain removers. Also used in cleaning agents and detergents. Solvents in lubricating oils. Solvents in dyeing of synthetic fibres (carriers) at atmospheric pressure. Solvents in printing for textile and leather. Finishing agents. Fabric softeners. Also used as moth-proofing agent in textiles and for the manufacture of silk and pearls.

Alternatives: Where possible, apply water-based emulsions based on easily degradable surfactants. Alternative products are available or under development for all uses.

Carriers are not needed for dyeing of polyester in high-pressure machinery (autoclaves).

Categories of carriers to be avoided:
Chloronaphthalenes, which are toxic and cause liver damage, chlorobenzenes and chlorotoluenes, which are toxic and can cause liver and kidney damage and irritate eyes and airways.

Precaution: Assure strict and safe work environment measures in the process. Manufacturers in the EU/EEA are required to follow the Industry Emissions Directive (IED), 2010/75/EU.

Legal background: Restrictions (EU/EEA)
Several chlorinated organic solvents are restricted in Annex XVII of Regulation (EC) No 1907/2006 (REACH)

Duty to inform your customer on substances for authorisation (EU/EEA)

Chlorinated organic solvents are included in the Candidate list of Substances of Very High Concern (SVHC) for the authorization of the Regulation (EC) No 1907/2006 (REACH).

Overview of regulated chlorinated organic solvents

Solvent	CAS RN	Legal framework	Legal requirement
Chloroform 1,1,2 Trichloroethane 1,1,2,2 Tetrachloroethane 1,1,1,2 Tetrachloroethane Pentachloroethane 1,1 Dichloroethylene 1,4-dichlorobenzene	67-66-3 79-00-5 79-34-5 630-20-6 76-01-7 75-35-4 106-46-7	Annex XVII of Regulation (EC) No 1907/2006 (REACH).	Shall not be placed on the market, or used as substances, as constituents of other substances or in mixtures in concentrations equal to or greater than 0.1% by weight
Carbon tetrachloride 1,1,1 Trichloroethane	56-23-5 71-55-6	Regulation (EC) No 1005/2009 of the European Parliament and of the Council of 16 September 2009 on substances that deplete the ozone layer	Shall not be produced, placed on the market, or used
α,α,α,4-tetrachlorotoluene; p-chlorobenzotrichloride α,α,α-trichlorotoluene; benzotrichloride α-chlorotoluene; benzyl chloride	5216-25-1 98-07-7 100-44-7	Annex XVII of Regulation (EC) No 1907/2006 (REACH).	1 mg/kg in clothing, related accessories, textiles other than clothing in skin contact, or footwear (CMR fast track)
Trichloroethylene	79-01-6	SVHC	0.1% by weight in articles for information duty.
1,2,3-trichloropropane	96-18-4	SVHC	0.1% by weight in articles for information duty.

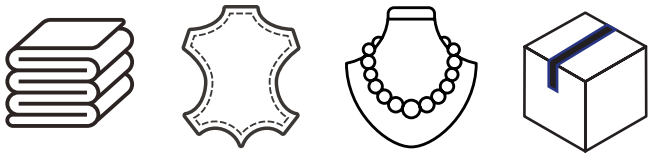
Prop 65: Several chlorinated solvents are known to the State of California to cause cancer and/or birth defects or other reproductive harm. Safe Harbor Limit: NSRL 3-50 µg/day. No information on settlements.

Test method: See annex 1.

Indicative LOQ: 0.5 mg/kg

[6] From 1 November 2020, the named solvents will have a restriction limit of 1 mg/kg in textiles (CMR fast track) according to Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 72. The CMR fast track restriction does not apply to clothing, related accessories, textiles other than clothing, or footwear within the scope of Regulation (EU) 2016/425 (PPE).

Aprotic solvents – 1,4 dioxane



Required limit value: Should not be used in processes and present in products

CAS RN: 123-91-1

Properties: Carcinogenic and harmful to the environment.

Use: 1,4-dioxane is used as a stabilizer for chlorinated solvents such as trichloroethane and trichloroethylene. 1 It can also be an unintended contaminant of chemical ingredients used in adhesives, foaming agents and antifreeze. It has also been used as a wetting and dispersing agent in textile processing.

Alternatives: Use low toxic and easily degradable chemicals as wetting and dispersing agents.

Legal background: Duty to inform your customer on substances for authorisation (EU/EEA)
1,4 dioxane is listed on the Candidate list of Substances of Very High Concern (SVHC) for the authorization of the Regulation (EC) No 1907/2006 of the European Parliament of the Council (REACH).

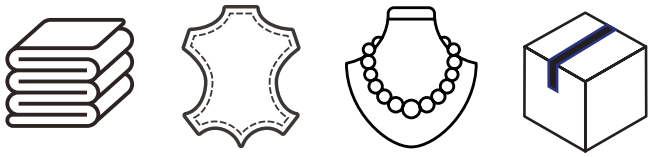
Prop 65: 1,4 dioxane is known to the State of California to cause cancer.

Test method: No standardised test method available.

Use checklist for lab, annex 2.

Indicative LOQ: 100 mg/kg

Aprotic solvents - DMFa (N, N-dimethylformamide)



Required limit value: Should not be present in products in concentrations above 500 mg/kg (sum of DMFa, DMAC and NMP).

CAS RN: 68-12-2

Properties: Toxic to reproduction. It may have a faint amine odour in finished products.

Use: Used as solvent in textile coating processes and in production of leather imitation (PU), acrylic and aramid. An intermediate for paper finishing.

Alternatives: Use "water-borne" PU, if possible, that contain less DMFa.

Legal background:

Restrictions (EU/EEA)
From 1 November 2020, DMFa has a restriction limit of 3000 mg/kg in clothing, related accessories, textiles other than clothing in skin contact, or footwear (CMR fast track) according to Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 72. The CMR fast track restriction does not apply to clothing, related accessories, textiles other than clothing, or footwear within the scope of Regulation (EU) 2016/425 (PPE).

From 12 December 2024 in relation to placing on the market for use, or use, as a solvent in direct or transfer polyurethane coating processes of textiles and paper material or the production of polyurethane membranes, and from 12 December 2025 in relation to placing on the market for use, or use, as a solvent in the dry and wet spinning processes of synthetic fibres.

Restricted in polyurethane-coated work gloves work gloves in Germany. The maximum DMFa content must be less than
10 mg/kg glove material (TRGS 401).

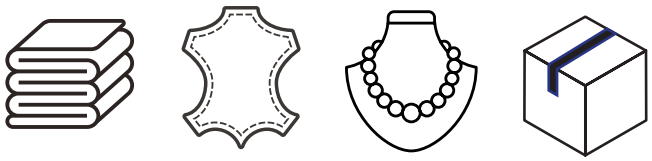
Duty to inform your customer on substances for authorisation (EU/EEA)
DMFa is listed on the Candidate list of Substances of Very High Concern (SVHC) for the authorization of the Regulation (EC) No 1907/2006 of the European Parliament of the Council (REACH).

Prop 65: DMFa is known to the State of California to cause cancer. Safe Harbor Limit: None. No information on settlements.

Test method: See annex 1

Indicative LOQ: 10 mg/kg

Aprotic solvents - DMAC (N, N-dimethylacetamide)



Required limit value: Should not be present in products in concentrations above 500 mg/kg (sum of DMFa, DMAC and).

CAS RN: 127-19-5

Properties: Toxic to reproduction, irritating.

Use: Used as solvent in textile coating processes and in industrial coatings, polyimide films, paint strippers and ink removers

Alternatives: Use "water-borne" systems if possible.

Legal background:

Restrictions (EU/EEA)
From 1 November 2020, DMAC has a restriction limit of 3000 mg/kg in clothing, related accessories, textiles other than clothing in skin contact, or footwear (CMR fast track) according to Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 72. The CMR fast track restriction does not apply to clothing, related accessories, textiles other than clothing, or footwear within the scope of Regulation (EU) 2016/425 (PPE).

Duty to inform your customer on substances for authorisation (EU/EEA)
DMAC is listed on the Candidate list of Substances of Very High Concern (SVHC) for the authorization of the Regulation (EC) No 1907/2006 of the European Parliament of the Council (REACH).

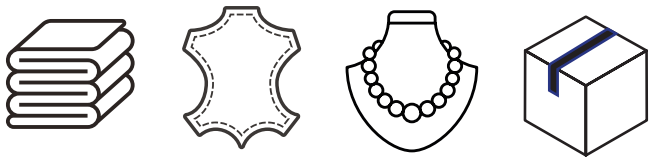
Prop 65: DMAC is known to the State of California to cause birth defects or other reproductive harm. Safe Harbor Limit: None. No information on settlements.

Test method: No standardised quantitative test method available.

Use checklist for lab, annex 2.

Indicative LOQ: 10 mg/kg

Aprotic solvents - NMP (N-methyl-2-pyrrolidone)



Required limit value: Should not be present in products in concentrations above 500 mg/kg (sum of DMFa, DMAC and NMP).

CAS RN: 872-50-4

Properties: Toxic to reproduction, irritating.

Use: Good solvency properties for polymers. Used as solvent in textile coating processes and in production of leather imitation (PU). Surface treatment, resins, and metal coated plastics or as a paint stripper. Intermediates for textile auxiliaries, plasticizers, stabilizers, and specialty inks.

Polyamide precursor. SBR (styrene-butadiene) latex production.

Alternatives: Use "water-borne" systems if possible.

Note that NEP (1-ethylpyrrolidin-2-one), CAS 2687-91-4, currently a restriction proposal in REACH annex XVII, is not a suitable alternative to NMP since it is Reproduction Toxic 1B (a CMR substance) and on-going regulation in EU/EEA.

Legal background: Restrictions (EU/EEA)
From 1 November 2020, NMP has a restriction limit of 3000 mg/kg in clothing, related accessories, textiles other than clothing in skin contact, or footwear (CMR fast track) according to Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 72. The CMR fast track restriction does not apply to clothing, related accessories, textiles other than clothing, or footwear within the scope of Regulation (EU) 2016/425 (PPE). NMP has also a limit value for working environment under Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 71.

Duty to inform your customer on substances for authorisation (EU/EEA)
NMP is listed on the Candidate list of Substances of Very High Concern (SVHC) for the authorization of the Regulation (EC) No 1907/2006 of the European Parliament of the Council (REACH).

Prop 65: NMP is known to the State of California to cause birth defects or other reproductive harm. Safe Harbor Limit: MADL 3200 µg/day (inhalation), 17000 µg/day (dermal). No information on settlements.

Test method: See annex 1 for leather

No standardised quantitative test method available for textiles.
Use checklist for lab, annex 2.

Indicative LOQ: 25 mg/kg

6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol (DBMC)

Required limit value: Should not be used in processes or present in products.

CAS RN: 119-47-1

Properties: Toxic for reproduction

Use: Uses in hydraulic fluids, lubricants and greases, metal working fluids, adhesives and sealants, fuels and polymers. This substance is used for the manufacture of rubber products and plastic products.

Legal background: Duty to inform your customer on substances for authorisation (EU/EEA)

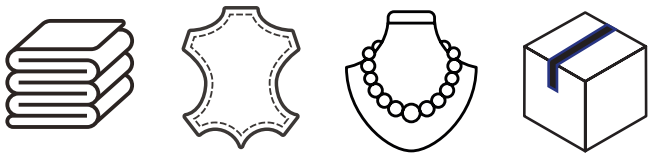
6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol is listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).

Test method: No standardised test method available.

Use checklist for lab, annex 2.

Indicative LOQ: 200 mg/kg

Tin organic compounds (Organostannic compounds)



Required limit value: Should not be present in products.

CAS RN: Several

Properties: Tributyltin, dibutyltin and dioctyltin compounds are different chemical substances that are toxic and dangerous for the environment. Bioaccumulative and persistent.

Use: Dialkyl tin compounds represents a large family of substances that consist of a wide range of compounds.

Dibutyltin compounds (DBT) and dioctyltin compounds (DOT) are used in consumer products as heat stabilizers (mainly PVC) or catalysts (PU and PVC). Organotin catalysts are used in a wide variety of polyurethane applications, aiding formation of the urethane bond and generally functioning as catalysts.

Trialkyltin compounds are biocides, see also the section regarding biocidal agents.

Alternatives: Alternative stabilizers are barium/zinc, potassium/zinc, calcium, calcium/zinc organic or methyltin stabilisers.
Alternative catalysts can be organotitanate or zirconate compounds (e.g. titanium 2-ethylhexanoate) or amines such as bis- (dimethylaminoethyl) ether (BDMAEE) and triethylenediamine (TEDA) along with organometallic compounds such as potassium acetate.

Legal background:

Restrictions (EU/EEA)
Dioctyltin (DOT), dibutyltin (DBT) compounds and tri-substituted organostannic compounds such as tributyltin (TBT) shall not be used in articles that exceed 0.1% by weight of tin.
Annex XVII of the Regulation (EC) No 1907/2006 (REACH), entry 20.

Duty to inform your customer on substances for authorisation (EU/EEA)
Tin organic compounds are listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH), see below.

[7] reaction mass of 2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate and 2-ethylhexyl 10-ethyl-4-[[2-[(2-ethylhexyl)oxy]-2-oxoethyl]thio]-4-octyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate

Overview of regulated tin organic compounds

Substances	CAS RN (EC No)	Legal status
Tributyltin oxide (TBTO)	56-35-9	SVHC
Dibutyltin dichloride (DBTC),	683-18-1	SVHC
2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (DOTE),	15571-58-1	SVHC
Reaction mass of DOTE and MOTE and Dibutylbis(pentane-2,4-dionato-O,O')tin,	22673-19-4	SVHC
dioctyltin dilaurate; stannane, dioctyl-, bis(coco acyloxy) derivs.	(799-973-9)	SVHC
Stannane, dioctyl-, bis(coco acyloxy) derivs.	91648-39-4	SVHC
Dioctyltin dilaurate	3648-18-8	SVHC

Test method: See annex 1

Indicative LOQ: 0.2 mg/kg

Tris(2-methoxyethoxy)vinylsilane

Required limit value: Should not be used in processes or present in products.

CAS RN: 1067-53-4

Properties: Toxic for reproduction

Use: An adhesion promoter for various mineral-filled polymers, improving mechanical and electrical properties especially after exposure to moisture. A co-monomer for the preparation of different polymers such as polyethylene or acrylics.Plating agent and surface treating agent

Legal background: Duty to inform your customer on substances for authorisation (EU/EEA)
Tris(2-methoxyethoxy)vinylsilane is listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).

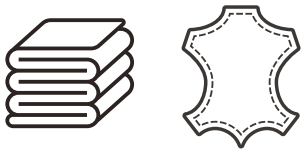
Test method: No standardised test method available.

Use checklist for lab, annex 2.

Indicative LOQ: 200 mg/kg

Product-related (property-lending) chemicals

Allergenic dyes



Required limit value: Should not be present in products.

CAS RN: Several

Properties: Highly allergenic (strong sensitizers). They may also have other hazardous properties.

Use: Dyeing of textile and leather imitation goods mainly made of polyester..

Alternatives: Use other feasible dyes that are not hazard classified as skin sensitizers (skin allergens).

Legal background:

Restrictions (EU/EEA)
Legal limit: 0.1% by weight for Navy Blue, EC# 405-665-4 in chemical preparations used for colouring textile and leather articles in Annex XVII (entry 43) of Regulation (EC) No 1907/2006 (REACH).

Eight disperse dyestuffs are banned in Germany, see below.

Overview of allergenic dystuffs where some are regulated, and some are considered for regulation

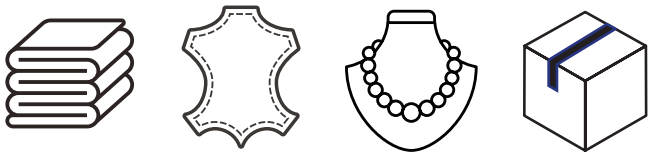
Substances	CAS RN (EC No)	Legal status
C.I. Disperse Yellow 1	119-15-3	
C.I. Disperse Blue 35	12222-75-2	Restricted in EU
C.I. Disperse Blue 102	12222-97-8	
C.I. Disperse Blue 106	12223-01-7, 68516-81-4	Restricted in Germany
C.I. Disperse Yellow 39	12236-29-2	
C.I. Disperse Orange 37/59/76	13301-61-6	Restricted in Germany
C.I. Disperse Brown 1	23355-64-8	
C.I. Disperse Blue 3	2475-46-9	

C.I. Disperse Orange 1	2581-69-3	
C.I. Disperse Yellow 3	2832-40-8	Restricted in Germany
C.I. Disperse Red 11	2872-48-2	
C.I. Disperse Red 1	2872-52-8	Restricted in Germany
C.I. Disperse Red 17	3179-89-3	
C.I. Disperse Blue 7	3179-90-6	
C.I. Disperse Blue 26	3860-63-7,	
C.I. Disperse Yellow 49	54824-37-2,	
C.I. Disperse Blue 124	61951-51-7	Restricted in EU
C.I. Disperse Yellow 9	6373-73-5	
C.I. Disperse Orange 3	730-40-5	Restricted in Germany
Navy Blue	(405-665-4)	Restricted in EU
C.I Disperse Blue 1	2475-45-8	Restricted in EU
Disperse Yellow 64	10319-14-9	
Disperse Violet 93	122463-28-9	
CI Disperse Yellow 23	6250-23-3	
CI Disperse Violet 1	128-95-0	
CI Disperse Blue 291	56548-64-2	
CI Disperse Orange 149	85136-74-9	

Test method: See annex 1

Indicative LOQ: 50 mg/kg

Restricted arylamines derived from certain azodyes



Required limit value: Azo dyes that are degradable to carcinogenic arylamines should not be present in products.

CAS RN: Several

Properties: Carcinogenic. Some are allergenic. Arylamines can form part of the molecular structure of a dye. Certain azo dyes can form the 26 restricted arylamines and additionally 2,4 xylidine (CAS 95-68-1) and 2,6 xylidine (CAS 87-62-7), that are only listed in voluntary schemes.

Use: Constituent of azo dyes for dyeing and printing.

Alternatives: Colorants that can release each of the 28 aromatic amines may not be used.

Legal background:

Restrictions (EU/EEA)
Legal limit in textile and leather articles: 0.003 % by weight (30 mg/kg) per each of the arylamine breakdown products in the dyed parts of the article, which may come into direct and prolonged contact with the human skin or oral cavity. Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 43.

From 1 November 2020, 4-chloro-o-toluidinium chloride, 2-Naphthylammoniumacetate, 4-methoxy-m-phenylene diammonium sulphate, 2,4-diaminoanisole sulphate and 2,4,5-trimethylaniline hydrochloride have a restriction limit of 30 mg/kg in clothing, related accessories, textiles other than clothing in skin contact, or footwear (CMR fast track) according to Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 72. The CMR fast track restriction does not apply to clothing, related accessories, textiles other than clothing, or footwear within the scope of Regulation (EU) 2016/425 (PPE).

Duty to inform your customer on substances for authorisation (EU/EEA)
Several arylamines are listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH), see below.

Overview of regulated arylamines (derived from certain azodyes)

Substances	CAS RN	Legal status
4,4-Methylene-bis[2-chloro-aniline]	101-14-4	SVHC and restricted
4,4-Methylenedianiline	101-77-9	SVHC and restricted
4,4'-oxydianiline	101-80-4	SVHC and restricted
4-chloroaniline	106-47-8	Restricted

o-Dianisidine	119-90-4	Restricted
4,4'-bi-o-toluidine	119-93-7	Restricted
p-Cresidine	120-71-8	Restricted
2,4,5-trimethylaniline	137-17-7	Restricted
4,4'-thiodianiline	139-65-1	Restricted
4-Aminoazobenzene	60-09-3	SVHC and restricted
4-methoxy-m-phenylenedia-mine	615-05-4	Restricted
2,6-xylidine	87-62-7	Only in voluntary schemes
o-Anisidine	90-04-0	Restricted
2-Naphthylamine	91-59-8	Restricted
3,3-Dichlorobenzidine	91-94-1	Restricted
Biphenyl-4-ylamine	92-67-1	Restricted
Benzidine	92-87-5	Restricted
o-Toluidine	95-53-4	Restricted
2,4-xylidine	95-68-1	Only in voluntary schemes
4-Chloro-o-toluidine	95-69-2	Restricted
o-Aminoazotoluene	97-56-3	Restricted
4-methyl-m-phenylenediamine	95-80-7	Restricted
5-Nitro-o-toluidine	99-55-8	Restricted
4-chloro-o-toluidinium chloride	3165-93-3	Restricted
2-Naphthylammoniumacetate	553-00-4	Restricted
4-methoxy-m-phenylene diammonium sulphate; 2,4-di-aminoanisole sulphate	39156-41-7	Restricted
2,4,5-trimethylaniline hydro-	21436-97-5	Restricted

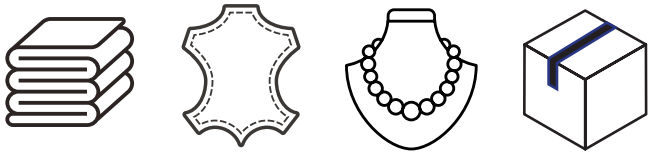
Prop 65: Several arylamines are known to the State of California to cause cancer. Safe Harbor Limit: NSRL 0.001-110 µg/day. No information on settlements.

Test method:

See annex 1

Indicative LOQ: 20 mg/kg (per each of the arylamine breakdown products).

Benzotriazols (UV-320, UV-327, UV-328 and UV-350)



Required limit value: Should not be present in products.

CAS RN: Several

Properties: Persistent, Bioaccumulative and Toxic.
Very Persistent and very Bioaccumulative.

Use: UV-stabilizer for plastics, polyurethanes and rubber and constituent in formulations used for coating of surfaces, e.g. cars or special industrial wood coatings. Also used in dishwasher detergents, dry cleaning equipment, and de-icing/anti-icing fluids

Legal background: Duty to inform your customer on substances for authorisation (EU/EEA)
UV-320, UV-327, UV-328 and UV-350 are listed in the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).

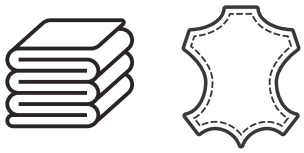
Overview of regulated benzotriazols

Substance	CAS RN	Legal status
2-benzotria-zol-2-yl-4,6-di-tert-butylphe-nol (UV-320)	3846-71-7	SVHC
2,4-di-tert-butyl-6-(5-ch-lorobenzotriazol-2-yl)phenol (UV-327)	3864-99-1	SVHC
2-(2H-benzotria-zol-2-yl)-4,6-ditertpentylphe-nol (UV-328)	25973-55-1	SVHC
2-(2H-benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl) phenol (UV-350)	36437-37-3	SVHC

Test method: See annex 1

Indicative LOQ: 50 mg/kg

3-benzylidene camphor (1,7,7-trimethyl-3-(phenylmethylene)bicyclo[2.2.1] heptan-2-one) (3-BC)



Required limit value:	Should not be present in products.
CAS RN:	15087-24-8
Properties:	Endocrine disrupting properties
Use:	UV-stabilizer for cosmetics and also used for polymeric materials such as plastics, polyurethanes and rubber.
Legal background:	Duty to inform your customer on substances for authorisation (EU/EEA) 1,7,7-trimethyl-3-(phenylmethylene)bicyclo[2.2.1]heptan-2-one (3-BC) is listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH)
Test method:	No standardised test method available. Use checklist for lab, annex 2. Indicative LOQ: 100 mg/kg

2-benzyl-2-dimethylamino-4'-morpholinobutyrophenone

Required limit value: Should not be present in products.

CAS RN: 119313-12-1

Properties: Toxic to reproduction

Use: Used as a photo initiator added to UV curable inks, adhesives, resins, paints and other coatings. It may also be used in fillers and adhesives.

Legal background: Duty to inform your customer on substances for authorisation (EU/EEA)
2-benzyl-2-dimethylamino-4'-morpholinobutyrophenone is listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH)

Test method: No standardised test method available.

Use checklist for lab, annex 2.

Indicative LOQ: 100 mg/kg

2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one

Required limit value: Should not be present in products.

CAS RN: 71868-10-5

Properties: Toxic to reproduction

Use: Used as a photo initiator added to UV curable inks, adhesives, resins, paints and other coatings. It may also be used in fillers and adhesives.

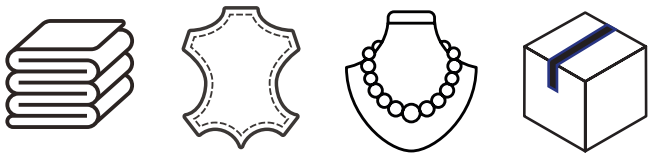
Legal background: Duty to inform your customer on substances for authorisation (EU/EEA)
2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one is listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH)

Test method: No standardised test method available.

Use checklist for lab, annex 2.

Indicative LOQ: 100 mg/kg

Cadmium (Cd) and cadmium salts



Required limit value: Should not be present in products.

CAS RN: Cadmium (metal): 7440-43-9
Cadmium compounds: Several

Properties: Heavy metal that occurs naturally in small quantities in nature. Toxic to aquatic organisms. Non-biodegradable. Dangerous for the environment. Can cause kidney damage.

Use in textile and leather: Can occur in pigmented plastisol/rubber prints.

Use in accessories and packaging: Surface treatment. Pigment in colouring agent. Also, in plastics as stabilizers and pigment. Cadmium-based stabilizers are used to increase the endurance of the material. For recycled packaging, cadmium may have had a different original use.

Alternatives: Alternatives are available, such as calcium-zinc based stabilizers. Order cadmium-free processes and materials.

Occurrence in materials below 0.5 mg/kg is generally regarded as contaminations which cannot be controlled.

Legal background:

Restrictions (EU/EEA)
Legal limit: 0.01 % by weight (100 mg/kg) in articles produced from plastic material and in the paint of painted articles. Shall not be used in brazing fillers or in jewellery. Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 23.

From 1 November 2020, cadmium and its compounds have a restriction limit of 1 mg/kg (extractable content) in clothing, related accessories, textiles other than clothing in skin contact, or footwear (CMR fast track) according to Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 72. The CMR fast track restriction does not apply to clothing, related accessories, textiles other than clothing, or footwear within the scope of Regulation (EU) 2016/425 (PPE).

The sum of concentration levels of lead, cadmium, mercury and hexavalent chromium present in packaging or packaging components shall not exceed 100 ppm by weight Directive (EC) No 94/62/EC of 20 December 1994 on packaging and packaging waste.

Cadmium is restricted in Denmark. Danish legal limits: 75 mg/kg.
(Bekendgørelse nr. 858 af 5. September 2009 om forbud mod import salg og fremstilling af cadmiumholdige varer)

Duty to inform your customer on substances for authorisation (EU/EEA)
Several cadmium compounds are listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).

Overview of regulated cadmium compounds

Substance	CAS RN	Legal status
Cadmium	7440-43-9	SVHC
Cadmium oxide	1306-19-0	SVHC
Cadmium sulphide	1306-23-6	SVHC
Cadmium chloride	10108-64-2	SVHC
Cadmium fluoride	7790-79-6	SVHC
Cadmium sulphate,	10124-36-4, 31119-53-6	SVHC
Cadmium nitrate	10325-94-7	SVHC
Cadmium carbonate	513-78-0	SVHC
Cadmium hydroxide	21041-95-2	SVHC

Prop 65: Cadmium and cadmium compounds are known to the State of California to cause cancer and birth defects or other reproductive harm Safe Harbor Limit: MADL cadmium 4.1 µg/day (oral). None for cancer effects. No information on settlements.

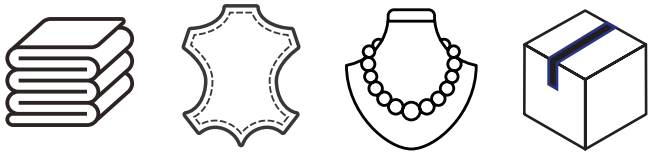
Test method:

See annex 1

Indicative LOQ: 10 mg/kg (total content), 0.1 mg/kg (extractable content).

Test equipment: XRF screening for metal cadmium.
Indicative LOQ: 50 mg/kg for XRF.

CMR, Carcinogenic, Mutagenic, Reproductive toxic dyestuffs



Required limit value: Should not be present in products.

CAS RN: Several

Properties: Carcinogenic, mutagenic, reproductive toxic. Characteristics: Dyestuffs that are classified as carcinogens, mutagenic, reproductive toxic according to CLP including class 2 (only 1A and 1B are CMR)

Use: Dyeing of textile and leather goods.

Alternatives: Do not use any dyestuffs that are hazard classified as CMR substances. Do not use the dyestuffs listed in Appendix 3.

Legal background:

Restrictions (EU/EEA)
Restrictions for use of substances, harmonised classified as carcinogens, mutagenic, reproductive toxic according to CLP including class 2 (only 1A and 1B are CMR), as substances, as constituents of other substances or in mixtures. These are found in REACH annex XVII, entry 28-30.

From 1 November 2020, C.I. Disperse Blue 1, C.I. Basic Red 9 and C.I. Basic Violet 3 with ≥ 0,1 % of Michler's ketone have a restriction limit of 50 mg/kg in clothing, related accessories, textiles other than clothing in skin contact, or footwear (CMR fast track) according to Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 72. The CMR fast track restriction does not apply to clothing, related accessories, textiles other than clothing, or footwear within the scope of Regulation (EU) 2016/425 (PPE).

Duty to inform your customer on substances for authorisation (EU/EEA)
Several CMR dyestuffs are listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).

Overview of regulated CMR dyestuffs

Substances	CAS RN	Legal status
C.I. Direct Brown 95	16071-86-6	
C.I. Direct Black 38	1937-37-7	SVHC
C.I. Disperse Blue 1	2475-45-8	Restricted
C.I. Direct Blue 6	2602-46-2	
C.I. Acid Red 26	3761-53-3	
C.I. Basic Red 9	569-61-9	
C.I. Direct Red 28	573-58-0	SVHC

C.I. Basic Violet 14	632-99-5	
C.I. Disperse Orange 11	82-28-0	
C.I. Disperse Orange 149	85136-74-9	
C.I. Solvent Blue 4	6786-83-0	SVHC
C.I. Basic Blue 26,	2580-56-5	SVHC
C.I. Basic Violet 3	548-62-9	SVHC and restricted
Michler's base	101-61-1	SVHC
Michler's ketone	90-94-8*	SVHC Prop 65
C.I. Disperse Yellow 3	2832-40-8	
Acid red 114	6459-94-5	Prop 65
Direct blue 15	2429-74-5	Prop 65
4,4'-bis(dimethylamino)-4''-(methylamino)trityl alcohol	561-41-1	SVHC

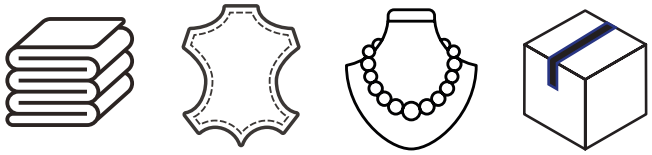
Prop 65: Several CMR dyestuffs are known to the State of California to cause cancer. Safe Harbor Limit: NSRL 0.09-300 µg/day. No information on settlements.

Test method:

See annex 1.

LOQ: 50 mg/kg

Chromium VI (Cr+6, hexavalent chromium)



Required limit value: Should not be present in products.

CAS RN: 18540-29-9

Properties: Dangerous for the environment. Carcinogenic. Allergenic. Toxic.

Use: Metal plated metal parts. Chromic acid is used as wood preservative. Some dyes may contain chromium.

Oxidation agent. Fixing chemical. Used for finishing of direct dyes to improve their wash fastness. Potassium dichromate is used for oxidation of vat and sulphur dyes. Chromium salts are used for preparation and finishing of acid dyes on silk and wool.

Tanning leather with basic chromium III salts is the most widely used method, where chromium VI may occur as an impurity. Etching of artificial leather and rubber.

Alternatives: Chromium III is an alternative in surface treatment of metal but only for decorative metal plating and not hard metal plating. Other metals such as tin and zinc may be used for metal plating instead of chromium VI.

III is an alternative as fixing agent in mordant dyeing.

Use acid dyes with high colourfastness to avoid use of chromium salts for dyeing of polyamide, silk, wool, and leather. Use hydrogen peroxide and other per-salts to avoid the use of chromium VI-based salts.

In leather tanning chromium III is used but can oxidize to chromium VI under uncontrolled conditions. Vegetable tanning agents are alternatives for leather if these tanning agents are formaldehyde free. Tanning with titanium is an emerging technology.

Legal background: Restrictions (EU/EEA)
Legal limit: 0.0003% by weight (3 mg/kg) for leather in direct skin contact. Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 47.

From 1 November 2020, chromium VI compounds have a restriction limit of 1 mg/kg (extractable chromium VI content) in clothing, related accessories, textiles other than clothing in skin contact, or footwear (CMR fast track) according to Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 72. The CMR fast track restriction does not apply to clothing, related accessories, textiles other than clothing, or footwear within the scope of Regulation (EU) 2016/425 (PPE).

The sum of concentration levels of lead, cadmium, mercury and chromium VI present in packaging or packaging components shall not exceed 100 ppm by weight.

Directive (EC) No 94/62/EC of 20 December 1994 on packaging and packaging waste.

Duty to inform your customer on substances for authorisation (EU/EEA)
Chromium VI compounds listed on the Candidate list of Substances of Very High Concern (SVHC) for the authorization of the Regulation (EC) No 1907/2006 of the European Parliament of the Council (REACH) are listed in the table below.

Overview of regulated chromium VI compounds

Substance	CAS RN	Legal status
Ammonium dichromate	7789-09-5	SVHC
Potassium chromate	7789-00-6	SVHC
Potassium dichromate	7778-50-9	SVHC
Sodium chromate	7775-11-3	SVHC
Sodium dichromate dehydrate	7789-12-0, 10588-01-9	SVHC
Strontium chromate	7789-06-2	SVHC
Chromium trioxide	1333-82-0	SVHC
Chromic acid	7738-94-5	SVHC
Dichromic acid	13530-68-2	SVHC
Lead chromate	7758-97-6	SVHC
Lead sulfochromate	1344-37-2	SVHC
Lead chromate molybdate	12656-85-8	SVHC
Dichromium tris(chromate)	24613-89-6	SVHC
Potassium hydroxyoctaoxodizincatedichromate	11103-86-9	SVHC
Pentazinc chromate octahydroxide	49663-84-5	SVHC

Prop 65: Chromium VI is known to the State of California to cause cancer and birth defects or other reproductive harm. Safe Harbor Limit: NSRL 0.001 µg/day (inhalation), MADL 8.2 µg/day (oral). No information on settlements.

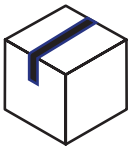
Test method: See Annex 1

No standardised test method available for textiles.
Use checklist for lab, annex 2.

Indicative LOQ: 0.5 mg/kg

Test equipment: XRF screening for metal chromium.
Indicative LOQ: 50 mg/kg for XRF.

Boric acid, borate compounds



Required limit value: Should not be present in products.

Properties: Toxic to reproduction

Use: Wood veneers/pressed wooden panels and boards. Boric acid and other boron compounds may be used as flame retardant in cellulosic materials, mainly wood, and biocidal agent in boards. Borate compounds may be used as bleaching agents in chemical preparations.

Legal limit: Duty to inform your customer on substances for authorisation (EU/EEA)
Boric acid and borate compounds are listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).

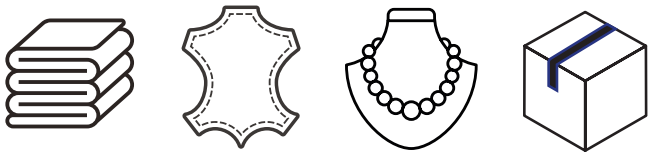
Overview of regulated boric acid, borate compounds

Substances	CAS RN (EC No)	Legal status
Boric acid;	10043-35-3 and 11113-50-1	SVHC
Disodium tetraborate nhydrous;	1303-96-4, 12179-04-3 and 1330-43-4	SVHC
Tetraboron disodium heptaoxid, hydrate;	12267-73-1	SVHC
Sodium perborate; perboric acid, sodium salt,	(234-390-0)	SVHC
Sodium peroxometaborate,	7632-04-04	SVHC
Disodium octaborate,	12008-41-2	SVHC
Orthoboric acid, sodium salt	13840-56-7	SVHC
Barium diboron tetraoxide	13701-59-2	SVHC

Test method: No standardised test method available.
Use checklist for lab, annex 2.

Indicative LOQ: 25 mg/kg for individual compounds (10 mg/kg for total Boron content)

Chloroparaffins



Required limit value: Should not be present in products.

CAS RN: Short-chain chloroparaffins (C10-C13, SCCP): 85535-84-8
Medium-chain chloroparaffins(C14-C17, MCCP): 85535-85-9
Long-chain chloroparaffins (C18-. LCCP): 85535-86-0

Properties: Dangerous for the environment. Allergenic. Toxic.

Use in textile: Plasticizers and flame retardant in plastic material. Plasticizers in coated synthetic or fake leather.

Use in leather: Fat liquoring agent in leather production.

Use in accessories and packaging: Plasticizers and flame retardant in plastic material and rubber.

Alternatives: Replace chloroorganic chemical flame retardants with halogen -free phosphorus- and/or nitrogen-based organic chemical flame retardants or non-chemical barrier technologies.

Alternative plasticizers include citrates, sebacates, adipates, and phosphates etc. The terephthalate, DEHT and the cyclohexane DINCH are example of commercially available alternatives with low human and environmental toxicity. There are also polymers that do not require plasticizers. However, each application needs to be individually assessed for each best specific technical performance.

Legal background: Restrictions (EU/EEA)
Short chain chloroparaffins are listed as POP in the Stockholm Convention on Persistent Organic Pollutants (POPs) and banned by Regulation (EC) No 2019/1021. Residues below 0.15 % SCCP by weight in articles are allowed to be placed on the market and used, as this is the amount of SCCP that may be present as an impurity in an article produced with MCCP.

Duty to inform your customer on substances for authorisation (EU/EEA)
SCCP and MCCP are listed on the Candidate list of Substances of Very High Concern (SVHC) for the authorization of the Regulation (EC) No 1907/2006 (REACH).

[8] Halogens are fluorine, bromine and chlorine
[9] Persistent Organic Pollutants (POPs) are organic chemical substances, which remain intact for exceptionally long periods of time, become widely distributed in the environment, accumulate in the fatty tissue of living organisms and are toxic to both humans and wildlife

Overview of regulated chloroparaffins

Substances	CAS RN	Legal status
Short-chain chloroparaffins (C10-C13, SCCP)	85535-84-8	Restricted and SVHC
Medium-chain chloroparaffins(C14-C17, MCCP)	85535-85-9	SVHC
Long-chain chloroparaffins (C18-. LCCP)	85535-86-0	Not regulated

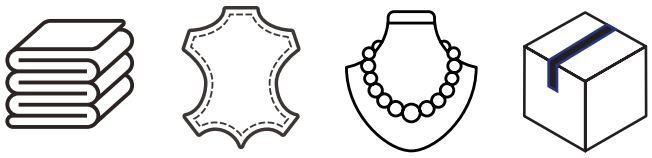
Prop 65: Chloroparaffins are known to the State of California to cause cancer. Safe Harbor Limit: NSRL 8 µg/day. No information on settlements.

Test method:

See annex 1

Indicative LOQ: 100 mg/kg

2,2-bis(bromomethyl)propane1,3-diol (BMP)



Required limit value: Should not be present in products.

CAS RN: 3296-90-0

Properties: Carcinogenic and mutagenic toxic.

Use: 2,2-Bis(bromomethyl)propane-1,3-diol is a reactive flame retardant that is used primarily in unsaturated polyester resins for moulded products and in rigid polyurethane foams.

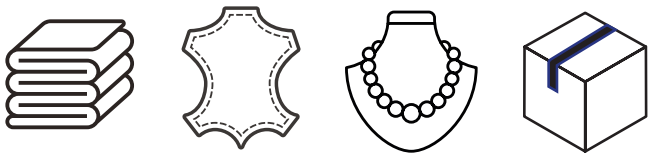
Legal background: Duty to inform your customer on substances for authorisation (EU/EEA)
2,2-Bis(bromomethyl)propane-1,3-diol is listed in the Candidate List of Substances of Very High Concern for authorization of Regulation (EC) No 1907/2006 (REACH).

Prop 65: 2,2-Bis(bromomethyl)propane-1,3-diol is known to the State of California to cause cancer.

Test method: See annex 1

Indicative LOQ: 100 mg/kg

2,2-dimethylpropan-1-ol, tribromo derivative/3-bromo-2,2-bis(bromomethyl)-1-propanol (TBNPA)



Required limit value: Should not be present in products.

CAS RN: 36483-57-5 and 1522-92-5

Properties: Carcinogenic.

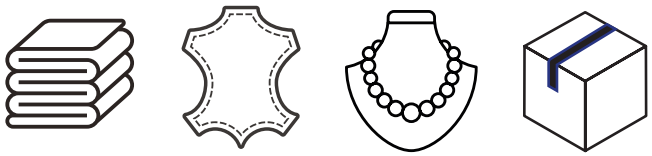
Use: TBNPA is used for polymer production manufacture of plastics products, such as foam seating and bedding products, including compounding and conversion and as an intermediate.

Legal background: Duty to inform your customer on substances for authorisation (EU/EEA)
TBNPA is listed in the Candidate List of Substances of Very High Concern for authorization of Regulation (EC) No 1907/2006 (REACH).

Test method: See annex 1

Indicative LOQ: 100 mg/kg

2,3-dibromo-1-propanol (2,3-DBPA)



Required limit value: Should not be present in products.

CAS RN: 96-13-9

Properties: Carcinogenic and suspected to be toxic to reproduction.

Use: 2,3-DBPA is registered in EU/EEA as an intermediate in the preparation of flame retardants, insecticides, and pharmaceuticals. Main use is in the production of tris (1,2,3-dibromopropyl) phosphate, commonly abbreviated TRIS, a banned flame retardant used in textiles.

Legal background: Duty to inform your customer on substances for authorisation (EU/EEA)
2,3-DBPA is listed in the Candidate List of Substances of Very High Concern for authorization of Regulation (EC) No 1907/2006 (REACH).

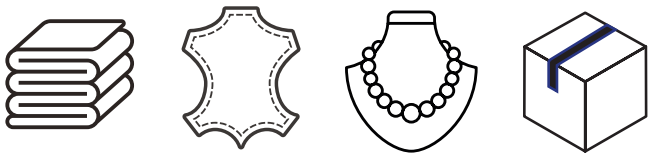
Prop 65: 2,3-dibromo-1-propanol (2,3-DBPA) is known to the State of California to cause cancer.

Test method: See annex 1

Indicative LOQ: 100 mg/kg

Dechlorane ™ Plus

(1,6,7,8,9,14,15,16,17,17,18,18 Dodecachloropentacyclo[12.2.1.16,9.02,13.05,10] octadeca-7,15-diene)



Required limit value: Should not be present in products.

CAS RN: 13560-89-9; 135821-74-8; 135821-03-3

Properties: Persistent and bio accumulative.

Use: Flame retardant for plastics. Use in adhesives and sealants. Used in binders.

Legal background: Duty to inform your customer on substances for authorisation (EU/EEA)
Dechlorane™ Plus is listed in the Candidate List of Substances of Very High Concern for authorization of Regulation (EC) No 1907/2006 (REACH).

Test method: No standardised test method available.

Use checklist for lab, annex 2.

Indicative LOQ: 100 mg/kg

bis(2-ethylhexyl) tetrabromophthalate covering any of the individual isomers and/or combinations thereof Bis(2-ethylhexyl) tetrabromophthalate


Required limit value: Should not be present in products.

CAS RN: Several

Properties: Persistent and bio accumulative.

Use: Flame retardant mainly used in PVC.

Legal background: Duty to inform your customer on substances for authorisation (EU/EEA)
bis(2-ethylhexyl) tetrabromophthalate covering any of the individual isomers and/or combinations thereof
Bis(2-ethylhexyl) tetrabromophthalate is listed in the Candidate List of Substances of Very High Concern for authorization of Regulation (EC) No 1907/2006 (REACH).

Test method: No standardised test method available.
Use checklist for lab, annex 2.

Indicative LOQ: 100 mg/kg

1,1'-[ethane-1,2-diylbisoxy]bis[2,4,6-tribromobenzene]

Required limit value: Should not be present in products.

CAS RN: 37853-59-1

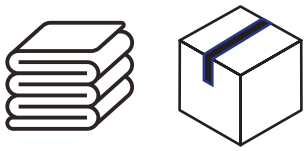
Properties: Persistent and bio accumulative.

Use: One of the major "novel" brominated flame retardants (NBFRs) from various polymer materials

Legal background: Duty to inform your customer on substances for authorisation (EU/EEA)
bis(2-ethylhexyl) tetrabromophthalate covering any of the individual isomers and/or combinations thereof
Bis(2-ethylhexyl) tetrabromophthalate is listed in the Candidate List of Substances of Very High Concern for authorization of Regulation (EC) No 1907/2006 (REACH).

Test method: No standardised test method available.
Use checklist for lab, annex 2.

Hexabromocyclododecan (HBCDD)



Required limit value: Should not be present in products.

CAS RN: 25637-99-4, 3194-55-6, 134237-50-6, 134237-51-7 and 134237-52-8

Properties: Persistent, bio accumulative and toxic. Halogenated organic additives in polymers may leach out and have a negative impact on health and environment.
Halogen containing polymers may form highly corrosive substances and an undefined range of halogenated substances that may be PBT or CMR when incinerated.

Use: Flame-retardant treatment of products, (i.e. upholstery and interior textiles), where fire protection is required. Also used in packaging flakes made of polystyrene (PS).

Alternatives: Replace bromoorganic chemical flame retardants with halogen free phosphorus- and/or nitrogen-based organic chemical flame retardants or non-chemical barrier technologies such as blends of natural and synthetic fibres used in furniture and mattresses and high performance synthetic materials used in firefighter uniforms and other protective clothing.

Textile goods for private use are basically never flame-retardant-treated. The only case when textile goods are treated with flame retardant is if the end customer orders this property. Usually it is done to satisfy regulatory requirements of fire protection.

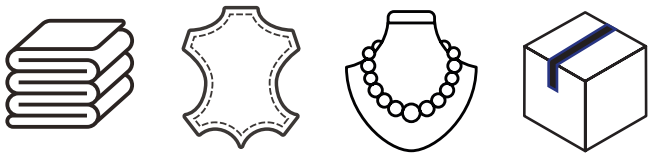
Legal background: Restrictions (EU/EEA)
Legal limit: 100 ppm. Hexabromocyclododecane (HBCDD, CAS 25637-99-4 and 3194-55-6) are listed in the Stockholm Convention on Persistent Organic Pollutants (POPs) and banned by Regulation (EC) No 2019/1021.

Duty to inform your customer on substances for authorisation (EU/EEA)
Hexabromocyclododecane (HBCDD) and all major isomers are listed in both annex XIV and in the Candidate List of Substances of Very High Concern for authorization of Regulation (EC) No 1907/2006 (REACH).

Test method: See annex 1

Indicative LOQ: 20 mg/kg

Polybrominated biphenyls (PBB) and Polybrominated diphenyl ethers (PBDE)



Required limit value: Should not be present in products.

Properties: Persistant, bioaccumulative and toxic. Halogenated organic additives in polymers may leach out and have a negative impact on health and environment. Halogen containing polymers may form highly corrosive substances and undefined range of halogenated substances that may be PBT or CMR when incinerated.

Use: Flame-retardant treatment of plastic and textile products.

Alternatives: Replace bromo organic chemical flame retardants with halogen free phosphorus- and/or nitrogen-based organic chemical flame retardants or non-chemical barrier technologies such as blends of natural and synthetic fibers used in furniture and mattresses and high performance synthetic materials used in firefighter uniforms and other protective clothing.

Textile goods for private use are basically never flame-retardant-treated. The only case when textile goods are treated with flame retardant is if the end customer orders this property. Usually it is done to satisfy regulatory requirements of fire protection.

Legal background:

Restrictions (EU/EEA)
10 mg/kg as substances for several PBDEs as POPs. Commercial TetraBDE, PentaBDE, HexaBDE, HeptaBDE, DecaBDE (sum 500 ppm in mixtures and articles) and Hexabromobiphenyl (ban) are listed in the Stockholm Convention on Persistent Organic Pollutants (POPs) and banned by Regulation (EC) No 2019/1021.

Commercial OctaBDE (0.1 % by weight), entry 45 and Polybrominated biphenyls (PBBs), entry 8, are banned in Annex XVII of Regulation (EC) No 1907/2006 (REACH). The legal limit for PBBs in textile articles with skin contact is detection limit. Commercial OctaBDE is listed as a POP in Annex A of the Stockholm Convention.

Decabromo diphenyl ether (DecaBDE, CAS1163-19-5), is banned in Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 67. This regulation will be removed as DecaBDE is banned under the Stockholm Convention.

PBBs are listed in the Rotterdam Convention

Duty to inform your customer on substances for authorisation (EU/EEA)
DecaBDE is listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).

Overview of regulated PBBs and PBDEs

Substance	CAS RN	Legal status
Polybrominated biphenyls (PBB) (mix)	59536-65-1	Restricted
Hexabromobiphenyl	36355-01-8	Restricted
Pentabromodiphenyl ether (PentaBDE)	32534-81-9 and 60348-60-9	Restricted
Octabromodiphenyl ether (OctaBDE)	32536-52-0	Restricted
Decabromodiphenyl ether (DecaBDE)	1163-19-5	Restricted and SVHC
Tetrabromodiphenyl ether (TetraBDE)	5436-43-1	Restricted
Heptabromodiphenyl ether (HeptaBDE)	207122-16-5 and 446255-22-7	Restricted
Hexabromodiphenyl ether (HexaBDE)	68631-49-2 and 207122-15-4	Restricted

Prop 65: Pentabromodiphenyl ether mixture [DE-71 (technical grade)] is known to the State of California to cause cancer. Safe Harbor Limit: None. No information on settlements.

Polybrominated and polychlorinated biphenyls are known to the State of California to cause cancer and birth defects or other reproductive harm Safe Harbor Limit: NSRL PBB 0.02 µg/day, PCB 0.09 µg/day. None for reproductive harm. No information on settlements

Test method: See annex 1

Indicative LOQ: 10 mg/kg

2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol also called A-TBBPA


Required limit value: Should not be used in processes or present in products.

CAS RN: 79-94-7

Properties: Carcinogenic (CMR)

Use: Primarily used as a reactive flame retardant in epoxy resin circuit boards but also used in polycarbonate and ether polyester resins. TBBPA is also used as a flame retardant in plastics, paper, and textiles, and as a plasticizer in adhesives and coatings.

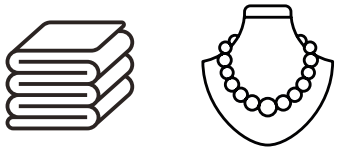
Legal background: Duty to inform your customer on substances for authorisation (EU/EEA)
A-TBBPA is listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).

Prop 65: TBBPA is known to the State of California to cause cancer. Safe Harbor Limit: None.

Test method: See annex 1

Indicative LOQ: 100 mg/kg

bis(2-ethylhexyl) tetrabromophthalate covering any of the individual isomers and/or combinations thereof Bis(2-ethylhexyl) tetrabromophthalate



Required limit value: Should not be used in processes or present in products.

CAS RN: Several

Properties: Persistent, Bioaccumulative and Toxic (PBT).

Use: Flame-retardant plasticizer mainly in PVC

Legal background: Duty to inform your customer on substances for authorisation (EU/EEA)
bis(2-ethylhexyl) tetrabromophthalate covering any of the individual isomers and/or combinations thereof Bis(2-ethylhexyl) tetrabromophthalate is listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).

Test method: See annex 1

Indicative LOQ: 100 mg/kg

1,1'-[ethane-1,2-diylbisoxy]bis[2,4,6-tribromobenzene]

Required limit value: Should not be used in processes or present in products.

CAS RN: 37853-59-1

Properties: Carcinogenic (CMR)

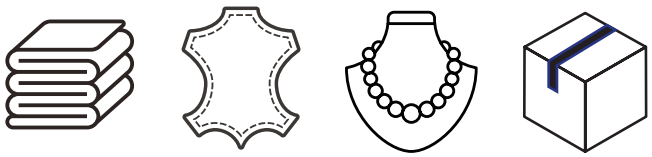
Use: One of the major "novel" brominated flame retardants (NBFRs) from various polymer materials.

Legal background: Duty to inform your customer on substances for authorisation (EU/EEA)
1,1'-[ethane-1,2-diylbisoxy]bis[2,4,6-tribromobenzene]is listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).

Test method: No standardised test method available.
Use checklist for lab, annex 2.

Indicative LOQ: 100 mg/kg

Halogenated aryl phosphates - TCEP, TBPP



Required limit value: Should not be present in products.

CAS RN: Tris(2-chlorethyl)phosphate (TCEP): 115-96-8
Tris (2,3 dibromopropyl)phosphate (TBPP): 126-72-7

Properties: Persistent, bioaccumulative and toxic. Halogenated organic additives in polymers may leach out and have a negative impact on health and environment. Halogen containing polymers may form highly corrosive substances and undefined range of halogenated substances that may be PBT or CMR when incinerated.

Use: Flame-retardant treatment of products (i.e. coated textiles) where fire protection is required but also as plasticizers. TBPP was officially last being sold in late 1970s and is probably phased-out except for recycled materials.

Alternatives: Replace chloro and bromoorganic chemical flame retardants with halogen free phosphorus- and/or nitrogen-based organic chemical flame retardants or non-chemical barrier technologies such as blends of natural and synthetic fibres used in furniture and mattresses and high performance synthetic materials used in firefighter uniforms and other protective clothing.

Textile goods for private use are basically never flame-retardant-treated. The only case when textile goods are treated with flame retardant is if the end customer orders this property. Usually it is done to satisfy regulatory requirements of fire protection.

Legal background: Restrictions (EU/EEA)
TBBP shall not be used in textile articles, such as garments, undergarments, and linen, intended to come into contact with the skin. Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 4.

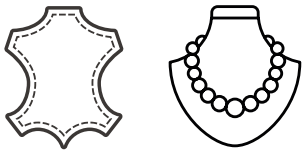
Duty to inform your customer on substances for authorisation (EU/EEA)
Tris(2-chlorethyl) phosphate (TCEP) is listed in the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).

Prop 65: TCEP and TBPP are known to the State of California to cause cancer. Safe Harbor Limit: None. Settlements agreed at 25 ppm TCEP for PVC rainwear.

Test method: See annex 1

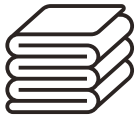
Indicative LOQ: 5 mg/kg

Aryl phosphates - Trixylyl phosphate



Required limit value:	Should not be present in products.
CAS RN:	25155-23-1
Properties:	Toxic for reproduction
Use:	Mainly used as functional fluid. Plasticizer of vinylite (a copolymer of vinyl chloride and vinyl acetate), cellulosic resins and natural and synthetic rubber. Plasticizer and flame retardant of PVC and PU.
Legal background:	Duty to inform your customer on substances for authorisation (EU/EEA) Trixylyl phosphate is listed in the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).
Test method:	See annex 1 Indicative LOQ: 5 mg/kg

Tris(aziridinyl)phosphinoxide (TEPA)



Required limit value: Should not be present in products.

CAS RN: 545-55-1

Properties: Mutagen toxicity

Use: Flame-retardant treatment of products (i.e. coated textiles) where fire protection is required. TEPA was officially last being sold in late 1970s and is probably phased-out except for recycled materials

Legal background: Restrictions (EU/EEA)
TEPA shall not be used in textile articles, such as garments, undergarments, and linen, intended to come into contact with the skin. Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 7.

Test method: See annex 1

Indicative LOQ: 5 mg/kg

Formaldehyde

Required limit value: 20 mg/kg for textiles and leather goods for children under the age of two.
75 mg/kg for all clothing and related accessories, as well as textiles and leather goods that under normal or reasonably foreseeable conditions of use, come into contact with the human skin to an extent similar to clothing.
300 mg/kg for all other textiles and leather goods.

CAS RN: 50-00-0

Properties: Formaldehyde is a volatile colourless gas that is CMR classified according to Regulation (EC) No 1272/2008 (CLP). Occurs naturally in small quantities in the atmosphere and in nature. Formaldehyde is a human carcinogen that can also cause skin irritation and allergy.

Use: Shrinkage-resistant treatment. Wrinkle-resistant treatment. Dirt-repellent treatment. Dye fixing agent. Preservative.
Organic cross linkers are used in synthetic tanning of leather ("synthans") and may release formaldehyde.

Alternatives: Use chemical products with no or very low concentrations of formaldehyde. Due to its volatility, formaldehyde is "contagious". If a garment containing formaldehyde is placed on top of a garment without formaldehyde, the latter garment will be contaminated.
Fabric samples for testing must be packed in air dense plastic bags (polyethylene, PE, or polypropylene, PP).

Legal background: Restrictions (EU/EEA)
From 1 November 2020, formaldehyde has a restriction limit of 75 mg/kg in clothing, related accessories, textiles other than clothing in skin contact, or footwear (CMR fast track) according to Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 72. The CMR fast track restriction does not apply to clothing, related accessories, textiles other than clothing, or footwear within the scope of Regulation (EU) 2016/425 (PPE).

The EU countries' national legislations for textile in skin contact will be withdrawn when the CMR fast track enters into force. For other products, they will continue to be valid.

German law (Bedarfsgegenständeverordnung and Chemikalien-Verbotsverordnung); Products with formaldehyde content shall be labelled. Wooden products shall not release formaldehyde. Cleaning and finishing agents shall not contain formaldehyde above 0.2%.

Prop 65: Formaldehyde (gas) is known to the State of California to cause cancer. Safe Harbor Limit: NSRL 40 µg/day. No information on settlements.

10 During a transition period of 3 years, jackets, coats or upholstery will have a restriction limit of 300 mg/kg for formaldehyde.

Overview of national and international regulations of formaldehyde in EU/EEA

Country	Regulations/ Requirements	Regulatory limit
Germany	Gefahrstoffverordnung (Hazardous Substances Ordinance) Annex III, No. 9, 26.10.1993	Textiles that normally come into contact with the skin and release more than 1500 mg/kg formaldehyde must bear the label:" Contains formaldehyde". Washing this garment is recommended prior to first time use in order to avoid irritation of the skin."
France	Official Gazette of the French Republic, Notification 97/0141/F	The regulations apply to products that are intended to come into contact with human skin, Including: textiles, leather, shoes etc. Textiles for babies: 20 mg/kg. Textiles in direct skin contact: 100 mg/kg. Textiles not in direct skin contact: 400 mg/kg.
Netherlands	The Dutch (Commodities Act) Regulations on Formaldehyde in Textiles (July 2000)	Textiles in direct skin contact must be labelled:" Wash before first use" if they contain more than 120 mg/kg formaldehyde and the product must not contain more than 120 mg/kg formaldehyde after wash.
Austria	Formaldehydverordnung, BGBL Nr. 194/1990	Textiles that contains 1500 mg/kg or above must be labelled.
Finland	Decree on Maximum Amounts of Formaldehyde in Certain Textiles Products (Decree 210/1988)	Textiles for babies under 2 years: 30 mg/kg. Textiles in direct skin contact: 100 mg/kg. Textiles not in direct skin contact: 300 mg/kg.
Norway	Regulations Governing the Use of a Number of Chemicals in Textiles (April 1999)	Textiles for babies under 2 years: 30 mg/kg. Textiles in direct skin contact: 100 mg/kg. Textiles not in direct skin

Formaldehyde regulations outside EU/EEA

Country	Regulations/ Requirements	Regulatory limit
China	Limits of Formaldehyde Content in Textiles: GB18401, Leather: GB/T 19941	Textiles for infants and babies: ≤20 mg/kg. Textiles in direct skin contact: ≤75 mg/kg. Textiles not in direct skin contact: ≤300 mg/kg.
Japan	Japanese Law 112 Textiles: JIS L1041	Textiles for infants: Not detectable. Textiles in direct skin contact: 75 ppm.
Vietnam	Circular no 23/2016/ TT-BCT	Textiles for babies under 36 months: 30 mg/kg. Textiles in direct skin contact: 75 mg/kg. Textiles not in direct skin contact: 300 mg/kg
USA	Federal Hazardous Substances Act (FHSA)	The Federal Hazardous Substances Act (FHSA) is a chemicals legislation that does not focus on products but regulates certain hazardous substances in products, such as lead in candle wicks and solvents in shoe waxes. Consumer products containing more than 1% formaldehyde must be labeled with a warning. The following states have restrictions of formaldehyde: California (cleaning products, cosmetics, wood products), Illinois, Iowa, Louisiana, Massachusetts (children's products, jewelry, toys), New Hampshire (children's products, toys), New York (electronics equipment), South Carolina and Vermont (chemical products).
Eurasian Customs Union (Armenia, Belarus, Kazakhstan, Kyrgyzstan and Russia)	Technical Regulation on the, TP TC 007/2011 On "Safety of Products intended for children and adolescents", enacted in 2011 and its amendment "Decision N° 51 (28 April 2017)", enacted in 2017. "TP TC 017/2011 On Safety of Light Industry Products enacted in 2011 and its amendment "Decision N° 60 (9 August 2016)"	Mass fraction of free Formaldehyde babies up to36 months: 20 mcg/g for 1st and 2nd layer of products and 300 mcg/g for 3rd layer Mass fraction of free Formaldehyde for children and adolescents: 75 mcg/g for 1st and 2nd layer of products and 300 mcg/g for 3rd layer *Apply less than 20 mg free formaldehyde/kg as a customs requirement.*

	enacted in 2016.GOST 30386-95 (Textiles. Maximum permissible concentrations of free formaldehyde) GOST 50729-95 (Textiles. Limit permissible concentration of free formaldehyde)
Test method:	See annex 1 Test method specified in Japan law 112 Indicative LOQ: 16 mg/kg

11 http://www.ilo.org/dyn/natlex/natlex4.detail?p_lang=en&p_isn=95146&p_country=JPN&p_count=851

Glutaral (Glutaraldehyde)

Required limit value: Should not be used in processes or present in products.

CAS RN: 111-30-8

Properties: Toxic for reproduction.

Use: Also called glutaraldehyde and used as a disinfectant, preservative, and fixative and can occur in vegetable tanning of leather (chrome free tanning). Also used in cosmetics.

Legal background: Duty to inform your customer on substances for authorisation (EU/EEA)
Glutaral is listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).

Test method: No standardised test method available.

Use checklist for lab, annex 2.

Indicative LOQ: 200 mg/kg

Melamine


Required limit value: Should not be used in processes or present in products.

CAS RN: 108-78-1

Properties: Toxic for reproduction.

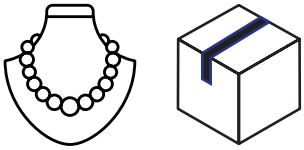
Use: Melamine is used to make electrical components, household goods, laminates, military applications, kitchenware, floor tiles, and fire-resistant and other finished textiles and leather.

Legal background: Duty to inform your customer on substances for authorisation (EU/EEA)
Melamine is listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).

Test method: No standardised test method available.
Use checklist for lab, annex 2.

Indicative LOQ: 200 mg/kg

Lead (Pb) and lead salts



Required limit value: Should not be present in products.

CAS RN: Lead (metal): 7439-92-1

Properties: Lead exposure can give rise to a number of negative health effects, including damage to liver, nervous system and foetuses. Lead is mainly accumulated in bone tissue. It has a very long half-life in the human body. Use of lead in plastics has not been deemed to cause any significant environmental or health effects in the short term, but in the long term such use increases lead concentrations in the environment.

Use: Lead salts are additives in plastics as stabilizers to increase the service of life of the material. May be used as pigment in paint and in coloured plastic material. Metallic surface coating of bottoms and accessories. For recycled packaging material lead may have had a different original use. Lead metal can also be used to increase ductility of other metals.

Alternatives: Alternative stabilizers are barium/zinc, potassium/zinc, calcium or calcium/zinc organic stabilizers.
Alternative catalysts can be organotitanate or zirconate compounds (e.g. titanium 2-ethylhexanoate) or amines such as bis- (dimethylaminoethyl) ether (BDMAEE) and triethylenediamine (TEDA) along with organometallic compounds such as potassium acetate.

Legal background: Restrictions (EU/EEA)
Lead salts are restricted in paint products (no restriction on painted articles) within the EU, entry 16 (lead carbonates) and 17 (lead sulphates). Lead and its compounds are restricted in jewellery articles and hair accessories within EU with a legal limit: 500 mg/kg (0.05%), entry 63. Lead and its compounds are restricted in articles that may be placed in the mouth by children with the legal limit 500 mg/kg (0.05%) , entry 63. Annex XVII of Regulation (EC) No 1907/2006 (REACH).

From 1 November 2020, lead and its compounds have a restriction limit of 1 mg/kg (extractable content) in clothing, related accessories, textiles other than clothing in skin contact, or footwear (CMR fast track) according to Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 72. The CMR fast track restriction does not apply to clothing, related accessories, textiles other than clothing, or footwear within the scope of Regulation (EU) 2016/425 (PPE).

The sum of concentration levels of lead, cadmium, mercury and hexavalent chromium present in packaging or packaging components shall not exceed 100 ppm by weight. Directive (EC) No 94/62/EC of 20 December 1994 on packaging and packaging waste.

12 That limit shall not apply where it can be demonstrated that the rate of lead release from such an article or any such accessible part of an article, whether coated or uncoated, does not exceed 0.05 µg/cm2 per hour (equivalent to 0.05 µg/g/h), and, for coated articles, that the coating is sufficient to ensure that this release rate is not exceeded for a period of at least two years of normal or reasonably foreseeable conditions of use of the article.

Lead is restricted in Denmark. Danish legal limits: 100 mg/kg. *(Bekendgørelse nr. 856 af 5. September 2009 om forbud mod import og salg af produkter, der indeholder bly).*

Duty to inform your customer on substances for authorisation (EU/EEA)
Lead and lead salts are listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).

Overview of regulated lead and lead salts

Name	CAS RN	Legal status
Lead and its compounds	Several	Restricted and SVHC. TSCA Prop 65
Lead (metal)	7439-92-1	Restricted and SVHC
Lead chromate	7758-97-6	SVHC
Lead sulfochromate	1344-37-2	SVHC
Lead chromate molybdate sulphate	12656-85-8	SVHC
Lead dipicrate	6477-64-1	SVHC
Lead styphnate	15245-44-0	SVHC
Lead diazide	13424-46-9	SVHC
Lead hydrogen arsenate	7784-40-9	SVHC
Lead monoxide (Lead oxide)	1317-36-8	SVHC
Orange lead (Lead tetroxide)	1314-41-6	SVHC
Lead bis(tetrafluoroborate)	13814-96-5	SVHC
Trilead bis(carbonate)dihydroxide	1319-46-6	SVHC
Lead titanium trioxide	12060-00-3	SVHC
Lead titanium zirconium oxide	12626-81-2	SVHC
Lead(II) bis(methanesulfonate)	17570-76-2	SVHC
Silicic acid, lead salt	11120-22-2	SVHC
Silicic acid ($H_2Si_2O_5$), barium salt (1:1), lead-doped	68784-75-8	SVHC
Acetic acid, lead salt, basic	51404-69-4	SVHC
Lead oxide sulfate	12036-76-9	SVHC
[Phthalato(2-)]dioxotrilead	69011-06-9	SVHC

Dioxobis(stearato)trilead	12578-12-0	SVHC
Fatty acids, C16-18, lead salts	91031-62-8	SVHC
Lead cynamidate	20837-86-9	SVHC
Lead dinitrate	10099-74-8	SVHC
Pentalead tetraoxide sulphate	12065-90-6	SVHC
Pyrochlore, antimony lead yellow	8012-00-8	SVHC
Sulfurous acid, lead salt, dibasic	62229-08-7	SVHC
Tetraethyllead	78-00-2	SVHC
Tetralead trioxide sulphate	12202-17-4	SVHC
Trilead dioxide phosphonate	12141-20-7	SVHC
Lead di(acetate)	301-04-2	SVHC

Prop 65: Lead and lead compounds are known to the State of California to cause cancer and birth defects or other reproductive harm. Safe Harbor Limit: NRSL lead acetate 23 µg/day (oral), lead 15 µg/day (oral), lead phosphate 58 µg/day (oral), lead subacetate 41 µg/day (oral), MADL lead 0.5 µg/day. Settlements agreed at 50, 90 or 100 ppm for Several products.

Test method:

See annex 1

Indicative LOQ: 10 mg/kg (total content), 0.1 mg/kg (extractable content).

Test equipment: XRF screening for metal lead.

Indicative LOQ: 50 mg/kg for XRF.

Mercury and mercury compounds

Required limit value: Should not be present in products.

Properties: Heavy metal that occurs naturally in small quantities in nature. Toxic to aquatic organisms and non-biodegradable. Dangerous for the environment. Can cause kidney damage.

Use: Phenylmercury compound are used as catalysts in the production of polyurethane coatings, adhesives, sealants, and elastomers.
For recycled packaging mercury may have had a different original use as e.g. pesticide in woods.

Legal background: Restrictions (EU/EEA)
Mercury compounds are restricted in impregnation of heavy-duty industrial textiles and yarn intended for their manufacture in Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 18. Phenyl mercury compounds are also restricted in entry 62 with a restriction limit of 0.01% (100 mg/kg)

Article 1 of the European Parliament and Council Regulation (EC) No 1102/2008 of 22 October 2008 ban the exports of metallic mercury and certain mercury compounds and mixtures.

The sum of concentration levels of lead, cadmium, mercury and hexavalent chromium present in packaging or packaging components shall not exceed 100 ppm by weight
Directive (EC) No 94/62/EC of 20 December 1994 on packaging and packaging waste.

Products containing mercury may not be placed on the Swedish market.
Norway prohibits the manufacture, import, export and sale of articles that contain mercury or mercury compounds (0.001% (10 ppm).
Denmark prohibits the import, export and sale of articles and part of articles that contain mercury or mercury compounds (0.01% (100 ppm).

Overview of regulated mercury metal and mercury compounds

Substance	CAS RN	Legal status
Mercury (metal)	7439-97-6	Restricted
Phenylmercury neodecanoat	26545-49-3	Restricted
Phenylmercury octanoate	13864-38-5	Restricted
Phenylmercury 2-ethylhexanoate	13302-00-6	Restricted
Phenylmercury propionate	103-27-5	Restricted
Phenylmercury acetate	62-38-4	Restricted

Global treaties
Mercury and its compounds are listed in the global UN Rotterdam convention

Mercury is under restriction globally through the global UN Minamata Convention.

Prop 65: Mercury is known to the State of California to cause birth defects or other reproductive harm. No Safe Harbor Limit. No information on settlements.

Test method:

See annex 1

Indicative LOQ: 10 mg/kg (total content), 0.02 mg/kg (extractable content).

Test equipment: XRF screening for metal mercury.
LOQ: 50 mg/kg for XRF.

Nickel (Ni), in accessories

Required limit value: Avoid nickel plating.

CAS RN: Nickel (metal): 7440-02-0

Properties: Nickel is one of the most common substances that cause contact dermatitis. Highly allergenic (strong sensitizer).

Use: Nickel is often used in stainless steel and other alloys used in clothing accessories such as zippers, buttons and rivets.

Alternatives: Refrain from using nickel-treated metals or nickel-containing metal coatings.

Legal background:

Restrictions (EU/EEA)
Nickel plated items shall not migrate more than 0.5 µg per cm2 and week for products intended to come into direct and prolonged contact with the skin and not more than 0.2 µg per cm2 and week for piercing items.
Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 27.

Prop 65: Metallic nickel is known to the State of California to cause cancer.
Safe Harbor Limit: None. No information on settlements.

Test method:

See annex 1:
Test method I: EN 12472:2020 and EN 1811:2011+A1:2015 (for coated items)
EN 1811:2011+A1:2015 (for non-coated item).
(CEN methods specified in REACH Annex XVII, entry 27)

Indicative LOQ: 0.02 µg/cm2/week

Test method II (not for testing legal compliance): Screening test for nickel emission. Swedish pharmacies sell a test kit.

Detection limit II: Qualitative indication only = no occurrence. (This screening method can also give a reading for other metals than Ni.)

N-(hydroxymethyl)acrylamide

Required limit value: Should not be used in processes and present in products

CAS RN: 924-42-5

Properties: May cause genetic defects, may cause cancer and causes damage to organs through prolonged or repeated exposure.

Use: As a monomer in fluoroalkyl acrylate copolymers, adhesives, binders in paper-making and textiles to a variety of surface coatings and resins for varnishes, paints, films and sizing agents

Alternatives: Refrain from using monomers with CMR, hormome disturbing and/or PBT properties.

Legal background: Duty to inform your customer on substances for authorisation (EU/EEA)
N-(hydroxymethyl)acrylamide is listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).

Test method: No standardised test method available.
Use checklist for lab, annex 2.

Indicative LOQ: 100 mg/kg

Per and polyfluorinated alkyl substances (PFAS)

Required limit value: Should not be used in products and processes.

Properties: Perfluorinated acids, PFCAs and PFSAs, such as PFOA and PFOS are persistent, bioaccumulative and toxic (PBT) substances. Due to their extreme stability these chemicals will not degrade but will accumulate due to their persistency in the environment. They are water soluble and can contaminate drinking water. As a result of their long-range transport potential and mobility they can be found even in remote regions (e.g. the Artic).
Several known PFASs can cause cancer (testicular and kidney cancer), liver damage and changes in immune- and endocrine system (e.g. cholesterol levels). Exposure to some known PFASs effects the foetus development during pregnancy and has adverse effects on breastfed infants (e.g. low birth weight). They can be as present as pure substances in products or as precursor chemicals (e.g. polymers) that form PFOA and other PFCAs due to transformation processes.

Highly fluorinated ethers (PFPEs) such as HFPO-DA (2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propionic acid) were developed as replacements for PFAO and PFOS. They are water-soluble and mobile surfactants that are under suspicion to be equally persistent as other PFASs. While the bioaccumulation potential of HFPO-DA is still uncertain, this substance has showed adverse effects on kidney, immune- and haematological system, as well as effects on foetus development in animal studies. Other PFPEs are likely to be equally stable and mobile.

Use: PFCA and PFSA-related substances (e.g. side-chain fluorinated polymers) are used in water oil repellent textile finishes as well as impregnation agents in leather. PFOA and other PFCAs are still used as an emulsifier in the production of fluoropolymers such as polytetrafluoroethylene (PTFE) etc.

PFPEs are used as emulsifiers in the production of fluoropolymers such as polytetrafluoroethylene (PTFE).

Alternatives: May only be used in applications where oil and stain repellent properties are scientifically assessed as essential, such as protective occupational products (PPE), when no other feasible alternatives are available.

Where oil repellent properties are not essential and just water repellence is required, non-fluorinated chemistries such as waxes and paraffins but not silicones are recommended, since silicones contain toxic and regulated cyclic siloxanes such as D4, D5 and D6..

Legal background: Restrictions (EU/EEA)
From 4 July 2020, PFOA and its salts are restricted in articles and mixtures in a concentration equal to or above 25 ppb of PFOA including its salts, or 1 000 ppb of one or a combination of PFOA-related substances. From 4 July 2023 the restriction applies to textiles for the protection of workers from risks to their health and safety. Annex XVII Regulation (EC) No 1907/2006 (REACH), entry 68.

Legal limit for PFOS is 1 µg/m2[13] that applies to fluoro coated textiles and leather products and 0.1% by weight applies to semi-finished articles or parts of articles.

PFOS and PFOA and their related substances are listed in the Stockholm Convention on Persistent Organic Pollutants (POPs) and restricted by Regulation (EC) No 2019/1021.

PFNA (C9), PFDA (C10), PFTrDA (C11), PFDoA (C12) , PFUnA (C13) and PFTA (C14) including their related substances are restricted in Regulation (EC) No 1907/2006 (REACH), entry 68. Shall not be manufactured or placed on the market the article 25 ppb for the sum of C9-C14 is below PFCAs and their salts or 260 ppb for the sum of C9-C14 PFCA-related substances from 25 February 2023.

Declaration duty in Sweden from 1 January 2019 to the Swedish Chemicals Agency for PFAS in chemical products that are deliberately added. Composition needs not to be specified but the information duty applies without any concentration limit.

Duty to inform your customer on substances for authorisation (EU/EEA)
Several PFASs including their salts and precursors are listed as a group in the Candidate List of Substances of Very High Concern for authorization of Regulation (EC) No 1907/2006 (REACH).

Overview of regulated and ongoing PFAS regulations

PFAS substances, their salts and related substances	CAS	Abbr	SV HC	REACH annex XVII	EU POP regulation	Stockholm Convention
Perfluorobutane sulfonate	375-73-5	PFBS	Yes			
Perfluorohexane sulfonate	355-46-4	PFHxS	Yes	Ongoing		Yes
Perfluorohexanoic acid	307-24-4	PFHxA	Yes	Ongoing		
Perfluorooctane sulfonate	307-34-6	PFOS			Yes	Yes
Perfluorononanoic acid and its sodium ammonium salts,	375-95-1 21049-39-8, 4149-60-4	PFNA	Yes	Yes		Ongoing
Perfluorodecanoic acid its sodium and ammonium salts,	335-76-2 3108-42-7 3830-45-3	PFDA	Yes	Yes		Ongoing
Pentacosafluoro tridecanoic acid	72629-94-8	PFTrDA	Yes	Yes		Ongoing
Tricosafluoro dodecanoic acid	307-55-1	PFDoA	Yes	Yes		Ongoing

13 The total amount of PFOS and PFOS related substances counted as PFOS, see test method CEN/TS 15968:2009

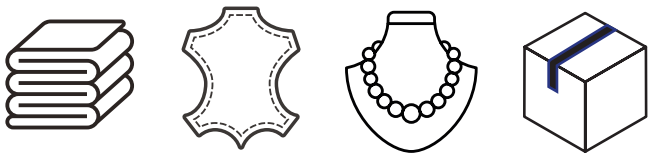
Henicosafluoro undecanoic acid	2058-94-8	PFUnA	Yes	Yes		Ongoing
Heptacosafluoro tetradecanoic acid	376-06-7	PFTA	Yes	Yes		Ongoing
PFAS, C15 -C21	Several					Ongoing
Perfluoroctane acid Ammonium pentadecafluoro octanoate	335-67-1 3825-26-1	PFOA APFO	Yes		Yes	Yes
2,3,3,3-tetrafloro-2-(heptafluoropropoxy) propionic acid, its salts and its acyl halides (covering any of their individual isomers and combinations thereof)	Several	HPFO-DA.	Yes			
Broader PFAS regulation	Suggested to cover all compounds that include one or more perfluorinated moieties.				Ongoing	
reaction mass of 2,2,3,3,5,5,6,6-octafluoro-4-(1,1,1,2,3,3,3-heptafluoropropan-2-yl) morpholine and 2,2,3,3,5,5,6,6-octafluoro-4-(heptafluoropropyl) morpholine	Several		Yes			

Prop 65: PFOA and PFOS are known to the State of California to cause birth defects or other reproductive harm. Safe Harbor Limit: None. No information on settlements. PFPEs are not listed under Prop. 65.

Test method: See annex 1

For LOQ use annex 2 to the laboratory that performs these analysis

Ortho-phthalates



Required limit value: Should not be present in products.

Properties: Several are classified as having health and environmental effects. Many ortho-phthalates are suspected endocrine disrupters.

Use: Ortho-phthalates may be used as plasticizers in polymers. Additives in adhesives, paints, lacquers, varnishes, and solvents.

Alternatives: Alternative plasticizers include citrates, sebacates, adipates, and phosphates etc. The terephthalate, DEHT and the cyclohexane DINCH are example of commercially available alternatives with low human and environmental toxicity. There are also polymers that do not require plasticizers. However, each application needs to be individually assessed for each best specific technical performance.

Legal background:

Restrictions (EU/EEA)
Annex XVII of Regulation (EC) No 1907/2006 (REACH) addresses the following legal limits:

0.1% by weight of the plasticized material in toys and childcare articles for the sum of DEHP, DBP and BBP, entry 51.

From 7 July 2020, 0.1% by weight of the plasticized material in all articles for the sum of DEHP, DBP, BBP and DIBP.

0.1% by weight of the plasticized material in toys and childcare articles which can be placed in the mouth for DEHP, DBP, BBP, DINP, DIDP and DNOP, entry 52.

From 1 November 2020, DIHP, DMEP, DIPP, DPP and DnHP have a restriction limit of 1000 mg/kg in clothing, related accessories, textiles other than clothing in skin contact, or footwear (CMR fast track) according to Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 72. This limit applies to each substance individually or in combination with other phthalates that are classifies as CMR substances. The CMR fast track restriction does not apply to clothing, related accessories, textiles other than clothing, or footwear within the scope of Regulation (EU) 2016/425 (PPE).

All phthalates in toys and childcare articles for children aged 0-3 years are restricted (0.05%) in Denmark (BEK nr 855).

Duty to inform your customer on substances for authorisation (EU/EEA)
Several ortho-phthalates are listed in the Candidate List of Substances of Very High Concern for authorization of Regulation (EC) No 1907/2006 (REACH).

Prop 65: BBP and DINP are known to the State of California to cause cancer. Safe Harbor Limit: NSRL BBP 1200 µg/day (oral), DINP 146 µg/day. DEHP is known to the State of California to cause cancer and birth defects or other re-

productive harm. Safe Harbor Limit: NSRL 310 µg/day (oral). None for reproductive harm. DBP, DnHP and DIDP are known to the State of California to cause birth defects or other reproductive harm. Safe Harbor Limit: MADL DBP 8.7 µg/day, DnHP 2200 µg/day (oral), DIDP 2200 µg/day.
Settlements agreed at 1000 ppm for Several products for DBP, DEHP, DIDP, DINP and DnHP.

Overview of regulated ortho-phthalates

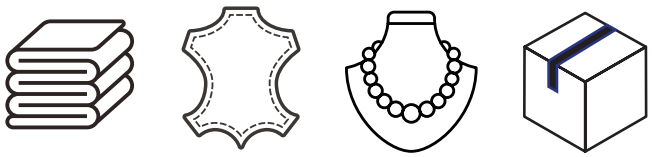
Substance	Abbr.	CAS RN	Legal status
Bis(2-ethylhexyl) phthalate	DEHP	117-81-7	SVHC and restricted Prop 65
Dibutyl phthalate	DBP	84-74-2	SVHC and restricted Prop 65
Benzyl butyl phthalate	BPB	85-68-7	SVHC and restricted Prop 65
Diisononyl phthalate	DINP	28553-12-0 and 68515-48-0	Restricted Prop 65
Diisodecyl phthalate	DIDP	26761-40-0 and 68515-49-1	Restricted Prop 65
Di-n-octyl phthalate	DNOP	117-84-0	Restricted
Diisobutyl phthalate	DIBP	84-69-5	Restricted
1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich	DIHP	71888-89-6	SVHC and restricted
1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters	DHNUP	68515-42-4	SVHC
Bis(2-methoxyethyl) phthalate	DMEP	117-82-8	SVHC and restricted
1,2-Benzenedicarboxylic acid, dipentylester, branched and linear		84777-06-0	SVHC
Diisopentyl phthalate	DIPP	605-50-5	SVHC and restricted
N-pentyl-isopentylphthalate	PIPP	776297-69-9	SVHC
Dipentyl phthalate	DPP	131-18-0	SVHC
Dihexyl phthalate	DnHP	84-75-3	SVHC and restricted Prop 65
1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear		68515-50-4	SVHC

1,2-benzenedicarboxylic acid, di-C6-10-alkyl esters with ≥ 0.3% of dihexyl phthalate (CAS 84-75-3)		68515-50-4	SVHC
1,2-benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters with ≥ 0.3% of dihexyl phthalate		68648-93-1	SVHC
Dicyclohexyl phthalate	DCHP	84-61-7	SVHC
Diisohexylphthalate	DIHXP	71850-09-4	SVHC

Test method: See annex 1.

Indicative LOQ: 100 mg/kg.

Siloxanes



Required limit value: 500 mg/kg (0,05% by weight).

CAS RN: SeveraL

Properties: Reproduction toxic. Toxic to aquatic life with long lasting effects.

Use: Used in washing and cleaning products such as softeners, polishes and waxes, cosmetics and personal care products, textile treatment products and dyes, paper, and cardboard products. Precursors in the production of polymers such as silicone rubbers.

Legal limit: Duty to inform your customer on substances for authorisation (EU/EEA)
D4, D5 and D6 are listed in the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).

Overview of regulated siloxanes

Substance	CAS RN	Legal status
Octamethylcyclotetra-siloxane (D4)	556-67-2	SVHC
Decamethylcyclopen-tasiloxane (D5)	541-02-6	SVHC
Dodecamethyl-cyclohexasiloxane	540-97-6	SVHC

Test method: No standardised test methods.

Use checklist for lab, annex 2.

Indicative LOQ: 100 mg/kg

BIOCIDAL AGENTS

General information

Biocidal agents are both used as process chemicals to prohibit growth of microbes during production and as product related chemicals to render biocidal property to the article.

The use of biocidal products in articles should be kept limited, for instance to avoid the increase of resistant bacteria. If the use of biocidal agents is essential, there are biocidal agents approved for PT9 (product type 9, that includes textiles, polymers, and leather) according to the Biocidal Product Regulation (EU 528/2012).

Cu-HDO (Bis-(N-cyclohexyldiazeniumdioxy) –copper)

Required limit value: Should not be present in products.

CAS RN: 312600-89-8

Properties: Fungicide. Cu-HDO is classified as very toxic to aquatic organisms.

Use: Fungicide mainly as wood preservatives but may occur in fungicidal coating of textile-polymeric materials.

Alternatives: The alternative to biocidal agents during storage and transport is a cool and dry environment.
If use of biocidal agents is essential, use only biocidal agents approved for PT9 according to the Biocidal Product Regulation (EU 528/2012).

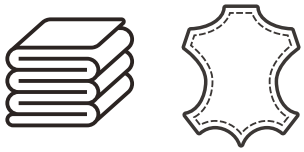
Legal background: Restrictions (EU/EEA)
Cu-HDO is banned within PT9 (product type 9) that includes textiles, polymers, and leather, according to the Biocidal Product Regulation (EU 528/2012).

Test method: No standardised test method available.

Use checklist for lab, annex 2.

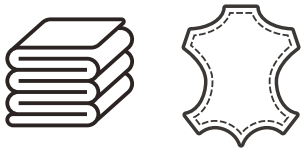
Indicative LOQ: 50 mg/kg

Carbendazim



Required limit value:	Should not be present in products.
CAS RN:	10605-21-7
Properties:	Fungicide. Reproduction toxic, mutagenic and toxic to aquatic life with long lasting effects and processes.
Use in textile and leather:	To counteract fungus growth in clothes, shoes, and other leather items.
Alternatives:	The alternative to biocidal agents during storage and transport is cool and dry environment. If use of biocidal agents is essential, use only biocidal agents approved for PT9 according to the Biocidal Product Regulation (EU 528/2012).
Legal background:	Restrictions (EU/EEA) Carbendazim is banned within PT9 (product type 9) that includes textiles, polymers, and leather, according to the Biocidal Product Regulation (EU 528/2012)
Test method:	No standardised test method available. Use checklist for lab, annex 2. For LOQ use annex 2 to the laboratory that performs these analysis

Dimethylfumarate (DMFu)



Required limit value:	Should not be present in products.
CAS RN:	624-49-7
Properties:	Fungicide. DMFu is harmful to skin and a strongly allergenic substance.
Use in textile and leather:	To counteract fungus growth in clothes, shoes and other leather items. DMFu can e.g. be found in silica gel bags but is also applied on the product both as a powder and in tablet form.
Alternatives:	The alternative to biocidal agents during storage and transport is cool and dry environment. If use of biocidal agents is essential, only approved biocidal agents for PT9 according to the Biocidal Product Regulation (EU 528/2012) should be applied.
Legal background:	Restrictions (EU/EEA) Legal limit: 0.00001 % by weight (0.1 mg/kg) in articles or any parts thereof. Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 61.
Test method:	See annex 1 Indicative LOQ: 0.1 mg/kg.

Guanidine, N,N'''-1,6-hexanediylbis[N'-cyano-, polymer with 1,6-hexanediamine, hydrochloride (PHMB 1600; 1.8)

Required limit value: Should not be present in products.

CAS RN: 27083-27-8, 32289-58-0

Properties: Bactericide. PHMB is very toxic to aquatic life, is suspected of causing cancer and may cause an allergic skin reaction

Use: Biocide, bactericide in textiles.

Alternatives: The alternative to biocidal agents during storage and transport is a cool and dry environment and satisfactory washing during use. If use of biocidal agents is essential, only approved biocidal agents for PT9 according to the Biocidal Product Regulation (EU 528/2012) should be applied.

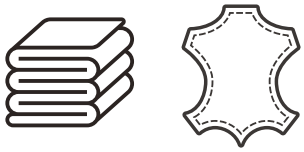
Legal background: Restrictions (EU/EEA)
PHMB is banned within PT9 (product type 9) that includes textiles, polymers and leather, according to the Biocidal Product Regulation (EU 528/2012)

Test method: No standardised test method available.

Use checklist for lab, annex 2.

For LOQ use annex 2 to the laboratory that performs these analysis

Parabenes



Required limit value: Should not be used in processes or present in products.

CAS RN: Several, including:
Butyl 4-hydroxybenzoate (Butylparaben), 94-26-8

Properties: Toxic for reproduction.

Use: Bactericides. Used in cosmetic products and detergents, in coating products, fillers, putties, plasters, modelling clay, adhesives, inks and toners.

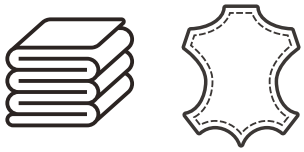
Legal background: Restrictions (EU/EEA)
Butyl 4-hydroxybenzoate (Butylparaben, CAS no.: 94-26-8) is an allowed preservative under the Regulation (EC) No 1223/2009 (cosmetic products)

Duty to inform your customer on substances for authorisation (EU/EEA)
Butyl 4-hydroxybenzoate (Butylparaben, CAS no.: 94-26-8) and Isobutyl 4-hydroxybenzoate (isobutylparabene , CAS no: 4247-02-3) are listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).

Test method: No standardised test method available for textiles and leather.

Use checklist for lab, annex 2.

Pentachlorophenol (PCP) and all isomers of Tetrachlorophenols (TeCP)



Required limit value: Should not be present in products.

CAS RN: 87-86-5 (PCP), 131-52-2 (PCP sodium salt),
935-95-5 (one isomer of TeCP namely 2,3,5,6-Tetrachlorophenol)

Properties: Fungicide. Organic compounds. Toxic and dangerous for the environment. On combustion, PCP emits dioxins, which are extremely toxic to humans.

Use: Fungicide for preservative treatment of goods prior to storage and transport.

Alternatives: Preservative in sizing agents and adhesives. Component in printing pastes (thickener).

The alternative to biocidal agents during storage and transport is a cool and dry environment. If use of biocidal agents is essential, only approved biocidal agents for PT9 according to the Biocidal Product Regulation (EU 528/2012) should be applied.

Legal background: Restrictions (EU/EEA)
PCP and its salts and esters are listed in Annex I to Regulation 2019/1021 (EU POP Regulation)

Pentachlorophenol (and its salts and esters) is banned in Norway in textiles and leather. Legal limit 5 ppm, (FOR-2004-06-01-922).

Pentachlorophenol and its salts and esters in articles, are banned in Germany (Chemikalien-Verbotsverordnung section 15), Denmark (BEK nr 854) and Austria (477.ChemVerbotsV 2003). Legal limit 5 ppm.

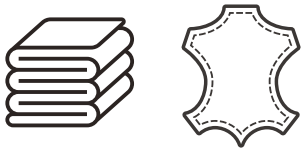
Pentachlorophenol is listed in the Rotterdam convention.

Prop 65: PCP is known to the State of California to cause cancer. Safe Harbor Limit: NRSL 40 µg/day. No information on settlements.

Test method: See annex 1

Indicative LOQ: 0.1 mg/kg

Permethrin



Required limit value: Should not be present in products.

CAS RN: 52645-53-1

Properties: Insecticide. Permethrin is like all synthetic pyrethroids a neurotoxin. It is considered more acutely toxic to children than to adults.

Use: Permethrin is a biocide in textiles. It is also used for home pest control, forestry, and in public health programs, including head lice control.

Alternatives: The alternative to biocidal agents during storage and transport is a cool and dry environment. If use of biocidal agents is essential, only approved biocidal agents for PT9 according to the Biocidal Product Regulation (EU 528/2012) should be applied.

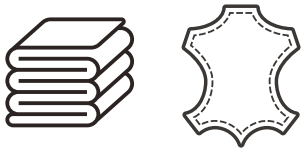
Legal background: Restrictions (EU/EEA)
Permethrin is on the list of temporarily permitted existing biocides within PT9 (product type 9) that includes textiles, polymers, and leather, according to the Biocidal Product Regulation (EU 528/2012).

Test method: No standardised test method available.

Use checklist for lab, annex 2.

Indicative LOQ: 5 mg/kg

Silver and its compounds



Required limit value: Should not be present in products.

CAS RN: Silver (metal): 7440-22-4

Properties: Slight skin and eye irritant. Disturb denitrification processes in nature that is essential for provision of nutrition to plants.

Dissolved (free) silver ions are very toxic to aquatic organisms.

Use: Bactericide.

Alternatives: If use of biocidal agents is essential, only approved for PT9 according to the Biocidal Product Regulation (EU 528/2012) should be applied.

The alternative to antibacterial agents during use is satisfactory washing. If use of biocidal agents is essential, only approved biocidal agents for PT9 according to the Biocidal Product Regulation (EU 528/2012) should be applied.

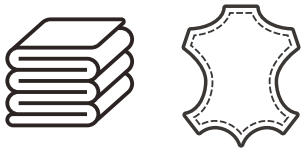
Legal background: Restrictions (EU/EEA)
Some silver compounds are on the list of temporarily permitted existing biocides within PT9 (product type 9) that includes textiles, polymers, and leather, according to the Biocidal Product Regulation (EU 528/2012).

Test method: No standardised test method available.

Use checklist for lab, annex 2.

Indicative LOQ: 10 mg/kg

Trisubstituted tin organic compounds



Required limit value: Should not be present in products.

Properties: Tributyltin compounds are different chemical substances that are toxic and dangerous for the environment. Bioaccumulative and persistent.

Use in textile and leather: Bactericides. Antibacterial agent to counteract noxious odours in clothes and shoes. Preservative, fungicide, and antifouling agent.

Alternatives: The alternative to antibacterial agents during use is satisfactory washing. If use of biocidal agents is essential, only approved biocidal agents for PT9 according to the Biocidal Product Regulation (EU 528/2012) should be applied.

Legal background:

Restrictions (EU/EEA)
Legal Limit: 0.1% by weight
All tri-substituted organostannic compounds such as tributyltin (TBT) are restricted in articles in annex XVII of the Regulation (EC) No 1907/2006 (REACH), entry 20.

Duty to inform your customer on substances for authorisation (EU/EEA)
Tributyltin oxide (TBTO), 56-35-9 is listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH)

The seven tri-substituted organostannic compounds listed below are also included in the Rotterdam convention

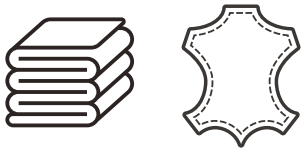
Non exhaustive overview of regulated tri-substituted organostannic compounds

Substance	CAS RN	Legal status
Bis(tributyltin) oxide, (TBTO)	56-35-9	SVHC and restricted
Tributyltin chloride	1461-22-9	Restricted
Tributyltin fluoride	1983-10-4	Restricted
Tributyltin methacrylate	2155-70-6	Restricted
Tributyltin benzoate	4342-36-3	Restricted
Tributyltin linoleate	24124-25-2	Restricted
Tributyltin naphthenate	85409-17-2	Restricted

Test method: See annex 1

Indicative LOQ: 0.2 mg/kg

Triclosan and Triclocarban



Required limit value: Should not be present in products.

CAS RN: Triclosan: 3380-34-5, Triclocarban: 101-20-2

Properties: Triclosan is classified as a probable human carcinogen and bio accumulative.

Use: Bactericides. Antibacterial agent in clothes and other commodities.

Alternatives: The alternative to antibacterial agents during use is satisfactory washing. If use of biocidal agents is essential, only approved biocidal agents for PT9 according to the Biocidal Product Regulation (EU 528/2012) should be applied.

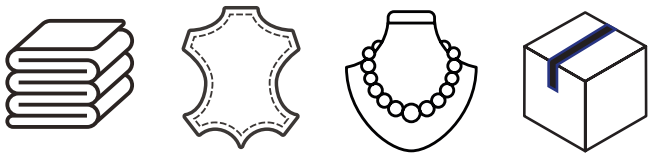
Legal background: Restrictions (EU/EEA)
Triclosan is banned within PT9 (product type 9) that includes textiles, polymers, and leather, according to the Biocidal Product Regulation 528/2012).

Triclocarban is not on the active substance list for PT9 and thus not allowed to use in textiles, polymers, and leather.

Test method: See annex 1.

Indicative LOQ: 10 mg/kg

Zincpyrithion



Required limit value: Should not be present in products.

CAS RN: 13463-41-7

Properties: Toxic to reproduction.

Use: Bactericide, fungicide and algicide.Antibacterial and fungicide agent in articles. Commonly used in shampoo and previously in antifouling paint. May be used in plastic articles

Alternatives: The alternative to antibacterial agents during use is satisfactory washing. If use of biocidal agents is essential, only approved biocidal agents for PT9 according to the Biocidal Product Regulation (EU 528/2012) should be applied.

Legal background: Restrictions (EU/EEA)
Zincpyrithion is on the list of temporarily permitted existing biocides within PT9 (product type 9) that includes textiles, polymers, and leather, according to the Biocidal Product Regulation (EU 528/2012).

Test method: No standardised test method available.

Use checklist for lab, annex 2.

Indicative LOQ: 100 mg/kg as Zinc

Bronopol

Required limit value: Should not be used in processes or present in products.

CAS RN: 52-51-7

Properties: Harmful to the environment.

Use: Bronopol is used as a microbiocide/microbiostat in oil field systems, air washer systems, air conditioning/humidifying systems, cooling water systems, paper-mills, absorbent clays, metal working fluids, printing inks, paints, adhesives and consumer/institutional products.

Legal background: Restrictions (EU/EEA)
Bronopol is banned within PT9 (product type 9) that includes textiles, polymers, and leather, according to the Biocidal Product Regulation 528/2012).

Test method: No standardised test method available for textiles or leather.

Use checklist for lab, annex 2.

Indicative LOQ: 100 mg/kg

Thiram

Required limit value: Should not be used in processes or present in products.

CAS RN: 137-26-8

Properties: Skin sensitizer. Harmful to the environment.

Use: Thiram is a non-systemic fungicide used to prevent crop damage in the field and to protect from deterioration in storage or transport.

Legal background: Restrictions (EU/EEA)
Thiram is banned within PT9 (product type 9) that includes textiles, polymers, and leather, according to the Biocidal Product Regulation 528/2012).

Test method: No standardised test method available for textiles or leather.

Use checklist for lab, annex 2.

Indicative LOQ: 100 mg/kg

Metam-sodium (sodium N-methyldithiocarbamate)

Required limit value: Should not be used in processes or present in products.

CAS RN: 137-42-8

Properties: Skin sensitizer. Harmful to the environment.

Use: Metam sodium (sodium N-methyldithiocarbamate) is a fumigant used primarily in agriculture as a preplant treatment to kill soil fungi, nematodes, weed seeds and soil insects.

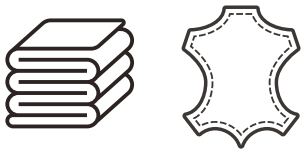
Legal background: Restrictions (EU/EEA)
Metam-sodium ((sodium N-methyldithiocarbamate) is banned within PT9 (product type 9) that includes textiles, polymers, and leather, according to the Biocidal Product Regulation 528/2012).

Test method: No standardised test method available for textiles or leather.

Use checklist for lab, annex 2.

Indicative LOQ: 100 mg/kg

Polyhexamethylene biguanide hydrochloride with a mean number-average molecular weight (Mn) of 1415 and a mean polydispersity (PDI) of 4.7 (PHMB(1415;4.7))



Required limit value: Should not be present in products.

CAS RN: 1802181-67-4

Properties: Bactericide. PHMB is very toxic to aquatic life, is suspected of causing cancer and may cause an allergic skin reaction.

Use: Biocide, bactericide. Polyhexamethylene biguanide (PHMB) is an antiseptic with antiviral and antibacterial properties used in a variety of products including wound care dressings, contact lens cleaning solutions, perioperative cleansing products, and swimming pool cleaners.

Alternatives: The alternative to biocidal agents during storage and transport is a cool and dry environment and satisfactory washing during use. If use of biocidal agents is essential, only approved biocidal agents for PT9 according to the Biocidal Product Regulation (EU 528/2012) should be applied.

Legal background: Restrictions (EU/EEA)
PHMB(1415;4.7 is banned within PT9 (product type 9) that includes textiles, polymers and leather, according to the Biocidal Product Regulation (EU 528/2012)

Test method: No standardised test method available.
Use checklist for lab, annex 2.

For LOQ use annex 2 to the laboratory that performs these analysis

Orto phenyl-phenols (OPP) also called biphenyls or 2-phenylphenols

Required limit value: Should not be present in products.

CAS RN: 13707-65-8 (potassium salt), 132-27-4 (sodium salt)

Properties: Preservatives. Very toxic to aquatic life, causes severe skin burns and eye damage.

Use: Biocide, preservative. OPP is used as an auxiliary to protect leather through various production stages, from hide to finished good. OPP may be used in textile material production as a dye carrier, especially for synthetic fibres.

Alternatives: The alternative to biocidal agents during storage and transport is a cool and dry environment and satisfactory washing during use. If use of biocidal agents is essential, only approved biocidal agents for PT9 according to the Biocidal Product Regulation (EU 528/2012) should be applied.

Legal background: Restrictions (EU/EEA)
The potassium and sodium salts of biphenyls are banned within PT9 (product type 9) that includes textiles, polymers and leather, according to the Biocidal Product Regulation (EU 528/2012)

Test method: See annex 1.

Indicative LOQ: 10 mg/kg

Sodium p-chloro-m-cresolate

Required limit value: Should not be present in products.

CAS RN: 15733-22-9

Properties: Bactericide. Very toxic to aquatic life, causes severe skin burns and eye damage.

Use: Biocide, bactericide used in a variety of products.

Alternatives: The alternative to biocidal agents during storage and transport is a cool and dry environment and satisfactory washing during use. If use of biocidal agents is essential, only approved biocidal agents for PT9 according to the Biocidal Product Regulation (EU 528/2012) should be applied.

Legal background: Restrictions (EU/EEA)
Sodium p-chloro-m-cresolate is banned within PT9 (product type 9) that includes textiles, polymers and leather, according to the Biocidal Product Regulation (EU 528/2012)

Test method: No standardised test method available.
Use checklist for lab, annex 2.

For LOQ use annex 2 to the laboratory that performs these analysis

MISCELLANEOUS

pH

Limit value textiles:	4.0 - 8.5
Limit value leather:	3.5 - 7.0
Properties:	A pH higher than 10 or lower than 3 can cause skin irritation.
Alternatives textiles:	The pH value can easily be corrected by washing.
Legal background:	None.
Test method textiles:	EN ISO 3071:2020
Test equipment:	pH meter. Accuracy 0.2 pH units
Test method leather:	EN ISO 4045:2018
Test equipment:	pH meter. Accuracy 0.2 pH units

Cobalt (Co) and its compounds

Required limit value: Should not be used in production and present in products.

CAS RN:
10124-43-3, Cobalt sulphate
10141-05-6, Cobalt dinitrate
71-48-7, Cobalt di(acetate)
513-79-1, Cobalt carbonate
7646-79-9, Cobalt dichloride

Properties: May cause cancer by inhalation, may damage fertility, is very toxic to aquatic life, is very toxic to aquatic life with long lasting effects, is harmful if swallowed, is suspected of causing genetic defects, may cause an allergic skin reaction and may cause allergy or asthma symptoms or breathing difficulties if inhaled.

Use: Cobalt dichloride: Absorber for gases, humidity indicator (e.g., silica gels), to produce vitamin B12, dye mordant for glass industry, solid lubricant, catalyst, invisible inks, drying agent, production of non-ferrous metals, electroplating, additive in rubber production.

Cobalt sulphate: Mainly used in the production of other chemicals. Further applications may include manufacture of catalysts and driers, surface treatments (such as electroplating), corrosion prevention, production of pigments, decolorizing (in glass, pottery), batteries, animal food supplements, soil fertilizers, and others.

Cobalt carbonate: Mainly used in the manufacture of catalysts. Minor uses may include feed additive, production of other chemicals, production of pigments, and adhesion (in ground coat frit).

Cobalt di(acetate): Mainly used in the manufacture of catalysts. Minor uses may include production of other chemicals, surface treatment, alloys, and production of pigments, dyes, rubber adhesion,

Cobalt dinitrate: Mainly used in the production of other chemicals and the manufacture of catalysts. Further applications may include surface treatment and batteries.

Alternatives: Avoid using cobalt and its salts as much as possible with retained functionality and cost efficiency of the product.

Legal background: Restrictions (EU/EEA)
Annex XVII of Regulation (EC) No 1907/2006 (REACH).
Shall not be manufactured, placed on the market or used as substances on their own or in mixtures in a concentration equal to or above 0.01% by weight (100 mg/kg), unless safety measures have been taken to limit exposure of any of the cobalt salts to below 0.01% by weight (100 mg/kg) to demonstrate safe use and production.

Test method: Duty to inform your customer on substances for authorisation (EU/EEA)
These five cobalt salts are listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH)

Overview of regulated Cobalt (Co) and its compounds

Substance	CAS RN	Legal status
Cobalt Metal Powder	7440-48-4	Prop 65
Cobalt sulphate	10124-43-3	SVHC and restricted, Prop 65
Cobalt dinitrate	10141-05-6	SVHC and restricted
Cobalt di(acetate)	71-48-7	SVHC and restricted
Cobalt carbonate	513-79-1	SVHC and restricted
Cobalt dichloride	7646-79-9	SVHC and restricted

Prop 65: Cobalt sulphate is known to the State of California to cause cancer.

Test method: See annex 1.

Indicative LOQ: 10 mg/kg

Proposition 65: Other chemicals listed with relevance to the materials referred to in this guidance document.

Chemicals related to dyestuffs

Substance name	CAS RN	Comment
Aniline	62-53-3	NSRL: 100 µg/day
Benzyl violet 4B	1694-09-3	NSRL: 30 µg/day
Carbon black (airborne, unbound particles of respirable size)	1333-86-4	No Safe Harbor Limit
Cobalt Metal Powder	7440-48-4	No Safe Harbor Limit
Ethylene oxide	75-21-8	NSRL: 2 µg/day MADL: 20 µg/day
Naphthalene	91-20-3	NSRL: 5.8 µg/day
1,3-Propane sultone	1120-71-4	NSRL: 0.3 µg/day
Trypan blue (commercial grade)	72-57-1	No Safe Harbor Limit

Chemicals related to materials

Substance name	CAS RN	Comment
Antimony oxide (Antimony trioxide)	1309-64-4	Polyester catalyst No Safe Harbor Limit
Dichloromethane (Methylene chloride)	75-09-2	Triacetate (NSRL): 50 µg/day NSRL- Inhalation: 200 µg/day
N-Nitrosodimethylamine	62-75-9	Rubber NSRL: 0.04 µg/day

Biocides

Substance name	CAS RN	Comment
Hexachlorobenzene	118-74-1	NSRL: 0.4 µg/day
o-Phenylphenate, sodium	132-27-4	NSRL: 200 µg/day
o-Phenylphenol	90-43-7	No Safe Harbor Limit
Methyl bromide, as a structural fumigant	74-83-9	MADL - Inhalation: 810 µg/day
2,4,6-Trichlorophenol	88-06-2	NSRL: 10 µg/day

Flame retardants

Substance name	CAS RN	Comment
Tris(1,3-dichloro-2-propyl) phosphate (TDCPP)	13674-87-8	NSRL: 5.4 µg/day
Vinyl bromide	593-60-2	No Safe Harbor Limit

Annex 1

Overview of published and proposed EN and EN ISO test methods for textile, leather and footwear. (January 2023)

Regulated textile and leather relevant substances	CAS RN	Latest published: CEN/ISO test methods	In progress: CEN/ISO test methods
Alkylphenol ethoxylates (APEO) and derivatives. Alkylphenols (AP)	Several	EN ISO 18254-1:2016, 2:2019 (textile), (APEO) EN ISO 21084:2019 (textile), (AP) EN ISO 18218-1:2015 (APEO direct method, leather) EN ISO 18218-2:2019 (APEO indirect method, leather)	prEN ISO 18218-1 rev Leather - Determination of ethoxylated alkylphenols - Part 1: Direct method
Arsenic compounds	Several	EN 16711-1,-2:2015 (textile) EN ISO 17072-1,:2019 (leather) EN ISO 17072-2:2022 (leather)	
Bisphenols	80-05-07(BPA) 77-40-7 (BPB) 6807-17-6 (2,2-bis(4'-hydroxyphenyl)-4-methylpentane) 80-09-1, 4,4'-sulphonyl diphenol	CEN/TS 13130-13:2005 (Bisphenol A, abbr: BPA and Bisphenol B abbr. BPB)	prEN ISO 11936 (leather)
C,C'-azodi(formamide) (ADCA)	123-77-3	Not yet available	
Ethylenediamine (EDA)	107-15-3	Not yet available	

Regulated textile and leather relevant substances	CAS RN	Latest published: CEN/ISO test methods	In progress: CEN/ISO test methods
Ethylenethiourea	96-45-7	Not yet available	
Formamide	75-12-7	Not yet available	
2-Ethoxyethanol	110-80-5	Not yet available	
Hydrazine	302-01-2	Not yet available	
Formamide	0075-12-07	Not yet available	
1-vinylimidazole 2-methylimidazole	1072-63-5 693-98-1	Not yet available	
2-methoxyethyl acetate	110-49-6	Not yet available	
Bis(2-(2-methoxyethoxy)ethyl) ether	143-24-8	Not yet available	
N-Nitrosodimethylamine	62-75-9	Not yet available	
PAH - Polycyclic aromatic hydrocarbons	Several	EN 17132:2019 (textile) EN ISO 16190:2021 (footwear)	
Quinoline	91-22-5	Not yet available	
Solvents - Aliphatic organic solvents	Several	Not yet available	
Solvents - Aromatic organic solvents	Several	Not yet available	Update that include residues of benzene in textiles: prEN 17131-1,-2 rev.
Solvents - Chlorinated organic solvents	Several	EN 17137:2018 (textile)	Update under drafting: Determination of the content of compounds based on chlorobenzenes and chlorotoluenes. prEN 17137 rev

Regulated textile and leather relevant substances	CAS RN	Latest published: CEN/ISO test methods	In progress: CEN/ISO test methods
Solvents - 1.4 dioxane	123-91-1	Not yet available	
Solvents - DMFa (N,N-dimethylformamide)	68-12-2	EN 17131:2019 (textile) CEN ISO/TR 16178:2021 (footwear) EN ISO 16189:2021 (footwear) EN 16778:2016 (gloves)	Update under approval: prEN 17131-1 rev Determination of certain residual solvents – Part 1: Determination of aprotic solvents, method using gas chromatography (textile) Update under drafting that include residues of benzene in textiles: prEN 17131-2 rev.
Solvents - DMAC (N,N-dimethylacetamide)	127-19-5	Not yet available	Under drafting: prEN 17131-1 rev Determination of certain residual solvents – Part 1: Determination of aprotic solvents, method using gas chromatography (textile)

Regulated textile and leather relevant substances	CAS RN	Latest published: CEN/ISO test methods	In progress: CEN/ISO test methods
Solvents - NMP (N-methyl-2-pyrrolidone)	872-50-4	EN ISO 19070:2016 (leather)	Under drafting: prEN 17131-1 rev Determination of certain residual solvents – Part 1: Determination of aprotic solvents, method using gas chromatography (textile)
6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol (DBMC)	119-47-1	Not yet available	
Tin organic compounds (Organostannic compounds)	Several	EN ISO 22744-1:2020 (textile) EN ISO 22744-2:2020 (textile) CEN ISO/TS 16179:2012 (footwear)	
Tris(2-methoxyethoxy)vinylsilane	1067-53-4	Not yet available	
Allergenic dyes	Several	EN ISO 16373-2:2014 (textile)	
Restricted arylamines related to azo dyes	Several	EN ISO 14362-1, 3:2017 (textile) EN ISO 17234-1:2020 (leather) EN ISO 17234-2:2011 (leather)	
Benzotriazols (UV-320, UV-327, UV-328 and UV-350)	3846-71-7 (UV320) 3864-99-1(UV327) 25973-55-1 (UV 328) 36437-37-3 (UV 350)	ISO 24040:2022 (textiles)	

Regulated textile and leather relevant substances	CAS RN	Latest published: CEN/ISO test methods	In progress: CEN/ISO test methods
3-benzylidene camphor (1,7,7-trimethyl-3-(phenylmethylene)bi-cyclo[2.2.1] heptan-2-one) (abbr: 3-BC)	15087-24-8	Not yet available	
Boric acid, borate compounds	Several	Not yet available	
2-benzyl-2-dimethylami-no-4'-morpholinobutyrophe-none	119313-12-1	Not yet available	
2-methyl-1-(4-methylthiop-henyl)-2-morpholinopro-pan-1-one	71868-10-5	Not yet available	
Cadmium (Cd) and cadmium salts	7440-43-9 (cad-mium metal) Several	EN 16711-1, -2:2015 (textile) EN ISO 17072-1:2019 (leather) EN ISO 17072-2:2022 (leather)	
Cobalt (Co) and its com-pounds	7440-48-4 (cobalt metal) Several	EN 16711-1, -2:2015 (textile) EN ISO 17072-1:2019 (leather) EN ISO 17072-2:2022 (leather)	Under approval
CMR, Carcinogenic, Mutagenic, Reproductive toxic dyestuffs	Several	EN ISO 16373-2:2014 (textile)	

Regulated textile and leather relevant substances	CAS RN	Latest published: CEN/ISO test methods	In progress: CEN/ISO test methods
Chloroparaffins	85535-84-8 (SCCP) 85535-85-9 (MCCP)	EN ISO 22818:2021 (textile) EN ISO 18219-1:2021 (SCCP, leather) EN ISO 18219- 2:2021 (MCCP, leather)	
Chromium VI	18540-29-9	EN ISO 17075-1,-2:2017 (leather) EN ISO 10195:2021 (ageing of leather)	
Dechlorane ™ Plus (1,6,7,8,9,14,15,16,17,17,18,18 Dodecachloropenta-cyclo[12.2.1.16,9.02,13.05,10] octadeca-7,15-diene)	13560-89-9	Not yet available	
Formaldehyde	50-00-0	EN ISO 14184-1,-2:2011 (textile) EN ISO 17226-1:2021 (leather) EN ISO 17226-2:2019 (leather) EN ISO 17226-3:2011(formaldehyde emissions from leather)	Under drafting: prEN ISO 14184-3 (Free and hydrolysed formaldehyde by LC-MS) (textile)
Glutaraldehyde (glutaral)	111-30-8	Not yet available	
Melamine	108-78-1	Not yet available	
Hexabromocyclododecan (HBCDD)	25637-99-4, 3194-55-6, 134237-50-6, 134237-51-7 and 134237-52-8	EN ISO 17881-1:2016 (textile)	

Regulated textile and leather relevant substances	CAS RN	Latest published: CEN/ISO test methods	In progress: CEN/ISO test methods
Lead (Pb) and lead salts	7439-92-1 (lead metal) Several	EN 16711-1,-2:2015, -3:2019 (textile) EN ISO 17072-1,:2019 (leather) EN ISO 17072-2:2022 (leather)	
Mercury (Hg)	7439-97-6	EN 16711-1,-2:2015 (textile) EN ISO 17072-1,2019 (leather) EN ISO 17072-2:2022 (leather)	
N-(hydroxymethyl)acrylamide	924-42-5	Not yet available	
Nickel (Ni), in accessories	7440-02-0	EN 12472:2020 and EN 1811:2011+A1:2015 (for coated and non coated items)	Under approval: EN 1811:2023 rev
Nitrosamines *N-Nitrosodimethylamine listed in Proposition 65	Several *62-75-9	EN ISO 19577:2019 (footwear)	

Regulated textile and leather relevant substances	CAS RN	Latest published: CEN/ISO test methods	In progress: CEN/ISO test methods
Per and polyfluorinated alkyl substances (PFAS)	Several	EN 17681-1:2022 (non volatile PFAS, textile) EN 17681-2:2022 (volatile PFAS, textile) EN ISO 23702-1:2018 (leather)	prEN ISO 23702-1 rev (leather)
Ortho-phthalate esters	Several	EN ISO 14389:2022 (textile) EN ISO 16181-1, -2:2021 (footwear)	
Polybrominated biphenyls (PBB) and Polybrominated diphenyl ethers (PBDE)	Several	EN ISO 17881-1:2016 (textile)	
2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol also called A-TBBPA	79-94-7	EN ISO 17881-1:2016 (textile)	
bis(2-ethylhexyl) tetrabromophthalate covering any of the individual isomers and/or combinations thereof Bis(2-ethylhexyl) tetrabromophthalate	Several	EN ISO 17881-1:2016 (textile)	
2,2-bis(bromomethyl) propane1,3-diol (BMP)	3296-90-0	EN ISO 17881-1:2016 (textile)	
2,2-dimethylpropan-1-ol, tribromo derivative/3-bromo-2,2-bis(bromomethyl)-1-propanol (TBNPA)	36483-57-5	EN ISO 17881-1:2016 (textile)	
2,3-dibromo-1-propanol (2,3-DBPA)	1522-92-5 96-13-9	EN ISO 17881-1:2016 (textile)	

Regulated textile and leather relevant substances	CAS RN	Latest published: CEN/ISO test methods	In progress: CEN/ISO test methods
Siloxanes (D4, D5 and D6)	556-67-2 (D4) 541-02-6 (D5) 540-97-6 (D6)	Not yet available	
Halogenated aryl phosphates – TCEP, TBPP, TCPP and TDCPP	115-96-8, 126-72-7, 13674-84-5, 13674-87-8	EN ISO 17881-2:2016 (textile)	
Aryl phosphates Trixylyl phosphate, Triphenyl-phosphate	25155-23-1, 115-86-6	EN ISO 17881-2:2016 (textile)	
Tris(aziridinyl)phosphinoxide(-TEPA)	545-55-1	EN ISO 17881-2:2016 (textile)	
BIOCIDAL AGENTS			
General test methods for biocides in textiles, leather and footwear	----	EN ISO 20743:2021 (textile) EN ISO 22517:2021 leather) EN ISO 19574:2022 (footwear)	prEN 17134-1,-2 (textile) prEN ISO 22517 (leather) prEN ISO 16187 rev (footwear)
Cu-HDO (Bis-(N-cyclohexyl-diazeniumdioxy) –copper)	27083-27-8	Not yet available	
Dimethylfumarate (DMFu)	624-49-7	EN 17130:2019 (textile) EN ISO 16186:2021 (footwear)	
Guanidine, N,N'''-1,6-hexan-ediylbis[N'-cyano-, polymer with 1,6-hexanediamine, hyd-rochloride (PHMB 1600; 1.8)	27083-27-8	Not yet available	

Regulated textile and leather relevant substances	CAS RN	Latest published: CEN/ISO test methods	In progress: CEN/ISO test methods
Pentachlorophenol (PCP) and all isomers of Tetrachlorophenols (TeCP)	87-86-5 Several	EN ISO 17070:2015 (leather) CEN/TR 14823:2003 (wood) EN ISO 15320:2011 (pulp and paper)	Under drafting: prEN 17134-2 Determination of biocide additives – Part 2, Chlorophenol-based preservatives, method using gas chromatography Preliminary prEN 14823 (wood)
Permethrin	52645-53-1	Not yet available	Under drafting: Determination of biocide additives – prEN 17134-3 rev , Permethrin, method using liquid chromatography
Silver and its compounds	Several	Not yet available	
Trisubstituted tin organic compounds	Several	EN ISO 22744-1,-2:2020 (textile) CEN ISO/TS 16179:2012 (footwear)	
Triclosan 2-phenylphenol (OPP)	3380-34-5 90-43-7	EN 17134:2019 (2-phenylphenol (OPP) and triclosan in textile materials) EN ISO 13365-1,-2:2020 (TCMTB, PCMC, OPP, OIT, content in leather)	Under drafting: prEN 17134 rev Part 1: Determination of biocide additives 2 - Phenylphenol and triclosan, method using liquid chromatography (textile)
Zincpyrithion	13463-41-7	Not yet available	
Bronopol	52-51-7	Not yet available	

Regulated textile and leather relevant substances	CAS RN	Latest published: CEN/ISO test methods	In progress: CEN/ISO test methods
Thiram	137-26-8	Not yet available	
Metam-sodium (sodium N-methyldithiocarbamate)	137-42-8	Not yet available	
Polyhexamethylene biguanide hydrochloride with a mean number-average molecular weight (Mn) of 1415 and a mean polydispersity (PDI) of 4.7 (PHMB(1415;4.7))	1802181-67-4	Not yet available	
Orto phenyl-phenols (OPP) also called biphenyls or 2-phenylphenols	13707-65-8 (potassium salt), 132-27-4 (sodium salt)	Not yet available	
Sodium p-chloro-m-cresolate	15733-22-9	Not yet available	

Annex 2 - Checklist for laboratories

Introduction
This routine is to ensure qualified chemical test protocols and test results by selected and by NN, approved accredited independent test laboratories in selected countries of concern.

If there are published EN or EN ISO or ISO methods available always use that method and clearly report in the test protocol

If other methods are used e.g., in-house test methods, always carefully answer each section below.

In case the applied EN, EN ISO or ISO method is modified by the test laboratory, always report these modified procedures in the test report.

All test reports should be signed by an authorised person at the laboratory.

Testing
For those chemical substances to be tested, where no official international standard test method exists, the test report should include the following:

Sample preparation
- Amount of specimen for preparation, weight, and size
- procedure of extraction, solvents used, and equipment used for extraction e.g., Soxhlet

Instrumental performance
- instrument used e.g GC-MS etc.
- lab specific detection limit(s) where preferably LOQ (limit of quantification) are reported
- standard deviation in analytical results

Other information of importance
- describe modified procedures from applied established ISO/EN standard methods if available.
- always present test results in mg/kg
- description of the recalculation from mg/kg if the test result is presented in another unit e.g ppm, ppb, ug/kg etc

Instruction to the laboratory
- always present the actual test result of the analysis and not any letter combinations if not properly described e.g N/A
- if not detected, report always below the actual LOQ (< LOQ) values

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