Manufacturing Restricted Substance List

January 2023, Version 2.0
effective in our production from June 2023

reima

Overview

This document specifies which chemical substances are banned or restricted in the product manufacturing process. It also defines the limits for chemical substances in the finished products. We follow European Union legislations including SVHC-rules and bluesign® criteria on chemicals, but we have set even stricter limits for various substances. Please note that this RSL applies for both, apparel, and footwear, although some limits might deviate in the latter case. Therefore, we have indicated the most important deviations in footwear in the footnote section and separately at the end of this document.

We will update the RSL on a regular basis and share the updated information with our partners to undertake responsible chemical management in their practices.

CONTENTS

1. ALKYLPHENOLS AND ALKYLPHENOL ETHOXYLATES

Alkylphenol ethoxylates (APEOs), often called Alkylphenols (APs), can be used in detergents and as scouring, coating or waterproofing agents, in printing pastes and in dyeing. They are surfactants with good wetting, penetration, solubilizing and washing characteristics. APEOs are slow to biodegrade, and they tend to bioaccumulate. They have been shown to be toxic to aquatic organisms, endocrine disruptors and thus pose a risk to humans.

Table 1 Prohibited and restricted alkylphenols and alkylphenol ethoxylates.

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE (mg/kg)
Alkylphenols (APs)			**Usage ban** DL <10 mg/kg (For sum of all allocated members/substances)
Nonylphenol, mixed isomers	25154-52-3	Decree of Finnish Government 596/2004; Directive 2003/53/EC (EU, 2003b)[1] bluesign ®[2]	
Isononylphenol	11066-49-2		
4-Nonylphenol	104-40-5		
4-Nonylphenol, branched	84852-15-3		
p-(1,1-dimethylpropyl) phenol	80-46-6	REACH, SVHC bluesign®	
4-heptylphenol, branched and linear	1987-50-4		
Octylphenol, mixed isomers	27193-28-8	REACH, Annex XVII[2]	
4-Octylphenol	1806-26-4		
4-tert-Octylphenol	140-66-9		
Alkylphenol ethoxylates (APEOs)			**Usage ban** DL<100 mg/kg (For sum of all allocated members/substances)
Isononylphenol, ethoxylated	37205-87-1		
Nonylphenol, branched, ethoxylated	68412-54-4		
Nonylphenol, branched, ethoxylated, phosphated	68412-53-3		
4-Nonylphenol, branched, ethoxylated	127087-87-0		
Octylphenol, ethoxylated	9036-19-5		
Octylphenol ethoxylated	68987-90-6		
Polyoxyethylated octylphenol	9002-93-1		
Polyoxyethylated nonylphenol	9016-45-9		
Polyoxyethylated p-nonylphenol	26027-38-3		
4-(1,1,3,3-tetramethylbutyl) phenol, ethoxylated			

[1] Limit: 0,1% by weight
[2] Limit: 100 mg/kg

Test methods:

Alkylphenols

- Textiles and leather: ISO 21084 (2019)
- Metal and polymer parts, down/feather articles: EN ISO 21084 (2019), modified // 1 g sample / 20 ml THF with Sonication for 60 min at 70°C

Alkylphenol ethoxylates

- Textiles, metal and polymer parts, down/feather articles: ISO 18254-1 (2016) with determination of APEO using LC/MS or LC/MS/MS.
- Leather: ISO 18218-1 (2015) with quantification according to EN ISO 18254-1 (2016)

2. AMINES

Amines, in particular aniline, can be found in textile dyes such as synthetic indigo and are suspected to be carcinogen and to cause skin allergies. Moreover, aniline is toxic to aquatic organisms, which implies that its release into the environment needs to be prevented.

Table 2 Restricted amines according to US Chemicals Concern and bluesign® RSL, Version 13.0, Jul. 01, 2022.

SUBSTANCE	**CAS NO.**	REGULATION	**REIMA LIMIT VALUE mg/kg // TEST METHOD**	**NOTES**
Aniline	62-53-3	Chemical of concern Article 37/ Title 9 / State of New York bluesign®	**Usage ban** DL <30 mg/kg Textiles and polymer parts: EN ISO 14362-1 (2017) Leather: EN ISO 17234-1 (2015)	In case aniline is detected, the test needs to be repeated without addition of sodium dithionite
Amine salts	Several		**Usage ban** DL< 30 mg/kg	

3. ALKANES OR CHLORINATED PARAFFINES

Short chain, chlorinated paraffins are used in leather coatings, plasticizer for PVC, rubber and as flame retardants. They are toxic and can bioaccumulate. Long chain paraffins can be applied to make outdoor clothing water repellent and are banned for the same reasons as the former.

Table 3 Restricted alkanes and chlorinated paraffines

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE mg/kg TEST METHOD
Alkanes C10 – C13 Chlorine (SCCP's, Short Chain Chlorinated Paraffins)	85535-84-8	REACH, SVHC REACH, Annex XVII	Shall not be placed on the market for use as substances or as constituents of other substances or preparations in concentrations higher than 0.1 % in metalworking or for fat liquoring of leather.[3]
Medium-chain chlorinated paraffins (MCCP) (UVCB substances consisting of more than or equal to 80% linear chloroalkanes with carbon chain lengths within the range from C14 to C17)	-	REACH, SVHC	Shall not be used in flame retardants, plasticizers, or in rubber and textiles.
Chlorinated Paraffins, long chain	108171-26-2	Chemicals of concern Article 37 / Title 9 / State of New York	Shall not be used in water repellent treatment in fabrics.

[3] For footwear, a DL of 1500 mg/kg is imposed.

4. Biocides

Biocides are chemical substances, preparations, or micro-organisms intended to destroy, deter, render harmless, prevent the action of or otherwise exert a controlling effect on any harmful organism by chemical or biological means. Biocides include among other things disinfectants, pesticides, mosquito repellents and preservatives both in materials and in processing systems.

4.1. Regulations in EU[4]

Regulation on biocidal products requires all biocidal products to be authorized by the appropriate authority before they are placed on the market. Authorities can only authorize products if they have carried out an evaluation that shows that the use of the product is safe for human health, animal health and the environment. The product must also be proven to be effective for its intended use(s).

Biocidal products are authorized based on a two-step approach:

1. The active substance responsible for the biocidal effect must be approved at EU level. Its hazardous properties and possible risks to humans, animals and the environment are then assessed.
2. Every product containing that active substance must be authorized for each specific formulation (e.g. liquid, spray, etc.), intended use (e.g. control of ticks or mosquitos) and user category (e.g. professional users or general public).

The EU country where the biocidal products are to be placed on the market is responsible for authorizing the product. This is referred to as the 'National authorization'. The process of national authorization relies however on the process of mutual recognition. Once a biocidal product is authorized by a first EU country (the 'Reference Member State'), the other EU countries must, if requested to do so, authorize the biocidal products under the same terms and conditions.

Some products can also be authorized at EU level, allowing the companies to place these on the entire EU market. In these cases, it is the European Commission that authorizes the products. This is referred to as the 'Union authorization'.

[4] Regulation (EU) 528/2012

The Regulation makes Union authorization optional – companies can choose to either have their products authorized by one EU country with this being recognized afterwards by EU countries (through national authorizations or be authorized at EU level directly.

The Regulation contains provisions which apply both to biocidal products and to any articles that have been treated with or incorporate a biocidal product.

Articles can only be treated with active substances that have been approved in the EU for that purpose. This is a significant change to the previous scheme, where articles imported from non-EU countries were permitted to be treated with substances that are not allowed in the EU.

Substances listed on the Table 4 are based on EU regulations and bluesign® criteria.

Table 4 Restricted biocides according to EU regulations and bluesign® RSL, Version 11.0, Dec.1, 2020.

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE mg/kg AND TEST METHOD
Boric acid	10043-35-3	SVHC[5]	**Usage ban //** ND
Chlordecone	143-50-0	POP 850/2004, 756/2010[6]	**Usage ban** // ND
Chlorinated and non-chlorinated Isothiazolinone-derivatives	*Several*	*bluesign®*	***Usage ban***
• 2-Methyl-4-isothiazolin-3-one (MIT)	2682-20-4	bluesign®	DL <50 mg/kg
• 2-n-Octyl-4-isothiatzolin-3-one (OIT)	26530-20-1	bluesign®	DL <25 mg/kg
• 1,2-Benzoisothiazol-3(2H)-one (BIT)	2634-33-5	bluesign®	DL <25 mg/kg
• Dichlorooctylisothiazolinone	64359-81-5	bluesign®	DL <15 mg/kg
2-Chloroasetamide	79-07-2	Commission Decision 2010/72/EU[7] bluesign®	**Usage ban** // DL <1.0 mg/kg Extraction with MeOH // GC-MS
Dichlorophen	97-23-4	Commission Decision 2010/72/EU[8] bluesign®	**Usage ban** // DL <1.0 mg/kg Derivatization with acetic anhydride // GC-MS
Dimethylfumarate (DMFu)	624-49-7	REACH, Annex XVII, Commission Decision 2009/251/EU bluesign®	**Usage ban** // DL <0.1mg/kg Textiles: EN 17130 (2019) Textiles, metal and polymer parts, down/father articles, leather ISO 16186 (2021)
α-hexachlorocyclohexane	319-84-6	POP 850/2004, 756/2010	**Usage ban //** ND

[5] Limit: < 0,1% by weight
[6] Limit: < 50 mg/kg
[7] Limit: N.D.
[8] Limit: N.D.

β-hexachlorocyclohexane	319-85-7	POP 850/2004, 756/2010	**Usage ban //** ND
Lindane (ɣ-hexachlorocyclohexane)	58-89-9	POP 850/2004, 756/2010[9]	**Limitation** // <50 mg/kg
Permethrin	52645-53-1	bluesign®	**Usage ban** // DL <0.2 mg/kg Test method: Accelerated Solvent Exraction or Soxhlet Extraction with Acetone/Hexane // GC-MS or LC-MS
α-Phenylphenol and its salts	Several	bluesign®	**Limitation** // <50 mg/kg Leather: DIN 50009(2021) Textiles: DIN 50009(2021
Triclosan	3380-34-5	bluesign®	**Usage ban** // DL <1.0 mg/kg Test method: Extraction with DCM // GC-MS

[9] Limit: < 50 mg/kg

5. Chlorinated Benzenes (Chlorobenzenes) and Toluenes (Chlorotoluenes)

Chlorobenzenes are a group of twelve chemical substances, each consisting of a benzene ring with one or more hydrogen atoms replaced by chlorine atoms. Legislation around the world restricts the use of some chlorobenzenes in the production of apparel, footwear and accessories. Leading apparel and footwear brands have banned the use of chlorobenzenes in production of their products.

Chlorobenzenes are mainly used as intermediates in the synthesis of other chemicals and may be present as impurities in chemical formulations (for example, dyestuffs and biocides). They can be used as carriers in the dyeing process of polyester or wool/polyester fibers and as leveling agents for dyeing, printing and coating of textile and leather materials including fibers, yarns and fabrics. They may also be used as solvents, deodorizers and degreasers. Some chlorobenzenes can be very toxic to aquatic organisms at certain concentrations. Above certain levels some chlorobenzenes are toxic by inhalation or skin contact and long-term exposure to some chlorobenzenes may result in the development of cancer. Chlorotoluenes are grouped with chlorobenzenes due to their chemical similarities.

Table 5 List of banned chlorobenzenes according to REACH and EU regulations

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE mg/kg TEST METHOD
Hexachlorobenzene	118-74-1	POP (EU) 2019/1021 (EU) 474/2014, REACH, Annex XVII 1907/2006 REACH[10] bluesign®	**Usage ban** DL <1.0 mg/kg for every single substance DIN 54232 (2010), EN 17137 (2018)
Monochlorobenzene	108-90-7		
Pentachlorobenzene	608-93-5		
Dichlorobenzenes	*Several*		
• 1,2-Dichlorobenzene	95-50-1		
• 1,3-Dichlorobenzene	541-73-1		
• 1,4-Dichlorobenzene	106-46-7		
Trichlorobenzenes, all isomers	*Several*		
• 1,2,3-Trichlorobenzene	87-61-6		
• 1,2,4-Trichlorobenzene	120-82-1		
• 1,3,5-Trichlorobenzene	108-70-3		
Tetrachlorobenzene, all isomers	*Several*		
• 1,2,3,4-Tetrachlorobenzene	634-66-2		
• 1,2,3,5-Tetrachlorobenzene	634-90-2		
• 1,2,4,5-Tetrachlorobenzene	95-94-3		

[10] Limit: < 0.1% by weight

Table 6 List of banned chlorotoluenes

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE mg/kg TEST METHOD
Chlorotoluene, unspecific mixture	25168-05-2	(EU) 2018/1513 (CMR) bluesign®	**Usage ban** DL <1.0 mg/kg for every single substance DIN 54232 (2010)
Monochlorotoluens, all isomers	*Several*		
• 2-Chlorotoluene	95-49-8		
• 3-Chlorotoluene	108-41-8		
• 4-Chlorotoluene	106-43-4		
• *α*-chlorotoluene; benzyl chloride[1]	100-44-7		
Dichlorotoluenes, all isomers	*Several*		
• 2,3-Dichlorotoluene	32768-54-0		
• 2,4-Dichlorotoluene	95-73-8		
• 2,5-Dichlorotoluene	19398-61-9		
• 2,6-Dichlorotoluene	118-69-4		
• 3,4-Dichlorotoluene	95-75-0		
• 3,5-Dichlorotoluene	25186-47-4		
Trichlorotoluenes, all isomers	*Several*		
• 2,3,4-Trichlorotoluene	7359-72-0		
• 2,3,6-Trichlorotoluene	2077-46-5		
• 2,4,5-Trichlorotoluene	6639-30-1		
• 2,4,6-Trichlorotoluene	23749-65-7		
• 3,4,5-Trichlorotoluene	21472-86-6		
• *α, α, α* -trichlorotoluene; benzotrichloride[1]	98-07-7		
Tetrachlorotoluenes, all isomers	*Several*		
• 2,3,4,5-Tetrachlorotoluene	76057-12-0		
• 2,3,5,6- Tetrachlorotoluene	29733-70-8		
• 2,3,4,6-Tetrachlorotoluene	875-40-1		
• *α, α, α,*2-tetrachlorotoluene			
• *α, α, α,*4-tetrachlorotoluene; p-chlorobenzotrichloride[1]	5216-25-1		
Pentachlorotoluene	877-11-2		

Regulations

- [1] Commission regulation (EU) 2018/1513 (CMR, amending Annex XVII to Regulation (EC) No 1907/2006 REACH[11]

[11] Limit: ≤ 1 mg/kg

6. Chlorinated Phenols

Chlorinated phenols are used in leather and textile products as fungicides. They are toxic and can cause cancer.

Table 7 List of banned chlorinated phenols

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE mg/kg TEST METHOD
Monochlorophenols (MonoCPs), all isomers	25167-80-0	bluesign®	**Usage ban** DL <0.05 mg/kg[12] Usage ban for every allocated member/substance. DL valid for the sum of all allocated chlorophenols. EPA 8290A Extraction with KOH* // GC-MS* * In case of results close to limit value (+/- 10%) re-test with reference method: §64 LFGB BVL B 82.02-8 (2001) FOR TEXTILES or ISO 17070 (2015) for leather
• 2-Chlorophenol	95-57-8		
• 3-Chlorophenol	108-43-0		
• 4-Chlorophenol	106-48-9		
Dichlorophenols (DiCP), all isomers	25167-81-1		
• 2,3-Dichlorophenol	576-24-9		
• 2,4-Dichlorophenol	120-83-2		
• 2,5-Dichlorophenol	583-78-8		
• 2,6-Dichlorophenol	87-65-0		
• 3,4-Dichlorophenol	95-77-2		
• 3,5-Dichlorophenol	591-35-5		
Trichlorophenols /TriCP), all isomers	25167-82-2		
• 2,3,4-Trichlorophenol	15950-66-0		
• 2,3,5-Trichlorophenol	933-78-8		
• 2,3,6-Trichlorophenol	933-75-5		
• 2,4,5-Trichlorophenol	95-95-4		
• 2,4,6-Trichlorophenol	88-06-2		
• 3,4,5-Trichlorophenol	609-19-8		
Tetrachlorophenol (TeCP), salts and compounds	25167-83-3		
• 2,3,4,5-Tetrachlorophenol	4901-51-3		
• 2,3,4,6-Tetrachlorophenol	58-90-2		
• 2,3,5,6-Tetrachlorophenol	935-95-5		
Pentachlorophenol (PCP) and its salts and esters	87-86-5		

[12] Limit according to bluesign®

Regulations

- Swiss Chemical legislation, Chemical Risk Reduction Ordinance (2019)[13]
- The Korean Agency for Technology and Standard (KATS), Children's Products Safety Special Act (2016)[14]
- EU Regulation: 1907/2006 REACH, Annex XVII, Finnish law 143/2000[15]
- bluesign® RSL, Version 13.0, Jul. 01, 2022.

[13] Limit for PCP, including their salts: It is prohibited to manufacture these substances, and substances and preparations containing these substances, and/or to place them on the market

[14] Limits: 0.5 mg/kg for PCP, including their salts, in textile products for infants (< 36 months); 5 mg/kg for children (≥36 months to ≤13 years)

[15] Limit: < 0.1% by weight for PCP and its salts and esters

7. Dyestuff

7.1. AZO DYES

As substance, for example in PU, and as decomposition product of azo dyes, azo groups may release one or more of the aromatic amines, or arylamines. Arylamines are harmful for human health, as they can be absorbed by human body.

Table 8 List of restricted azo dyes.

SUBSTANCE	CAS NO.	Regulation	REIMA LIMIT VALUE (mg/kg) TEST METHOD
Biphenyl-4-ylamine; 4-aminobiphenyl xenylamine	92-67-1	REACH Annex XVII, 552/2009/EU, SVHC	**Usage ban** DL <20 mg/kg Textiles: EN 14362-1 (2017) EN 14362-3 (2017) (for azo dyes which may release 4-Aminoazobenzene) Leather: EN 17234-1 (2015) EN 17234-2 (2011) (for azo dyes which may release 4-Aminoazobenzene)
Benzidine and its salts	92-87-5	REACH Annex XVII 552/2009/EU	
4-Chloro-o-toluidine	95-69-2	REACH Annex XVII, 552/2009/EU	
2-Naphthylamine	91-59-8	REACH Annex XVII, 552/2009/EU	
o-Aminoazotoluene; 4-Amino-2',3dimethylazobenzene; 4-o-Tolylazo-otoluidine	97-56-3	REACH Annex XVII, 552/2009/EU, SVHC	
5-Nitro-o-toluidine	99-55-8	REACH Annex XVII, 552/2009/EU	
4-Chloroaniline	106-47-8	REACH Annex XVII, 552/2009/EU	
4-Methoxy-m-phenylenediamine	615-05-4	REACH Annex XVII, 552/2009/EU	
4,4'-Methylenedianiline; 4,4'Diaminodiphenylmethane	101-77-9	REACH Annex XVII, 552/2009/EU, REACH Annex XIV + SVHC	
3,3'-Dichlorobenzidine; 3,3'-Dichlorobiphenyl-4,4'-ylenediamine	91-94-1	REACH Annex XVII, 552/2009/EU	
3,3'-Dimethoxybenzidine o-dianisidine	119-90-4	REACH Annex XVII, 552/2009/EU	
3,3'-Dimethylbenzidine 4,4'-bi-o-toluidine	119-93-7	REACH Annex XVII, 552/2009/EU	
4,4'-Methylenedi-o-toluidine	838-88-0	REACH Annex XVII, 552/2009/EU, SVHC	
6-Methoxy-m-toluidine p-cresidine	120-71-8	REACH Annex XVII, 552/2009/EU, SVHC	
4,4'-Methylene-bis-(2-chloro-aniline) 2,2'-Dichloro-4,4'-methylene-dianiline	101-14-4	REACH Annex XVII, 552/2009/EU REACH SVHC + Annex XIV	
4,4'-Oxydianiline	101-80-4	REACH Annex XVII, 552/2009/EU,SVHC	
4,4'-Thiodianiline	139-65-1	REACH Annex XVII, 552/2009/EU	

o-Toluidine; 2-Aminotoluene	95-53-4	REACH Annex XVII, 552/2009/EU,SVHC	
4-Methyl-m-phenylenediamine	95-80-7	REACH Annex XVII, 552/2009/EU, SVHC	
2,4,5-Trimethylaniline	137-17-7	REACH Annex XVII, 552/2009/EU	
o-Anisidine (2-methoxyaniline)	90-04-0	REACH Annex XVII, 552/2009/EU, SVHC	
4-Aminoazobenzene	60-09-3	REACH Annex XVII 552/2009/EU,SVHC	
2,4-Xylidine	95-68-1	REACH Annex XVII, 552/2009/EU	
2,6-Xylidine	87-62-7	REACH Annex XVII, 552/2009REACH Annex XVII, 552/2009/EU/EU	
A mixture of: disodium (6-(4-anisidino)-3-sulfonato-2-(3,5-dinitro-2oxidophenylazo)-1-naphtholato)(1-(5-chloro-2-oxidophenylazo)-2-naphtholato)chromate(1-); trisodium bis(6-(4-anisidino)-3-sulfonato-2-(3,5-dinitro-2-oxidophenylazo)-1-naphtholato)chromate(1-)	Not allocated Component 1: CAS-No: 118685-33-9 C39H23ClCrN7O12S. 2Na Component 2: C46H30CrN10O20S2. 3Na	REACH Annex XVII, 552/2009/EU	
4-Chloro-o-toluidinium chloride	3165-93-3	(EU) 2018/1513 (CMR)	
2-Naphthylammonium-acetate	553-00-4	(EU) 2018/1513 (CMR)	
4-Methoxy-m-phenylene diammonium sulphate; 2,4-diaminoanisole sulphate	39156-41-7	(EU) 2018/1513 (CMR)	
2,4,5-Trimethylaniline hydrochloride	21436-97-5	(EU) 2018/1513 (CMR)	

Regulations

Exception[16]:

A mixture of: disodium (6-(4-anisidino)-3-sulfonato-2-(3,5-dinitro-2oxidophenylazo)-1-naphtholato)(1-(5-chloro-2-oxidophenylazo)-2-naphtholato)chromate(1-); trisodium bis(6-(4-anisidino)-3-sulfonato-2-(3,5-dinitro-2-oxidophenylazo)-1-naphtholato)chromate(1-)	Not allocated Component 1: CAS-No: 118685-33-9 C39H23ClCrN7O12S. 2Na Component 2: C46H30CrN10O20S2. 3Na

- China: GB 18401-2010 National General Safety Technical Code for Textile Products and GB 20400-2006 National Standard for Leather and Fur[17]

[16] Limit: < 0,1% by weight

[17] Limit: 20 mg/kg for textile products for leather products

7.2. DYES WITH CARCINOGENIC POTENTIAL

Some dyestuffs are expected to be carcinogenic. Dyestuffs listed in the Table 9 are based on EU Commission regulation, EU Ecolabel and SVHC criteria and on bluesign® criteria.

Table 9 Restricted carcinogenic dyes.

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE (mg/kg) TEST METHOD
Acid red 26	3761-53-3		**Usage ban** DL <20 mg/kg DIN 54231 (2005)
Basic Green 4			
• Malachit green	10309-95-2		
• Malachit green chloride	569-64-2		
• Malachit green oxalate	2437-29-8		
Basic Red 9	569-61-9	(EU) 2018/1513 (CMR)	
Basic Violet 3	548-62-9	REACH, SVHC (EU) 2018/1513 (CMR)	
Basic Violet 14	632-99-5		
Direct Black 38	1937-37-7	REACH, SVHC	
Direct Blue 6	2602-46-2	REACH Annex XVII	
Direct Brown 95	16071-86-6	REACH Annex XVII	
Direct Red 28	573-58-0	REACH, SVHC	
Disperse Blue 1	2475-45-8	(EU) 2018/1513 (CMR)	
Disperse Orange 11	82-28-0		
Disperse Yellow 3	2832–40–8		
Pigment Black 25	68186-89-0		
Pigment Yellow 34	1344-37-2		
Pigment Yellow 157	68610-24-2		
Pigment Red 104	12656-85-8	REACH, SVHC, + Annex XIV	
Basic Blue 26	2580-56-5	REACH, SVHC	
Basic Violet 3	548-62-9,603-48-5 14426-25-6		
Solvent Blue 4	6786-83-0	REACH, SVHC	
Solvent Violet 8 - with ≥ 0.1% of Michler's ketone (EC No. 202-027-5) or Michler's base (EC No. 202-959-2)	561-41-1	REACH, SVHC	
Solvent Yellow 2	60-11-7		
Solvent Red 80	6358-53-8		
Direct Brown 95	16071-86-6		

Regulations

Disperse Blue 1, Basic Red 9, Basic Violet 3: Commission regulation (EU) 2018/1513 amending Annex XVII to Regulation (EC) No 1907/2006 REACH[18]

- Azoic Diazo Component 11: Commission regulation (EU) 2018/1513 amending Annex XVII to Regulation (EC) No 1907/2006 REACH[19]
- Direct Black 38, Direct Red 28, Pigment Red 104: REACH, SVHC[20]
- bluesign® RSL, Version 13.0, Jul. 01, 2022.

7.3. DYES WITH ALLERGENIC POTENTIAL

Some dyestuffs are expected to be sensitizing or allergenic. Allergenic dyes are mainly used to dye some polyester, acetate and polyamide products, either as dyed and printed products, or in dyed parts, such as buttons. Dyestuffs listed in the Table 10 are based on EU Ecolabel and bluesign® criteria. **Error! Reference source not found.**

Regulations

[18] Limit: 50 mg/kg
[19] Limit: 30 mg/kg
[20] Limit: <0,1% by weight

- EU regulation: Decision 2009/567/EC[21]
- bluesign® RSL, Version 13.0, Jul. 01, 2022.

[21] Limit <0,1% by weight

7.4. Environmentally and for other Reasons Harmful Dyes

Dyestuffs listed in Table 10 are based on EU regulations and bluesign® criteria.

Table 10 Dyes banned for environmental and other reasons.

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE (mg/kg) TEST METHOD
Acid Orange 24	1320-07-6		**Usage ban**
Acid Violet 49	1694-09-3		
Basic Blue 26 - with ≥ 0.1% of Michler's ketone (EC No. 202-027-5) or Michler's base (EC No. 202-959-2)	2580-56-5		
Basic Violet 1	8004-87-3		
Basic Violet 3 - with ≥ 0.1% of Michler's ketone (EC No. 202-027-5) or Michler's base (EC No. 202-959-2)	548-62-9		
Basic Violet 3 [1]	548-62-9		
Basic Violet 3 [2]	603-48-5		
Basic Violet 3 [3]	14426-25-6		
Direct Black 91	6739-62-4		
Direct Blue 76	16143-79-6		DL <20 mg/kg
Direct Blue 218	28407-37-6		DIN 54231 (2005)
Direct Yellow 1	6472-91-9		
Disperse Yellow 23	6250-23-3		
Disperse Orange 149	85136-74-9		
Navy Blue: A mixture of: disodium (6-(4-anisidino)-3-sulfonato-2-(3,5-dinitro-2-oxidophenylazo)-1-naphtholato)(1-(5-chloro-2-oxidophenylazo)-2-naphtholato)chromate(1-); trisodium bis(6-(4-anisidino)-3-sulfonato-2-(3,5-dinitro-2-oxidophenylazo)-1-naphtholato)chromate(1-)	Component 1: 118685-33-9 Component 2: Not allocated	2003/3 EU	
Disodium (6-(4-anisidino)-3-sulfonato-2-(3,5-dinitro-2-oxidophenylazo)-1-naphtholato)(1-(5-chloro-2-oxidophenylazo)-2-naphtholato)chromate(1-)	118685-33-9	2003/3/EU	
Trisodium bis(6-(4-anisidino)-3-sulfonato-2-(3,5-dinitro-2-oxidophenylazo)-1-naphtholato)chromat			

Regulations

- EU regulation: 1907/2006 REACH[22]
- bluesign® RSL, Version 13.0, Jul. 01, 2022

[22] N.D.

8. Dioxins and Furans

Due to their chemical stability, dioxins and furans can accumulate in the environment and persist in the food chain. In humans, dioxin has a half-life time of 7-9 years, which implies that they can cause cancer and other severe diseases.

Table 11 List of banned dioxins and furans

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE / TEST METHOD	Notes
Dioxins and Furans Group 1 and 2	Several	bluesign®	**Usage ban** DL <5 µg/kg EPA 8290A	(For sum of all allocated substances to Group 1 and 2) Single substances listeted in Annex 2
Dixoins and Furans Group 1	Several	bluesign®	**Usage ban** DL <1 µg/g EPA 8290A	(For sum of all allocated substances to group 1) Single substances listeted in Annex 2
Dioxins and Furans Group 3	Several	bluesign®	**Usage ban** DL <95 µg/kg EPA 8290A	For sum of all allocated Members/Substances to Group 3 - official regulation for sum of all allocated Members/Substances to Group 1, 2 and 3 - 100 µg/kg Single substances listeted in Annex 2
Dioxins and Furans – Group 4 and 5	Several	bluesign®	**Usage ban** DL <5 µg/kg EPA 8290A	For sum of all allocated Members/Substances to Group 4 and 5 Single substances listeted in Annex 2
Dioxins and Furans – Group 4	Several	bluesign®	**Usage ban** DL <1,0 µg/kg EPA 8290A	For sum of all allocated Members/Substances to Group 4 Single substances listeted in Annex 2

9. Fibers

Asbestos represents a range of chemically similar silicate minerals (s. Table 12) that crystallize in fiber like structures. It usually has high strength, good acid, and thermal resistance. In textiles, it can be found especially in work wear to make clothing resistant against heat and corrosion. In humans, asbestos can cause asbestosis, and even cancer, which results from the microfibers released during processing. Since the human body is not able to degrade the asbestos fibers, they accumulate in the lungs and trigger inflammations.

Table 12 Asbestos fibers banned in clothing.

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE / TEST METHOD
Asbestos	**Several**	**bluesign®**	**Usage ban** Not detected EN ISO 17881-1 (2016) for brominated flame retardants EN ISO 17881-2 (2016) for phosphorus flame retardants
Actinolite	77536-66-4	bluesign®	
Amosite	12172-73-5	bluesign®	
Anthophyllite	77536-67-5	bluesign®	
Chrysotile	12001-29-5 132207-32-0	bluesign®	
Crocidolite	12001-28-4	bluesign®	
Tremolite	77536-68-6	bluesign®	

10. Flame retardants

Flame retardants are typically polybrominated diphenyl ethers (PBDE) and they can be found in for example in home textile products and in garments for special purposes, such as individual protection equipment and flame-resistant sleepwear. In Reima's products, all flame retardants are prohibited.

Table 13 List of banned flame retardants.

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE mg/kg TEST METHOD
2,2-Bis(bromomethyl)-1,3-propanediol	3296-90-0	buesign®, REACH SVHC	**Usage ban** DL <5.0 mg/kg[23] for every single substance Extraction following IEC 62321-6 (2015) // LC-MS, GC-MS, GC-NCI EN ISO 17881-1 (2016) for brominated flame retardants EN ISO 17881-2 (2016) for phosphorus flame retardants prEN ISO 18219 (2021) prEN ISO 22818 (2021) for chlorinated paraffins
2,2-dimethylpropan-1-ol, tribromo derivative/3-bromo-2,2-bis(bromomethyl)-1-propanol (TBNPA);	36483-57-5	REACH SVHC	
2,3-dibromo-1-propanol (2,3-DBPA)	96-13-9	REACH SVHC	
Bis(2,3-dibromopropyl) phosphate	5412-25-9	bluesign®	
Tetrabromobisphenol A	79-94-7	buesign®	
Tetrabromobisphenol A bis(2,3-dibromopropylether)	21850-44-2	buesign®	
Triethylenephosphoramide (TEPA)	545-55-1	1907/2006/REACH, 552/2009/EU	
Trimethyl phosphate	512-56-1	buesign®	
Tri-o-cresyl phosphate	78-30-8	buesign®	
Tris(chloroethyl) phosphate	115-96-8	buesign®	
Tris-(2-chloro-1-methylethyl) phosphate (TCPP)	13674-84-5	buesign®	
Tris-[2-chloro-1-(chloromethyl) ethylphosphate (TDCP)	13674-87-8		
Tris(2,3-dibromopropyl) phosphate (TRIS)	126-72-7	1907/2006/REACH, 552/2009/EU	
Tris(methylphenyl) phosphate	1330-78-5	buesign®	
Trixylyl phosphate	25155-23-1	SVHC	
Polybrominated biphenyls (PBB)	59536-65-1	1907/2006/REACH, 552/2009/EU	
Hexabromobiphenyl	36355-01-8	757/2010/EU, 850/2004/EC (POP)	
Hexabromocyclododecan, all isomers – group for all major diastereoisomers identified (HexaBCDD)	25637-99-4 3194-55-6 134237-50-6 134237-51-7 134237-52-8	SVHC (POP)	
Triphenyl phosphate TPP	115-86-6	Chemical of concern Article 37 / Title 9 / State of New York On CoRAP list	
Chlorinated Paraffins, all chain lengths	***Several***	***buesign®***	

[23] For footwear, a limit of < 500 mg/kg applies for the sum of all flame retardants detected in all materials.

• Paraffin wax, chlorinated	63449-39-8	buesign®	
• Paraffin, C10-C13, chlorinated	85535-84-8	buesign®	
• Paraffin, C14-C17, chlorinated	85535-85-9	buesign®	
• Paraffin, C18-C28, chlorinated	85535-86-0	buesign®	
Polybrominated diphenyl ethers	***Several***	***buesign®***	
Decabromodiphenyl ether (DecaBDE)	1163-19-5	SVHC (POP)	
Tetrabromodiphenyl ether (TetraBDE)	40088-47-9, 5436-43-1	757/2010/EU (POP)	
Pentabromodiphenyl ether (PentaBDE)	32534-81-9	757/2010/EU (POP)	
Octabromodiphenyl ether (OctaBDE)	32536-52-0	552/2009 /EU (POP)	
Nonabromodiphenyl ether (NonaBDE)	63936-56-1	buesign®	
Hexabromodiphenyl ether (HexaBDE)	36483-60-0	buesign®	
Heptabromodiphenyl ether (HeptaBDE)	68928-80-3 446255-22-7, 207122-16-5	757/2010/EU (POP)	
Monobromodiphenyl ether	***Several***	***buesign®***	
2-Bromodiphenyl ether	7025-06-1	buesign®	
3-Bromodiphenyl ether	6876-00-2	buesign®	
4-Bromodiphenyl ether	101-55-3	buesign®	
Brominated alkyl alcohols	**Several**	**buesign®**	**Usage ban** DL <5.0 mg/kg for every single substance
1-Propanol, 2,2-dimethyl-, tribromo deriv.	36483-57-5 1522-92-5	buesign®	
2,3-Dibromopropan-1-ol - (2,3-DBPA)	96-13-9	buesign®	

Regulations

- EU regulations: 757/2010, 552/2009, 1907/2006/REACH, 850/2004/EC[24]
- SVHC[25]
- bluesign® RSL, Version 13.0, Jul. 01, 2022

[24] N.D.
[25] Limit <0.1% by weight

11. Fluorinated Substances

Only fluorochemical-free / fluorine-free water repellent finishes are allowed in Reima's garments and shoes.

Per- and polyfluoroalkyl substances (PFAS) are a large group of man-made chemicals that have been used in industry and consumer products worldwide since the 1950s. PFAS are heat, oil, grease, and water resistant. The two best known groups of this family of chemicals are the perfluorocarboxylic acids (PFCAs), which include perfluorooctanoic acid (PFOA, sometimes called C8), and the perfluorosulfonates (PFSAs), which include perfluorooctane sulfonate (PFOS). PFCAs and PFSAs do not break down easily in the environment. They also bioaccumulate, or build up, in the blood and organs of exposed humans and animals and remain there for extended periods of time. Some PFASs are precursors to PFCAs and PFSAs and can break down to those chemicals in the body or in the environment.

Table 14 Restricted and banned PFAC/PFAS-compounds.

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE TEST METHOD
Perfluoroalkyl carboxylic acid and derivatives (PFCA)	***Several***	***bluesign®***	**Usage ban** DL <0.1 mg/kg Leather: EN ISO 23702-1 (2018) All others: CEN/TS 15968 (**2014**) List of all substances can be found **in** Annex 4
• erfluorobutanoic acid (PFBA)	375-22-4		**Usage ban**
• Perfluorohexnoic acid (PFHxA)	307-24-4	bluesign®	**Usage ban** DL <0.06 mg/kg Leather: EN ISO 23702-1 (2018) All others: EN/TS 15968 (2014)
• Perfluorooctanoic acid (PFOA)	335-67-1	SVHC, Norwegian regulation[26] bluesign®	**Usage ban** DL <25 µg/kg Leather: EN ISO 23702-1 (2018) All others: CEN/TS 15968 (2010)
• Perfluorononanoic acid (PFNA) and its sodium and ammonium salts and related substances	375-95-1, 21049-39-8	SVHC bluesign®	**Usage ban** DL <1000 µg/kg Leather: EN ISO 23702-1 (2018) All others: CEN/TS 15968 (2014)
• Nonadecafluorodecanoid acid (PFDA) and its sodium and ammonium salts	3108-42-7 3830-45-3 3108-42-7	SVHC	**Usage ban**
PFSA Chemicals	***Several***		List of all substances can be found in Annex 4
• Perfluorobutane sulfonic acid (PFBS) and its salts	375-73-5	REACH, SVHC (2020) bluesign®	**Usage ban** DL <1.0 mg/kg
• Perfluorohexane sulfonic acid/ Perfluorohexane sulfonate (PFHxS)	355-46-4 / 432-50-7	SVHC (vPvB, article 57e)	**Usage ban** DL <1.0 µg/m²
• Perfluorooctane sulfonic acid / Perfluorooctane sulfonate (PFOS)	1763-23-1	2006/122 / EC Directive, Regulation 757/2010 (enacted in 2008) Finnish Decree 18/2008[27] (POP) bluesign®	CEN/TS 15968 (2014)

Regulations

[26] Limit < 1µg/m²
[27] Limit < 1µg/m²

- SVHC[28]
- bluesign® RSL, Version 13.0, Jul. 01, 2022

Notes: Phase-out of long-chain compounds based on telomer chemistry (C8 and higher) since end of 2014.

[28] Limit <0.1% by weight

12. Formaldehyde

Formaldehyde is a volatile chemical widely used in the textile and leather industries such as:

a) Fixing agents for direct and reactive dyes in cellulose fibers
b) Anti-wrinkle and anti-shrinking resins used in the finishing processes in cotton products
c) Resins used in permanent wrinkles in textile articles made of cellulose fibers, mainly in jeans
d) Heat transfer adhesives used as binders in dye printing
e) Heat transfer adhesives used in several types of printing processes, such as flock and foil, among others
f) Resins and/or binding agents in some special finishes and/or coatings
g) Products for tanning and softening of leather
h) Anti-microbial agents in pastes used in water-based positional printing
i) Preservatives for vegetable and animal raw materials

Formaldehyde may cause an allergic reaction, irritate respiratory system, eyes and skin and is possible risk for cancer.

Table 15 Formaldehyde and related restrictions.

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE mg/kg
Formaldehyde	50-00-0	Finnish degree 233/2012[29] Japan law 112[30] Chinese standard GB 18401-2010[31] 1907/2006 REACH + Amendment 1513/2018 (CMR)[32] bluesign® RSL[33]	**Usage ban** DL <15 mg/kg Textile: ISO 14184-1 (2011) Leather: ISO 17226-1 (2021) or ISO 17226-2 (2019) with ISO 17226-1 (2021)

[29] Limits: 30 mg/kg for textiles and textile toys for children under the age of 2; 100 mg/kg for all textiles that come into contact with skin during normal use and for textile toys for children older than 2 years of age; 300 mg/kg for all other textiles and for leather goods
[30] Limits: No detection (Detection limit 16 mg/kg) for textile products aimed at users younger than 2 years old, 75 mg/kg for underwear, sleepwear, gloves and socks
[31] Limits: 20 mg/kg for textile products aimed at users at the age of 3 years or younger, 75 mg/kg with direct contact to skin and 300 mg/kg without a direct contact to skin
[32] Limit: ≤75 mg/kg
[33] Limits for leather, textiles, metal and polymer parts as well as down and feather articles: ≤15 mg/kg for next to skin use and baby articles (0 to 3 years), ≤75 mg/kg for occasional skin contact and ≤300 mg/kg for no skin contact

13. Glycols

Glycols are used mainly as solvents and chemical intermediates.

Table 16 List of restricted glycol derivatives.

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE mg/kg TEST METHOD
Bis(2-methoxyethyl)-ether	111-96-6	REACH: SVHC + Annex XIV	**Usage ban** DL <5.0 mg/kg Textile: Extraction with MeOH // GC-MS Plastics: 2-Step extraction with THF and MeOH // GC-MS
2-Ethoxyethanol	110-80-5	SVHC	
2-Ethoxyethyl acetate	111-15-9	SVHC	
Ethylene glycol dimethyl ether	110-71-4	SVHC	
2-Methoxyethanol	109-86-4	SVHC	
2-Methoxyethyl acetate	110-49-6	bluesign®	
2-Methoxy-1-propanol	1589-47-5	bluesign®	
2-Methoxypropyl acetate	70657-70-4	bluesign®	
Triethylene glycol dimethyl ether	112-49-2	SVHC	
Ethylene glycol	107-21-1	Chemical of concern Article 37 / Title 9 / State of New York	

Regulations

- SVHC[34]
- bluesign® RSL, Version 13, July. 1, 2022[35]

[34] Limit < 0.1 % by weight
[35] Limit < 5.0 mg/kg

14. Halogenated Biphenyls, halogenated Terphenyls and halogenated Naphthalenes

The above-mentioned substances can be applied as plasticizers, pigments for inks in paper and plastic products, flame retardants, insecticides, and fungicides. Dependent on their substitution level, they have a high potential to bioaccumulate especially because of their presence in microplastics. Halogenated biphenyls, terphenyls, and naphthalenes are all known to cause different, lethal diseases such as cancer, severe skin rashes and liver disease in both, animals, and humans. Globally, their use has been restricted for many years and is thus also banned from all Reima products.

Table 17 List of restricted halogenated biphenyls, halogenated terphenyls and halogenated naphthalenes.

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE mg/kg TEST METHOD
Polybrominated Biphenyls	59536-65-1	bluesign®	**Usage ban** DL <5.0 mg/kg EN ISO 17881-1 (2016) ISO/TR 17881-3 (2018)
Polybrominated Naphthalenes	Several	bluesign®	**Usage ban** DL <1.0 mg/kg EN ISO 17881-1 (2016) ISO/TR 17881-3 (2018) For sum of all allocated Members/Substances
Polybrominated Terphenyls	Several	bluesign®	
Polychlorinated Biphenyls	1336-36-3	bluesign®	
Polychlorinated Naphthalenes	Several	bluesign®	
Polychlorinated Terphenyls	61788-33-8	bluesign®	
Monomethyl-dibromo-diphenyl methane	99688-47-8	bluesign®	**Usage ban** DL <1.0 mg/kg GC-MS // Extraction following DIN EN 62321-6 (2016)
Monomethyl-dichloro-diphenyl methane	81161-70-8	bluesign®	
Monomethyl-tetrachloro-diphenyl methane	76253-60-6	bluesign®	

15. Isocyanates

Isocyanates are functional groups that react with alcohols to polyurethanes which can be used in foams for mattresses, furniture, and shoes. They can also be found in spandex fibers and polyurethane paints. Isocyanates are highly reactive and can cause occupational asthma, contact dermatitis, and irritation of the respiratory tract. Therefore, their usage underlies the bluesign® criteria.

Table 18 Limited isocyanates according to bluesign® RSL, Version 13.0, Jul. 01, 2022.

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE mg/kg TEST METHOD
1,3-bis(isocyanatomethyl)benzene	3634-83-1	bluesign®	**Limitation** DL <1.0 mg/kg (Content applies to sum of all allocated isocyanates) EN 13130-8 (2004)
Hexamethylene-di-isocyanate	822-06-0	bluesign®	
Isophorone-di-isocyanate	4098-71-9	bluesign®	
Tetramethylxylene-di-isocyanate	2778-42-9	bluesign®	
Diphenylmethane-di-isocyanates	***Several***	***bluesign®***	
• Diphenylmethane-2,2-di-isocyanate	2536-05-2	bluesign®	
• Diphenylmethane-2,4-di-isocyanate	5873-54-1	bluesign®	
• Diphenylmethane-4,4-di-isocyanate	101-68-8	bluesign®	
Methylenediphenyl diisocyanate - mixed isomers	26447-40-5	bluesign®	
Toluene-di-isocyanates	*Several*	*bluesign®*	
• Toluene-2,4-di-isocyanate	584-84-9	bluesign®	
• Toluene-2,6-di-isocyanate	91-08-7	bluesign®	

16. Metals

Many heavy metals are bio accumulative when absorbed by the human body through perspiration and give cause for concern in health terms such as chronic toxicity, allergenic reactions and cancer.

16.1. ANTIMONY

Antimony is used as flame retardant, in plastic manufacturing processes (plastic bottles often contain antimony) and in leather processing. Reima limit values are based on bluesign® criteria.

Table 19 Limit values of antimony according to bluesign® RSL, Version 13.0, Jul. 01, 2022.

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE mg/kg
Antimony, its salts and compounds	7440-36-0	bluesign®	**Limitation** <5.0 mg/kg For textiles and leather[36] <60.0 mg/kg For metal parts and non-metal parts others than textiles and leather, and down/feather articles <260 mg/kg[37] For fibers and yarns

Test methods

- Leather: EN ISO 17072-1 (2019) // Acidic sweat solution
- Textiles: DIN EN 16711-2 (2016) // Acidic sweat solution

[36] Oeko-Tex 100 class I limit 30.0 mg/kg
[37] bluesign® RSL

- Metal and polymer parts as well as down and feather articles: DIN EN ISO 11885 (2009), EN 71-3 (2019) // Acidic solution migration simulating gastric juices DIN EN ISO 17294-2 (2017)
- Fibers/yarn: DIN EN 16711-1 (2016) // total content

Notes: As extractable metal content // Usage as flame retardant: bluesign® CRITERIA for flame retardants have to be followed.

16.2. Arsenic

Reima limit values are based on bluesign® criteria.

Table 20 Usage ban of arsenic according to bluesign® RSL, Version 13.0, Jul. 01, 2022.

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE mg/kg
Arsenic, its salts and compounds	7440-86-2	(EU) 2018/1513 (CMR) bluesign®	**Usage ban** DL <0.2 mg/kg For textiles, leather, metal parts, polymer parts, and down and feather articles.

Regulations

- Commission regulation (EU) 2018/1513 amending Annex XVII to Regulation (EC) No 1907/2006 REACH [38]
- bluesign® RSL, Version 13.0, Jul. 01, 2022

Test methods

- Textiles, metal and polymer parts, and down/feather articles: DIN EN 16711-2 (2016) // Acidic sweat solution

[38] Limit: ≤1.0 mg/kg (expressed as As metal that can be extracted from the material)

- Leather: EN ISO 17072-1 (2019) // Acidic sweat solution

16.3. BARIUM

In the textile industry, Barium is used, for example, as barium peroxide that is supposed to assist in the dyeing process.

Table 21 Limitation of barium according to EU regulations.

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE mg/kg
Barium, its salts and compounds	7440-39-3	(EU) 2018/1513 (CMR)	**Limitation** <100 mg/kg For textiles <1000 mg/kg For metal parts and non-metal parts others than textiles

Test methods

- Textiles: Total digestion // ISO 17294-2 (2016) or DIN EN ISO 11885 (2009)
- For metal parts and non-metal parts others than textiles: EN 71-3 (2013) (acid solution) // 17294-2 (2016) or DIN EN ISO 11885 (2009)

16.4. Cadmium

Cadmium is present in electroplating, batteries, PVC, stabilization of synthetic fibers.

Table 22 Usage ban of cadmium.

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE mg/kg
Cadmium, its salts and compounds	7440-43-9	(EU) 2018/1513 (CMR) REACH, Annex XVII, SVHC bluesign®	**Usage ban** DL <0.1mg/kg[1] For textiles (As extractable metal content) DL <40mg/kg[2] (As total metal content) DL <40 mg/kg For metal parts and non-metal parts others than textiles
• Cadmium nitrate	10325-94-7	REACH, SVHC REACH, Annex XVII	**Usage ban**
• Cadmium hydroxide	21041-95-2	REACH, SVHC REACH, Annex XVII	**Usage ban**
• Cadmium carbonate	513-78-0	REACH, SVHC REACH, Annex XVII	**Usage ban**

Regulations

- Commission regulation (EU) 2018/1513 amending Annex XVII to Regulation (EC) No 1907/2006 REACH[39]
- SVHC[40]
- Indonesian regulation SNI 7617:2013[41]
- bluesign® RSL, Version 13.0, Jul. 01, 2022.

Test methods

- Textiles, polymer parts, and down feather articles: DIN EN 16711-2 (2016) // Acidic sweat solution, DIN EN 16711-1 (2016) // Total content

[39] Limit: ≤1.0 mg/kg after extraction (expressed as Cd metal that can be extracted from the material)
[40] Limit: <0.1% by weight
[41] Limit: ≤0.1 mg/kg

- Leather: EN ISO 17072-1 (2019) // Acidic sweat solution
- For metal parts: Total digestion // 17294-2 (2016) or DIN EN ISO 11885 (2009)

16.5. CHROMIUM

Chromium is used in metal complex dyestuffs for wool, silk, and polyamide textiles especially for dark shades. It is used also as dyeing fixative agents, dyeing additives to improve color fastness and for leather tanning.

Table 23 Restriction of chromium based on bluesign® criteria and Oeko-Tex class I.

SUBSTANCE	CAS NO.	REIMA LIMIT VALUE mg/kg	NOTES
Chromium	7440-47-3 Several	**Limitation** <60 mg/kg For metal and polymer parts, down and feather articles. <0.5 mg/kg For textiles. No regulation for leather.	If products are covered with a metal layer, including a chromium layer, coating must be constantly in good condition // as extractable metal content As extractable metal content // for textiles dyed with chromium containing metal complex dyes

Regulations

- Oeko-Tex 100 class I[42]
- bluesign® RSL, Version 11, Dec. 1, 2020.

Test methods

- Textiles and leather: DIN EN ISO 105-E04 (2013) (acid sweat solution) // ISO 17294-2 (2016) or DIN EN ISO 11885 (2009), DIN EN 16711-2 (2016) // Acidic sweat solution
- Metal and polymer parts, down and feather articles: DIN EN ISO 11885 (2009), EN 71-3 (2019) // Acidic solution migration simulating gastric juices, DIN EN ISO 17294-2 (2017)

[42] Limit: <1.0 mg/kg

16.6. CHROMIUM VI

Chromium VI is harmful to humans and it can be found in products made of leather.

Table 24 Restriction of Chromium VI according to bluesign® criteria and EU commission regulation

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE mg/kg
Chromium VI, its salts and compounds	Several	bluesign®	**Usage ban** DL <0.5 mg/kg[43] For textiles, metal and polymer parts, down/feather articles
Chromium VI	1333-82-0	(EU) 2018/1513 (CMR) REACH SVHC + Annex XIV	**Usage ban** DL <1.0 mg/kg For leather

Regulations

- Commission regulation (EU) 2018/1513 amending Annex XVII to Regulation (EC) No 1907/2006 REACH[44]
- bluesign® RSL, Version 13.0, Jul. 01, 2022

Test methods

- Textiles, metal and polymer parts, and down and feather articles: EN ISO 170575-1 (2017), EN 62321-7-1 (2016)
- Leather: EN ISO 17075-1 (2017), EN ISO 17075-2 (2017), DIN EN ISO 4044 (2017)

[43] For footwear, a detection limit of 3 mg/kg is applicable for all materials.
[44] Limit: ≤1.0 mg/kg after extraction (expressed as Cr VI that can be extracted from the material)

16.7. COBALT AND COBALT COMPOUNDS

Cobalt compounds are used in metal complex dyes and in antibacterial agents in textiles.

Table 25 Limitation of cobalt compounds in Reima products.

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE mg/kg	NOTES
Cobalt, its salts and cobalt compounds	7440-48-4	Chemical of concern Article 37 / Title 9 / State of New York bluesign® RSL, Version 11, Dec. 1, 2020	**Limitation** <1.0 mg/kg	As extractable metal content // for textiles and leather dyed with cobalt containing metal complex dyes.

Test method

- Textiles: DIN EN 16711-2 (2016) (acidic sweat solution)
- Leather: ISO 17072-1 (2019) (acidic sweat solution)
- Metal and polymer parts, down/feather articles: DIN EN 16711-2 (2016) // Acidic sweat solution

16.8. Copper

Copper compounds are used in metal complex dyes, as fastness improvers.

Table 26 Copper limits for Rema products.

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE mg/kg
Copper, its salts and compounds	7440-50-8	SNI 7617: 2013 bluesign®	**Limitation** <25 mg/kg For textiles and leather

Regulations

- Indonesian regulation SNI 7617:2013[45]
- bluesign® RSL, Version 11.0,

[45] Limit: ≤25 mg/kg

Test method

- General: DIN EN ISO 105-E04 (2013) (acid sweat solution) // ISO 17294-2 (2016) or DIN EN ISO 11885 (2009)
- Textiles: DIN EN 16711-2 (2016) // Acidic sweat solution
- Leather: EN ISO 17072-1 (2019) // Acidic sweat solution

16.9. Mercury

Mercury can be found in textiles and leather products due to contamination during production processes.

Table 27 Usage ban of mercury in Reima products.

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE mg/kg
Mercury, its salts and compounds	7439-97-6	1907/2006 REACH REACH, Annex XVII bluesign®	**Usage ban** DL <0.02 mg/kg For textiles, leather polymer parts, down/feather articles DL <60 mg/kg For metal parts

Regulations

- 1907/2006 REACH[46]
- bluesign® RSL, Version 13.0, Jul. 01, 2022.

[46] N.D.

Test methods

- Textiles, leather, polymer parts and down/feather articles: DIN EN ISO 105-E04 (2013) (acid sweat solution) // ISO 12846 (2012), EN ISO 17072-1 (2019) // Acidic sweat solution, DIN EN 16711-2 (2016) // Acidic sweat solution
- For metal parts: EN 71-3 (2019) (acid solution) // ISO 12846 (2012)

16.10. LEAD

Lead is used as metal or alloy in production of different accessories. It is used also as a pigment (especially red, orange, yellow or green colors) in paints, prints and plastics.

Table 28 Usage ban of lead in Reima products.

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE mg/kg TEST METHOD

Lead, its salts and compounds	7439-92-1	(EU) 2018/1513 (CMR)
		
		CPSIA
		
		bluesign®
			Usage ban
			
			DL<90 mg/kg[47]
			For metal parts: DIN EN 16711-2 (2016) // total content
			
			DL<40 mg/kg
			For leather: EN ISO 17072-2 (2019) // total content
			DL<0.2 mg/kg EN ISO 17072-1 (2019) // Acidic sweat solution
			
			DL<40 mg/kg
			Textiles, polymer parts, down/feather articles: DIN EN 16711 (2016) // total content
			DL<0.2 DIN EN 16711-2 (2016) // Acidic sweat solution

[47] DL applies for all materials in shoes, while for textiles limitations are followed as stated in Table 28.

Regulations

- Commission regulation (EU) 2018/1513 amending Annex XVII to Regulation (EC) No 1907/2006 REACH[48]
- Indonesian regulation SNI 7617:2013[49]
- bluesign® RSL, Version 13.0, Jul. 01, 2022.
- U.S. Consumer Product Safety Improvement Act 2008 Title I, Section 101 For Total Lead Content in Non-Surface Coating Materials (Substrate)[50]
- U.S. Consumer Product Safety Improvement Act 2008 Title I, Section 101 For Total Lead Content in Surface Coating[51]
- bluesign® RSL, Version 11, Dec. 1, 2020.

According to Oeko-Tex standard 100 limit value for baby wear is 0.2 mg/kg (acid extraction test), for digested materials 90 mg/kg.

16.11. Nickel

Nickel can be found in many metal items in apparel such as buttons, snaps, and zippers. It can cause skin irritations such as eczema and contact dermatitis.

Table 29 Limitation and usage ban for nickel in Reima products.

SUBSTANCE	CAS NO.	**REGULATION**	**REIMA LIMIT VALUE mg/kg**	**NOTES**
Nickel, its salts, and compounds	7440-02-0	REACH EU Directive 2004/96/EU Finnish law 494/2005, Indonesian regulation SNI bluesign®	**Limitation** <1.0 mg/kg For textiles and leather **Usage ban** DL <0,5 µg/cm2/week For metal and polymer parts, down/feather articles:	As extractable metal content // for leather dyed with nickel containing metal complex dyes. As released metal content

[48] Limit: ≤1.0 mg/kg after extraction (expressed as Pb metal that can be extracted from the material)
[49] Limit: ≤0.2 mg/kg after extraction (expressed as Pb metal that can be extracted from the material)
[50] Limit: 100 mg/kg
[51] Limit: 90 mg/kg

Regulations

- 1907/2006 REACH: Annex XVII[52]
- Indonesian regulation SNI 7617:2013[53]
- bluesign® RSL, Version 13.0, Jul. 01, 2022.

Test methods

- Textiles and leather: DIN EN ISO 105-E04 (2013) (acid sweat solution) // ISO 17294-2 (2016) or DIN EN ISO 11885 (2009), DIN EN 16711-2 (2016) // Acidic sweat solution, EN ISO 17072-1 (2019) // Acidic sweat solution
- For metal parts and non-metal parts other than textiles and leather: EN 12472 (2020) + A1 (2009) // EN 1811 (2011) + A1 (2015), prEN 12472 (2018)

[52] Limit: A product (e.g. buttons, studs, zips etc) may emit no more than 0.5 µg/cm²/week
[53] Limit: ≤1.0 mg/kg

17. Monomers

The following monomers are restricted as they can have a severe impact on human health.

Table 30 Restricted monomers

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE mg/kg TEST METHOD
Acrylonitrile	107-13-1	Chemical of concern Article 37 / Title 9 / State of New York	**Usage ban** DL< 1.0 EN 13130-3 (2004)
Vinyl chloride	75-01-4	Chemical of concern Article 37 / Title 9 / State of New York	**Usage ban** DL<1.0 ISO 6401 (2008)
Acrylamide	79-06-1	bluesign®	**Usage ban** DL<1.0 mg/kg CEN/TS 13130-10 (2005)

18. Nano materials

Nanomaterials are widely used in consumer products such as cosmetics, paints, electronics, and fabrics. They are chemical substances or materials with particle sizes between 1 to 100 nanometers in at least one dimension. Due to the increased specific surface area by volume, nanomaterials may have different characteristics compared to the same material without nanoscale features. Therefore, the properties of nanomaterials may differ from those of the bulk substances or particles of a larger size. Although nanomaterials offer technical and commercial opportunities, they may pose a risk to the environment and raise health and safety concerns for humans and animals. Due to safety reasons nanomaterials are not allowed to use in Reima's products.

19. Nitrobenzene

Nitrobenzene is an aromatic organic compound. It can be used, for example, in the production of dyestuffs, synthetic rubber and pesticides. It is expected to be carcinogenic.

Table 31 Usage ban for nitrobenzene.

SUBSTANCE	CAS NO.	REGULATIONS	REIMA LIMIT VALUE mg/kg
Nitrobenzene	98-95-3	REACH, Annex XIV	**Usage ban**

20. Ozone Depleting Substances

Ozone depleting substances are compounds that destroy the earth's ozone layer.

Table 32 Classes of ozone depleting substances banned in Reima products.

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE mg/kg TEST METHOD
Ozone depleting substances (CFCs) class I	Several	bluesign®	**Usage ban** DL <0.1 mg/kg Usage ban for direct use in manufacturing of articles GC-MS // Headspace List of all substances s. Annex 3
Ozone depleting substances (CFCs) class II	Several	bluesign®	

21. Pesticides

Pesticides are chemical substances that prevents, destroys or controls a harmful organism or disease, or protects plants or plant products during production, storage and transport.

Table 33 *Pesticides restricted in Reima products.*

SUBSTANCE	CAS NO.	REIMA LIMIT VALUE mg/kg TEST METHOD
Pesticides (Single substances listed in Annex 1)	Several	**Usage ban** ASE or Soxhlet Extraction with Acetone/Hexane // GC-MS or LC-MC

22. Phenols and Bisphenol A

BPA is found in polycarbonate plastics and epoxy resins. It is suspected of disrupting hormonal functioning.

Table 34 Restricted phenols and Bisphenol A

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE mg/kg	Notes
Bisphenol A (4,4'-Isopropylidenediphenol)	80-05-7	REACH, Annex XIV	**Usage ban** DL <1.0 mg/kg For textile and leather **Limitation** < 50 mg/kg[54] For metal and polymer parts, down/feather articles	EN ISO 18857-2 (2012) // Extraction with Methanol EN ISO 18857-2 (2012) // Extraction with THF
4,4'-(1-methylpropylidene)bisphenol	77-40-7	REACH, SVHC		
p-(1,1-dimethylpropyl)phenol	80-46-6	REACH, SVHC	**0.1 % by weight**	
Phenol	108-95-2	bluesign®	**Limitation** <10 mg/kg	LC-MS // Extraction with Methanol GC-MS // Extraction with Methanol
Phenol, alkylation products (mainly in para position) with C12-rich branched alkyl chains from oligomerisation, covering any individual isomers and/ or combinations thereof (PDDP)	-	REACH, SVHC		
4-heptylphenol, branched and linear	1987-50-4	REACH, SVHC	**0.1 % by weight**	
2,2-bis (4'-hydroxyphenyl)-4-methyl-pentane	6807-17-6	REACH, SVHC	**0.1 % by weight**	

Regulations

- REACH, Annex XIV, SVHC[55]
- bluesign® RSL, Version 13.0, Jul. 01, 2022

[54] For footwear, a limitation of <100 mg/kg applies.
[55] 0,1% by weight

23. Plasticizers

Phthalates are a group of chemical substances used to soften plastics. They are also called plasticizers and can be found in many articles and consumer products. Some phthalates have shown adverse effects on reproductive system and endocrine system.

In textile industry phthalates can be used in PVC materials, in printing and in man-made leather.

Table 35 Restricted plasticizers

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE mg/kg
Butylbenzyl phthalate (BBP)	85-68-7	REACH, Annex XVII CPSIA, CCPSA, KATS, Japan	**Usage ban** In any combination DL <50 mg/kg[56] Textiles: EN ISO 14389 (2014), CPSC-CH-C1001-09.4 Metal and polymer parts, down/feather articles, leather: CPSC-CH-C1001-09.4
Diethyl phthalate (DEP)	84-66-2	Chemical of concern Article 37 / Title 9 / State of New York	
Mono-n-butylphthalate	131-70-4	Chemical of concern Article 37 / Title 9 / State of New York	
Dibutyl phthalate (DBP)	84-74-2	REACH, Annex XVII CPSIA, CCPSA, KATS, Japan	
Diethylhexyl phthalate (DEHP)	117-81-7	REACH, Annex XVII CPSIA, CCPSA, KATS, Japan	
Diisobutyl phthalate (DIBP)	84-69-5	REACH, Annex XVII CPSIA, KATS, Japan	
Diisononyl phthalate (DINP)	28553-12-0 68515-48-0	REACH, Annex XVII CPSIA, CCPSA, KATS, Japan	
Diisodecyl phthalate (DIDP)	26761-40-0 68515-49-1	REACH, Annex XVII CCPSA, Japan	
Di-n-pentyl phthalate (DnPP)	131-18-0	1907/2006 REACH + Amendment 1513/2018 (CMR)	
Di-n-hexyl phthalate (DnHP)	84-75-3	1907/2006 REACH + Amendment 1513/2018 (CMR) CPSIA	
Di-n-octyl phthalate (DnOP)	117-84-0	REACH, Annex XVII CCPSA, KATS, Japan	
Di-cyclohexyl phthalate (DCHP)	84-61-7	REACH, SVHC CPSIA	
1,2-Benzenedicarboxylic acid, di-C_{6-8}-branched alkyl esters, C_7-rich (DIHP)	71888-89-6	1907/2006 REACH + Amendment 1513/2018 (CMR)	
Bis-(2-methoxyethyl) phthalate (DMEP)	117-82-8	1907/2006 REACH + Amendment 1513/2018 (CMR)	
Diisopentyl phthalate (DIPP)	605-50-5	1907/2006 REACH + Amendment 1513/2018 (CMR)	

[56] For footwear, Reima allows a higher DL of 500 mg/kg as the probability of mouthing in footwear is considered lower than in apparel.

Diisohexyl phthalate (DIHxP)	71850-09-4	REACH, SVHC (2020)	
Di-iso-octyl phthalate	27554-26-3	bluesign®	
Dimethyl phthalate	131-11-3	bluesign®	
Di-n-octyl phthalate	117-84-0	bluesign®	
Dinonyl phthalate	84-76-4	bluesign®	
Di-n-propyl phthalate	131-16-8	bluesign®	
N-pentyl-isopentylphthalate (PIPP)	776297-69-9	REACH, Annex XIV	
Dihexyl phthalate (DHP)	84-75-3	REACH, SVHC	
1,2-Benzenedicarboxylic acid, benzyl C7-9-branched and linear alkyl esters	68515-40-2	bluesign®	
1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkylesters	68515-42-4	bluesign®	
1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear	68515-50-4	bluesign®	
1,2-Benzenedicarboxylic acid, dipentylester, branched and linear	84777-06-0	bluesign®	
1,2-Benzenedicarboxylic acid, di-C6-10-alkyl esters or mixed decyl and hexyl and octyl diesters	Several	bluesign®	
1,2-Benzenedicarboxylic acid, di-C6-10-alkyl esters	68515-51-5	bluesign®	
1,2-Benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters	68648-93-1	bluesign®	

Regulations

- SVHC[57]
- Commission regulation (EU) 2018/1513 amending Annex XVII to Regulation (EC) No 1907/2006 REACH[58]
- REACH, Annex XIV[59]
- bluesign® RSL, Version 13.0, Jul. 01, 2022

[57] Limit: <1000 mg/kg (individually or in combination with other phthalates)
[58] Limit: <1000 mg/kg (individually or in combination with other phthalates)
[59] N.D.

24. Polyaromatic Hydrocarbons (PAHs)

Polycyclic aromatic hydrocarbons (PAHs) are a group of over 100 different chemicals that are formed during the incomplete burning of coal, oil and gas, garbage, or other organic compounds. PAHs are known for their carcinogenic, mutagenic, and teratogenic properties.

PAHs can be found in petrochemicals, rubber, plastics, lubricants, antirust oil, paints, leather, and other products. Rubber and plastics are high risky materials containing PAHs. PAHs are not really used in textile manufacturing, but they can be found in raw materials as contaminants.

Table 36 Prohibited or restricted polyaromatic hydrocarbons

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE mg/kg
Polyaromatic hydrocarbons (PAHs)	**Several**	**bluesign®**	**Usage ban // DL<10 mg/kg** **For a sum of all allocated PAHs** **Test method for all substances below:** **AfPS GS 2019, EPA 8310, EPA 8270D, EPA 8275A**
Benzo[a]pyrene	50-32-8	bluesign®	**Usage ban** DL<0.2 mg/kg
Benzo[e]pyrene (BeP)	192-97-2	1907/2006 REACH + amendments 1272/2013 and 1513/2018, bluesign®	**Usage ban** DL <0.5 mg/kg for each
Benzo[a]anthracene (BaA)	56-55-3		
Chrysen (CHR)	218-01-9		
Benzo[b]fluoranthene (BbFA)	205-99-2		
Benzo[j]fluoranthene (BjFA)	205-82-3		
Benzo[k]fluoranthene (BkFA)	207-08-9		
Dibenzo[a,h]anthracene (DBAhA)	53-70-3		
Naphtho[1,2,3,4-def]chrysene	192-65-4		
Dibenzo[b,def]chrysene	189-64-0		
Benzo[rst]pentaphene	189-55-9		
Methylpyrene, 1-	2381-21-7		
Cyclopenta[c,d]pyrene	27208-37-3		
Anthracene	120-12-7	REACH, SVHC	**Usage ban** DL<0.1% by weight
Fluoranthene	206-44-0		
Phenanthrene	85-01-8		
Pyrene	129-00-0		
Benzo [ghi] perylene	191-24-2		
Acenaphthene	83-32-9	bluesign®	
Acenaphthylene	208-96-8		
Fluorene	86-73-7		
Indeno(1,2,3-cd) pyrene	193-39-5 z		
Naphthalene	91-20-3		

Regulations:

- 1907/2006 REACH + amendments 1272/2013 and 1513/2018[60]
- SVHC[61]
- bluesign® RSL, Version 13.0, Jul. 01, 2022

[60] Limit: 1.0 mg/kg

[61] Limit: < 0.1% by weight

25. Polymers

Globally, polyvinyl chloride (PVC) is one of the most produced polymers, which is used in clothing to create weather/water resistant garments. During its lifetime, PVC can degrade to microplastic particles, which can soak up various organic pollutants that are later absorbed or swallowed by bio-organisms.

Table 37 Restricted polymers.

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE mg/kg TEST METHOD
Polyvinyl chloride	9002-86-2	bluesign®	**Usage ban** Should not be detected FTIR Beilstein test // FTIR measurement only if result of Beilstein test was positive

26. Solvents

Excess residual solvents (RSs) in clothes or in other textiles could be toxic and pose risks to both humans and the environment. N,N-Dimethylformamide (DMF), N,N-dimethylacetamide (DMAc) and 1-methyl-2-pyrrolidinone (NMP) are important chemicals frequently used as solvents in the textile industry.

Benzene is an aromatic hydrocarbon. It can be used as a solvent or for the manufacturing of different aromatic compounds, e.g. for dyestuffs and for synthetic rubber. It is toxic and carcinogenic.

Table 38 List of restriced solvents

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE mg/kg TEST METHOD
Benzene	71-43-2	1907/2006 REACH + Amendment 1513/2018[62]	**Usage ban** // DL< 1.0 mg/kg[63] Headspace GC-MS
1,2-Dichloroethane	107-06-2	bluesign®	**Usage ban** // DL<0.1 mg/kg GC-MS // Headspace
Dichloromethane	75-09-2	bluesign®	**Usage ban** // DL 5.0 mg/kg (Usage ban for direct use in manufacturing of articles) GC-MS // Headspace
1,4-dioxane	123-91-1	REACH SVHC	
Toluene	108-88-3	Chemical of concern Article 37 / Title 9 / State of New York	**Usage ban** // <10 mg/kg Headspace GC-MS Exception valid for solvent coating and metal treatment.
2-Ethyl-2-pyrrolidone	2687-91-4	bluesign®	**Usage ban** // DL<10 mg/kg Leather: EN ISO 19070 (2016) Metal and polymer parts, down/feather articles: CEN ISO/TS 16189 (2013) Textiles: EN 17131 (2019)

[62] Commission regulation (EU) 2018/1513 amending Annex XVII to Regulation (EC) No 1907/2006 REACH; 5.0 mg/kg

[63] For footwear, a limit of DL <5mg/kg applies for all materials.

N-Methyl pyrrolidone (NMP)	872-50-4	1907/2006 REACH + Amendment 1513/2018[64] bluesign®	**Usage ban** // DL<10 mg/kg[65] Textiles: EN 17131 (2019) Metal and polymer parts, down/feather articles: CEN ISO/TS 16189 (2013) Leather: EN ISO 19070 (2016)
N,N-Dimethylacetamide (DMAc)	127-19-5	bluesign®	**Usage ban** // DL<5.0 mg/kg[64] Textiles: EN 17131 (2019) Metal and polymer parts and down/feather: CEN ISO/TS 16189 (2013) Leather: EN ISO 19070 (2016) Fibers/yarn: EN17131 (2019)
N,N-Dimethylformamide (DMF)	68-12-2	bluesign® Oeko-tex 100 REACH, SVHC (EU) 2018/1513 (CMR)	**Usage ban** // DL<500.0 mg/kg[64] (Usage ban 5mg/kg for all the bluesign® materials and bluesign® products) Textiles: EN 1731 (2019) Metal and polymer parts, down/feather articles: CEN ISO/TS 16189 (2013) Leather: EN ISO 19070 (2016)
Tetrachloroethylene	127-18-4	bluesign®	**Usage ban** // DL <1.0 mg/kg GC-MS // Headspace
Trichloroethylene	79-01-6	bluesign®	**Usage ban** // DL <5.0 mg/kg GC-MS // Headspace
Xylene, all isomers	1330-20-7	bluesign®	**Usage ban** // DL<50 mg/kg (Usage ban 50mg/kg for sum of all isomers) GC-MS // Headspace

[64] Commission regulation (EU) 2018/1513 amending Annex XVII to Regulation (EC) No 1907/2006 REACH; 3000 mg/kg (this chemical has "always" been there and now awareness has risen and restrictions are getting tighter and that our situation in light of these Ok but now we have to think about the future and what our solution is)

[65] In footwear, a higher limit of 500 mg/kg applies for all materials.

27. Tin-organic Compounds

Tin-organic compounds are used as antibacterial and antifungal agents in the textile and leather industries. They are also used as stabilizers in plastics and as catalysts in polymer synthesis.

Table 39 List banned tin-organic compounds

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE mg/kg
Tin- organic compounds as mono-, di- and tri-, tetraalkyltin organics	**Several**	**bluesign®**	**Usage ban for all allocated members/substances below[66]** **Test: CEN ISO/TS 16179 (2012)**
Ethyltin compounds	***Several***	***bluesign®***	***Usage ban***
• Tetraethyltin compounds (TET)	Several	bluesign®	DL <1.0 mg/kg
Hexyltin compounds	***Several***	***bluesign®***	***Usage ban***
• Tricyclohexyltin compounds (TCyHT)	Several	bluesign®	DL <0.5 mg/kg
Butyltin compounds	***Several***	***bluesign®***	***Usage ban***
• Dibutyltin (DBT) compounds	Several	bluesign®	DL <1.0 mg/kg
• Monobutyltin compounds (MBT)	Several	bluesign®	DL <1.0 mg/kg
• Tetrabutylin compounds (TeBT)	Several	bluesign®	DL <0.5 mg/kg
• Tributyltin (TBT)+compounds	Several	bluesign®	DL <0.5 mg/kg
Methyltin compounds	***Several***	***bluesign®***	***Usage ban***
• Dimethyltin compounds	Several	bluesign®	DL <0.5 mg/kg
• Monomethyltin compounds	Several	bluesign®	DL <2.0 mg/kg
• Trimethyltin compounds (TMT)	Several	bluesign®	DL <0.5 mg/kg
Octyltin compounds	***Several***	***bluesign®***	***Usage ban***
• Dioctyltin compounds (DOT)	Several	bluesign®	DL <1.0 mg/kg
• Monooctyltin compounds (MOT)	Several	bluesign®	DL <2.0 mg/kg
• Tetraoctyltin compounds (TeOT)	Several	bluesign®	DL <0.5 mg/kg
• Trioctyltin compounds (TOT)	Several	bluesign®	DL <0.5 mg/kg
Phenyltin compounds	***Several***	***bluesign®***	***Usage ban***
• Diphenyltin compounds (MPhT)	Several	bluesign®	DL <2.0 mg/kg
• Monophenyltin compounds	Several	bluesign®	DL <1.0 mg/kg
• Triphenyltin (TPhT) compounds	Several	bluesign®	DL <0.5 mg/kg
Propyltin compounds	***Several***	***bluesign®***	***Usage ban***
• Dipropyltin compounds (DPT)	Several	bluesign®	DL <1.0 mg/kg
• Tripropyltin compounds (TPT)	Several	bluesign®	DL <0.5 mg/kg

[66] For footwear, a detection limit of 0.5 mg/kg applies for all organo tins.

28. Uv-protection Agents

UV-stabilizers are used especially in the manufacturing of polymers, coatings and rubber-based products.

Table 40 Restriced UV-protection agents according to REACH, SVHC, and bluesign® RSL, Version 13.0, Jul. 01, 2022.

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE mg/kg
2,4-di-tert-butyl-6-(5chlorobenzotriazol-2-yl) phenol (UV-327)	3864-99-1	REACH, SVHC, bluesign®	**Usage ban** DL >1000 mg/kg DIN EN 62321-6 (2016) // Extraction with THF
2-(2H-benzotriazol-2-yl)-4-(tertbutyl)-6-(sec-butyl) phenol (UV-350)	36437-37-3	REACH, SVHC, bluesign®	
2-(2H-benzotriazol-2-yl)-4,6ditertpentylphenol (UV-328)	25973-55-1	REACH, SVHC, bluesign®	
2-benzotriazol-2-yl-4,6-di-tertbutylphenol (UV-320)	3846-71-7	REACH, SVHC, bluesign®	
1,7,7-trimethyl-3-(phenylmethylene) bicyclo[2.2.1]heptan-2-one	15087-24-8	REACH, SVHC	

29. Other Substances and Chemicals

Table 41 Commission regulation (EU) 2018/1513 amending Annex XVII to Regulation (EC) No 1907/2006 REACH, New York regulations, and bluesign® RSL, Version 11.0, De. 1, 2020.

SUBSTANCE	CAS NO.	REGULATION	REIMA LIMIT VALUE mg/kg	Notes and detection method
Acetophenone	98-86-2	bluesign®	<20 mg/kg	GC-MS // Extraction with Methanol
Azodicarbonamide (ADCA)	123-77-3	bluesign® REACH, Annex XIV	<100 mg/kg	Solvent Extraction // GC-MS or LC-MS or LC-DAD
4,4'-bis(dimethylamino)benzophenone (Michler's ketone)	90-94-8	REACH, SVHC	<0.1 % by weight	
Bis(2-(2-methoxyethoxy)ethyl)ether	693-98-1	REACH, SVHC		
1-Bromopropane	106-94-5	REACH, SVHC		
Chloroform	67-66-3	REACH Annex XIV		
Cresol, all isomers	*1319-77-3*	*bluesign®*	**Usage ban** // DL<10 mg/kg	BVL B 82.02-8 (2001) // Extraction with KOH DIN EN ISO 17070 (2015) // Extraction with KOH
• m-Cresol	108-39-4	bluesign®		
• o-Cresol	95-48-7	bluesign®		
• p-Cresol	106-44-5	bluesign®		
1,1-Dichloroethylene	75-35-4	REACH Annex XIV	<0.1 % by weight	
1,2-Diethoxyethane	629-14-1	REACH, SVHC		
Diboron trioxide	1303-86-2	REACH, SVHC		
Dibutyltin dichloride (DBT)	683-18-1	REACH, SVHC		
Diethyl sulphate	64-67-5	REACH, SVHC		
Dimethyl sulphate	77-78-1	REACH, SVHC		
2,4-Dinitrotoluene	121-14-2	REACH SVHC + Annex XIV		
Disodium tetraborate, anhydrous	1303-96-4, 1330-43-4, 12179-04-3	REACH, SVHC		
Ethylenediamine	107-15-3	REACH, Annex XIV		
3-ethyl-2-methyl-2-(3-methylbutyl)-1,3-oxazolidine	143860-04-2	REACH, SVHC		
Formamide	75-12-7	bluesign®	**Usage ban** // DL<50 mg/kg	Textiles: EN 17131 (2019) All others: CEN ISO/TS 16189 (2013)
Furan	110-00-9	REACH, SVHC	<0.1 % by weight	
Hexahydro-2-benzofuran-1,3-dione (HHPA)	*85-42-7*	*REACH, SVHC*		
• Cis-cyclohexane-1,2-dicarboxylic anhydride				
• Trans- cyclohexane-1,2-dicarboxylic anhydride				

Hexahydromethylphathalic anhydride	*25550-51-0*	*REACH, SVHC*		
• Hexahydro-4-methylphathalic anhydride	19438-60-9			
• Hexahydro-1- methylphathalic anhydride	48122-14-1			
• Hexahydro- 3-methylphathalic anhydride	57110-29-9			
Hydrazine	302-01-2	REACH, SVHC		
Imidazolidine-2-thione; 2-imidazoline- 2-thiol	96-45-7	REACH, SVHC		
Isoquinoline	119-65-3	bluesign®	**Usage ban** // DL<50 mg/kg	LC-MS/MS // Extraction with Methanol LC-DAD // Extraction with THF LC-DAD // Extraction with Methanol LC-MS/MS // Extraction with THF
N-methylacetamide	79-16-3	REACH, SVHC	**<**0,1 % by weight	
2-methylimidazole	693-98-1	REACH, SVHC		
Pentachloroethane	76-01-7	REACH Annex XIV		
Phenolphthalein	77-09-8	REACH, SVHC		
Pitch, coal tar, high temp.	65996-93-2	SVHC		
Propylene oxide; 1,2-epoxypropane; methyloxirane	75-56-9	REACH, SVHC		
Quinoline	91-22-5	Amendment 2018/1513 to EC 1907/2006 Annex XVII bluesign®	**Usage ban** // DL<50 mg/kg	LC-MS/MS // Extraction with Methanol LC-DAD // Extraction with THF or Methanol LC-MS/MS // Extraction with THF
Sodium peroxometaborate	7632-04-4	REACH, SVHC + Annex XIV	<0,1 % by weight	
4-tert-butylphenol	98-54-4	REACH, SVHC		
1,1,1,2- Tetrachloroethane	630-20-6	REACH Annex XIV		
1,1,2- Trichloroethane	79-00-5	REACH Annex XIV		
Tri-n-butyl-phosphate TNBP	126-73-8	Chemical of concern Article 37 / Title 9 / State of New York Test method: Extraction following IEC 62321-6 (2015) // GC-MS	<10 mg/kg	
5-tert-butyl-2,4,6-trinitro-m-xylene (musk xylene)	81-15-2	REACH SVHC + Annex XIV	<0,1 % by weight	
N,N,N',N'-tetramethyl-4,4'-methylenedianiline (Michler's base)	101-61-1	REACH, SVHC		
Tetraboron disodium heptaoxide, hydrate	12267-73-1	REACH, SVHC		
1,2,3-Trichloropropane	96-18-4	REACH, SVHC		

TGIC (1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione)	2451-62-9	REACH, SVHC		
β -TGIC (1,3,5-tris[(2S and 2R)-2,3-B64epoxypropyl]-1,3,5-triazine-2,4,6-(1H,3H,5H)-trione)	59653-74-6	REACH, SVHC		
2-benzyl-2-dimethylamino-4'-morpholinobutyrophenone	119313-12-1	REACH, SVHC (2020)	<1000 mg/kg	
2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one	71868-10-5	REACH, SVHC (2020)	<1000 mg/kg	
2-Phenyl-2-propanol	617-94-7	bluesign®	<10 mg/kg	GC-MS // Extraction with Methanol
2-(4-tert-butylbenzyl)propionaldehyde and its individual stereoisomers		REACH, SVHC		
Orthoboric acid, sodium salt	13840-56-7	REACH, SVHC		
Siloxanes	*Several*	*bluesign®*	***Usage ban***	
Octamethyl cyclotetrasiloxane (D4)	556-67-2	bluesign® REACH, Annex XIV	**Usage ban** // DL<30mg/kg	Usage ban for allocated member/substance GC // with reference to TEGEWA method
Decamethyl cyclopentasiloxane (D5)	541-02-6	bluesign®	**Usage ban** // DL<50 mg/kg	Usage ban for allocated member/substance GC // with reference to TEGEWA method
Dodecamethyl cyclohexasiloxane (D6)	540-97-6	bluesign®	**Usage ban** // DL<50 mg/kg	Usage ban for allocated member/substance GC // with reference to TEGEWA method

All chemicals were either included in the bluesign® RSL, Version 13.0, Jul. 01, 2022 or in the Candidate List of Substances of Very High Concern for Authorization / REACH: https://echa.europa.eu/fi/candidate-list-table.

Annex 1

Table 42 List of restricted pesticides based on REACH and bluesign® RSL, Version 13.0, Jul. 01, 2022.

PESTICIDES	CAS NO.	REGULATION
Alachlor	15972-60-8	
Aldicarb	116-06-3	
Aldrine	309-00-2	POP (EU) 2019/1021
Atrazine	1912-24-9	
Azinphos methyl	86-50-0	
Azinphos ethyl	2642-71-9	
Binapacryl	485-31-4	
Bromophos-ethyl	4824-78-6	
Captafol	2425-06-1	
Carbaryl	63-25-2	
Carbendazim	10605-21-7	
Chlordane	57-74-9	POP (EU) 2019/1021
Chlordecone	143-50-0	
Chlordimeform	6164-98-3	
Chlorfenvinphos	470-90-6	
Chlorobenzilate	510-15-6	
Chlorpyrifos	2921-88-2	
Chlorthalonil	1897-45-6	
Clofenotane, DDT (1,1,1-trichloro-2,2-bis (4-chlorophenyl)ethane)	40-29-3	POP (EU) 2019/1021
Clothianidin	210880-92-5	
Coumaphos	56-72-4	
Cyfluthrin	68359-37-5	
Cyhalothrin, lambda	91465-08-6	
Cypermethrin	52315-07-8	
Deltamethrin	52918-63-5	
Demeton	919-86-8	
Diazinon	333-41-5	
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	
Dichlofenthion	97-17-6	
Dichlofluanide	1085-98-9	
o,p'-Dichlorodiphenyldichloroethane (o,p'-DDD)	53-19-0	
p,p'-Dichlorodiphenyldichloroethane (p,p'-DDD)	72-54-8	
o,p'-Dichlorodiphenyldichloroethylene (o,p'-DDE)	3424-82-6	
p,p'-Dichlorodiphenyldichloroethylene (p,p'-DDE)	72-55-9	
o,p'-Dichlorodiphenyltrichloroethane (o,p'DDT) and its isomers; preparations containing DDT and its isomers	789-02-6	
p,p'-Dichlorodiphenyltrichloroethane (p,p'DDT) and its isomers; preparations containing DDT and its isomers	50-29-3	

2,4-Dichlorophenoxyacetic acid, its salts, esters and compounds	94-75-7	
4,6-Dichloro-7-(2,4,5-trichlorophenoxy)-2trifluoromethylbenzimidazole (DTTB)	-	
Dichlorprop	120-36-5	
Dichlorvos	62-73-7	
Dicofol	115-32-2	
Dicrotophos	141-66-2	
Dicyclanil	112636-83-6	
Dieldrine	60-57-1	POP (EU) 2019/1021
Diflubenzuron	35367-38-5	
Difocol	115-32-2	POP (EU) 2019/1021
Dimethoate	60-51-5	
Dinoseb, its salts, esters and acetate	88-85-7 and others	REACH, SVHC
Dinotefuran	165252-70-0	
Dinoterb	1420-07-1	
Disulfoton	298-04-4	
Diuron	330-54-1	
DNOC	534-52-1	
Endosulfan	115-29-7	POP (EU) 2019/1021
Endosulfan, alpha	959-98-8	POP (EU) 2019/1021
Endosulfan, beta	33213-65-9	POP (EU) 2019/1021
Endrine	72-20-8	POP (EU) 2019/1021
Esfenvalerate	66230-04-4	
Ethion	563-12-2	
Ethylene dibromide (EDB)	106-93-4	
Ethylene oxide (Pesticide)	75-21-8	
Fenchlorphos	299-84-3	
Fenitrothion	122-14-5	
Fenvalerate	51630-58-1	
Flumethrin	69770-45-2	
Gluteral	111-30-8	
Heptachlor	76-44-8	POP (EU) 2019/1021
Heptachlor epoxide	1024-57-3	
Hexachlorocyclohexane (HCH), all isomers	608-73-1	
Imidacloprid (ISO)	105827-78-9 138261-41-3	
Isodrin	465-73-6	
Isoproturon	34123-59-6	
Kelevane	4234-79-1	
Lindane (gamma-HCH)	58-89-9	
Linuron	330-55-2	
Malathion	121-75-5	
MCPA	94-74-6	
MCPB	94-81-5	
Mecoprop	93-65-2	
Methamidophos	10265-92-6	

Methoxychlor	72-43-5	
Methyl bromide	74-83-9	
Methyl parathion	298-00-0	
Mevinophos	7786-34-7	
Mirex	2385-85-5	POP (EU) 2019/1021
Monocrotophos	6923-22-4	
Monolinuron	1746-81-2	
Omethoate	1113-02-6	
Oxydemeton-methyl	301-12-2	
Paraquat dication	4685-14-7	
Paraquat dichloride	1910-42-5	
Ethyl parathion	56-38-2	
Pentachloroanisole	1825-21-4	
Perthane	72-56-0	
Pirimiphos-methyl	29232-93-7	
Phosphamidon	13171-21-6	
Phoxim	14816-18-3	
Polychlorinated naphthalenes	70776-03-3 and others	POP (EU) 2019/1021
Profenophos	41198-08-7	
Propanil	709-98-8	
Propetamphos	31218-83-4	
Pyrazon	1698-60-8	
Quinalphos	13593-03-8	
Quintozene	82-68-8	
Simazine	122-34-9	
Strobane	8001-50-1	
Telodrin	297-78-9	
Thiamethoxam	53719-23-4	
Tiacloprid	111988-49-9	
Timiperone (DTTB)	57648-21-2	
Tolyfluanide	731-27-1	
Toxaphene	8001-35-2	POP (EU) 2019/1021
Tribufos (DEF)	78-48-8	
Trichlorfon	52-68-6	
2,4,5-Trichlorophenoxyacetic acid, its salts, esters and compounds	93-76-5	
2-(2,4,5-Trichlorophenoxy)propionic acid, salts and compounds	93-72-1	
Triflumuron	64628-44-0	
Trifluralin	1582-09-8	
Vinclozolin	50471-44-8	
Acetamipirid, its salts, esters and compounds	*Several*	
• Acetamipirid (ISO)	135410-20-7	
• Acetamipirid [2]	160430-64-8	
Nitenpyram, its salts, esters and compounds	*Several*	
• Nitenpyram [1]	150824-47-8	
• Nitenpyram [2]	120738-89-8	

Annex 2

Table 43 List of restricted dioxins and furans according to bluesign® RSL, Version 13.0, Jul. 01, 2022.

DIOXINS AND FURANS	**CAS NO.**
Dioxins and Furans - Group 3	**Several**
• 1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0
• 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268-87-9
• 1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4
• 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9
• 1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7
Dioxins and Furans - Group 4 and 5	**Several**
Dioxins and Furans - Group 5	*Several*
• 1,2,3,4,7,8-Hexabromodibenzo-p-dioxin	
• 1,2,3,6,7,8-Hexabromodibenzo-p-dioxin	110999-45-6
• 1,2,3,7,8,9-Hexabromodibenzo-p-dioxin	110999-46-7
• 1,2,3,7,8-Pentabromodibenzofuran	107555-93-1
• *Dioxins and Furans - Group 4*	Several
• 1,2,3,7,8-Pentabromodibenzo-p-dioxin	109333-34-8
• 2,3,4,7,8-Pentabromodibenzofuran	131166-92-2
• 2,3,7,8-Tetrabromodibenzofuran	67733-57-7
• 2,3,7,8-Tetrabromodibenzo-p-dioxin	50585-41-6
Dioxins and Furans - Group 1 and 2	**Several**
Dioxins and Furans - Group 2	*Several*
• 1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9
• 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6
• 1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9
• 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7
• 1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9
• 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3
• 1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6
• 2,3,4,6,7,8-Hexachlorodibenzofuran	
Dioxins and Furans - Group 1	*Several*
• 1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4
• 2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4
• 2,3,7,8-Tetrachlorodibenzofuran	51207-31-9
• 2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6

Annex 3

Table 44 List of restricted ozone depleting substances according to bluesign® RSL, Version 13.0, Jul. 01, 2022.

OZONE DEPLETING SUBSTANCES	CAS NO.
Ozone depleting substances (CFCs) class I	**Several**
HBFC-241 B4	
1,1,1,2-Tetrachlorodifluoro-ethane	76-11-9
1,1,1-Trichloro-2,2,2-trifluoroethane	354-58-5
1,1,1-Trichloropentafluoro-propane	4259-43-2
1,1,2,2-Tetrachloro-1,2-difluoroethane	76-12-0
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1
1,1,3-Trichloropentafluoro-propane	76-17-5
1,1-Dichloro-1,2,2,2-tetrafluoroethane	374-07-2
1,2,2-Trichloropentafluoro-propane	1599-41-3
1,2,3-Trichloropentafluoro-propane	1652-81-9
1,2-Dichloro-1,1,2,2-tetrafluoroethane	76-14-2
Bromochlorodifluoro-methane	353-59-3
Bromotrifluoro-methane	75-63-8
Carbon tetrachloride	56-23-5
Chlorobromo-methane	74-97-5
Chlorotrifluoro-methane	75-72-9
Dibromotetrafluoro-ethane	124-73-2
Dichlorodifluoro-methane	75-71-8
Dichlorohexafluoro-propane	661-97-2
HBFC-121 B4	353-93-5
HBFC-122 B3	353-97-9
HBFC-123 B2	354-04-1
HBFC-124 B1	354-07-4
HBFC-131 B3	172912-75-3
HBFC-132 B2	75-82-1
HBFC-133a B1	421-06-7
HBFC-141 B2	358-97-4
HBFC-142 B1	359-07-9
HBFC-151 B1	762-49-2
HBFC-21 B2	1868-53-7
HBFC-22 B1	1511-62-2
HBFC-221 B6	
HBFC-222 B5	
HBFC-223 B4	
HBFC-224 B3	666-48-8
HBFC-225 B2	431-78-7
HBFC-226 B1	2252-79-1
HBFC-231 B5	
HBFC-232 B4	148875-98-3
HBFC-233 B3	431-48-1
HBFC-234 B2	460-86-6
HBFC-235 B1	460-88-8
HBFC-242 B3	666-25-1
HBFC-243 B2	460-60-6
HBFC-244 B1	460-67-3

HBFC-251 B1	75372-14-4
HBFC-252 B2	51584-25-9
HBFC-253 B1	460-32-2
HBFC-261 B2	453-00-9
HBFC-262 B1	461-49-4
HBFC-271 B1	1871-72-3
HBFC-31 B1	373-52-4
Heptachlorofluoro-propane	422-78-6
Hexachlorodifluoro-propane	3182-26-1
Monochloroheptafluoro-propane	422-86-6
Monochloropentafluoro-ethane	76-15-3
Pentachlorofluoro-ethane	354-56-3
Pentachlorotrifluoro-propane	2354-06-5
Tetrachlorotetrafluoro-propane	29255-31-0
Trichlorofluoro-methane	75-69-4
Ozone depleting substances (CFCs) class II	**Several**
Dichlorodifluoro-ethane	1649-08-7
Dichlorodifluoro-propane	819-00-1
Dichlorofluoroethane	1717-00-6
Dichlorofluoro-methane	75-43-4
Dichlorofluoro-propane	420-97-3
Dichloropentafluoropropane	422-56-0
Dichloropentafluoro-propane	507-55-1
Dichlorotetrafluoro-propane	425-94-5
Dichlorotrifluoro-ethane	306-83-2
Dichlorotrifluoro-propane	460-69-5
HCFC-141	430-57-9
HCFC-142	
HCFC-151	
HCFC-225	
Hexachlorofluoro-propane	422-26-4
Monochlorodifluoro-ethane	75-68-3
Monochlorodifluoro-methane	75-45-6
Monochlorodifluoro-propane	421-02-3
Monochlorofluoro-methane	593-70-4
Monochlorofluoro-propane	430-55-7
Monochlorohexafluoro-propane	431-87-8
Monochloropentafluoro-propane	460-92-4
Monochlorotetrafluoro-ethane	2837-89-0
Monochlorotetrafluoro-propane	134190-50-4
Monochlorotrifluoro-ethane	75-88-7
Monochlorotrifluoro-propane	460-35-5
Pentachlorodifluoro-propane	422-49-1
Pentachlorofluoro-propane	421-94-3
Tetrachlorodifluoro-propane	460-89-9
Tetrachlorofluoro-ethane	354-14-3
Tetrachlorofluoro-propane	666-27-3
Tetrachlorotrifluoro-propane	422-52-6
Trichlorodifluoro-ethane	354-21-2
Trichlorodifluoro-propane	460-63-9
Trichlorofluoro-ethane	359-28-4
Trichloromonofluoro-propane	421-41-0
Trichlorotetrafluoro-propane	422-54-8
Trichlorotrifluoro-propane	7125-84-0

Annex 4

Table 45 List of restricted perfluoro derivatives according to bluesign® RSL, Version 13.0, Jul. 01, 2022.

PERFLUORO DERIVATIVES	**CAS. NO.**
Perfluoroalkyl sulfonic acids and derivatives - PFSA	
Perfluorooctane sulfonic acid and its derivatives	*Several*
• Ammonium perfluorooctane sulfonate	29081-56-9
• Diethanolamine perfluorooctane sulfonate	70225-14-8
• Lithium perfluorooctane sulfonate	29457-72-5
• Perfluorooctane sulfonate	45298-90-6
• Perfluorooctane sulfonic acid (PFOS)	1763-23-1
• Potassium heptadecafluoro-octane-1-sulphonate	2795-39-3
Perfluorooctane sulfon amidoethanols	*Several*
• 1-Octanesulfonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-	4151-50-2
• 1-Octanesulfonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6, 7,7,8,8,8-heptadecafluoro-N-(2-hydroxyethyl)-	1691-99-2
• Heptadecafluoro-N-methyloctane sulfonamideoethanol	24448-09-7
Perfluorooctane sulfon polymers	Several
Perfluorooctane sulfon halides	Several
• 1-Octanesulfonyl fluoride., 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8- heptadecafluoro-	307-35-7
Perfluorooctane sulfon amides	Several
• Heptadecafluoro-N-methyloctane sulfonamide	31506-32-8
• Perfluorooctane sulfonamide	754-91-6
Perfluorooctane sulfon amidoethyl (meth)acrylates	Several
Perfluoroalkyl carboxylic acids and deriviatives - PFCA	
Perfluorocarboxylic acids and its salts	*Several*
Perfluorohexanoic acid and its salts	*Several*
• Perfluorohexanoic acid (PFHxA)	307-24-4
Perfluorooctanoic acid and its salts	*Several*
• Ammonium pentadecafluoro octanoate	3825-26-1
• Octanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-pentadecafluoro-, sodium salt (1:1)	335-95-5
• Perfluorooctanoic acid (PFOA)	335-67-1
• Potassium perfluorooctanoate	2395-00-8
Perfluorooctanoic acid related substances	*Several*
• Methyl perfluorooctanoate	376-27-2
• Ethyl perfluorooctanoate	3108-24-5
• *Perfluorooctylethyl alcohols*	Several
• Perfluorooctylethanol	678-39-7
• *Perfluorooctylethyl olefins*	Several
• Perfluorooctylethene	21652-58-4
• *Perfluorooctylethyl halides*	Several
• 1H,1H,2H,2H-Perfluorodecyliodide	2043-53-0
• Heptadecafluoro-1-iodooctane	507-63-1
• Pentadecafluorooctyl fluoride	335-66-0
Perfluorooctylethyl acrylate or methacrylate	*Several*
Perfluorooctylethyl polymers	*Several*

Specifications for Footwear

Test Item	Test Method	Requirement	Mandatory or Optional
Azodyes	Textiles: EN 14362-1 (2017) EN 14362-3 (2017) (for azo dyes which may release 4-Aminoazobenzene) Leather: EN 17234-1 (2015) EN 17234-2 (2011) (for azo dyes which may release 4-Aminoazobenzene)	"EU: <30 mg/kg US: N/A CHINA: <20 mg/kg (Textile Product); 30 mg/kg (Leather & Fur) Japan: < 30 mg/kg"	M
Amines Salts	Refer to Azo Dyes	"EU: Each: < 30 mg/kg US & CHINA: N/A"	M
Formaldehyde	Textile: ISO 14184-1 (2011) Leather: ISO 17226-1 (2008) or ISO 17226-2 (2008)	"US: N/A EU: <30 mg/kg REACH: <75 mg/kg CHINA: <20 mg/kg (baby's products) <75 mg/kg (products with direct skin contact) <150 mg/kg (product other than infant product) Japan: Not Detected (baby's products) <75 mg/kg for others"	M
Total Lead	For metal parts: DIN EN 16711-2 (2016) For leather:EN ISO 17072-2 (2019) For textiles, polymer parts, down/feather articles: DIN EN 16711 (2016)	EU & US: < 90 mg/kg	M
	CPSC-CH-E1001-08.3 CPSC-CH-E1002-08.3 CPSC-CH-E1003-09 / XRF firstly		
Chrome VI after aging	EN ISO 17075-2 Ageing-ISO 10195	EU & US: < 3 mg/kg 80°C,RH:0~10%, 24h;	M
PCP,Tecp,TricP ,opp	Textile:NF G-08-015 or (&64LF GB) B82,02-8 Leather :ISO 17070	EU & US & CHINA: OPP: < 100 mg/kg Others: < 0.5 mg/kg each	M
NP/NPEO	Textile: ISO/DIS 18254 Leather: ISO 18218-1/2	NP< 10 mg/kg NPEO< 100 mg/kg	M
Phthalates -19P	ISO TS 16181 ISO 14389	**EU**: 3P: SUM[DNOP+DIDP+DINP]: < 500 mg/kg 4P:SUM[DBP+BBP+DEHP+DIBP]: < 500 mg/kg And meanwhile all 19P: each< 500 mg/kg DNOP/DIDP/DINP,DBP,BBP,DEHP,DIBP,DIHP,DMEP,DiPP,DPP, DnHP,DHNUP,nPiPP,(DNPP+DIPP+nPiPP),DHxP,C6-10, DCHP, DIHxP	M
	CPSC-CH-C1001-09.4	**US**: each < 500 mg/kg	
Phthalates -23P	CPSC-CH-C1001-09.4	"EU & US: Each < 500 mg/kg, total 1000 mg/kg"	M
	GB 30585 (ISO/TS 16181-1)	"CHINA: Infant shoe: DINP,DIDP,DNOP total 0.1% (1000 mg/kg), DEHP,DBP,BBP total 0.1% (1000 mg/kg) Children Shoe: DEHP,DBP,BBP total 0.1% (1000 mg/kg)"	

Cadmium (Cd)	Plastics: EN 1122 Textile/Metal: EN 16711-1 Leather: ISO 17072-2	EU & US: Total < 40 mg/kg	M
Total Mercury (Hg)	Textile&others: EN 16711-1 Leather: ISO 17072-2	Total < 0.5 mg/kg	M
Total Arsenic (As)	GB 30585 (QB/T 4340)	"CHINA: ≤100 mg/kg US & EU: N/A"	M
PAHs -8P	AfPS GS 2019	< 0.5 mg/kg each BaP,BeP,BaA,CHR, BbFA,BjFA,BkFA, DBAhA	M
Nickel	EN 1811/A1 EN12472 (if coated)	Spot test first (Negative), if fail then apply Nickel release: ≤ 0.5 μg/cm²/week (≤ 0.2 for piercing item)	M
SCCP	ISO 18219-1	< 1500 mg/kg	M
pH value	Textile : ISO 3071 Leather : ISO 4045	"EU & US: Textile: 4.0-7.5 Leather: 3.2-4.5 CHINA: 4.0-8.5 Textile: 4.0-7.5 Leather: 4.0-4.5"	M
Organo tins	Screening(XRF). If result >0,1% then follow CEN ISO 16179	EU: DBT, DOT, MBT, TCyHT, TMT, TOT, TPT: 1 mg/kg each TBT, TPhT: 0.5 mg/kg each US & CHINA: N/A"	M
Dimethylfumarate (DMFu)	"ISO 16186 GB 30585 (GB/T 26713)"	**≤** 0.1 mg/kg	M
Heavy metal - ROHS	Directive 2011/65/EC	comply with RoHS regulation *** For Led light shoes**	M
FC free (PFOS & PFOA)	ISO 23702-1	"No PFC * For materials treated with oil or water repellency EU: PFOS and its salts & PFOS-related substances: < 1 ug/m2((textiles or other coated materials), 0.1%(others) PFOA and its salts:< 0.025 mg/kg PFOA-related substances: <1 mg/kg C9-C14 PFCA and its salts <0.025 mg/kg (sum) C9-C14 PFCA-related substances <0.26 mg/kg (sum) US: Prohibited CHINA: N/A"	M
Bisphenol A	Inhouse based on LC-MS/GC-MS 1g sample/20 ml THF, sonication for 60 minutes at 60 degrees C, analysis with LC/MS	"US: BPA: <1 mg/kg EU & CHINA: N/A"	M
Extractable heavy metal	Cr VI: CTC based on ISO 17075-2 Pb,Cd,As: EN 16711-2	Pb <0.2 mg/kg; Cd < 0.1 mg/kg; Hg < 0.02 mg/kg; Others < 1 mg/kg	M
Benzene	EN 71-11 Annex A GC/MS headspace 45 minutes at 120 degrees C	< 5 mg/kg	M
PVC	Flame test, if positive, confirmation by FTIR	NO PVC	M
N-nitrosamines N	for Rubber materials only. GB30585 (GB/T 24153)	"CHINA: Not Detected US & EU: N/A"	M
Allergenic & carcinogenic Dyes	DIN 54231	"EU: <50 mg/kg each US & CHINA: N/A"	M
NMP	ISO/TS 16189	"EU: 3000 mg/kg US & CHINA: N/A"	M
DMAC	ISO/TS 16189	"EU: 3000 mg/kg US & CHINA: N/A"	M
DMFa	ISO/TS 16189	"EU: 3000 mg/kg US & CHINA: N/A"	M

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Quinoline	DIN 54231	"EU: 50 mg/kg US & CHINA: N/A"	M
EU Directive 94/62/EC & US Model Toxics in Packaging Legislation (TPCH) - Pb、Cd、Hg、Cr VI	Acid digestion	"EU & US: total 100 mg/kg CHINA: N/A"	M
US Model Toxics in Packaging Legislation (TPCH) - Phthalate(follow up the latest items)	CPSC-CH-C1001-09.4	"US: total 100 mg/kg EU & CHINA: N/A"	M
US Model Toxics in Packaging Legislation (TPCH) - Total F or PFAS(follow up the latest items)	"Options A and B: A. Screening test: Make Total F first (EN 14582:2016). When the total fluorine content is less than 50 mg / kg, it is judged as pass; When it is greater than 50 mg / kg, it is recommended to test additional PFAS to confirm its compliance. The conclusion will be determined based on the results of specific PFAS substances. B. Test PFAS directly: CEN/TS 15968:2010"	"US: High risk: For materials treated with oil or water repellency Prohibited (Not Detected) EU & CHINA: N/A"	M
Chlorinated Benzenes and Toluenes	EN 17137	"EU: 1,2-Dichlorobenzene: 10 mg/kg, others: 1 mg/kg each US & CHINA: N/A"	M
Flame retardant	Screening ASTM F2617-15. if Br>350 ppm then BDE by internal method EN ISO 17881-1 & -2	"* For material with Flame retardant treatment DBDPE, PBDEs, PBBs, TBBPA, HBCDD, BBMP, TDCPP,TXP, TRIS, TEPA, TCEP, BDBPP: < 10 mg/kg each"	O

Footwear Substance list

Azo dyes

Substances	**CAS No.**
4-Aminobiphenyl	92-67-1
Benzidine	92-87-5
4-Chlor-o-toluidine	95-69-2
2-Naphthylamine	91-59-8
o-Aminoazotoluene	97-56-3
5-nitro-o-toluidine / 2-Amino-4-nitrotoluene	99-55-8
4-Chloroaniline	106-47-8
4-methoxy-m-phenylenediamine / 2,4-Diaminoanisole	615-05-4
4,4'-Diaminodiphenylmethane	101-77-9
3,3'-Dichlorobenzidine	91-94-1
3,3'-Dimethoxybenzidine	119-90-4
3,3'-Dimethybenzidine	119-93-7
4,4'-methylenedi-o-toluidine / 3,3'-Dimethyl-4,4'-diaminodiphenylmethane	838-88-0
p-Cresidine	120-71-8
4,4'-Methylene-bis-(2-chloroaniline)	101-14-4
4,4'-Oxydianiline	101-80-4
4,4'-Thiodianiline	139-65-1
o-Toluidine	95-53-4
4-methyl-m-phenylenediamine / 2,4-Toluylendiamine	95-80-7
2,4,5-Trimethylaniline	137-17-7
4-aminoazobenzene	60-09-3
O-Anisidine	90-04-0
2,6-Xylidine	87-62-7
2,4-Xylidine	95-68-1

Allergenic & Carcinogenic Dyes

Substances	**CAS No.**
Disperse Blue 1	2475-45-8
Disperse Blue 3	2475-46-9
Disperse Blue 7	3179-90-6
Disperse Blue 26	3860-63-7
Disperse Blue 35	56524-77-7 / 56524-76-6
Disperse Blue 102	12222-97-8
Disperse Blue 106	12223-01-7
Disperse Blue 124	61951-51-7
Disperse Brown 1	23355-64-8
Disperse Orange 1	2581-69-3
Disperse Orange 3	730-40-5
Disperse Orange 37/76	13301-61-6
Disperse Red 1	2872-52-8
Disperse Red 11	2872-48-2
Disperse Red 17	3179-89-3
Disperse Yellow 1	119-15-3
Disperse Yellow 3	2832-40-8
Disperse Yellow 9	6373-73-5
Disperse Yellow 39	12236-29-2
Disperse Yellow 49	54824-37-2
Basic Red 9	569-61-9
Basic Violet 3 with>=0,1 % of Michler's ketone	548-62-9

Phthalates

Substances	CAS No.
Diisononyl Phthalate (DINP)	28553-12-0
Di-n-octyl Phthalate (DNOP)	117-84-0
Bis-(2-ethylhexyl) Phthalate (DEHP)	117-81-7
Diisodecyl Phthalate (DIDP)	26761-40-0
Benzylbutyl Phthalate (BBP)	85-68-7
Dibutyl Phthalate (DBP)	84-74-2
Diisobutyl phthalate (DIBP)	84-69-5
Di-n-Hexylphthalate (DnHP)	84-75-3
Diethylphthalate (DEP)	84-66-2
Dimethylphthalate (DMP)	131-11-3
Di-n-pentylphthalate (DnPP)	131-18-0
Dicyclohexyl phthalate (DCHP)	84-61-7
1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHpP)	71888-89-6
Bis (2-methoxyethyl) phthalate (DMEP)	117-82-8
Diisopentylphthalate (DiPP)	605-50-5
Di-n-propyl phthalate (DPRP)	131-16-8
Di-isooctyl phthalate (DIOP)	27554-26-3
1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear standard (DHP)	68515-50-4
1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters (DHNUP)	68515-42-4
1,2-Benzenedicarboxylic acid, dipentylester, branched and linear (DPP)	84777-06-0
1,2-Benzenedicarboxylic acid, di-C6-10-alkyl esters or mixed decyl and hexyl and octyl diesters with >= 0.3% of dihexyl phthalate; 1,2-Benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters; 1,2-Benzenedicarboxylic acid, di-C6-10-alkyl esters	68648-93-1 / 68515-51-5
n-Pentyl-isopentylphthalate (nPIPP)	776297-69-9
Diisohexyl phthalate (DIHxP)	71850-09-4

Chlorinated Benzenes and Toluenes

Substances	CAS No.
2-Chlorotoluene	95-49-8
3-Chlorotoluene	108-41-8
4-Chlorotoluene	106-43-4
2,3-Dichlorotoluene	32768-54-0
2,4-Dichlorotoluene	95-73-8
2,5-Dichlorotoluene	19398-61-9
2,6-Dichlorotoluene	118-69-4
3,4-Dichlorotoluene	95-75-0
2,3,6-Trichlorotoluene	2077-46-5
2,4,5-Trichlorotoluene	2077-46-5
2,3,4,5-Tetrachlorotoluene	76057-12-0
2,3,4,6-Tetrachlorotoluene	875-40-1
2,3,5,6-Tetrachlorotoluene	1006-31-1
Pentachlorotoluene	877-11-2
1,3-Dichlorobenzene	541-73-1
1,4-Dichlorobenzene	106-46-7
1,2,3-Trichlorobenzene	87-61-6
1,2,4-Trichlorobenzene	120-82-1
1,3,5-Trichlorobenzene	108-70-3
1,2,3,4-Tetrachlorobenzene	634-66-2
1,2,3,5-Tetrachlorobenzene	634-90-2
1,2,4,5-Tetrachlorobenzene	95-94-3
Pentachlorobenzene	608-93-5
Hexachlorobenzene	118-74-1
p-Chlorobenzotrichloride	5216-25-1
Benzotrichloride	98-07-7
Benzyl Chloride	100-44-7
1,2-Dichlorobenzene	95-50-1

PFCs

Substances	CAS No.
PFOA and its salts	
Perfluorooctanoic acid (PFOA)	335-67-1
PFOA-Na	335-95-5
PFOA-K	2395-00-8
PFOA-Ag	335-93-3
PFOA-F	335-66-0
APFO	3825-26-1
PFOA-related substances	
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	39108-34-4
Methyl perfluorooctanoate (Me-PFOA)	376-27-2
Ethyl perfluorooctanoate (Et-PFOA)	3108-24-5
1H,1H,2H,2H-Perfluorodecan-1-ol (8:2 FTOH)	678-39-7
1H,1H,2H,2H-Perfluorodecyl acrylate (8:2 FTA)	1996-88-9
Perfluoro-1-iodooctane (PFOI)	507-63-1
1H,1H,2H,2H-Perfluorodecyl methacrylate (8:2 FTMA)	1996-88-9
PFOS and its salts	
Perfluorooctanesulfonic acid (PFOS)	1763-23-1
PFOS-K	2795-39-3
PFOS-Li	29457-72-5
PFOS-NH4	29081-56-9
PFOS-NH(OH)2	70225-14-8
PFOS-N(C2H5)4	56773-42-3
PFOS-N(C10H21)2(CH3)2	251099-16-8
POSF	307-35-7
PFOS-related substances	
N-Ethylperfluoro-1-octanesulfonamide (N-Et-FOSA)	4151-50-2
N-Methylperfluoro-1-octanesulfonamide (N-Me-FOSA)	31506-32-8
2-(N-Ethylperfluoro-1-octanesulfonamido)-ethanol (N-Et-FOSE)	1691-99-2
2-(N-Methylperfluoro-1-octanesulfonamido)-ethanol (N-Me-FOSE)	24448-09-7
Perfluorooctane sulfonamide (PFOSA)	754-91-6
C9-C14 PFCA and its salts	
Perfluorononane Acid (PFNA) and its salts	375-95-1
Perfluorodecane Acid (PFDA) and its salts	335-76-2
Perfluoroundecanoic Acid (PFUnA)	2058-94-8
Perfluorododecanoic Acid (PFDoA) and its salts	307-55-1
Perfluorotridecanoic Acid (PFTrA)	72629-94-8
Perfluorotetradecanoic Acid (PFTeA)	376-06-7
Perfluoro-3,7-dimethyloctanoic Acid (PF-3,7-DMOA)	172155-07-6
C9-C14 PFCA-related substances	
Perfluorodecane sulfonic Acid (PFDS) and its salts	335-77-3
1H,1H,2H,2H-Perfluoro-1-dodecaol (10:2 FTOH)	865-86-1
1H,1H,2H,2H-Perfluorododecylacrylate (10:2 FTA)	17741-60-5

PAHs

Substances	CAS No.
Benzo[a]anthracene (BaA)	56-55-3
Chrysene (CHR)	218-01-9
Benzo[b]fluoranthene (BbFA)	205-99-2
Benzo[j]fluoranthene (BjFA)	205-82-3
Benzo[k]fluoranthene (BkFA)	207-08-9
Benzo[a]pyrene (BaP)	50-32-8
Benzo[e]pyrene (BeP)	192-97-2
Dibenzo[a,h]anthracene (DBA)	53-70-3

N-nitrosamines

Substances	CAS No.
N-nitrosodimethylamine (NDMA)	62-75-9
N-nitrosodiethylamine (NDEA)	55-18-5
N-nitrosodipropylamine (NDPA)	621-64-7
N-nitrosodibutylamine (NDBA)	924-16-3
N-nitrosopiperidine (NPIP)	100-75-4
N-nitrosopyrrolidine (NPYR)	930-55-2
N-nitrosomorpholine (NMOR)	59-89-2
N-nitroso N-methyl N-phenylamine (NMPhA)	614-00-6
N-nitroso N-ethyl N-phenylamine (NEPhA)	612-64-6

Amines Salts

Substances	CAS No.
4-chloro-o-toluidinium chloride	3165-93-3
2-Naphthylammoniumacetate	553-00-4
4-methoxy-m-phenylene diammonium sulphate; 2,4-diaminoanisole sulphate	39156-41-7
2,4,5-trimethylaniline hydrochloride	21436-97-5

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