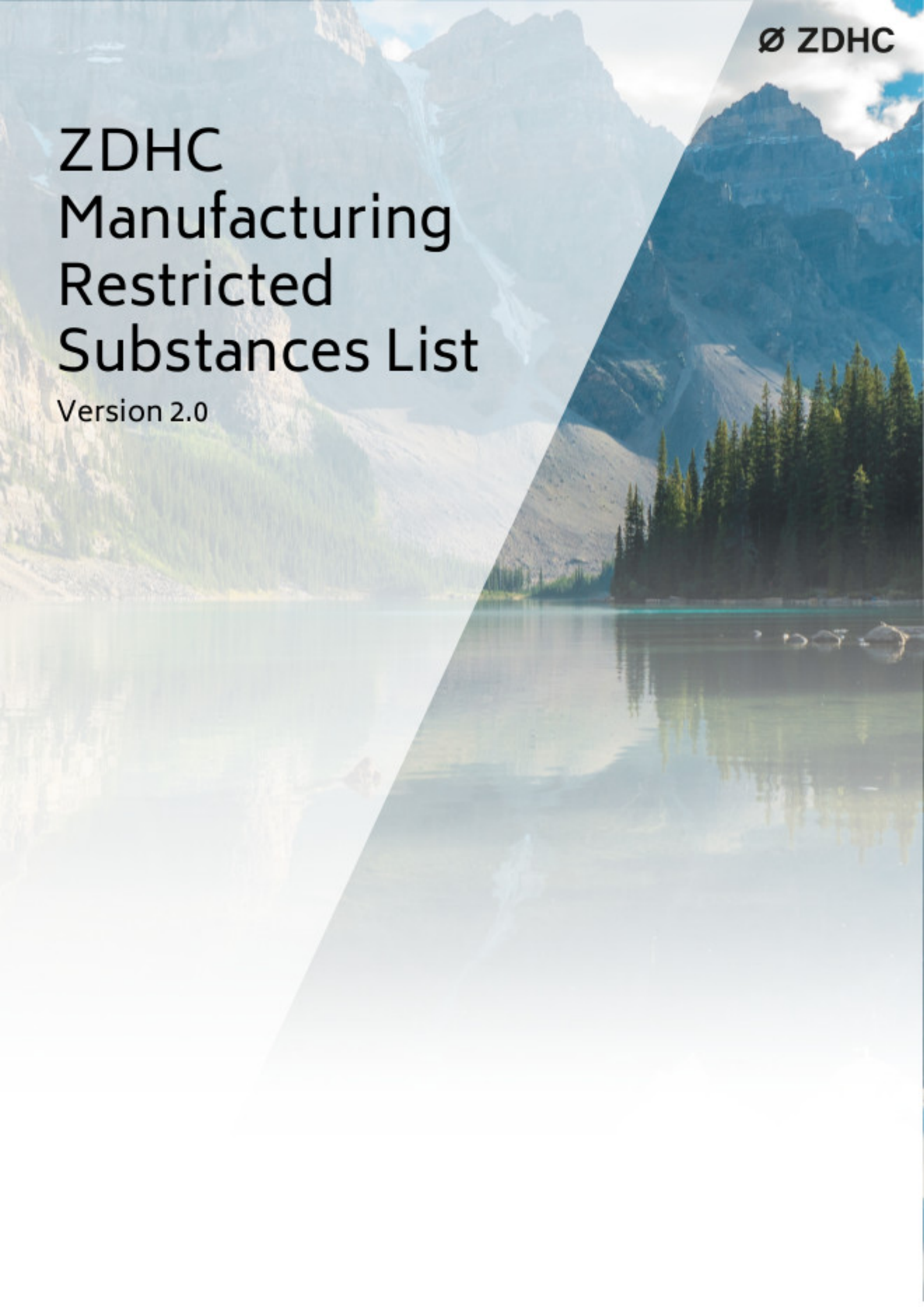
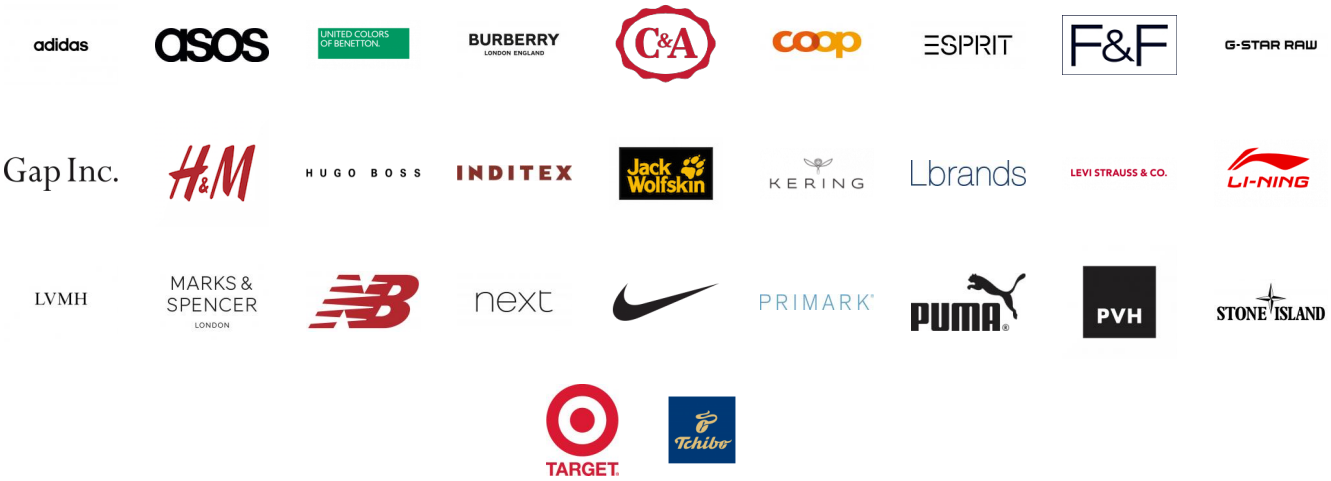


ZDHC

ZDHC Manufacturing Restricted Substances List

Version 2.0

Signatory Brands



Value-Chain Affiliates - Chemical Industry

Value-Chain Affiliates - Solution Provider

Value-Chain Affiliates - Textile and Footwear Industry

Associates

1 Background

The ZDHC Manufacturing Restricted Substances List (ZDHC MRSL) is a list of chemical substances. These substances are banned from intentional use in facilities processing textile materials, leather, rubber, foam, adhesives and trim parts in textiles, apparel, and footwear. Using chemical formulations that conform to the ZDHC MRSL allows suppliers to assure themselves, and their customers, that banned chemical substances are not intentionally used during production and manufacturing processes.

The ZDHC MRSL goes beyond the traditional approaches to chemical restrictions, which only apply to finished products (Product Restricted Substances List - PRSL). This approach helps to protect consumers while minimising the possible impact of banned hazardous chemicals on production workers, local communities, and the environment.

Chemical formulations covered by restrictions in the ZDHC MRSL include, but are not limited to, cleaners, adhesives, paints, inks, detergents, dyes, colourants, auxiliaries, coatings and finishing agents used during raw material production, wet processing, process machinery maintenance, wastewater treatment, sanitation, and pest control. ZDHC MRSL limits apply to substances in commercially available formulations, not those from earlier stages of chemical synthesis.

The ZDHC Foundation Roadmap to Zero Programme would like to acknowledge the vital role of the experts comprising the MRSL Advisory Council who independently and objectively evaluated the proposed compound additions to the MRSL and made the decision on the compounds added to this version of the ZDHC MRSL.

2 Purpose

The ZDHC MRSL offers brands and suppliers a single, harmonised list of chemical substances banned from intentional use during manufacturing and related processes in supply chains of the textile, apparel, and footwear (including leather and rubber) industries (the Industry).

Version 2.0 applies to textiles, leather, rubber, foam and adhesives, recognising that these materials use different processes. Filters for each material ensure limits reflect the processes.

3 Notes

The information in this ZDHC MRSL V2.0 is provided for information only. Whilst ZDHC takes every reasonable effort to make sure that the information is as accurate as possible, ZDHC makes no claims, promises, or guarantees about the accuracy, completeness, or adequacy of the contents of this document.

"Meeting the requirements of the ZDHC MRSL V2.0 does not

a) replace applicable national environmental or workplace safety restrictions. Worker exposure to chemical substances listed in this document, along with other hazardous substances, must not exceed occupational exposure limits

b) guarantee compliance with or take the place of legal or regulatory requirements relating to the use, storage, and transport of chemical products."

The ZDHC MRSL V2.0 does not replace legal or brand-specific restrictions on hazardous substances in finished products, including the material components of them.

4 DISCLAIMERS

In no event will ZDHC (and/or any related ZDHC majority owned legal entities) or the Directors or staff thereof be liable and ZDHC expressly disclaims any liability of any kind to any party for any loss, damage, or disruption caused

a) by errors or omissions, whether such errors or omissions result from negligence, accident, or any other cause and/or

b) from any use, decision made, action taken, or any other kind of reliance on the ZDHC MRSL V2.0 by a reader or user of it and/or

c) for any results obtained or not obtained from the use of the ZDHC MRSL V2.0

d) by any updates to the ZDHC MRSL V2.0

5 ZDHC MRSL Chapters

5.1 Chapter 1: ZDHC MRSL

This applies to chemical formulations and substances used during creation and wet processing of textile fibres, and during creation and processing of (coated) fabrics, leather, rubber, foam and adhesives.

Group A: Supplier Guidance

Group A substances are banned from intentional use in facilities that process raw materials and manufacture finished products.

Group B: Formulation Limit

Group B substances are restricted to concentration limits in chemical formulations commercially available from chemical suppliers. These limits ban intentional use while allowing for reasonable expected manufacturing impurities, which should be consistently achievable by responsible chemical manufacturers.

5.2 Chapter 2: ZDHC Archived Substances

Archived substances, or those without strong evidence of current use in Industry, but with clear evidence of historical use.

5.3 Chapter 3: ZDHC MRSL Candidate List

Found in Chapter 2 of the ZDHC MRSL. Proposed ZDHC MRSL additions can meet listing criteria, as described in the Principles and Procedures, yet lack safer alternatives at scale. Including such substances on the Candidate List encourages the innovation of alternatives.

6 Process for ZDHC MRSL Revision

After the release of a new version of the ZDHC MRSL a transition period applies. This lets the Industry prepare for implementation of the new version. The current transition period is twelve months, beginning on January 1st 2020. During this time, both versions of the ZDHC MRSL remain active and it’s possible to certify against them.

Alkylphenol (AP) and Alkylphenol Ethoxylates (APEOs): including all isomers

Potential Uses in Apparel and Footwear Textile Processing:

APEOs can be used as or found in: detergents, scouring agents, spinning oils, wetting agents, softeners, emulsifier/dispersing agents for dyes and prints, impregnating agents, de- gumming for silk production, dyes and pigment preparations, polyester padding and down/feather fillings.

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
104-40-5 11066-49-2 25154-52-3 84852-15-3	Nonylphenol (NP),mixed isomers	Textile	No intentional use	250 ppm	Liquid chromatography-mass spectrometry (LC-MS), gas chromatography-mass spectrometry (GC-MS)
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
9016-45-9 26027-38-3 37205-87-1 68412-54-4 127087-87-0	Nonylphenolethoxylates (NPEO)	Textile	No intentional use	500 ppm	Liquid chromatography-mass spectrometry (LC-MS), gas chromatography-mass spectrometry (GC-MS)
		Leather	No intentional use	500 ppm	
		Polymers (R,F,A)*	No intentional use	500 ppm	
9002-93-1 9036-19-5 68987-90-6	Octylphenolethoxylates (OPEO)	Textile	No intentional use	500 ppm	Liquid chromatography-mass spectrometry (LC-MS), gas chromatography-mass spectrometry (GC-MS)
		Leather	No intentional use	500 ppm	
		Polymers (R,F,A)*	No intentional use	500 ppm	
140-66-9 1806-26-4 27193-28-8	Octylphenol (OP),mixed isomers	Textile	No intentional use	250 ppm	Liquid chromatography-mass spectrometry (LC-MS), gas chromatography-mass spectrometry (GC-MS)
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	

Anti- Microbials & Biocides

Potential Uses in Apparel and Footwear Textile Processing:

These substances have biocidal properties, making it useful for various preservation applications.

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
90-43-7	o-Phenylphenol (+salts)	Textile	No intentional use	5000 ppm	Solvent extraction LC MS, LC DAD, GC MS
		Leather		Use is permitted and OPP is approved for use under BPR PT6 as a preservative for formulations.	
		Polymers (R,F,A)*	No Limit		
Multiple	Permethrin	Textile	No intentional use	250 ppm except for processes mentioned	Solvent extraction, LC MS/MS, GC MS/MS
		Leather	No intentional use	250 ppm except for processes mentioned	
		Polymers (R,F,A)*	No intentional use	250 ppm except for processes mentioned	
	In most situations, deliberate use is not permitted. However, it should be noted that Permethrin is approved for use on PT18 under BPR and is permitted for use on wool curtains and carpets, rugs and floor coverings. Permethrin is permitted for PPE use (EU 2016/425, EPA registered product, APVMA Registered Product, PMRA Registered Product, etc.). Also, its use is sometimes stipulated for certain end uses such as military. All efforts should be made to maximise the durability of the chemical finish and to minimise losses to the environment.				
3380-34-5	Triclosan	Textile	No intentional use	250 ppm	solvent extraction LC MS, DAD
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	

Chlorinated Parafins

Potential Uses in Apparel and Footwear Textile Processing:

These are used occasionally as flame retardants in certain industries. In leather formulations, these are also used as fat liquoring agents.

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
85535-84-8	Short-chain Chlorinatedparaffin (C10– C13)	Textile	No intentional use	50 ppm	prEN ISO 22699-2
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No Limit		
85535-85-9	Medium-chain Chlorinatedparaffins (MCCPs) (C14-C17)	Textile	No intentional use	500 ppm	prEN ISO 22699-2
		Leather	No intentional use	500 ppm	
		Polymers (R,F,A)*	No intentional use	500 ppm	

Chlorobenzenes and Chlorotoluenes

Potential Uses in Apparel and Footwear Textile Processing:

Chlorobenzenes and Chlorotoluenes (chlorinated aromatic hydrocarbons) can be used as carriers in the dyeing process of polyester or wool/polyester fibres. They can also be used as solvents.

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
95-50-1	1,2-dichlorobenzene	Textile	No intentional use	500 ppm	GC-MS
		Leather	No intentional use	500 ppm	
		Polymers (R,F,A)*	No intentional use	500 ppm	
Multiple	Other isomers of mono-, di-, tri-, tetra-, penta- and hexa-Chlorobenzene and mono-, di-, tri-, tetra- and penta-chlorotoluene	Textile	No intentional use	Sum = 200 ppm tetrachlorotoluene, and trichlorotoluene 5 ppm each	GC-MS
		Leather	No intentional use	Sum = 200 ppm tetrachlorotoluene, and trichlorotoluene 5 ppm each	
		Polymers (R,F,A)*	No intentional use	Sum = 200 ppm tetrachlorotoluene, and trichlorotoluene 5 ppm each	

Chlorophenols

Potential Uses in Apparel and Footwear Textile Processing:

Chlorophenols are polychlorinated compounds used as preservatives or pesticides. Pentachlorophenol (PCP) and tetrachlorophenol (TeCP) have been used in the past to prevent mould when storing/ transporting raw hides and leather. They are now regulated and should not be used.

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
87-86-5	Pentachlorophenol (PCP)[1]	Textile	No intentional use	Sum of substances[1] = 20 ppm	GC-MS EN ISO 17070
		Leather	No intentional use	Sum of substances[1] = 20 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[1] = 20 ppm	
Multiple	Tetrachlorophenol(TeCP)[1]	Textile	No intentional use	Sum of substances[1] = 20 ppm	GC-MS EN ISO 17070
		Leather	No intentional use	Sum of substances[1] = 20 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[1] = 20 ppm	
120-83-2	2,4-dichlorophenol[2]	Textile	No intentional use	Sum of substances[2] = 50 ppm	GC-MS EN ISO 17070
		Leather	No intentional use	Sum of substances[2] = 50 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[2] = 50 ppm	
95-57-8	2-chlorophenol[2]	Textile	No intentional use	Sum of substances[2] = 50 ppm	GC-MS EN ISO 17070
		Leather	No intentional use	Sum of substances[2] = 50 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[2] = 50 ppm	
583-78-8	2,5-dichlorophenol[2]	Textile	No intentional use	Sum of substances[2] = 50 ppm	GC-MS EN ISO 17070
		Leather	No intentional use	Sum of substances[2] = 50 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[2] = 50 ppm	
87-65-0	2,6-dichlorophenol[2]	Textile	No intentional use	Sum of substances[2] = 50 ppm	GC-MS EN ISO 17070
		Leather	No intentional use	Sum of substances[2] = 50 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[2] = 50 ppm	
88-06-2	2,4,6-trichlorophenol[2]	Textile	No intentional use	Sum of substances[2] = 50 ppm	GC-MS EN ISO 17070
		Leather	No intentional use	Sum of substances[2] = 50 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[2] = 50 ppm	
591-35-5	3,5-dichlorophenol[2]	Textile	No intentional use	Sum of substances[2] = 50 ppm	GC-MS EN ISO 17070
		Leather	No intentional use	Sum of substances[2] = 50 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[2] = 50 ppm	

Chlorophenols

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
95-95-4	2,4,5-trichlorophenol[2]	Textile	No intentional use	Sum of substances[2] = 50 ppm	GC-MS EN ISO 17070
		Leather	No intentional use	Sum of substances[2] = 50 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[2] = 50 ppm	
576-24-9	2,3-dichlorophenol[2]	Textile	No intentional use	Sum of substances[2] = 50 ppm	GC-MS EN ISO 17070
		Leather	No intentional use	Sum of substances[2] = 50 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[2] = 50 ppm	
95-77-2	3,4-dichlorophenol[2]	Textile	No intentional use	Sum of substances[2] = 50 ppm	GC-MS EN ISO 17070
		Leather	No intentional use	Sum of substances[2] = 50 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[2] = 50 ppm	
108-43-0	3-chlorophenol[2]	Textile	No intentional use	Sum of substances[2] = 50 ppm	GC-MS EN ISO 17070
		Leather	No intentional use	Sum of substances[2] = 50 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[2] = 50 ppm	
106-48-9	4-chlorophenol[2]	Textile	No intentional use	Sum of substances[2] = 50 ppm	GC-MS EN ISO 17070
		Leather	No intentional use	Sum of substances[2] = 50 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[2] = 50 ppm	
15950-66-0	2,3,4-trichlorophenol[2]	Textile	No intentional use	Sum of substances[2] = 50 ppm	GC-MS EN ISO 17070
		Leather	No intentional use	Sum of substances[2] = 50 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[2] = 50 ppm	
609-19-8	3,4,5-trichlorophenol[2]	Textile	No intentional use	Sum of substances[2] = 50 ppma	GC-MS EN ISO 17070
		Leather	No intentional use	Sum of substances[2] = 50 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[2] = 50 ppm	
933-78-8	2,3,5-trichlorophenol[2]	Textile	No intentional use	Sum of substances[2] = 50 ppm	GC-MS EN ISO 17070
		Leather	No intentional use	Sum of substances[2] = 50 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[2] = 50 ppm	
933-75-5	2,3,6-trichlorophenol[2]	Textile	No intentional use	Sum of substances[2] = 50 ppm	GC-MS EN ISO 17070
		Leather	No intentional use	Sum of substances[2] = 50 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[2] = 50 ppm	

Dyes – Azo (Forming Restricted Amines)

Potential Uses in Apparel and Footwear Textile Processing:

Azo dyes and pigments are colourants that incorporate one or several azo groups (-N=N-) bound with aromatic compounds. Thousands of azo dyes exist, but only those that degrade to form the listed cleavable amines are restricted. Azo dyes that release these amines are regulated and should no longer be used for the dyeing of textiles. Please find a non-exhaustive list of dyes which can form restricted amines in the appendix.

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
101-80-4	4,4-oxydianiline	Textile	No intentional use	150 ppm	LC, GC
		Leather	No intentional use	150 ppm	
		Polymers (R,F,A)*	No intentional use	150 ppm	
101-14-4	4,4-methylene-bis-(2-chloro-aniline)	Textile	No intentional use	150 ppm	LC, GC
		Leather	No intentional use	150 ppm	
		Polymers (R,F,A)*	No intentional use	150 ppm	
119-90-4	3,3-dimethoxylbenzidine	Textile	No intentional use	150 ppm	LC, GC
		Leather	No intentional use	150 ppm	
		Polymers (R,F,A)*	No intentional use	150 ppm	
101-77-9	4,4-methylenedianiline	Textile	No intentional use	150 ppm	LC, GC
		Leather	No intentional use	150 ppm	
		Polymers (R,F,A)*	No intentional use	150 ppm	
106-47-8	4-chloroaniline	Textile	No intentional use	150 ppm	LC, GC
		Leather	No intentional use	150 ppm	
		Polymers (R,F,A)*	No intentional use	150 ppm	
119-93-7	3,3-dimethylbenzidine	Textile	No intentional use	150 ppm	LC, GC
		Leather	No intentional use	150 ppm	
		Polymers (R,F,A)*	No intentional use	150 ppm	
120-71-8	6-methoxy-m-toluidine	Textile	No intentional use	150 ppm	LC, GC
		Leather	No intentional use	150 ppm	
		Polymers (R,F,A)*	No intentional use	150 ppm	
139-65-1	4,4-thiodianiline	Textile	No intentional use	150 ppm	LC, GC
		Leather	No intentional use	150 ppm	
		Polymers (R,F,A)*	No intentional use	150 ppm	
60-09-3	4-aminoazobenzene	Textile	No intentional use	150 ppm	LC, GC
		Leather	No intentional use	150 ppm	
		Polymers (R,F,A)*	No intentional use	150 ppm	
137-17-7	2,4,5-trimethylaniline	Textile	No intentional use	150 ppm	LC, GC
		Leather	No intentional use	150 ppm	
		Polymers (R,F,A)*	No intentional use	150 ppm	

Dyes – Azo (Forming Restricted Amines)

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
90-04-0	o-anisidine	Textile	No intentional use	150 ppm	LC, GC
		Leather	No intentional use	150 ppm	
		Polymers (R,F,A)*	No intentional use	150 ppm	
838-88-0	4,4-methylenedi-o-toluidine	Textile	No intentional use	150 ppm	LC, GC
		Leather	No intentional use	150 ppm	
		Polymers (R,F,A)*	No intentional use	150 ppm	
91-94-1	3,'3-dichlorobenzidine	Textile	No intentional use	150 ppm	LC, GC
		Leather	No intentional use	150 ppm	
		Polymers (R,F,A)*	No intentional use	150 ppm	
615-05-4	4-methoxy-m-phenylenediamine	Textile	No intentional use	150 ppm	LC, GC
		Leather	No intentional use	150 ppm	
		Polymers (R,F,A)*	No intentional use	150 ppm	
87-62-7	2,6-xylidine	Textile	No intentional use	150 ppm	LC, GC
		Leather	No intentional use	150 ppm	
		Polymers (R,F,A)*	No intentional use	150 ppm	
91-59-8	2-naphthylamine	Textile	No intentional use	150 ppm	LC, GC
		Leather	No intentional use	150 ppm	
		Polymers (R,F,A)*	No intentional use	150 ppm	
95-53-4	o-toluidine	Textile	No intentional use	150 ppm	LC, GC
		Leather	No intentional use	150 ppm	
		Polymers (R,F,A)*	No intentional use	150 ppm	
92-87-5	Benzidine	Textile	No intentional use	150 ppm	LC, GC
		Leather	No intentional use	150 ppm	
		Polymers (R,F,A)*	No intentional use	150 ppm	
95-69-2	4-chloro-o-toluidine	Textile	No intentional use	150 ppm	LC, GC
		Leather	No intentional use	150 ppm	
		Polymers (R,F,A)*	No intentional use	150 ppm	
92-67-1	4-aminodiphenyl	Textile	No intentional use	150 ppm	LC, GC
		Leather	No intentional use	150 ppm	
		Polymers (R,F,A)*	No intentional use	150 ppm	
95-80-7	4-methyl-m-phenylenediamine	Textile	No intentional use	150 ppm	LC, GC
		Leather	No intentional use	150 ppm	
		Polymers (R,F,A)*	No intentional use	150 ppm	
95-68-1	2,4-xylidine	Textile	No intentional use	150 ppm	LC, GC
		Leather	No intentional use	150 ppm	
		Polymers (R,F,A)*	No intentional use	150 ppm	

Dyes – Azo (Forming Restricted Amines)

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
97-56-3	o-aminoazotoluene	Textile	No intentional use	150 ppm	LC, GC
		Leather	No intentional use	150 ppm	
		Polymers (R,F,A)*	No intentional use	150 ppm	
99-55-8	5-nitro-o-toluidine	Textile	No intentional use	150 ppm	LC, GC
		Leather	No intentional use	150 ppm	
		Polymers (R,F,A)*	No intentional use	150 ppm	
553-00-4	2-Naphthylammoniumacetate	Textile	No intentional use	150 ppm	LC, GC
		Leather	No intentional use	150 ppm	
		Polymers (R,F,A)*	No intentional use	150 ppm	
3165-93-3	4-chloro-o-toluidinium chloride	Textile	No intentional use	150 ppm	LC, GC
		Leather	No intentional use	150 ppm	
		Polymers (R,F,A)*	No intentional use	150 ppm	
39156-41-7	4-methoxy-m-phenylene diammonium sulphate; 2,4-diaminoanisole sulphate	Textile	No intentional use	150 ppm	LC, GC
		Leather	No intentional use	150 ppm	
		Polymers (R,F,A)*	No intentional use	150 ppm	
21436-97-5	2,4,5-trimethylaniline hydrochloride	Textile	No intentional use	150 ppm	LC, GC
		Leather	No intentional use	150 ppm	
		Polymers (R,F,A)*	No intentional use	150 ppm	

Dyes – Carcinogenic or Equivalent Concern

Potential Uses in Apparel and Footwear Textile Processing:

Most of these substances are regulated and should no longer be used for the dyeing of textiles.

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
632-99-5	C.I. Basic Violet 14	Textile	No intentional use	250 ppm	DIN 54231
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
1937-37-7	C.I. Direct Black 38	Textile	No intentional use	250 ppm	DIN 54231
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
2602-46-2	C.I. Direct Blue 6	Textile	No intentional use	250 ppm	DIN 54231
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
3761-53-3	C.I. Acid Red 26	Textile	No intentional use	250 ppm	DIN 54231
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
573-58-0	C.I. Direct Red 28	Textile	No intentional use	250 ppm	DIN 54231
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
569-61-9	C.I. Basic Red 9	Textile	No intentional use	250 ppm	DIN 54231
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
2475-45-8	C.I. Disperse Blue 1	Textile	No intentional use	250 ppm	DIN 54231
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
2580-56-5	C.I. Basic Blue 26 (with Michler's Ketone > 0.1%)	Textile	No intentional use	250 ppm	DIN 54231
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
2475-46-9	C.I. Disperse Blue 3	Textile	No intentional use	250 ppm	DIN 54231
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
2437-29-8	C.I. Basic Green 4 (Malachite Green Oxalate)	Textile	No intentional use	250 ppm	DIN 54231
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
569-64-2	C.I. Basic Green 4 (Malachite Green Chloride)	Textile	No intentional use	250 ppm	DIN 54231
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	

Dyes – Carcinogenic or Equivalent Concern

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
82-28-0	Disperse Orange 11	Textile	No intentional use	250 ppm	DIN 54231
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
10309-95-2	C.I. Basic Green 4 (Malachite Green)	Textile	No intentional use	250 ppm	DIN 54231
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
1694-09-3	C.I. Acid Violet 49	Textile	No intentional use	250 ppm	DIN 54231
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
548-62-9	Basic violet 3 with >0.1% of Michler´s Ketone	Textile	No intentional use	250 ppm	DIN 54231
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	

Dyes – Disperse (Sensitising)

Potential Uses in Apparel and Footwear Textile Processing:

Disperse dyes are a class of water- insoluble dyes that penetrate the fibre system of synthetic or manufactured fibres and are held in place by physical forces without forming chemical bonds. Disperse dyes are used in synthetic fibre (e.g. polyester, acetate, polyamide). Restricted disperse dyes are suspected of causing allergic reactions and should no longer be used for dyeing of textiles.

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
12236-29-2	Disperse Yellow 39	Textile	No intentional use	250 ppm	LC
		Leather	No Limit		
		Polymers (R,F,A)*	No Limit		
23355-64-8	Disperse Brown 1	Textile	No intentional use	250 ppm	LC
		Leather	No Limit		
		Polymers (R,F,A)*	No Limit		
119-15-3	Disperse Yellow 1	Textile	No intentional use	250 ppm	LC
		Leather	No Limit		
		Polymers (R,F,A)*	No Limit		
12222-97-8	Disperse Blue 102	Textile	No intentional use	250 ppm	LC
		Leather	No Limit		
		Polymers (R,F,A)*	No Limit		

Dyes – Disperse (Sensitising)

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
12223-01-7	Disperse Blue 106	Textile	No intentional use	250 ppm	LC
		Leather	No Limit		
		Polymers (R,F,A)*	No Limit		
13301-61-6	Disperse Orange 37/59/76	Textile	No intentional use	250 ppm	LC
		Leather	No Limit		
		Polymers (R,F,A)*	No Limit		
2581-69-3	Disperse Orange 1	Textile	No intentional use	250 ppm	LC
		Leather	No Limit		
		Polymers (R,F,A)*	No Limit		
2832-40-8	Disperse Yellow 3	Textile	No intentional use	250 ppm	LC
		Leather	No Limit		
		Polymers (R,F,A)*	No Limit		
2872-48-2	Disperse Red 11	Textile	No intentional use	250 ppm	LC
		Leather	No Limit		
		Polymers (R,F,A)*	No Limit		
2872-52-8	Disperse Red 1	Textile	No intentional use	250 ppm	LC
		Leather	No Limit		
		Polymers (R,F,A)*	No Limit		
3179-89-3	Disperse Red 17	Textile	No intentional use	250 ppm	LC
		Leather	No Limit		
		Polymers (R,F,A)*	No Limit		
54824-37-2	Disperse Yellow 49	Textile	No intentional use	250 ppm	LC
		Leather	No Limit		
		Polymers (R,F,A)*	No Limit		
3179-90-6	Disperse Blue 7	Textile	No intentional use	250 ppm	LC
		Leather	No Limit		
		Polymers (R,F,A)*	No Limit		
3860-63-7	Disperse Blue 26	Textile	No intentional use	250 ppm	LC
		Leather	No Limit		
		Polymers (R,F,A)*	No Limit		
6373-73-5	Disperse Yellow 9	Textile	No intentional use	250 ppm	LC
		Leather	No Limit		
		Polymers (R,F,A)*	No Limit		
61951-51-7	Disperse Blue 124	Textile	No intentional use	250 ppm	LC
		Leather	No Limit		
		Polymers (R,F,A)*	No Limit		

Dyes – Disperse (Sensitising)

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
12222-75-2	Disperse Blue 35	Textile	No intentional use	250 ppm	LC
		Leather	No Limit		
		Polymers (R,F,A)*	No Limit		
730-40-5	Disperse Orange 3	Textile	No intentional use	250 ppm	LC
		Leather	No Limit		
		Polymers (R,F,A)*	No Limit		
56524-77-7	Disperse Blue 35	Textile	No intentional use	250 ppm	LC
		Leather	No Limit		
		Polymers (R,F,A)*	No Limit		

Dyes – Navy Blue Colourant

Potential Uses in Apparel and Footwear Textile Processing:

Navy Blue Colourant is regulated and should no longer be used for the dyeing of textiles.

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
118685-33-9	Component 1: C39H23Cl-CrN7O12S2Na	Textile	No intentional use	250 ppm	LC
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
Not Allocated	Component 2: C46H-30CrN10O20S23Na	Textile	No intentional use	250 ppm	LC
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	

Flame Retardants

Potential Uses in Apparel and Footwear Textile Processing:

Flame retardant chemicals are rarely used to meet flammability requirements in children's clothing and adult products. They should no longer be used in apparel and footwear.
All Halogenated Flame Retardants are banned from intentional use that means including but not exclusive the list below;

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
32536-52-0	Octabromodiphenyl ether (OctaBDE)	Textile	No intentional use	250 ppm	GC-MS
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
115-96-8	Tris(2-chloroethyl)phosphate (TCEP)	Textile	No intentional use	250 ppm	GC-MS
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
126-72-7	Tris(2,3,-dibromopropyl)-phosphate (TRIS)	Textile	No intentional use	250 ppm	GC-MS
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
5412-25-9	Bis(2,3-dibromopropyl)phosphate (BIS)	Textile	No intentional use	250 ppm	GC-MS
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
1163-19-5	Decabromodiphenyl ether (DecaBDE)	Textile	No intentional use	250 ppm	GC-MS
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
32534-81-9	Pentabromodiphenyl ether (PentaBDE)	Textile	No intentional use	250 ppm	GC-MS
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
545-55-1	Tris(1-aziridinyl)phosphineoxide) (TEPA)	Textile	No intentional use	250 ppm	GC-MS
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
79-94-7	Tetrabromobisphenol A(TBBPA)	Textile	No intentional use	250 ppm	GC-MS
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
13674-87-8	Tris(1,3-dichloro-isopropyl)phosphate (TDCP)	Textile	No intentional use	250 ppm	GC-MS
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
59536-65-1	Polybromobiphenyls (PBB)	Textile	No intentional use	250 ppm	GC-MS
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	

Flame Retardants

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
3296-90-0	2,2-bis(bromomethyl)-1,3-propanediol (BBMP)	Textile	No intentional use	250 ppm	GC-MS
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
3194-55-6	Hexabromocyclododecane(HBCDD)	Textile	No intentional use	250 ppm	GC-MS
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
10043-35-3/ 11113-50-1	Boric acid	Textile	No intentional use	250 ppm	GC-MS
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
13654-09-6	Decabromobiphenyl (DecaBB)	Textile	No intentional use	250 ppm	GC-MS
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
1303-96-4/ 1330-43-4	Disodium tetraborate, anhydrous	Textile	No intentional use	250 ppm	GC-MS
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
12008-41-2	Disodium octaborate	Textile	No intentional use	250 ppm	GC-MS
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
21850-44-2	dibromopropylether	Textile	No intentional use	250 ppm	GC-MS
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
1303-86-2	Diboron trioxide	Textile	No intentional use	250 ppm	GC-MS
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
68928-80-3	Heptabromodiphenyl ether (HeptaBDE)	Textile	No intentional use	250 ppm	GC-MS
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
Multiple	Dibromobiphenyls (DiBB)	Textile	No intentional use	250 ppm	GC-MS
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
Multiple	Monobromodiphenyl ethers (MonoBDEs)	Textile	No intentional use	250 ppm	GC-MS
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
Multiple	Monobromobiphenyls (MonoBB)	Textile	No intentional use	250 ppm	GC-MS
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	

Flame Retardants

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
36483-60-0	Hexabromodiphenyl ether (HexaBDE)	Textile	No intentional use	250 ppm	GC-MS
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
Multiple	Nonabromobiphenyls (NonaBB)	Textile	No intentional use	250 ppm	GC-MS
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
63936-56-1	Nonabromodiphenyl ether (NonaBDE)	Textile	No intentional use	250 ppm	GC-MS
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
59536-65-1	Polybromobiphenyls (Polybrominated biphenyls) (PBBs)	Textile	No intentional use	250 ppm	GC-MS
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
Multiple	Octabromobiphenyls (OctaBB)	Textile	No intentional use	250 ppm	GC-MS
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
12267-73-1	Tetraboron disodium heptaoxide, hydrate	Textile	No intentional use	250 ppm	GC-MS
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
40088-47-9	Tetrabromodiphenyl ether (TetraBDE)	Textile	No intentional use	250 ppm	GC-MS
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
Multiple	Tribromodiphenylethers (TriBDEs)	Textile	No intentional use	250 ppm	GC-MS
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	
13674-84-5	Tris-(2-chloro-1-methylethyl)phosphate (TCPP)	Textile	No intentional use	250 ppm	GC-MS
		Leather	No intentional use	250 ppm	
		Polymers (R,F,A)*	No intentional use	250 ppm	

Glycols / Glycol Ethers

Potential Uses in Apparel and Footwear Textile Processing:

In apparel and footwear, glycols have a wide range of uses including as solvents for finishing/ cleaning, printing agents, and dissolving/ diluting fats, oils, and adhesives (e.g. in degreasing or cleaning operations).

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
110-71-4	Ethylene glycol dimethylether	Textile	No intentional use	50 ppm	High-performance liquid chromatography (HPLC), LC- MS
		Leather	No intentional use	50 ppm	
		Polymers (R,F,A)*	No intentional use	50 ppm	
110-49-6	2-methoxyethylacetate	Textile	No intentional use	50 ppm	High-performance liquid chromatography (HPLC), LC- MS
		Leather	No intentional use	50 ppm	
		Polymers (R,F,A)*	No intentional use	50 ppm	
110-80-5	2-ethoxyethanol	Textile	No intentional use	50 ppm	High-performance liquid chromatography (HPLC), LC- MS
		Leather	No intentional use	50 ppm	
		Polymers (R,F,A)*	No intentional use	50 ppm	
109-86-4	2-methoxyethanol	Textile	No intentional use	50 ppm	High-performance liquid chromatography (HPLC), LC- MS
		Leather	No intentional use	50 ppm	
		Polymers (R,F,A)*	No intentional use	50 ppm	
111-96-6	Bis(2-methoxyethyl) -ether	Textile	No intentional use	50 ppm	High-performance liquid chromatography (HPLC), LC- MS
		Leather	No intentional use	50 ppm	
		Polymers (R,F,A)*	No intentional use	50 ppm	
111-15-9	2-ethoxyethyl acetate	Textile	No intentional use	50 ppm	High-performance liquid chromatography (HPLC), LC- MS
		Leather	No intentional use	50 ppm	
		Polymers (R,F,A)*	No intentional use	50 ppm	
70657-70-4	2-methoxypropylacetate	Textile	No intentional use	50 ppm	High-performance liquid chromatography (HPLC), LC- MS
		Leather	No intentional use	1000 ppm	
		Polymers (R,F,A)*	No Limit		
112-49-2	Triethylene glycol dimethyl ether	Textile	No intentional use	50 ppm	High-performance liquid chromatography (HPLC), LC- MS
		Leather	No intentional use	50 ppm	
		Polymers (R,F,A)*	No intentional use	50 ppm	

Halogenated Solvents

Potential Uses in Apparel and Footwear Textile Processing:

In apparel and footwear, halogenated solvents are used as finishing/ cleaning and printing agents, for dissolving/ diluting fats, oils and adhesives (e.g. in degreasing or cleaning operations).

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
75-09-2	Methylene chloride	Textile	No intentional use	5 ppm	GC-MS
		Leather	No intentional use	5 ppm	
		Polymers (R,F,A)*	No intentional use	5 ppm	
107-06-2	1,2-dichloroethane	Textile	No intentional use	5 ppm	GC-MS
		Leather	No intentional use	5 ppm	
		Polymers (R,F,A)*	No intentional use	5 ppm	
79-01-6	Trichloroethylene	Textile	No intentional use	40 ppm	GC-MS
		Leather	No intentional use	40 ppm	
		Polymers (R,F,A)*	No intentional use	40 ppm	
127-18-4	Tetrachloroethylene	Textile	No intentional use	5 ppm	GC-MS
		Leather	No intentional use	5 ppm	
		Polymers (R,F,A)*	No intentional use	5 ppm	
100-44-7	Benzylchloride	Textile	No intentional use	5 ppm Dyes 100 ppm	GC-MS
		Leather	No intentional use	5 ppm Dyes 100 ppm	
		Polymers (R,F,A)*	No intentional use	5 ppm Dyes 100 ppm	

Organotin Compounds

Potential Uses in Apparel and Footwear Textile Processing:

Organotins are a class of chemicals combining tin and organics such as butyl and phenyl groups. Organotins are predominantly found in the environment as antifoulants in marine paints, but they can also be used as biocides (e.g. antibacterials), catalysts in plastic and glue production and heat stabilisers in plastics/rubber. In textiles and apparel, organotins are associated with plastics/rubber, inks, paints, metallic glitter, polyurethane products and heat transfer material.

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
Multiple	Dibutyltin (DBT)	Textile	No intentional use	20 ppm	Solvent extraction, GC MS, ISO TS 16179
		Leather	No intentional use	20 ppm (**EXCEPTION** 100 ppm for polyurethane based thickeners used at	
		Polymers (R,F,A)*	No intentional use	20 ppm	
Multiple	Mono-, di- and tri-methyltin derivatives	Textile	No intentional use	5 ppm	Solvent extraction, GC MS, ISO TS 16179
		Leather	No intentional use	5 ppm	
		Polymers (R,F,A)*	No intentional use	5 ppm	
Multiple	Mono-, di- and tri-octyltin derivatives	Textile	No intentional use	5 ppm	Solvent extraction, GC MS, ISO TS 16179
		Leather	No intentional use	5 ppm	
		Polymers (R,F,A)*	No intentional use	5 ppm	
Multiple	Mono-, di- and tri-phenyltin derivatives	Textile	No intentional use	5 ppm	Solvent extraction, GC MS, ISO TS 16179
		Leather	No intentional use	5 ppm	
		Polymers (R,F,A)*	No intentional use	5 ppm	
Multiple	Mono- and tri-butyltin derivatives	Textile	No intentional use	5 ppm	Solvent extraction, GC MS, ISO TS 16179
		Leather	No intentional use	5 ppm	
		Polymers (R,F,A)*	No intentional use	5 ppm	
Multiple	Dipropyltin compounds (DPT)	Textile	No intentional use	5 ppm	Solvent extraction, GC MS, ISO TS 16179
		Leather	No intentional use	5 ppm	
		Polymers (R,F,A)*	No intentional use	5 ppm	
Multiple	Tetraethyltin Compounds (TeET)	Textile	No intentional use	1 ppm	Solvent extraction, GC MS, ISO TS 16179
		Leather	No intentional use	1 ppm	
		Polymers (R,F,A)*	No intentional use	1 ppm	
Multiple	Tripropyltin Compounds (TPT)	Textile	No intentional use	1 ppm	Solvent extraction, GC MS, ISO TS 16179
		Leather	No intentional use	1 ppm	
		Polymers (R,F,A)*	No intentional use	1 ppm	
Multiple	Tetrabutyltin compounds (TeBT)	Textile	No intentional use	1 ppm	Solvent extraction, GC MS, ISO TS 16179
		Leather	No intentional use	1 ppm	
		Polymers (R,F,A)*	No intentional use	1 ppm	
Multiple	Tetraoctyltin compounds (TeOT)	Textile	No intentional use	1 ppm	Solvent extraction, GC MS, ISO TS 16179
		Leather	No intentional use	1 ppm	
		Polymers (R,F,A)*	No intentional use	1 ppm	

Organotin Compounds

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
Multiple	Tricyclohexyltin (TCyHT)	Textile	No intentional use	1 ppm	Solvent extraction, GC MS, ISO TS 16179
		Leather	No intentional use	1 ppm	
		Polymers (R,F,A)*	No intentional use	1 ppm	

Other/ Miscellaneous Chemicals

These are other chemicals/ substances/ process with a usage ban.

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
12767-90-7	Borate, zinc salt	Textile	No intentional use	1000 ppm	Acid digestion, ICP
		Leather	No intentional use	1000 ppm	
		Polymers (R,F,A)*	No intentional use	1000 ppm	

Borate, zinc salt can be used as a flame retardant but also in paints, pigments, and adhesives.

80-05-7	Bisphenol A	Textile	No intentional use	100 ppm	Solvent extraction, LC MS/MS, GC MS
		Leather	No intentional use	100 ppm	
		Polymers (R,F,A)*	No Limit		

Bisphenol A (BPA) is a precursor chemical used along with other chemicals to create some plastics and resins. It is commonly used to harden plastics.

62-56-6	Thiourea	Textile	No intentional use	1000 ppm	Solvent extraction, LC MS/MS
		Leather	No intentional use	1000 ppm	
		Polymers (R,F,A)*	No intentional use	1000 ppm	

Thiourea is used in many formulations to increase the solubility.

91-22-5	Quinoline	Textile	No intentional use	1000 ppm	DIN 54231
		Leather	No intentional use	1000 ppm	
		Polymers (R,F,A)*	No intentional use	1000 ppm	

Contaminant of dispersing agents in disperse dyes.

14464-46-1	Silica (particles of respirable size)	Textile	No intentional use	No use of Sand Blasting	Process due diligence, no test method available
		Leather	No intentional use	No use of Sand Blasting	
		Polymers (R,F,A)*	No intentional use	No use of Sand Blasting	

Respirable particles of silica are often generate during the process of sand blasting.

Other/ Miscellaneous Chemicals

These are other chemicals/ substances/ process with a usage ban.

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
111-41-1	AEEA [2-(2-aminoethylamino)ethanol]	Textile	No intentional use	100 ppm	Solvent extraction, LC MS/MS
		Leather	No intentional use	100 ppm	
		Polymers (R,F,A)*	No intentional use	100 ppm	

AEEA is used a.o. in chelating agents, surfactants and fabric softeners.

Perfluorinated and Polyfluorinated Chemicals (PFCs)

Durable water, oil and stain repellent finishes based on long-chain PFC's are banned from intentional use. There are two methods of manufacture of PFCs referred to as electrofluorination and telomerisation. PFC's made by the electrofluorination method have by-products associated with them called perfluoroalkyl sulphonates with the most common being the C8 species Perfluorooctane sulphonate (PFOS). The deliberate use of any PFCs made by electrofluorination with a chain length of C6 or above is not permitted. The detection of any PFOS analogue as where the chain length is 6 units or longer will trigger a failure [i.e. PFHS and above]. These types of PFCs are typically used in home textiles. PFC's made by the telomerisation method have by-products associated with them called perfluorocarboxylic acids with the most common being the C8 species perfluorooctanoic acid (PFOA). The deliberate use of any PFCs made by telomerisation with a chain length of C8 or above is restricted. ZDHC plans to further restrict the use of PFCs in future revisions and details can be found in the candidate list is not permitted. The detection of any PFOA analogue as where the chain length is 8 units or longer will trigger a failure (i.e. PFOA and above). These types of PFCs are typically used in clothing and footwear.

Potential Uses in Apparel and Footwear Textile Processing:

PFOA and PFOS may be present as unintended by-products in long-chain commercial water, oil and stain repellent agents. PFOA also may be in used in the production for polymers like polytetrafluoroethylene (PTFE).

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
Multiple	Perfluorooctane sulfonate (PFOS) and related substances	Textile	No intentional use	Sum = 2 ppm	LC-MS
		Leather	No intentional use	Sum = 2 ppm	
		Polymers (R,F,A)*	No intentional use	Sum = 2 ppm	
Multiple	Perfluorooctanoic acid (PFOA) and related substances	Textile	No intentional use	PFOA = 25 ppb PFOA-related substances = 1000 ppb	LC-MS
		Leather	No intentional use	PFOA = 25 ppb PFOA-related substances = 1000 ppb	
		Polymers (R,F,A)*	No intentional use	PFOA = 25 ppb PFOA-related substances = 1000 ppb	

Phthalates – including all other esters of ortho-phthalic acid

Potential Uses in Apparel and Footwear Textile Processing:

Esters of ortho-phthalic acid (phthalates) are a class of organic compounds commonly added to plastics to increase flexibility. They sometimes are used to facilitate moulding of plastic by decreasing its melting temperature. Phthalates can be found in:
- Flexible plastic components (e.g. PVC)
- Print pastes
- Adhesives
- Plastic buttons
- Plastic sleevings
- Polymeric coatings

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
117-84-0	Di-n-octyl phthalate(DNOP)[5]	Textile	No intentional use	Sum of substances[5] = 250 ppm	GC-MS
		Leather	No intentional use	Sum of substances[5] = 250 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[5] = 250 ppm	
117-82-8	Bis(2-methoxyethyl) phthalate (DMEP)[5]	Textile	No intentional use	Sum of substances[5] = 250 ppm	GC-MS
		Leather	No intentional use	Sum of substances[5] = 250 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[5] = 250 ppm	
26761-40-0	Di-iso-decyl phthalate(DIDP)[5]	Textile	No intentional use	Sum of substances[5] = 250 ppm	GC-MS
		Leather	No intentional use	Sum of substances[5] = 250 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[5] = 250 ppm	
117-81-7	Di(ethylhexyl) phthalate(DEHP)[5]	Textile	No intentional use	Sum of substances[5] = 250 ppm	GC-MS
		Leather	No intentional use	Sum of substances[5] = 250 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[5] = 250 ppm	
28553-12-0	Di-isononyl phthalate(DINP)[5]	Textile	No intentional use	Sum of substances[5] = 250 ppm	GC-MS
		Leather	No intentional use	Sum of substances[5] = 250 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[5] = 250 ppm	
84-75-3	Di-n-hexyl phthalate(DnHP)[5]	Textile	No intentional use	Sum of substances[5] = 250 ppm	GC-MS
		Leather	No intentional use	Sum of substances[5] = 250 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[5] = 250 ppm	
85-68-7	Butyl benzyl phthalate(BBP)[5]	Textile	No intentional use	Sum of substances[5] = 250 ppm	GC-MS
		Leather	No intentional use	Sum of substances[5] = 250 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[5] = 250 ppm	

Phthalates – including all other esters of ortho-phthalic acid

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
84-74-2	Dibutyl phthalate (DBP)[5]	Textile	No intentional use	Sum of substances[5] = 250 ppm	GC-MS
		Leather	No intentional use	Sum of substances[5] = 250 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[5] = 250 ppm	
84-76-4	Dinonyl phthalate (DNP)[5]	Textile	No intentional use	Sum of substances[5] = 250 ppm	GC-MS
		Leather	No intentional use	Sum of substances[5] = 250 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[5] = 250 ppm	
84-66-2	Diethyl phthalate (DEP)[5]	Textile	No intentional use	Sum of substances[5] = 250 ppm	GC-MS
		Leather	No intentional use	Sum of substances[5] = 250 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[5] = 250 ppm	
131-16-8	Di-n-propyl phthalate(DPRP)[5]	Textile	No intentional use	Sum of substances[5] = 250 ppm	GC-MS
		Leather	No intentional use	Sum of substances[5] = 250 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[5] = 250 ppm	
84-61-7	Di-cyclohexyl phthalate(DCHP)[5]	Textile	No intentional use	Sum of substances[5] = 250 ppm	GC-MS
		Leather	No intentional use	Sum of substances[5] = 250 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[5] = 250 ppm	
84-69-5	Di-isobutyl phthalate(DIBP)[5]	Textile	No intentional use	Sum of substances[5] = 250 ppm	GC-MS
		Leather	No intentional use	Sum of substances[5] = 250 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[5] = 250 ppm	
27554-26-3	Di-iso-octyl phthalate(DIOP)[5]	Textile	No intentional use	Sum of substances[5] = 250 ppm	GC-MS
		Leather	No intentional use	Sum of substances[5] = 250 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[5] = 250 ppm	
68515-42-4/ 68515-50-4	1,2-benzenedicarboxylic acid, di-C7-11 branched and liearalkyl esters (DHNUP)[5]	Textile	No intentional use	Sum of substances[5] = 250 ppm	GC-MS
		Leather	No intentional use	Sum of substances[5] = 250 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[5] = 250 ppm	
71888-89-6/ 84777-06-0	1,2-benzenedicarboxylic acid, di-C6-8 branched and liearalkyl esters , C7-rich (DIHP)[5]	Textile	No intentional use	Sum of substances[5] = 250 ppm	GC-MS
		Leather	No intentional use	Sum of substances[5] = 250 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[5] = 250 ppm	

Phthalates – including all other esters of ortho-phthalic acid

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
605-50-5	Diisopentylphthalates[5]	Textile	No intentional use	Sum of substances[5] = 250 ppm	GC-MS
		Leather	No intentional use	Sum of substances[5] = 250 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[5] = 250 ppm	
131-18-0	Di-n-pentylphthalates[5]	Textile	No intentional use	Sum of substances[5] = 250 ppm	GC-MS
		Leather	No intentional use	Sum of substances[5] = 250 ppm	
		Polymers (R,F,A)*	No intentional use	Sum of substances[5] = 250 ppm	

Polycyclic Aromatic Hydrocarbons (PAHs)

Potential Uses in Apparel and Footwear Textile Processing:

Oil containing PAHs are added to rubber and plastics as a softener or extender and may be found in rubber, plastics, lacquers, and coatings. Within the footwear producing industry, PAHs are often found in the outsoles of footwear and in printing pastes for screen prints. PAHs can be present as impurities in carbon black dyestuffs.

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
50-32-8	Benzo[a]pyrene	Textile	No intentional use	20 ppm	GC-MS
		Leather	No intentional use	20 ppm	
		Polymers (R,F,A)*	No intentional use	20 ppm	
129-00-0	Pyrene[3,4]	Textile	No intentional use	Sum of substances[3] = 200 ppm	GC-MS
		Leather	No intentional use	Sum of substances[4] = 200 ppm	
		Polymers (R,F,A)*	No Limit		
191-24-2	[3,4]	Textile	No intentional use	Sum of substances[3] = 200 ppm	GC-MS
		Leather	No intentional use	Sum of substances[4] = 200 ppm	
		Polymers (R,F,A)*	No Limit		
205-82-3	Benzo[j]fluoranthene[3,4]	Textile	No intentional use	Sum of substances[3] = 200 ppm	GC-MS
		Leather	No intentional use	Sum of substances[4] = 200 ppm	
		Polymers (R,F,A)*	No Limit		
120-12-7	Anthracene[3,4]	Textile	No intentional use	Sum of substances[3] = 200 ppm	GC-MS
		Leather	No intentional use	Sum of substances[4] = 200 ppm	
		Polymers (R,F,A)*	No Limit		

Polycyclic Aromatic Hydrocarbons (PAHs)

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
193-39-5	Indeno[1,2,3-cd]pyrene[3,4]	Textile	No intentional use	Sum of substances[3] = 200 ppm	GC-MS
		Leather	No intentional use	Sum of substances[4] = 200 ppm	
		Polymers (R,F,A)*	No Limit		
192-97-2	Benzo[e]pyrene[3,4]	Textile	No intentional use	Sum of substances[3] = 200 ppm	GC-MS
		Leather	No intentional use	Sum of substances[4] = 200 ppm	
		Polymers (R,F,A)*	No Limit		
205-99-2	Benzo[b]fluoranthene[3,4]	Textile	No intentional use	Sum of substances[3] = 200 ppm	GC-MS
		Leather	No intentional use	Sum of substances[4] = 200 ppm	
		Polymers (R,F,A)*	No Limit		
207-08-9	Benzo[k]fluoranthene[3,4]	Textile	No intentional use	Sum of substances[3] = 200 ppm	GC-MS
		Leather	No intentional use	Sum of substances[4] = 200 ppm	
		Polymers (R,F,A)*	No Limit		
206-44-0	Fluoranthene[3,4]	Textile	No intentional use	Sum of substances[3] = 200 ppm	GC-MS
		Leather	No intentional use	Sum of substances[4] = 200 ppm	
		Polymers (R,F,A)*	No Limit		
208-96-8	Acenaphthylene[3,4]	Textile	No intentional use	Sum of substances[3] = 200 ppm	GC-MS
		Leather	No intentional use	Sum of substances[4] = 200 ppm	
		Polymers (R,F,A)*	No Limit		
53-70-3	Dibenz[a,h]anthracene[3,4]	Textile	No intentional use	Sum of substances[3] = 200 ppm	GC-MS
		Leather	No intentional use	Sum of substances[4] = 200 ppm	
		Polymers (R,F,A)*	No Limit		
218-01-9	Chrysene[3,4]	Textile	No intentional use	Sum of substances[3] = 200 ppm	GC-MS
		Leather	No intentional use	Sum of substances[4] = 200 ppm	
		Polymers (R,F,A)*	No Limit		
85-01-8	Phenanthrene[3,4]	Textile	No intentional use	Sum of substances[3] = 200 ppm	GC-MS
		Leather	No intentional use	Sum of substances[4] = 200 ppm	
		Polymers (R,F,A)*	No Limit		

Polycyclic Aromatic Hydrocarbons (PAHs)

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
83-32-9	Acenaphthene[3,4]	Textile	No intentional use	Sum of substances[3] = 200 ppm	GC-MS
		Leather	No intentional use	Sum of substances[4] = 200 ppm	
		Polymers (R,F,A)*	No Limit		
86-73-7	Fluorene[3,4]	Textile	No intentional use	Sum of substances[3] = 200 ppm	GC-MS
		Leather	No intentional use	Sum of substances[4] = 200 ppm	
		Polymers (R,F,A)*	No Limit		
91-20-3	Naphthalene[3]	Textile	No intentional use	Sum of substances[3] = 200 ppm	GC-MS
		Leather	No intentional use	300 ppm	
		Polymers (R,F,A)*	No Limit		
56-55-3	3,4	Textile	No intentional use	Sum of substances[3] = 200 ppm	GC-MS
		Leather	No intentional use	Sum of substances[4] = 200 ppm	
		Polymers (R,F,A)*	No Limit		

Total Heavy Metals

Listed metals are banned from intentional use in textile manufacturing/ finishing unless stated differently. Additionally, residual traces of zinc, iron, and manganese in colourants are expected to comply with the Ecological and Toxicological Association of Dyes and Organic Pigments Manufacturers (ETAD) concentration limits (http://www.etad.com/).
The total heavy metal limits do not apply to products containing a listed metal as an inherent compositional part (e.g. metal-complex colorants, the double salts of certain cationic colourants or extenders like barium sulfate). In these cases, the extractable content of the corresponding metal has to be considered. Alternatively, the total content will be communicated to the customers, who will determine whether their final product will comply with the corresponding RSL(s) requirements.

Potential Uses in Apparel and Footwear Textile Processing:

Although typically associated with leather tanning, chromium VI also may be used in the dyeing of wool (after the chroming process).

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
7440-38-2	Arsenic (As)	Textile	No intentional use	50 ppm	Inductively coupled plasma-optical emission spectrometry (ICP-OES), atomic absorption spectroscopy (AAS)
		Leather	No intentional use	50 ppm	
		Polymers (R,F,A)*	No intentional use	50 ppm	
7440-43-9	Cadmium (Cd)	Textile	No intentional use	20 ppm (50 ppm for pigments)	Inductively coupled plasma-optical emission spectrometry (ICP-OES), atomic absorption spectroscopy (AAS)
		Leather	No intentional use	20 ppm (50 ppm for pigments)	
		Polymers (R,F,A)*	No intentional use	20 ppm (50 ppm for pigments)	
7439-97-6	Mercury (Hg)	Textile	No intentional use	4 ppm (25 ppm for pigments)	Inductively coupled plasma-optical emission spectrometry (ICP-OES), atomic absorption spectroscopy (AAS)
		Leather	No intentional use	4 ppm (25 ppm for pigments)	
		Polymers (R,F,A)*	No intentional use	4 ppm (25 ppm for pigments)	
7439-92-1	Lead (Pb)	Textile	No intentional use	100 ppm	Inductively coupled plasma-optical emission spectrometry (ICP-OES), atomic absorption spectroscopy (AAS)
		Leather	No intentional use	100 ppm	
		Polymers (R,F,A)*	No intentional use	100 ppm	
18540-29-9	Chromium (VI)	Textile	No intentional use	10 ppm	Inductively coupled plasma-optical emission spectrometry (ICP-OES), atomic absorption spectroscopy (AAS)
		Leather	No intentional use	10 ppm	
		Polymers (R,F,A)*	No intentional use	10 ppm	
7440-36-0	Antimony	Textile	No intentional use	Dye 50/ Pigment 250 ppm	Acid digestion, ICP
		Leather	No intentional use	Dye 50/ Pigment 250 ppm	
		Polymers (R,F,A)*	No intentional use	Dye 50/ Pigment 250 ppm	
7440-47-3	Chromium	Textile	No intentional use	Dyes and Pigments 100 ppm	Acid digestion, ICP
		Leather	No intentional use	Dyes and Pigments 100 ppm	
		Polymers (R,F,A)*	No intentional use	Dyes and Pigments 100 ppm	

Total Heavy Metals

Listed metals are banned from intentional use in textile manufacturing/ finishing unless stated differently. Additionally, residual traces of zinc, iron, and manganese in colourants are expected to comply with the Ecological and Toxicological Association of Dyes and Organic Pigments Manufacturers (ETAD) concentration limits (http://www.etad.com/).

The total heavy metal limits do not apply to products containing a listed metal as an inherent compositional part (e.g. metal-complex colorants, the double salts of certain cationic colourants or extenders like barium sulfate). In these cases, the extractable content of the corresponding metal has to be considered. Alternatively, the total content will be communicated to the customers, who will determine whether their final product will comply with the corresponding RSL(s) requirements.

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
7440-39-3	Barium	Textile	No intentional use	Dyes and Pigments 100 ppm	Acid digestion, ICP
		Leather	No intentional use	Dyes and Pigments 100 ppm	
		Polymers (R,F,A)*	No intentional use	Dyes and Pigments 100 ppm	
7782-49-2	Selenium	Textile	No intentional use	Dyes 20/ pigments 100 ppm	Acid digestion, ICP
		Leather	No intentional use	Dyes 20/ pigments 100 ppm	
		Polymers (R,F,A)*	No intentional use	Dyes 20/ pigments 100 ppm	
7440-31-5	Tin	Textile	No intentional use	Dyes 250 ppm	Acid digestion, ICP
		Leather	No intentional use	Dyes 250 ppm	
		Polymers (R,F,A)*	No intentional use	Dyes 250 ppm	
7440-02-0	Nickel	Textile	No intentional use	Dyes 250 ppm	Acid digestion, ICP
		Leather	No intentional use	Dyes 250 ppm	
		Polymers (R,F,A)*	No intentional use	Dyes 250 ppm	
7440-50-8	Copper	Textile	No intentional use	Dyes 250 ppm	Acid digestion, ICP
		Leather	No intentional use	Dyes 250 ppm	
		Polymers (R,F,A)*	No intentional use	Dyes 250 ppm	
7440-48-4	Cobalt	Textile	No intentional use	Dyes 500 ppm	Acid digestion, ICP
		Leather	No intentional use	Dyes 500 ppm	
		Polymers (R,F,A)*	No intentional use	Dyes 500 ppm	
7440-22-4	Silver	Textile	No intentional use	Dyes 100 ppm	Acid digestion, ICP
		Leather	No intentional use	Dyes 100 ppm	
		Polymers (R,F,A)*	No intentional use	Dyes 100 ppm	

UV absorbers

Potential Uses in Apparel and Footwear Textile Processing:

These are frequently used in formulations to be stable to the influences of light and UV

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
36437-37-3	2-(2H-benzotriazol-2-yl)-4-(tert-butyl)-6-(sec- butyl) phenol (UV-350)	Textile	No intentional use	1000 ppm	Solvent extraction, LC MS/MS, GC MS
		Leather	No intentional use	1000 ppm	
		Polymers (R,F,A)*	No intentional use	1000 ppm	
3846-71-7	2-benzotriazol-2-yl-4,6-di-tert-butylphenol (UV-320)	Textile	No intentional use	1000 ppm	Solvent extraction, LC MS/MS, GC MS
		Leather	No intentional use	1000 ppm	
		Polymers (R,F,A)*	No intentional use	1000 ppm	
3864-99-1	2,4-Di-tert-butyl-6-(5-chlorobenzotriazole-2-yl) phenol (UV-327)	Textile	No intentional use	1000 ppm	Solvent extraction, LC MS/MS, GC MS
		Leather	No intentional use	1000 ppm	
		Polymers (R,F,A)*	No intentional use	1000 ppm	
25973-55-1	2-(2H-benzotriazol-2-yl)-4,6-ditertpentyl phenol (UV-328)	Textile	No intentional use	1000 ppm	Solvent extraction, LC MS/MS, GC MS
		Leather	No intentional use	1000 ppm	
		Polymers (R,F,A)*	No intentional use	1000 ppm	

Volatile Organic Compounds (VOC)

Potential Uses in Apparel and Footwear Textile Processing:

These Volatile Organic Compounds (VOC) should not be used in textile auxiliary chemical preparations. They are associated with solvent-based processes like solvent-based polyurethane coatings and glues/ adhesives. They should not be used for any kind of facility cleaning or spot cleaning.

Cas No	Substance	Applicability	Supplier Guidance	Formulation Limit	General Techniques for Analysing Chemicals
71-43-2	Benzene	Textile	No intentional use	50 ppm	GC-MS
		Leather	No intentional use	50 ppm	
		Polymers (R,F,A)*	No intentional use	50 ppm	
95-48-7	o-cresol	Textile	No intentional use	500 ppm	GC-MS
		Leather	No intentional use	500 ppm	
		Polymers (R,F,A)*	No intentional use	500 ppm	
106-44-5	p-cresol	Textile	No intentional use	500 ppm	GC-MS
		Leather	No intentional use	500 ppm	
		Polymers (R,F,A)*	No intentional use	500 ppm	
1330-20-7	Xylene	Textile	No intentional use	500 ppm	GC-MS
		Leather	No intentional use	500 ppm	
		Polymers (R,F,A)*	No intentional use	500 ppm	
108-39-4	m-cresol	Textile	No intentional use	500 ppm	GC-MS
		Leather	No intentional use	500 ppm	
		Polymers (R,F,A)*	No intentional use	500 ppm	

(Free) Analine

Potential Uses in Apparel and Footwear Textile Processing:

Used for indigo and to manufacture AZO Dyes (especially the leather dyes).

Cas No	Substance	Intent
62-53-3	(Free) Aniline	High levels of free aniline can be encountered in some indigo dye formulations. In Version 3 of the ZDHC MRSL it is intended to place restrictions on the maximum permitted levels of free aniline in indigo dye formulations. Studies on levels of free aniline in currently available liquid and powder formulations and determination of safe levels of aniline for workers are required to determine appropriate levels.

ADCA

Potential Uses in Apparel and Footwear Textile Processing:

ADCA is used as a foaming/ blowing agent for rubber applications.

Cas No	Substance	Intent
123-77-3	Diazene-1,2-dicarboxamide [C,C`-azodi(formamide), ADCA]	It is intended to restrict ADCA in Version 3 of the ZDHC MRSL. Additionally, a wider appraisal of foaming/blowing agents and vulcanisation accelerators will be conducted and further chemicals may be included at that time.

Cyclic Siloxanes

Cas No	Substance	Intent
541-02-6	D5	These silicones are known contaminants in silicone formulation, the industry is currently reviewing the impact on silicone polymers. ZDHC will assess restrictions for the next update.
540-97-6	D6	These silicones are known contaminants in silicone formulation, the industry is currently reviewing the impact on silicone polymers. ZDHC will assess restrictions for the next update.
556-67-2	D4	These silicones are known contaminants in silicone formulation, the industry is currently reviewing the impact on silicone polymers. ZDHC will assess restrictions for the next update.

Dimethylfumarate

Cas No	Substance	Intent
624-49-7	Dimethylfumarate (DMFu)	DMFu must not be deliberately used in any formulations. It is intended to publish details of a universally agreed, robust test method and maximum allowable limit in version 3 of the MRSL. It should be noted that DMFu remains illegal in articles placed on the EU market above 0.1 ppm so testing for DMfu in formulations using methods currently recommended by laboratories is strongly advised, with any detections resulting in an investigation into deliberate use at all stages in the supply chain.

Dyes – Carcinogenic or Equivalent Concern

Potential Uses in Apparel and Footwear Textile Processing:

Green dye

Cas No	Substance	Intent
129-73-7	C.I. Basic Green 4 leuco base	Research needs to be conducted on alternative green dyes or green recipe formulations to establish if this can be restricted without affecting product/ colour choices. Application using techniques such as gel-dyeing are unlikely to be restricted.

Flame Retardants

Potential Uses in Apparel and Footwear Textile Processing:

Flame retardant chemicals are rarely used to meet flammability requirements in children’s clothing and adult products.

Cas No	Substance	Intent
25155-23-1	Trixylyl phosphate (TXP)	Certain phosphate flame retardants will be assessed for restrictions for the next ZDHC MRSL Update.
78-30-8	Tri-o-cresyl phosphate	Certain phosphate flame retardants will be assessed for restrictions for the next ZDHC MRSL Update.
512-56-1	Trimethyl phosphate	Certain phosphate flame retardants will be assessed for restrictions for the next ZDHC MRSL Update.

Formaldehyde

Potential Uses in Apparel and Footwear Textile Processing:

Formaldehyde has many uses in printing, interlinings, stiffeners, etc.

Cas No	Substance	Intent
50-00-0	Formaldehyde	The deliberate use of formaldehyde or inclusion of formaldehyde in formulations is not permitted. In Version 3 of the ZDHC MRSL it is intended to place restrictions on the maximum permitted levels of formaldehyde in formulations. The use, presence and generation of formaldehyde is a complex subject and studies are required to determine appropriate levels.

Perfluorinated and Polyfluorinated Chemicals (PFCs)

Potential Uses in Apparel and Footwear Textile Processing:

Used as water repellent, stain repellent and in certain cases to improve the colour fastness properties.

Cas No	Substance	Intent
Multiple	PFCs (excluding current restrictions)	C8 PFCs are currently restricted in Version 1.1 of the ZDHC MRSL. In Version 3 of the ZDHC MRSL it is intended to ban the deliberate use of all functional finishes based on PFC's except for anticipated derogations under EU law, such as protective articles where the highest levels of repellency are required to safeguard the user. In signaling this forthcoming restriction it is expected that wet processors plan to take no new deliveries of PFC-containing formulations after the publication of ZDHC MRSL Version 3.

Phenol

Potential Uses in Apparel and Footwear Textile Processing:

Phenol is not deliberately used in textiles or footwear but trace amounts of phenol can be found in many chemical formulations.

Cas No	Substance	Intent
108-95-2	Phenol	ZDHC is looking for safe limits for phenol as a contaminant in textile chemical formulations.

Solvents

Potential Uses in Apparel and Footwear Textile Processing:

There are many uses for solvents from adhesives, coated textiles, prints, etc.

Cas No	Substance	Intent
1589-47-5	2-methoxypropanol	In Version 3 of the ZDHC MRSL it is intended to place restrictions on certain solvents with certain specific hazardous properties (e.g. CMR's). The restrictions are likely to apply to the inclusion of such solvents in formulations for use by wet processors and product assembly factories - and deliberate use of neat solvents in those facilities. Studies on usage patterns, exposure controls, safer alternatives and the potential effects of restrictions are necessary before restrictions can be proposed. Any potential ZDHC MRSL limits will need to be established collaboratively with groups who are working in parallel to study solvents in relation to workplace safety, air emissions, RSL compliance and downstream concerns.
108-88-3	Toluene	In Version 3 of the ZDHC MRSL it is intended to place restrictions on certain solvents with certain specific hazardous properties (e.g. CMR's). The restrictions are likely to apply to the inclusion of such solvents in formulations for use by wet processors and product assembly factories - and deliberate use of neat solvents in those facilities. Studies on usage patterns, exposure controls, safer alternatives and the potential effects of restrictions are necessary before restrictions can be proposed. Any potential ZDHC MRSL limits will need to be established collaboratively with groups who are working in parallel to study solvents in relation to workplace safety, air emissions, RSL compliance and downstream concerns.
67-56-1	Methanol	In Version 3 of the ZDHC MRSL it is intended to place restrictions on certain solvents with certain specific hazardous properties (e.g. CMR's). The restrictions are likely to apply to the inclusion of such solvents in formulations for use by wet processors and product assembly factories - and deliberate use of neat solvents in those facilities. Studies on usage patterns, exposure controls, safer alternatives and the potential effects of restrictions are necessary before restrictions can be proposed. Any potential ZDHC MRSL limits will need to be established collaboratively with groups who are working in parallel to study solvents in relation to workplace safety, air emissions, RSL compliance and downstream concerns.
100-41-4	Ethylbenzene	In Version 3 of the ZDHC MRSL it is intended to place restrictions on certain solvents with certain specific hazardous properties (e.g. CMR's). The restrictions are likely to apply to the inclusion of such solvents in formulations for use by wet processors and product assembly factories - and deliberate use of neat solvents in those facilities. Studies on usage patterns, exposure controls, safer alternatives and the potential effects of restrictions are necessary before restrictions can be proposed. Any potential ZDHC MRSL limits will need to be established collaboratively with groups who are working in parallel to study solvents in relation

		to workplace safety, air emissions, RSL compliance and downstream concerns.
111-77-3	2-(2-methoxyethoxy)-ethanol	In Version 3 of the ZDHC MRSL it is intended to place restrictions on certain solvents with certain specific hazardous properties (e.g. CMR's). The restrictions are likely to apply to the inclusion of such solvents in formulations for use by wet processors and product assembly factories - and deliberate use of neat solvents in those facilities. Studies on usage patterns, exposure controls, safer alternatives and the potential effects of restrictions are necessary before restrictions can be proposed. Any potential ZDHC MRSL limits will need to be established collaboratively with groups who are working in parallel to study solvents in relation to workplace safety, air emissions, RSL compliance and downstream concerns.
872-50-4	N-Methyl-2-Pyrrolidone; 1-methyl-2-pyrrolidone (NMP)	With the exception of textile and leather coating processes, where no viable alternative solvent is currently available, the deliberate use of NMP, DMAC and DMFa should be avoided and their presence in all formulations carefully monitored to ensure compliance with product RSLs and the EU regulation for CMR chemicals, 2018/1513. It is intended to publish limits for maximum allowable limits in Version 3 of the ZDHC MRSL.
68-12-2	Dimethyl formamide; N,N-dimethylformamide (DMFa)	With the exception of textile and leather coating processes, where no viable alternative solvent is currently available, the deliberate use of NMP, DMAC and DMFa should be avoided and their presence in all formulations carefully monitored to ensure compliance with product RSLs and the EU regulation for CMR chemicals, 2018/1513. It is intended to publish limits for maximum allowable limits in Version 3 of the ZDHC MRSL.
127-19-5	N,N-dimethylacetamide (DMAC)	With the exception of textile and leather coating processes, where no viable alternative solvent is currently available, the deliberate use of NMP, DMAC and DMFa should be avoided and their presence in all formulations carefully monitored to ensure compliance with product RSLs and the EU regulation for CMR chemicals, 2018/1513. It is intended to publish limits for maximum allowable limits in Version 3 of the ZDHC MRSL.

Total Heavy Metals

Potential Uses in Apparel and Footwear Textile Processing:

Besides in dyes and pigments, metals are used as raw material for trims and other components.

Cas No	Substance	Intent
Multiple	Metals (Non -dye /pigment)	In Version 3 of the ZDHC MRSL it is intended to place restrictions on the maximum permitted levels of certain metals in (non-dye/pigment) formulations. Studies on usage patterns of metal containing chemicals and formulations and the potential effect of restrictions are required to determine appropriate levels and any possible derogations.

Cas No	Substance	General Techniques for Analysing Chemicals

Cas No	Substance	General Techniques for Analysing Chemicals

Dyes – Carcinogenic or Equivalent Concern

Potential Uses in Apparel and Footwear Textile Processing:

Most of these substances are regulated and should no longer be used for the dyeing of textiles.

Cas No	Substance	General Techniques for Analysing Chemicals
60-11-7	C I Solvent yellow 2	
81-88-9	D&C Red No. 19	
842-07-9	C.I. Solvent yellow 14	

Other/Misceleanous Chemicals

Potential Uses in Apparel and Footwear Textile Processing:

Dye

Cas No	Substance	General Techniques for Analysing Chemicals
2465-27-2	Auramine hydrochloride	

Solvents

Potential Uses in Apparel and Footwear Textile Processing:

In the past, it was used to make several types of polymers, resins, and textiles, but its use is now highly restricted.

Cas No	Substance	General Techniques for Analysing Chemicals
542-88-1	Bis(chloromethyl) ether	

FOOTNOTES:

**R,F,A refers to Rubber, Foams and Adhesives*

"Sum of substances1 =" means the limit refers to the sum of all the substances with the same number