

Chemical Requirements (RSL & MRSL)



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1. AFIRM Restricted Substance List (AFIRM RSL)

Articles produced for C&A must meet all European legal restrictions and as well all C&A chemical requirements.

1. AFIRM RSL – ADOPTED BY C&A

1.1 AFIRM RSL Adoption: C&A has adopted the AFIRM RSL and makes it the binding RSL standard for C&A supplies and manufacturers at all levels of the supply chain. The AFIRM RSL shall be used as a reference for limits and testing methods of restricted substances possibly found in raw materials, semi-finished and finished products. The AFIRM RSL is stated in this chapter beginning with the next page. Additionally, the AFIRM RSL is available in several languages at: <https://www.afirm-group.com/afirm-rsl/>

1.2 AFIRM Mission and Vision: AFIRM is the Apparel and Footwear International RSL Management (AFIRM) Working Group, established in 2004. AFIRM's mission is to reduce the use and impact of harmful substances in the apparel and footwear supply chain. AFIRM's purpose is to provide a forum to advance the global management of restricted substances in apparel and footwear, communicate information about chemical management to the supply chain, discuss concerns, and exchange ideas for improving chemical management. AFIRM continues to be a recognized global center of excellence, providing resources to enable continuous advancement of chemical management best practices. AFIRM do this based on transparency, science, and collaboration with relevant industries and experts to build safer and more sustainable chemistry within the apparel and footwear supply chains. Based on the collaboration efforts of the AFIRM member brands, the AFIRM RSL reduces and aligns the large number of complicated and sometimes contradictory brand RSLs. The AFIRM RSL provides up-to-date limits based on newest regulations, corresponding test methods, and potential uses of the chemicals in an easy-to-read format.

1.3 AFIRM Support Tools: Additionally to the AFIRM RSL, AFIRM member brands have produced a comprehensive set of educational documents advising suppliers about best practices for chemical management.

➤ **1.3.1 AFIRM Chemical Information Sheets:**

Each chemical information sheet covers a chemical or class of chemicals, giving an overview of the substance(s), where they are likely to be found in the materials and how to maintain compliance with the AFIRM RSL. The complete library of chemical information sheets is available on the AFIRM website at <https://www.afirm-group.com/chemical-information-sheets/>

➤ **1.3.2 AFIRM Supplier Chemistry Toolkit:**

The Apparel and Footwear International RSL Management (AFIRM) Group has developed this Chemistry Toolkit as part of its mission to reduce the use and impact of harmful substances in the apparel and footwear supply chain.
<https://www.afirm-group.com/toolkit/>

1.4 C&A Additional Chemical Requirements:

Beside restricted substances of the AFIRM RSL, there are some additional chemical parameters that C&A restricts for its products. These includes restrictions on Per- and Polyfluorinated Chemicals (PFCs), Polyvinylchloride (PVC), Heavy Metals for Toys and Total Chromium for Chrome free tanned leather, which are stated in more detail in [chapter 6. C&A Additional Chemical Requirements.](#)

AFIRM RESTRICTED SUBSTANCES LIST (AFIRM RSL)

CASNo.	Substance	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement	Reporting Limits Limits above which test results should be reported
Acetophenone and 2-Phenyl-2-Propanol					
98-86-2	Acetophenone	50 ppm each	Potential breakdown products in EVA foam when using dicumyl peroxide as a cross-linking agent.	Extraction in acetone or methanol GC/MS, sonication for 30 minutes at 60°C	25 ppm each
617-94-7	2-Phenyl-2-propanol				
Acidic and alkaline substances					
Various	pH-value	Textiles: 4.0 - 7.5 Leather: 3.5 - 7.0	The pH-value is a characteristic number, ranging from pH 1 to pH 14, indirectly showing the content of acidic or alkaline substances in a product. pH-values below 7 indicate sources of acidic substances and values above 7 indicated sources of alkaline substances. To avoid irritation or chemical burns of skin the pH-value of products shall be in the range of the human skin with ca. pH 5.5. Limits cited are recommended to comply with all global regulations for all products.	Textiles and Artificial leather: EN ISO 3071:2006 (KCl Solution) Leather: EN ISO 4045:2018	NA
Alkylphenol (AP) and Alkylphenol Ethoxylates (APEOs), including all isomers					
Various	Nonylphenol (NP), mixed isomers	Total: 100 ppm	APEOs can be used as or found in detergents, scouring agents, spinning oils, wetting agents, softeners, emulsifying/dispersing agents for dyes and prints, impregnating agents, de-gumming for silk production, dyes and pigment preparations, polyester padding and down/feather fillings. APs are used as intermediaries in the manufacture of APEOs and antioxidants used to protect or stabilize polymers. Biodegradation of APEOs into APs is the main source of APs in the environment. APEOs and formulations containing APEOs are prohibited from use throughout supply chain and manufacturing processes. We acknowledge that residual or trace concentrations of APEOs may still be found at levels exceeding 100 ppm and that more time is necessary for the supply chain to phase them out completely. This limit covers EU legislation restricting NPEOs effective 3 February 2021 and provides advance warning to suppliers.	Textiles: Extraction: 1 g sample/20 mL THF, sonication for 60 minutes at 70°C Measurement: EN ISO 18857-2:2011 (with derivatization) Leather: EN ISO 18218-2:2015 Polymers: 1 g sample/20 mL THF, sonication for 60 minutes at 70°C analysis with LC/MS or LC/MS/MS All other materials: 1 g sample/20 mL THF, sonication for 60 minutes at 70°C analysis with GC/MS	Sum of NP & OP: 10 ppm
Various	Octylphenol (OP), mixed isomers				
Various	Nonylphenol ethoxylates (NPEOs)	Total: 100 ppm		All materials except leather: EN ISO 18254-1:2016, determination of APEO using LC/MS or LC/MS/MS Leather: EN ISO 18218-1:2015	Sum of NPEO & OPEO: 20 ppm
Various	Octylphenol ethoxylates (OPEOs)				

AFIRM RESTRICTED SUBSTANCES LIST (AFIRM RSL) continued

CASNo.	Substance	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement	Reporting Limits Limits above which test results should be reported
Azo-amines and Arylamine salts					
92-67-1	4-Aminobiphenyl	20 ppm each	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 which degrade to form the listed cleavable amines are restricted. Azo dyes that release these amines are regulated and should no longer be used for dyeing of textiles.	All materials except leather: EN ISO 14362-1:2017 Leather: EN ISO 17234-1:2015 p-Aminoazobenzene: All materials except leather: EN ISO 14362-3:2017 Leather: EN ISO 17234-2:2011	5 ppm each
92-87-5	Benzidine				
95-69-2	4-Chloro-o-toluidine				
91-59-8	2-Naphthylamine				
97-56-3	o-Aminoazotoluene				
99-55-8	2-Amino-4-nitrotoluene				
106-47-8	p-Chloraniline				
615-05-4	2,4-Diaminoanisole				
101-77-9	4,4'-Diaminodiphenylmethane				
91-94-1	3,3'-Dichlorobenzidine				
119-90-4	3,3'-Dimethoxybenzidine				
119-93-7	3,3'-Dimethylbenzidine				
838-88-0	3,3'-dimethyl-4,4'-Diaminodiphenylmethane				
120-71-8	p-Cresidine				
101-14-4	4,4'-Methylen-bis(2-chloraniline)				
101-80-4	4,4'-Oxydianiline				
139-65-1	4,4'-Thiodianiline				
95-53-4	o-Toluidine				
95-80-7	2,4-Toluyldiamine				
137-17-7	2,4,5-Trimethylaniline				
95-68-1	2,4 Xylidine				
87-62-7	2,6 Xylidine				
90-04-0	2-Methoxyaniline (= o-Anisidine)				
60-09-3	p-Aminoazobenzene				
3165-93-3	4-Chloro-o-toluidinium chloride				
553-00-4	2-Naphthylammoniumacetate				
39156-41-7	4-Methoxy-m-phenylene diammonium sulphate				
21436-97-5	2,4,5-Trimethylaniline hydrochloride				
Bisphenols					
80-05-7	Bisphenol A (BPA)	Total: 1 ppm	Used in the production of epoxy resins, polycarbonate plastics, flame retardants and PVC. Prohibited from use in food and drink containers, and items intended to come into contact with the mouth.	All materials: Extraction: 1 g sample/20 ml THF, sonication for 60 minutes at 60°C analysis with LC/MS	1 ppm
80-09-1	Bisphenol S (BPS)	For informational purposes only – testing of polycarbonate materials recommended to assess content levels	BPA alternatives with known or suspected similar hazards used in the production of epoxy resins, polycarbonate plastics, flame retardants and PVC. Applicable to food and drink containers, and items intended to come into contact with oral cavity.		1 ppm each
620-92-8	Bisphenol F (BPF)				
1478-61-1	Bisphenol AF (BPAP)				

AFIRM RESTRICTED SUBSTANCES LIST (AFIRM RSL) continued

CASNo.	Substance	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement	Reporting Limits Limits above which test results should be reported
Chlorinated Paraffins					
85535-84-8	Short-chain chlorinated Paraffins (SCCP) (C10-C13)	1000 ppm	May be used as softeners, flame retardants or as fat liquoring agents in leather production. Also used as plasticizer in polymer production.	All materials: Combined CADS / ISO 18219:2015 method V1:06/17 (extraction by ISO 18219 and analysis by GC-NCI-MS)	100 ppm
85535-85-9	Medium-chain chlorinated Paraffins (MCCP) (C14-C17)	1000 ppm			100 ppm
Chlorophenols					
15950-66-0	2,3,4-Trichlorophenol (TriCP)	0.5 ppm each	Chlorophenols are polychlorinated compounds used as preservatives or pesticides. Pentachlorophenol (PCP) and tetrachlorophenol (TeCP), and trichlorophenols (TriCP) are sometimes used to prevent mold and kill insects when growing cotton and when storing/transporting fabrics. PCP, TeCP and TriCP can also be used as in can preservatives in print pastes and other chemical mixtures.	All materials: 1 M KOH extraction, 16 hours at 90°C, derivatization and analysis § 64 LFGB B 82.02-08 or DIN EN ISO 17070:2015	0.5 ppm each
933-78-8	2,3,5-Trichlorophenol (TriCP)				
933-75-5	2,3,6-Trichlorophenol (TriCP)				
95-95-4	2,4,5-Trichlorophenol (TriCP)				
88-06-2	2,4,6-Trichlorophenol (TriCP)				
609-19-8	3,4,5-Trichlorophenol (TriCP)				
4901-51-3	2,3,4,5-Tetrachlorophenol (TeCP)				
58-90-2	2,3,4,6-Tetrachlorophenol (TeCP)				
935-95-5	2,3,5,6-Tetrachlorophenol (TeCP)				
87-86-5	Pentachlorophenol (PCP)				

AFIRM RESTRICTED SUBSTANCES LIST (AFIRM RSL) continued

CASNo.	Substance	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement	Reporting Limits Limits above which test results should be reported
Chlororganic Carriers					
95-49-8	2-Chlorotoluene	Total: 1 ppm	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.	All materials: DIN 54232:2010	0.2 ppm each
108-41-8	3-Chlorotoluene				
106-43-4	4-Chlorotoluene				
32768-54-0	2,3-Dichlorotoluene				
95-73-8	2,4-Dichlorotoluene				
19398-61-9	2,5-Dichlorotoluene				
118-69-4	2,6-Dichlorotoluene				
95-75-0	3,4-Dichlorotoluene				
2077-46-5	2,3,6-Trichlorotoluene				
6639-30-1	2,4,5-Trichlorotoluene				
76057-12-0	2,3,4,5-Tetrachlorotoluene				
875-40-1	2,3,4,6-Tetrachlorotoluene				
1006-31-1	2,3,5,6-Tetrachlorotoluene				
877-11-2	Pentachlorotoluene				
541-73-1	1,3-Dichlorobenzene				
106-46-7	1,4-Dichlorobenzene				
87-61-6	1,2,3-Trichlorobenzene				
120-82-1	1,2,4-Trichlorobenzene				
108-70-3	1,3,5-Trichlorobenzene				
634-66-2	1,2,3,4-Tetrachlorobenzene				
634-90-2	1,2,3,5-Tetrachlorobenzene				
95-94-3	1,2,4,5-Tetrachlorobenzene				
608-93-5	Pentachlorobenzene				
118-74-1	Hexachlorobenzene				
5216-25-1	p-chlorobenzotrichloride				
98-07-7	Benzotrichloride				
100-44-7	Benzyl chloride				
95-50-1	1,2-Dichlorobenzene	10 ppm			1 ppm

AFIRM RESTRICTED SUBSTANCES LIST (AFIRM RSL) continued

CASNo.	Substance	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement	Reporting Limits Limits above which test results should be reported
Dimethylfumarate					
624-49-7	Dimethylfumarate (DMFu)	0.1 ppm	DMFu is an anti-mold agent used in sachets in packaging to prevent the buildup of mold, especially during shipping.	All materials: CEN ISO/TS 16186:2012	0.05 ppm
Dyes, Forbidden and Disperse					
2475-45-8	C.I. Disperse Blue 1	50 ppm each	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 fiber (e.g., polyester, acetate, polyamide). Restricted disperse dyes are suspected of causing allergic reactions and are prohibited from use for dyeing of textiles.	All materials: DIN 54231:2005	15 ppm each
2475-46-9	C.I. Disperse Blue 3				
3179-90-6	C.I. Disperse Blue 7				
3860-63-7	C.I. Disperse Blue 26				
56524-77-7	C.I. Disperse Blue 35A				
56524-76-6	C.I. Disperse Blue 35B				
12222-97-8	C.I. Disperse Blue 102				
12223-01-7	C.I. Disperse Blue 106				
61951-51-7	C.I. Disperse Blue 124				
23355-64-8	C.I. Disperse Brown 1				
2581-69-3	C.I. Disperse Orange 1				
730-40-5	C.I. Disperse Orange 3				
82-28-0	C.I. Disperse Orange 11				
12223-33-5	C.I. Disperse Orange 37/76/59				
13301-61-6					
51811-42-8	C.I. Disperse Orange 149				
85136-74-9					
2872-52-8	C.I. Disperse Red 1				
2872-48-2	C.I. Disperse Red 11				
3179-89-3	C.I. Disperse Red 17				
61968-47-6	C.I. Disperse Red 151				
119-15-3	C.I. Disperse Yellow 1				
2832-40-8	C.I. Disperse Yellow 3				
6300-37-4	C.I. Disperse Yellow 7				
6373-73-5	C.I. Disperse Yellow 9				
6250-23-3	C.I. Disperse Yellow 23				
12236-29-2	C.I. Disperse Yellow 39				
54824-37-2	C.I. Disperse Yellow 49				
54077-16-6	C.I. Disperse Yellow 56				
3761-53-3	C.I. Acid Red 26				
569-61-9	C.I. Basic Red 9				

AFIRM RESTRICTED SUBSTANCES LIST (AFIRM RSL) continued

CASNo.	Substance	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement	Reporting Limits Limits above which test results should be reported
569-64-2	C.I. Basic Green 4	50 ppm each	Disperse dyes are a class of water-insoluble dyes that penetrate the fiber system of synthetic or manufactured fibres and are held in place by physical forces without forming chemical bonds. Disperse dyes are used in synthetic fiber (e.g., polyester, acetate, polyamide). Restricted disperse dyes are suspected of causing allergic reactions and are prohibited from use for dyeing of textiles.	All materials: DIN 54231:2005	15 ppm each
2437-29-8					
10309-95-2					
548-62-9					
632-99-5					
2580-56-5					
1937-37-7					
2602-46-2					
573-58-0					
16071-86-6					
60-11-7					
6786-83-0					
561-41-1	4,4'-bis(dimethylamino)-4''-(methylamino)trityl alcohol				
Dyes, Navy Blue					
118685-33-9	Component 1: C39H23ClCrN7O12S.2Na	50 ppm each	Navy blue colourants are regulated and are prohibited from use for dyeing of textiles. (Index 611-070-00-2)	All materials: DIN 54231:2005	15 ppm each
Not allocated	Component 2: C46H30CrN10O20S2.3Na				

AFIRM RESTRICTED SUBSTANCES LIST (AFIRM RSL) continued

CAS No.	Substance	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement	Reporting Limits Limits above which test results should be reported
Flame Retardants					
32534-81-9	Pentabromodiphenyl ether (PentaBDE)	10 ppm each	Flame-retardant chemicals, including the entire class of organohalogen flame retardants, should no longer be used.	All materials: EN ISO 17881-1:2016	5 ppm each
32536-52-0	Octabromodiphenyl ether (OctaBDE)				
1163-19-5	Decabromodiphenyl ether (DecaBDE)				
Various	All other Polybrominated diphenyl ethers (PBDE)				
79-94-7	Tetrabromobisphenol A (TBBP A)				
59536-65-1	Polybromobiphenyls (PBB)				
3194-55-6	Hexabromocyclododecane (HBCDD)				
3296-90-0	2,2-bis(bromomethyl)-1,3- propanediol (BBMP)				
13674-87-8	Tris(1,3-dichloro-isopropyl) phosphate (TDCPP)				
25155-23-1	Trixylyl phosphate (TXP)				
126-72-7	Tris(2,3-dibromopropyl) phosphate (TRIS)				
545-55-1	Tris(1-aziridinyl)phosphine oxide) (TEPA)				
115-96-8	Tris(2-chloroethyl)phosphate (TCEP)				
5412-25-9	Bis(2,3-dibromopropyl) phosphate (BDBPP)				
Fluorinated Greenhouse Gases					
Various	See Regulation (EC) No 842/2006 for a complete list.	0.1 ppm each	May be used as foam blowing agents, solvents fire retardants, and aerosol propellants and are prohibited from use.	Sample preparation: Purge and trap – thermal desorption or SPME Measurement: GC/MS	0.1 ppm each
Formaldehyde					
50-00-0	Formaldehyde	Adults and children: 75 ppm Babies: 16 ppm	Used in textiles as an anti-creasing and anti-shrinking agent. It is also often used in polymeric resins. Although very rare in apparel & footwear, composite wood materials, e.g., particle board and plywood, must comply with existing California and forthcoming US formaldehyde emission requirements (40 CFR 770). Suppliers are advised to refer to brand-specific requirements for these materials.	All materials except leather: JIS L 1041- 1983 A (Japan Law 112) or EN ISO 14184- 1:2011 Leather: preEN ISO 17226-2:2017 with preEN ISO 17226-1:2017 confirmation method in case of interferences. Alternatively, preEN ISO 17226-1:2017 can be used on its own.	16 ppm

AFIRM RESTRICTED SUBSTANCES LIST (AFIRM RSL) continued

CASNo.	Substance	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement	Reporting Limits Limits above which test results should be reported
Heavy Metals					
7440-36-0	Antimony (Sb)	Extractable: 30 ppm	Found in or used as a catalyst in polymerisation of polyester, flame retardants, fixing agents, pigments and alloys.	All materials except leather: DIN EN 16711-2:2016 Leather: DIN EN ISO 17072-1:2017	Extractable: 3 ppm
7440-38-2	Arsenic (As)	Extractable: 0.2 ppm Total: 100 ppm	Arsenic and its compounds can be used in preservatives, pesticides and defoliants for cotton, synthetic fibres, paints, inks, trims and plastics.	Extractable: All materials except leather: DIN EN 16711-2:2016 Leather: DIN EN ISO 17072-1:2017 Total: All materials except leather: DIN EN 16711-1:2016 Leather: DIN EN ISO 17072-2:2017	Extractable: 0.1 ppm Total: 10 ppm
7440-39-3	Barium (Ba)	Extractable: 1000 ppm	Barium and its compounds can be used in pigments for inks, plastics, surface coatings, as well as in dyeing, mordant, filler in plastics, textile finish, and leather tanning.	All materials except leather: DIN EN 16711-2:2016 Leather: DIN EN ISO 17072-1:2017	Extractable: 100 ppm
7440-43-9	Cadmium (Cd)	Extractable: 0.1 ppm Total: 40 ppm	Cadmium compounds are used as pigments (especially in red, orange, yellow and green); as a stabilizer for PVC; and in fertilizers, biocides and paints.	Extractable: All materials except leather: DIN EN 16711-2:2016 Leather: DIN EN ISO 17072-1:2017 Total: All materials except leather: DIN EN 16711-1:2016 Leather: DIN EN ISO 17072-2:2017	Extractable: 0.05 ppm Total: 5 ppm
7440-47-3	Chromium (Cr)	Extractable: Textiles: 2 ppm Leather footwear for babies: 60 ppm	Chromium compounds can be used as dyeing additives, dye-fixing agents, colour fastness, after-treatments, dyes for wool, silk and polyamide (especially dark shades) and leather tanning.	Extractable: All materials except leather: DIN EN 16711-2:2016 Leather: EN ISO 17072-1:2017	Extractable: 0.5 ppm
18540-29-9	Chromium VI	Extractable: Leather: 3 ppm Textiles: 1 ppm	Though typically associated with leather tanning, Chromium VI also may be used in the dyeing of wool (after the chroming process).	All materials except leather: DIN EN 16711-2:2016 with EN ISO 17075-1:2017 if Cr is detected Leather: EN ISO 17075-1:2017 and EN ISO 17075-2:2017 for confirmation in case the extract causes interference Alternatively, EN ISO 17075-2:2017 may be used on its own. Ageing test: ISO 10195:2018 Method A2 is used at brand discretion.	Extractable: Leather: 3 ppm Textiles: 0.5 ppm

AFIRM RESTRICTED SUBSTANCES LIST (AFIRM RSL) continued

CASNo.	Substance	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement	Reporting Limits Limits above which test results should be reported
7440-48-4	Cobalt (Co)	Extractable: Adults: 4 ppm Children/babies: 1 ppm	Cobalt and its compounds can be used in alloys, pigments, dyestuff, and the production of plastic buttons.	All materials except leather: DIN EN 16711-2:2016 Leather: DIN EN ISO 17072-1:2017	Extractable: 0.5 ppm
7440-50-8	Copper (Cu)	Extractable: Adults: 50 ppm Children/babies: 25 ppm	Copper and its compounds can be found in alloys and pigments, and in textiles as an antimicrobial agent.	All materials except leather: DIN EN 16711-2:2016 Leather: DIN EN ISO 17072-1:2017	Extractable: 5 ppm
7439-92-1	Lead (Pb)	Extractable: Adults and children: 1 ppm Babies: 0.2 ppm Total: 90 ppm	May be associated with plastics, paints, inks, pigments and surface coatings.	Extractable: All materials except leather: DIN EN 16711-2:2016 Leather: DIN EN ISO 17072-1:2017 Total: Non-metal: CPSC-CH-E1002-08.3 Metal: CPSC-CH-E1001-08.3 Lead in paint and surface coating: CPSIA Section 101.16 CFR 1303	Extractable: 0.1 ppm Total: 10 ppm
7439-97-6	Mercury (Hg)	Extractable: 0.02 ppm Total: 0.5 ppm	Mercury compounds can be present in pesticides and as contaminants in caustic soda (NaOH). They may also be used in paints.	Extractable: All materials except leather: DIN EN 16711-2:2016 Leather: DIN EN ISO 17072-1:2017 Total: All materials except leather: DIN EN 16711-1:2016 Leather: DIN EN ISO 17072-2:2017	Extractable: 0.02 ppm Total: 0.1 ppm
7440-02-0	Nickel (Ni)	Extractable: 1 ppm Release (metal parts): Prolonged skin contact: 0.5 µg/cm ² /week Pierced part: 0.2 µg/cm ² /week	Nickel and its compounds can be used for plating alloys and improving corrosion-resistance and hardness of alloys. They can also occur as impurities in pigments and alloys.	Extractable: All materials except leather: DIN EN 16711-2:2016 Leather: DIN EN ISO 17072-1:2017 Release: EN 12472:2005+A1:2009 and EN 1811:2011+A1:2015 Release (Eyewear Frames): EN 16128:2015	Extractable & Release: 0.1 ppm
7782-49-2	Selenium (Se)	Extractable: 500 ppm	May be found in synthetic fibres, paints, inks, plastics and metal trims.	All materials except leather: DIN EN 16711-2:2016 Leather: DIN EN ISO 17072-1:2017	Extractable: 50 ppm

AFIRM RESTRICTED SUBSTANCES LIST (AFIRM RSL) continued

CASNo.	Substance	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement	Reporting Limits Limits above which test results should be reported
Monomers					
100-42-5	Styrene	500 ppm	Styrene is a precursor for polymerization and may be present in various styrene-copolymers like plastic buttons.	GC/MS Headspace 120°C for 45 minutes; -or- Extraction in Methanol GC/MS, sonication for 60 minutes at 60°C	50 ppm
75-01-4	Vinyl Chloride	1 ppm	Vinyl Chloride is a precursor for polymerization and may be present in various PVC materials like prints, coatings, flip flops, and synthetic leather.	EN ISO 6401:2008	1 ppm
N-Nitrosamines					
62-75-9	N-nitrosodimethylamine (NDMA)	0.5 ppm each	Can be formed as by-product in the production of rubber.	GB/T 24153-2009: determination using GC/MS with LC/MS/MS verification if positive. Alternatively, LC/MS/MS may be performed on its own. prEN 19577:2017	0.5 ppm each
55-18-5	N-nitrosodiethylamine (NDEA)				
621-64-7	N-nitrosodipropylamine (NDPA)				
924-16-3	N-nitrosodibutylamine (NDBA)				
100-75-4	N-nitrosopiperidine (NPIP)				
930-55-2	N-nitrosopyrrolidine (NPYR)				
59-89-2	N-nitrosomorpholine (NMOR)				
614-00-6	N-nitroso N-methyl N-phenylamine (NMPPhA)				
612-64-6	N-nitroso N-ethyl N-phenylamine (NEPhA)				
Organotin Compounds					
Various	Dibutyltin (DBT)	1 ppm each	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 stabilizers in plastics/rubber. In textiles and apparel, organotins are associated with plastics/rubber, inks, paints, metallic glitter, polyurethane products and heat transfer material.	All materials: CEN ISO/TS 16179: 2012	0.1 ppm each
Various	Diocetyl tin (DOT)				
Various	Monobutyltin (MBT)				
Various	Tricyclohexyltin (TCyHT)				
Various	Trimethyltin (TMT)				
Various	Triocetyl tin (TOT)				
Various	Tripropyltin (TPT)				
Various	Tributyltin (TBT)	0.5 ppm each			
Various	Triphenyltin (TPhT)				

AFIRM RESTRICTED SUBSTANCES LIST (AFIRM RSL) continued

CASNo.	Substance	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement	Reporting Limits Limits above which test results should be reported
Ortho-phenylphenol					
90-43-7	Ortho-phenylphenol (OPP)	1000 ppm	OPP can be used for its preservative properties in leather or as a carrier in dyeing processes.	All materials: 1 M KOH extraction, 16 hours at 90°C, derivatization and analysis § 64 LFGB B 82.02-08 or DIN EN ISO 17070:2015	100 ppm
Ozone-depleting Substances					
Various	See Regulation (EC) No 1005/2009 for a complete list.	5 ppm	Ozone depleting substances have been used as a foaming agent in PU foams as well as a dry-cleaning agent and are prohibited from use.	All materials: GC/MS headspace 120°C for 45 minutes	5 ppm
Perfluorinated and Polyfluorinated Chemicals (PFCs)					
Various	Perfluorooctane Sulfonate (PFOS) and related substances	1 µg/m ² each	PFOA and PFOS may be present as unintended byproducts in long-chain and short-chain commercial water, oil and stain repellent agents. PFOA may also be used in polymers like polytetrafluoroethylene (PTFE). The area-based limit for PFOA will be superseded by Commission Regulation (EU) 2017/1000 and removed in 2023.	All materials: prISO FDIS 23702-1:2018	1 µg/m ² each
Various	Perfluorooctanoic Acid (PFOA) and its salts	1 µg/m ² each 25ppb total			
Various	PFOA-related substances	1000 ppb total			
Pesticides, Agricultural					
Various	See Appendix A for a complete list	0.5 ppm each	May be found in natural fibres (primarily cotton).	All materials: ISO 15913/DIN 38407 F2 or EPA 8081/EPA 8151A or BVL L 00.00-34:2010-09	0.5 ppm each

AFIRM RESTRICTED SUBSTANCES LIST (AFIRM RSL) continued

CASNo.	Substance	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement	Reporting Limits Limits above which test results should be reported
Phthalates					
28553-12-0	Di-iso-nonylphthalate (DINP)	500 ppm each Total: 1000 ppm	Esters of ortho-phthalic acid (phthalates) are a class of organic compound commonly added to plastics to increase flexibility. They are sometimes used to facilitate the 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 sleeveings, Polymeric coatings Find more information about additional phthalates on the REACH SVHC list, which is updated frequently.	Sample preparation for all materials: CPSC-CH-C1001-09.4 Measurement: Textile: GC-MS, EN ISO 14389:2014 (7.1 Calculation based on weight of print only; 7.2 Calculation based on weight of print and textile if print cannot be removed). All materials except textile: GC-MS	50 ppm each
117-84-0	Di-n-octylphthalate (DNOP)				
117-81-7	Di(2-ethylhexyl)-phthalate (DEHP)				
26761-40-0	Diisodecylphthalate (DIDP)				
85-68-7	Butylbenzylphthalate (BBP)				
84-74-2	Dibutylphthalate (DBP)				
84-69-5	Diisobutylphthalate (DIBP)				
84-75-3	Di-n-hexylphthalate (DnHP)				
84-66-2	Diethylphthalate (DEP)				
131-11-3	Dimethylphthalate (DMP)				
131-18-0	di-n-pentyl phthalate (DPENP)				
84-61-7	dicyclohexyl phthalate (DCHP)				
71888-89-6	1,2-benzenedicarboxylic acid				
117-82-8	Bis(2-methoxyethyl) phthalate				
605-50-5	Diisopentyl phthalate (DIPP)				
131-16-8	Dipropyl phthalate (DPRP)				
27554-26-3	Diisooctyl phthalate (DIOP)				
68515-50-4	Diisohexyl phthalate (DIHP)				
68515-42-4	1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters (DHNUPE)				
84777-06-0	1,2-benzenedicarboxylic acid Dipentyl ester, branched and linear				

AFIRM RESTRICTED SUBSTANCES LIST (AFIRM RSL) continued

CASNo.	Substance	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement	Reporting Limits Limits above which test results should be reported
Polycyclic Aromatic Hydrocarbons (PAHs)					
83-32-9	Acenaphthene	No individual restriction	Total: 10 ppm	All materials: AFPS GS2014	0.2 ppm each
208-96-8	Acenaphthylene				
120-12-7	Anthracene				
191-24-2	Benzo(g,h,i)perylene				
86-73-7	Fluorene				
206-44-0	Fluoranthene				
193-39-5	Indeno(1,2,3-cd)pyrene				
91-20-3	Naphthalene**				
85-01-8	Phenanthrene				
129-00-0	Pyrene				
56-55-3	Benzo(a)anthracene	1 ppm each Child care articles: 0.5 ppm each	Total: 10 ppm	All materials: AFPS GS2014	0.2 ppm each
50-32-8	Benzo(a)pyrene				
205-99-2	Benzo(b)fluoranthene				
192-97-2	Benzo(e)pyrene				
205-82-3	Benzo(j)fluoranthene				
207-08-9	Benzo(k)fluoranthene				
218-01-9	Chrysene				
53-70-3	Dibenzo(a,h)anthracene				
<p>PAHs are natural components of crude oil and are common residues from oil refining. PAHs have a characteristic smell similar to that of car tires or asphalt. Oil residues containing PAHs are added to rubber and plastics as a softener or extender and may be found in rubber, plastics, lacquers and coatings. 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. They also may be formed from thermal decomposition of recycled materials during reprocessing</p> <p>**Naphthalene: Dispersing agents for textile dyes may contain high residual naphthalene concentrations due to the use of low-quality naphthalene derivatives (e.g., poor-quality naphthalene sulphonate formaldehyde condensation products).</p>					

AFIRM RESTRICTED SUBSTANCES LIST (AFIRM RSL) continued

CASNo.	Substance	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement	Reporting Limits Limits above which test results should be reported
Quinoline					
91-22-5	Quinoline	50 ppm	Found as an impurity in polyester and some dyestuffs.	AFPS GS 2014	10 ppm
Solvents / Residuals					
68-12-2	Dimethylformamide (DMFa)	500 ppm	DMFa is a solvent used in plastics, rubber, and polyurethane (PU) coating. Water-based PU does not contain DMFa and is therefore preferable.	All materials: DIN CEN ISO/TS 16189:2013	50 ppm each
75-12-7	Formamide	1000 ppm	Byproducts in the production of EVA foams.		
127-19-5	Dimethylacetamide (DMAC)		DMAC is a solvent used in the production of elastane fibres and sometimes as substitute for DMFa.		
872-50-4	N-Methyl-2-pyrrolidone (NMP)		Industrial solvent utilized in production of water-based polyurethanes and other polymeric materials. May also be used for surface treatment of textiles, resins, and metal coated plastics or as a paint stripper.		
UV Absorbers / Stabilizers					
3846-71-7	UV 320	1000 ppm each	PU foam materials such as open cell foams for padding. Used as UV-absorbers for plastics (PVC, PET, PC, PA, ABS, and other polymers), rubber, polyurethane.	DIN EN 62321-6:2016-05 (Extraction in THF, analysis by GC/MS)	500 ppm each
3864-99-1	UV 327				
25973-55-1	UV 328				
36437-37-3	UV 350				
Volatile Organic Compounds (VOCs)					
71-43-2	Benzene	5 ppm	These VOCs should not be used in textile auxiliary chemical preparations. They are also associated with solvent-based processes such as solvent-based polyurethane coatings and glues/adhesives. They should not be used for any kind of facility cleaning or spot cleaning.	For general VOC screening: GC/MS headspace 45 minutes at 120°C For DMAC: DIN CEN ISO/TS 16189:2013	Benzene: 5 ppm Other: 20 ppm each
75-15-0	Carbon Disulfide	Total: 1000 ppm			
56-23-5	Carbon tetrachloride				
67-66-3	Chloroform				
108-94-1	Cyclohexanone				
107-06-2	1,2-Dichloroethane				
75-35-4	1,1-Dichloroethylene				
100-41-4	Ethylbenzene				
76-01-7	Pentachloroethane				
630-20-6	1,1,1,2- Tetrachloroethane				
79-34-5	1,1,2,2- Tetrachloroethane				
127-18-4	Tetrachloroethylene (PER)				
108-88-3	Toluene				
71-55-6	1,1,1- Trichloroethane				
79-00-5	1,1,2- Trichloroethane				
79-01-6	Trichloroethylene				
1330-20-7	Xylenes (meta-, ortho-, para-)				

APPENDIX A: PESTICIDES, AGRICULTURAL

CAS No.	Pesticide Name	CAS No.	Pesticide Name	CAS No.	Pesticide Name
93-72-1	2-(2,4,5-trichlorophenoxy) propionic acid, its salts and compounds; 2,4,5-TP	115-32-2	Dicofol	10265-92-6	Metamidophos
93-76-5	2,4,5-T	141-66-2	Dicrotophos	72-43-5	Methoxychlor
94-75-7	2,4-D	60-57-1	Dieldrine	2385-85-5	Mirex
309-00-2	Aldrine	60-51-5	Dimethoate	6923-22-4	Monocrotophos
86-50-0	Azinophosmethyl	88-85-7	Dinoseb, its salts and acetate	298-00-0	Parathion-methyl
2642-71-9	Azinophosethyl	63405-99-2	DTTB (4, 6-Dichloro-7 (2,4,5-trichloro-phenoxy) -2-Trifluoro methyl benz imidazole)	1825-21-4	Pentachloroanisole
4824-78-6	Bromophos-ethyl	115-29-7	Endosulfan	7786-34-7	Phosdrin/Mevinphos
2425-06-1	Captafol	959-98-8	Endosulfan I (alpha)	72-56-0	Perthane
63-25-2	Carbaryl	33213-65-9	Endosulfan II (beta)	31218-83-4	Propethamphos
510-15-6	Chlorbenzilat	72-20-8	Endrine	41198-08-7	Profenophos
57-74-9	Chlordane	66230-04-4	Esfenvalerate	13593-03-8	Quinalphos
6164-98-3	Chlordimeform	106-93-4	Ethylendibromid	82-68-8	Quintozene
470-90-6	Chlorfenvinphos	56-38-2	Ethylparathione; Parathion	8001-50-1	Strobane
1897-45-6	Chlorthalonil	51630-58-1	Fenvalerate	297-78-9	Telodrine
56-72-4	Coumaphos	Various	Halogenated naphthalenes, including polychlorinated naphthalenes (PCNs)	8001-35-2	Toxaphene
68359-37-5	Cyfluthrin	76-44-8	Heptachlor	731-27-1	Tolyfluanide
91465-08-6	Cyhalothrin	1024-57-3	Heptachloroepoxide	1582-09-8	Trifluraline
52315-07-8	Cypermethrin	319-84-6	a-Hexachlorocyclohexane with and without Lindane		
78-48-8	S,S,S-Tributylphosphorotrithioate (Tribufos)	319-85-7	b-Hexachlorocyclohexane with and without Lindane		
52918-63-5	Deltamethrin	319-86-8	g-Hexachlorocyclohexane with and without Lindane		
53-19-0	DDD	118-74-1	Hexachlorobenzene		
72-54-8		465-73-6	Isodrine		
3424-82-6	DDE	4234-79-1	Kelevane		
72-55-9		143-50-0	Kepone		
50-29-3	DDT	58-89-9	Lindane		
789-02-6		121-75-5	Malathione		
333-41-5		94-74-6	MCPA		
1085-98-9	Dichlofluanide	94-81-5	MCPB		
120-36-5	Dichloroprop	93-65-2	Mecoprop		

2. ADDITIONAL C&A CHEMICAL REQUIREMENTS

Beside restricted substances of the AFIRM RSL, there are some additional chemical parameters that C&A restricts for its products. These includes restrictions on Perfluorinated Compounds (PFCs), Polyvinylchloride (PVC), Heavy Metals for toys and Total Chromium for Chrome free tanned leather.

2.1 Ban of Perfluorinated Compounds (PFCs)

C&A has banned the use of PFCs.

PFCs are commonly used in chemicals providing a Water Repellent function (WR) making the surface of a fabric or product water, oil and dirt repellent.

For complete list of substances [see Appendix B \(No. 1 to 34\)](#).

PFCs (No. 1 to 30): Limit value : 1 µg/m² each, Test method: prISO FDIS 23702-1:2018

PFCs (No.31-34): Limit value: 10 µg/m² each, Test method: prISO FDIS 23702-1:2018

2.2 Ban of Polyvinylchloride (PVC)

C&A has banned the use of PVC (CAS No. 9002-86-2) in any C&A products.

“Beilstein Test” method (qualitative analysis) can be used as preliminary test and Infrared Spectroscopy (FTIR) test method to confirm positive pre-test results.

PVC is a plastic, which is used in a wide range of products including packaging, pipes, electric cables, furniture, household applications and many others.

2.3 Heavy Metals for Toys

For complete list of restricted heavy metals and limit values [see Appendix C](#), Test Method: EN 71-3: 2013+A1:2014

2.4 Total Chromium for Chrome Free Tanned Leather

C&A has committed to only use leather that is tanned using alternative, non-toxic chrome-free methods.

Limit value: 1000 ppm, Reporting Limit: 1 ppm, Test method: EN ISO 17072-2:2011

APPENDIX B: PERFLUORINATED COMPOUNDS (PFCs)

No.	CAS No.	PFC Name
1	335-67-1, various	Perfluoro-octanoic acid and its salts (PFOA)
2	various	PFOA related substances
3	2795-39-3, 56773-42-3, 1763-23-1, various	Perfluoro-octane sulfonic acid (PFOS) and related substances
4	27619-97-2	1H,1H,2H,2H-Perfluoro-octane sulfonic acid (1H,1H,2H,2H-PFOS)
5	29420-49-3, 375-73-5	Perfluoro-butane sulfonic acid (PFBS)
6	3871-99-6, 355-46-4	Perfluoro-hexane sulfonic acid and salts (PFHxS)
7	375-92-8	Perfluoro-heptane sulfonic acid (PFHpS)
8	335-77-3	Perfluoro-decane sulfonic acid (PFDS)
9	754-91-6	Perfluoro-octane sulphonamide 1H,1H,2H,2H H4PFOS; 6:2 (PFOSA)
10	31506-32-8	N-methylperfluoro-1-octanesulfonamide (MeFOSA)
11	4151-50-2	N-ethylperfluoro-1-octanesulfonamide (EtFOSA)
12	24448-09-7	2-(N-methylperfluoro-FASE 1-octanesulfonamido)-ethanol (MeFOSA)
13	1691-99-2	2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol (EtFOSA)
14	375-22-4	Perfluoro-butanoic acid (PFBA)
15	2706-90-3	Perfluoro-pentanoic acid (PFPA)
16	307-24-4	Perfluoro-hexanoic acid (PFHxA)
17	375-85-9	Perfluoro-heptanoic acid (PFHpA)
18	375-95-1	Perfluoro-nonanoic acid (PFNA)
19	335-76-2	Perfluoro-decanoic acid (PFDA)
20	4234-23-5, 2058-94-8	Perfluoro-undecanoic acid (PFUnA)
21	307-55-1	Perfluoro-dodecanoic acid (PFDOA)
22	72629-94-8	Perfluoro-tridecanoic acid (PFTrA)
23	376-06-7	Perfluoro-tetradecanoic acid (PFTeA)
24	172155-07-6	Perfluoro-3,7-dimethyl-octanoic acid (PF-3,7-DMOA)
25	1546-95-8	7H-Dodecafluoro-heptanoic acid (HPFHpA)
26	27854-31-5	2H,2H-Perfluoro-decanoic acid (H2PFDA)
27	34598-33-9	2H,2H,3H,3H-Perfluoro-undecanoic acid (H4PFUnA)
28	17527-29-6	1H,1H,2H,2H-Perfluoro-octylacrylate (6:2 FTA)
29	27905-45-9	1H,1H,2H,2H-Perfluoro-decylacrylate (8:2 FTA)
30	17741-60-5	1H,1H,2H,2H-Perfluoro-dodecylacrylate (10:2 FTA)
31	2043-47-2	1H,1H,2H,2H-Perfluoro-1-hexanol (4:2 FTOH)
32	647-42-7	1H,1H,2H,2H-Perfluoro-1-octanol (6:2 FTOH)
33	678-39-7	1H,1H,2H,2H-Perfluoro-1-decanol (8:2 FTOH)
34	865-86-1	1H,1H,2H,2H-Perfluoro-1-dodecanol (10:2 FTOH)

APPENDIX C: HEAVY METALS FOR TOYS

No.	CAS No.	Heavy Metal Name	Category I	Category II	Category III	Category I	Category II	Category III
			Dry, brittle, powder like or pliable)	Liquid or sticky	Scraped-off	Dry, brittle, powder like or pliable)	Liquid or sticky	Scraped-off
			Limit [mg/kg]			Reporting Limit [mg/kg]		
1	7429-90-5	Aluminium (Al)	5625	1406	70000	50	50	50
2	7440-36-0	Antimony (Sb)	45	11.3	560	1	1	10
3	7440-38-2	Arsenic (As)	3.8	0.9	47	0.5	0.5	10
4	7440-39-3	Barium (Ba)	1500	375	18750	50	50	50
5	7440-42-8	Boron (B)	1200	300	15000	50	50	50
6	7440-43-9	Cadmium (Cd)	1.3	0.3	17	0.1	0.1	5
7	7440-47-3	Chromium (III) (CrIII)	37.5	9.4	460	1	1	1
8	18540-29-9	Chromium (VI) (CrVI)	0.02	0.005	0.2	0.018	0.005	0.18
9	7440-48-4	Cobalt (Co)	10.5	2.6	130	0.5	0.5	10
10	7440-50-8	Copper (Cu)	622.5	156	7700	50	50	50
11	7439-92-1	Lead (Pb)	2.0	0.5	23	0.5	0.5	10
12	7439-96-5	Manganese (Mg)	1200	300	15000	50	50	50
13	7439-97-6	Mercury (Hg)	7.5	1.9	94	0.5	0.5	10
14	7440-02-0	Nickel (Ni)	75	18.8	930	10	10	10
15	7782-49-2	Selenium (Se)	37.5	9.4	460	5	5	10
16	7440-24-6	Strontium (Sr)	4500	1125	56000	50	50	50
17	7440-31-5	Tin (Sn)	15000	3750	180000	0.36	0.08	4.9
18	Various	Organic Tin (Sn)	0.9	0.2	12	--	--	--
19	7440-66-6	Zinc (Zn)	3750	938	46000	50	50	50

3. MANUFACTURING RESTRICTED SUBSTANCE LIST (MRSL) Version 1.1 (2015) of the Zero Discharge of Hazardous Chemicals (ZDHC) Programme

On the following pages you will find the Manufacturing Restricted Substance List (MRSL) Version 1.1 from 2015 from the ZDHC (Zero Discharge of Hazardous Chemicals Programme).

This MRSL & Conformance Guidance comprises the same content as the MRSL & Conformance Guidance available under <http://www.roadmaptozero.com/programme/>.





1 Background

The ZDHC Roadmap to Zero Programme has developed a Manufacturing Restricted Substances List (ZDHC MRSL) for the textile, apparel, and footwear (including leather) industries ("Industry"). The ZDHC MRSL addresses hazardous substances potentially used and discharged into the environment during manufacturing and related processes deep within the value chain – not just those substances that could be present in finished products. In 2014, ZDHC MRSL version 1 was released, along with Chemical Guidance Sheets. The current version 1.1 was released in December 2015 and added leather. The ZDHC MRSL is a list of chemical substances that should not be intentionally used by the Industry in the production of products. The ZDHC MRSL applies to chemicals used in facilities that process materials and trim parts for use in the Industry. Chemicals in the ZDHC MRSL include solvents, cleaners, adhesives, paints, inks, detergents, dyes, colourants, auxiliaries, coatings and finishing agents used during raw material production, wet-processing, maintenance, wastewater treatment, sanitation and pest control. ZDHC MRSL limits¹ apply to substances in commercially available chemical formulations and not those from earlier stages of chemical synthesis. Now the ZDHC MRSL is being released in a digital format, rather than a static pdf type document.

2 Purpose

The ZDHC MRSL provides brands and suppliers with a single, harmonised list of chemical substances banned from intentional use during manufacturing and related processes within the Industry supply chain. The ZDHC MRSL Version 1.1 applies to textiles and leather with separate sections for each material. This separation accounts for the differences between the creation and processing of these materials used within the Industry and the need to set limits applicable to each that reflect the functional use of these chemicals. The ZDHC MRSL should be communicated to the value chain suppliers responsible for production and conversion of raw materials into finished goods including agents, chemical distributors and formulators, as well as facilities (especially cut & sew, wet-processing, laundries, and tanneries). This is to support our goal of using ZDHC MRSL compliant chemical formulations, ensuring that listed substances are not present in chemical formulations above established limits.

Notes: 1) The ZDHC MRSL does not 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.

2) Chemical formulations also must comply with all applicable legal restrictions, including any subsequent restrictions that establish stricter limits.

3) The ZDHC MRSL does not replace legal or brand-specific restrictions on hazardous substances in finished products.

3 How the ZDHC MRSL connects to other ZDHC Tools

The ZDHC Roadmap to Zero Programme takes a holistic approach to tackling the issue of hazardous chemicals in the global Industry and its value chain through input chemical management, process management and verification that banned hazardous chemicals are not present in outputs such as wastewater and sludge. The ZDHC MRSL is the fundamental backbone and one part of that approach.

3.1 The ZDHC MRSL Conformance Guidance

To accelerate the global impact of the ZDHC Roadmap to Zero Programme, ZDHC decided at a very early stage not to start its own certification system for ZDHC MRSL conformant chemistry but instead to leverage existing certification as indicators of ZDHC MRSL conformance. Therefore, in June 2017, ZDHC launched the ZDHC MRSL Conformance Guidance (“Guidance”) which provides chemical distributors and formulators with an indication system to assess the extent to which a chemical formulation conforms to, in other words meets, the requirements of the ZDHC MRSL. ZDHC Accepted Certification Standards for ZDHC MRSL Conformance are listed on the ZDHC Gateway – Chemical Module, ranging from level 1 to level 3 in accordance with the system set out in the Guidance. Chemical formulations certified by these standards are directly verified and officially ranked within the ZDHC Gateway – Chemical Module.

3.2 The ZDHC Gateway – Chemical Module

The ZDHC Gateway – Chemical Module is an easy to use, web-based platform that manufacturing facilities can use to find chemical formulations that conform to the ZDHC MRSL in accordance with the Guidance. The ZDHC Gateway – Chemical Module lists chemical formulations and their ZDHC MRSL conformance level, based on ZDHC accepted third-party product certifications or testing. A high level of conformance (e.g. level 3) indicates a high level of confidence that the chemical formulation will conform to the ZDHC MRSL.

3.3 The ZDHC Wastewater Guidelines

The ZDHC Wastewater Guidelines define a single, unified expectation for wastewater testing that goes beyond regulatory compliance. Covering not only conventional wastewater parameters, it is also the first guideline to define pass and fail criteria for chemical substances. Testing in accordance to the ZDHC Wastewater Guidelines helps check whether or not chemical substances in the ZDHC MRSL are in fact being used intentionally.

3.4 The ZDHC Gateway – Wastewater Module

The ZDHC Gateway – Wastewater Module is a global web-based platform that is designed to share verified wastewater and sludge test data based on testing against the ZDHC Wastewater Guidelines. It provides suppliers (manufacturing facilities) with an easy way to disclose secured and verified wastewater and sludge test data to their clients (brands/retailers). With this we enable the suppliers to reduce the number of unnecessary duplication on testing, and instead they could focus on improving the quality of discharge.

Definitions

4.1 Chemical Substance

A chemical substance is a chemical element and its compounds in the natural state or obtained by any manufacturing process (REACH, 2014)[1].

A chemical substance is usually identifiable by a single, unique Chemical Abstracts Service (CAS) number or Colour Index (CI) number. The ZDHC MRSL will primarily focus on chemical substances listed by CAS number and CI number, but also will include groups of substances for which listing individual substances is not practical.

4.2 Commercial Chemical Formulation

A commercial chemical formulation is usually a proprietary blend of several chemical substances that is available for purchase from chemical suppliers under their own trade name.

4.3 Usage Ban

A usage ban indicates that the ZDHC MRSL-listed chemical substance or group of substances may not be used to achieve a desired function or effect during production of the raw material or product (that is, no intentional use). This usage ban extends to other uses within a facility like cleaning and maintenance. Due to the existence of manufacturing impurities in chemical formulations, a minor or trace amount of the restricted substance is permitted. Chemical formulations containing restricted substances that exceed limits are not compliant with the ZDHC MRSL.

5 ZDHC MRSL Instructions

5.1 ZDHC MRSL Chapters

Chapter 1: ZDHC MRSL for Textiles and Coated Fabrics Processing

This section applies to chemical formulations and substances used during the creation and wet processing of textile fibres, and during the creation and processing of coated fabrics.

Chapter 2: ZDHC MRSL for Natural Leather Processing

This section applies to chemical formulations and substances used throughout the production of natural leather, from rawhide to finished leather.

5.2 ZDHC MRSL Groups

Group A: Raw Material and Finished Product Supplier Guidance

Group A substances are banned from intentional use in facilities that process raw materials and manufacture finished products. Please refer to the AFIRM guidance document for the lowest agreed upon material or finished product limits among AFIRM brands: <https://www.afirm-group.com/afirm-rsl/>

See brand RSLs for individual requirements.

Group B: Chemical Supplier 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 that should be consistently achievable by responsible chemical manufacturers. [3]

[1] "A chemical element and its compounds in the natural state or obtained by any manufacturing process, including any additive necessary to preserve its stability and any impurity deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition."
http://www.reachonline.eu/REACH/EN/REACH_EN/article3.html. Accessed May 8, 2014.

[2] These are alkylphenol ethoxylates/alkylphenols (APEOs/APEs), brominated and chlorinated flame retardants, chlorinated solvents, chlorobenzenes, chlorophenols, heavy metals, organotin compounds (e.g., TBT), perfluorinated and polyfluorinated chemicals (PFCs), phthalates (ortho-phthalates), short-chain chlorinated paraffins (SCCPs) and azo dyes that may release carcinogenic amines as defined in Annex XVII of REACH.

[3] Safety Data Sheets (SDS) only list substances present at concentrations of 1000 ppm or greater. Suppliers must communicate with chemical suppliers to ensure MRSL limits are met.

[4] Note: Threshold Limit values on restricted substances in chemical formulations are in some cases substantially higher than limits on restricted substances in finished products. This is because restricted substances in finished products are almost always found in smaller concentrations than in the chemical formulations used to produce them. Chemical formulations are highly concentrated before being diluted upon application to textiles and other materials.

Chapter 1 MRS� for Textiles and Coated Fabrics Processing

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.

General Techniques for Analysing Chemicals:

Liquid chromatography- mass spectrometry (LCMS),
gas chromatography-mass spectrometry (GC-MS)

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
104-40-5	Nonylphenol (NP), mixed isomers	No intentional use	250 ppm
11066-49-2			
25154-52-3			
84852-15-3			
140-66-9	Octylphenol (OP), mixed isomers	No intentional use	250 ppm
1806-26-4			
27193-28-8			
9002-93-1	Octylphenol ethoxylates (OPEO)	No intentional use	500 ppm
9036-19-5			
68987-90-6			
9016-45-9	Nonylphenol ethoxylates (NPEO)	No intentional use	500 ppm
26027-38-3			
37205-87-1			
68412-54-4			
127087-87-0			

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.

General Techniques for Analysing Chemicals:

GC-MS

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
95-50-1	1,2-dichlorobenzene	No intentional use	1000 ppm
Multiple	Other isomers of mono-, di-, tri-, tetra-, penta and hexachlorobenzene and mono-, di-, tri-, tetra- and penta-chlorotoluene	No intentional use	Sum = 200 ppm

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.

General Techniques for Analysing Chemicals:

GC-MS EN ISO 17070

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
25167-83-3	Tetrachlorophenol (TeCP)	No intentional use	Sum = 20 ppm
87-86-5	Pentachlorophenol (PCP)	No intentional use	Sum = 20 ppm
4901-51-3	2,3,4,5-tetrachlorophenol	No intentional use	Sum = 50 ppm
58-90-2	2,3,4,6-tetrachlorophenol	No intentional use	Sum = 50 ppm
935-95-5	2,3,5,6-tetrachlorophenol	No intentional use	Sum = 50 ppm
95-57-8	2-chlorophenol	No intentional use	Sum = 50 ppm
120-83-2	2,4-dichlorophenol	No intentional use	Sum = 50 ppm
583-78-8	2,5-dichlorophenol	No intentional use	Sum = 50 ppm
87-65-0	2,6-dichlorophenol	No intentional use	Sum = 50 ppm
95-95-4	2,4,5-trichlorophenol	No intentional use	Sum = 50 ppm
88-06-2	2,4,6-trichlorophenol	No intentional use	Sum = 50 ppm
591-35-5	3,5-dichlorophenol	No intentional use	Sum = 50 ppm
576-24-9	2,3-dichlorophenol	No intentional use	Sum = 50 ppm
95-77-2	3,4-dichlorophenol	No intentional use	Sum = 50 ppm
108-43-0	3-chlorophenol	No intentional use	Sum = 50 ppm
106-48-9	4-chlorophenol	No intentional use	Sum = 50 ppm
15950-66-0	2,3,4-trichlorophenol	No intentional use	Sum = 50 ppm
933-78-8	2,3,5-trichlorophenol	No intentional use	Sum = 50 ppm
609-19-8	3,4,5-trichlorophenol	No intentional use	Sum = 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 dyeing of textiles.

General Techniques for Analysing Chemicals:

LC, GC

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
101-14-4	4,4'-methylene-bis-(2-chloro-aniline)	No intentional use	150 ppm
101-77-9	4,4'-methylenedianiline	No intentional use	150 ppm
101-80-4	4,4'-oxydianiline	No intentional use	150 ppm
106-47-8	4-chloroaniline	No intentional use	150 ppm
119-90-4	3,3'-dimethoxybenzidine	No intentional use	150 ppm
119-93-7	3,3'-dimethylbenzidine	No intentional use	150 ppm
120-71-8	6-methoxy-m-toluidine	No intentional use	150 ppm
137-17-7	2,4,5-trimethylaniline	No intentional use	150 ppm
139-65-1	4,4'-thiodianiline	No intentional use	150 ppm
60-09-3	4-aminoazobenzene	No intentional use	150 ppm
615-05-4	4-methoxy-m-phenylenediamine	No intentional use	150 ppm
838-88-0	4,4'-methylenedi-o-toluidine	No intentional use	150 ppm
87-62-7	2,6-xylidine	No intentional use	150 ppm
90-04-0	o-anisidine	No intentional use	150 ppm
91-59-8	2-naphthylamine	No intentional use	150 ppm
91-94-1	3,3'-dichlorobenzidine	No intentional use	150 ppm
92-67-1	4-aminodiphenyl	No intentional use	150 ppm

Continued on
next page

Dyes – Azo (Forming Restricted Amines) - continuing

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
92-87-5	Benzidine	No intentional use	150 ppm
95-53-4	o-toluidine	No intentional use	150 ppm
95-68-1	2,4-xylidine	No intentional use	150 ppm
95-69-2	4-chloro-o-toluidine	No intentional use	150 ppm
95-80-7	4-methyl-m-phenylenediamine	No intentional use	150 ppm
97-56-3	o-aminoazotoluene	No intentional use	150 ppm
99-55-8	5-nitro-o-toluidine	No intentional use	150 ppm

Dyes – Navy Blue Colourant

Potential Uses in Apparel and Footwear Textile Processing:

Navy Blue colourants are regulated and should no longer be used for dyeing of textiles.

General Techniques for Analysing Chemicals:

LC

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
118685-33-9	Component 1: C ₃₉ H ₂₃ ClCrN ₇ O ₁₂ S ₂ ·2Na	No intentional use	250 ppm
Not Allocated	Component 2: C ₄₆ H ₃₀ CrN ₁₀ O ₂₀ S ₂ ·3Na	No intentional use	250 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 dyeing of textiles.

General Techniques for Analysing Chemicals:

LC

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
1937-37-7	C.I. Direct Black 38	No intentional use	250 ppm
2602-46-2	C.I. Direct Blue 6	No intentional use	250 ppm
3761-53-3	C.I. Acid Red 26	No intentional use	250 ppm
569-61-9	C.I. Basic Red 9	No intentional use	250 ppm
573-58-0	C.I. Direct Red 28	No intentional use	250 ppm
632-99-5	C.I. Basic Violet 14	No intentional use	250 ppm
2475-45-8	C.I. Disperse Blue 1	No intentional use	250 ppm
2475-46-9	C.I. Disperse Blue 3	No intentional use	250 ppm
2580-56-5	C.I. Basic Blue 26 (with Michler's Ketone > 0.1%)	No intentional use	250 ppm
569-64-2	C.I. Basic Green 4 (malachite green chloride)	No intentional use	250 ppm
2437-29-8	C.I. Basic Green 4 (malachite green oxalate)	No intentional use	250 ppm
10309-95-2	C.I. Basic Green 4 (malachite green)	No intentional use	250 ppm
82-28-0	Disperse Orange 11	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.

General Techniques for Analysing Chemicals:

LC

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
119-15-3	Disperse Yellow 1	No intentional use	250 ppm
12222-97-8	Disperse Blue 102	No intentional use	250 ppm
12223-01-7	Disperse Blue 106	No intentional use	250 ppm
12236-29-2	Disperse Yellow 39	No intentional use	250 ppm
13301-61-6	Disperse Orange 37/59/76	No intentional use	250 ppm
23355-64-8	Disperse Brown 1	No intentional use	250 ppm
2581-69-3	Disperse Orange 1	No intentional use	250 ppm
2832-40-8	Disperse Yellow 3	No intentional use	250 ppm
2872-48-2	Disperse Red 11	No intentional use	250 ppm
2872-52-8	Disperse Red 1	No intentional use	250 ppm
3179-89-3	Disperse Red 17	No intentional use	250 ppm
3179-90-6	Disperse Blue 7	No intentional use	250 ppm
3860-63-7	Disperse Blue 26	No intentional use	250 ppm
54824-37-2	Disperse Yellow 49	No intentional use	250 ppm
12222-75-2	Disperse Blue 35	No intentional use	250 ppm
61951-51-7	Disperse Blue 124	No intentional use	250 ppm

Continued on
next page

Dyes – Disperse (Sensitising) - continuing

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
6373-73-5	Disperse Yellow 9	No intentional use	250 ppm
730-40-5	Disperse Orange 3	No intentional use	250 ppm
56524-77-7	Disperse Blue 35	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.

General Techniques for Analysing Chemicals:

GC-MS

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
115-96-8	Tris(2-chloroethyl)phosphate (TCEP)	No intentional use	250 ppm
1163-19-5	Decabromodiphenyl ether (DecaBDE)	No intentional use	250 ppm
126-72-7	Tris(2,3,-dibromopropyl)-phosphate (TRIS)	No intentional use	250 ppm
32534-81-9	Pentabromodiphenyl ether (PentaBDE)	No intentional use	250 ppm
32536-52-0	Octabromodiphenyl ether (OctaBDE)	No intentional use	250 ppm
5412-25-9	Bis(2,3-dibromopropyl)phosphate (BIS)	No intentional use	250 ppm
545-55-1	Tris(1-aziridinyl)phosphine oxide (TEPA)	No intentional use	250 ppm
59536-65-1	Polybromobiphenyl (PBB)	No intentional use	250 ppm
79-94-7	Tetrabromobisphenol A (TBBPA)	No intentional use	250 ppm
3194-55-6	Hexabromocyclodecane (HBCDD)	No intentional use	250 ppm
3296-90-0	2,2-bis(bromomethyl)-1,3-propanediol (BBMP)	No intentional use	250 ppm
13674-87-8	Tris(1,3-dichloro-isopropyl) phosphate (TDCP)	No intentional use	250 ppm
85535-84-8	Short-chain chlorinated Paraffins (SCCP) (C10-C13)	No intentional use	250 ppm

Glycols

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 and diluting fats, oils and adhesives (e.g., in degreasing or cleaning operations).

General Techniques for Analysing Chemicals:

High-performance liquid chromatography (HPLC), LC- MS

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
111-96-6	Bis(2-methoxyethyl)-ether	No intentional use	50 ppm
110-80-5	2-ethoxyethanol	No intentional use	50 ppm
111-15-9	2-ethoxyethyl acetate	No intentional use	50 ppm
110-71-4	Ethylene glycol dimethyl ether	No intentional use	50 ppm
109-86-4	2-methoxyethanol	No intentional use	50 ppm
110-49-6	2-methoxyethylacetate	No intentional use	50 ppm
70657-70-4	2-methoxypropylacetate	No intentional use	50 ppm
112-49-2	Triethylene glycol dimethyl ether	No intentional use	50 ppm

Halogenated Solvents

Potential Uses in Apparel and Footwear Textile Processing:

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

General Techniques for Analysing Chemicals:

GC-MS

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
107-06-2	1,2-dichloroethane	No intentional use	5 ppm
75-09-2	Methylene	No intentional use	5 ppm
79-01-6	Trichloroethylene	No intentional use	40 ppm
127-18-4	Tetrachloroethylene	No intentional use	5 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.

General Techniques for Analysing Chemicals:

GC-MS, low resolution mass spectrometry (LRMS)

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
Multiple	Dibutyltin (DBT)	No intentional use	20 ppm
Multiple	Mono-, di- and tri-methyltin derivatives	No intentional use	5 ppm
Multiple	Mono-, di- and tri-butyltin derivatives	No intentional use	5 ppm
Multiple	Mono-, di- and tri-phenyltin derivatives	No intentional use	5 ppm
Multiple	Mono-, di- and tri-octyltin derivatives	No intentional use	5 ppm

Polycyclic Aromatic Hydrocarbons (PAHs)

Potential Uses in Apparel and Footwear Textile Processing:

General Techniques for Analysing Chemicals:

GC-MS

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
50-32-8	Benzo[a]pyrene (BaP)	No intentional use	20 ppm
120-12-7	Anthracene	No intentional use	Sum = 200 ppm
129-00-0	Pyrene	No intentional use	Sum = 200 ppm
191-24-2	Benzo[ghi]perylene	No intentional use	Sum = 200 ppm
192-97-2	Benzo[e]pyrene	No intentional use	Sum = 200 ppm
193-39-5	Indeno[1,2,3-cd]pyrene	No intentional use	Sum = 200 ppm
205-82-3	Benzo[j]fluoranthene	No intentional use	Sum = 200 ppm
205-99-2	Benzo[b]fluoranthene	No intentional use	Sum = 200 ppm
206-44-0	Fluoranthene	No intentional use	Sum = 200 ppm
207-08-9	Benzo[k]fluoranthene	No intentional use	Sum = 200 ppm
208-96-8	Acenaphthylene	No intentional use	Sum = 200 ppm
218-01-9	Chrysene	No intentional use	Sum = 200 ppm
53-70-3	Dibenz[a,h]anthracene	No intentional use	Sum = 200 ppm
56-55-3	Benzo[a]anthracene	No intentional use	Sum = 200 ppm
83-32-9	Acenaphthene	No intentional use	Sum = 200 ppm
85-01-8	Phenanthrene	No intentional use	Sum = 200 ppm
86-73-7	Fluorene	No intentional use	Sum = 200 ppm
91-20-3	Naphthalene	No intentional use	Sum = 200 ppm

Perfluorinated and Polyfluorinated Chemicals (PFCs)

Durable water, oil and stain repellent finishes and soil release finishes (fluorinated polymers) based on long-chain technology are banned from intentional use. Long-chain compounds according to the Organisation for Economic Cooperation and Development (OECD) definition (<http://www.oecd.org/ehs/pfc/>) are based on long-chain perfluorocarboxylic acids (C8 and higher) and on long-chain perfluoroalkyl sulfonates (C6 and higher).

The main contaminants of this technology include:

Perfluoroalkyl sulfonates (PFASs) with carbon chain lengths C6 and higher (e.g., PFOS, perfluorooctane sulfonate)

Perfluorocarboxylic acids with carbon chain lengths C8 and higher (e.g., PFOA, perfluorooctanoic acid)

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 use for polymers like polytetrafluoroethylene (PTFE).

General Techniques for Analysing Chemicals:

LC-MS

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
Multiple	Perfluorooctane sulfonate (PFOS) and related substances	No intentional use	Sum = 2 ppm
Multiple	Perfluorooctanoic acid (PFOA) and related substances	No intentional use	Sum = 2 ppm

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 sleeveings
- Polymeric coatings

General Techniques for Analysing Chemicals:

GC-MS

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
117-81-7	Di(ethylhexyl) phthalate (DEHP)	No intentional use	Sum of all phthalates = 250 ppm
117-82-8	Bis(2-methoxyethyl) phthalate (DMEP)	No intentional use	Sum of all phthalates = 250 ppm
117-84-0	Di-n-octyl phthalate (DNOP)	No intentional use	Sum of all phthalates = 250 ppm
26761-40-0	Di-iso-decyl phthalate (DIDP)	No intentional use	Sum of all phthalates = 250 ppm
28553-12-0	Di-isononyl phthalate (DINP)	No intentional use	Sum of all phthalates = 250 ppm
84-75-3	Di-n-hexyl phthalate (DnHP)	No intentional use	Sum of all phthalates = 250 ppm
84-74-2	Dibutyl phthalate (DBP)	No intentional use	Sum of all phthalates = 250 ppm
85-68-7	Butyl benzyl phthalate (BBP)	No intentional use	Sum of all phthalates = 250 ppm
84-76-4	Dinonyl phthalate (DNP)	No intentional use	Sum of all phthalates = 250 ppm
84-66-2	Diethyl phthalate (DEP)	No intentional use	Sum of all phthalates = 250 ppm
131-16-8	Di-n-propyl phthalate (DPRP)	No intentional use	Sum of all phthalates = 250 ppm
84-69-5	Di-isobutyl phthalate (DIBP)	No intentional use	Sum of all phthalates = 250 ppm
84-61-7	Di-cyclohexyl phthalate (DCHP)	No intentional use	Sum of all phthalates = 250 ppm
27554-26-3	Di-iso-octyl phthalate (DIOP)	No intentional use	Sum of all phthalates = 250 ppm
68515-42-4	1,2-benzenedicarboxylic acid, di-C7-11-branched and linearalkyl esters (DHNUP)	No intentional use	Sum of all phthalates = 250 ppm
71888-89-6	1,2-benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP)	No intentional use	Sum of all phthalates = 250 ppm

Total Heavy Metals

Listed metals are banned from intentional use in textile manufacturing/finishing. Additionally, residual traces of antimony, zinc, copper, nickel, tin, barium, cobalt, iron, manganese, selenium and silver 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/>).

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).

General Techniques for Analysing Chemicals:

Inductively coupled plasma- optical emission spectrometry (ICP-OES), atomic absorption spectroscopy (AAS)

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
7440-38-2	Arsenic	No intentional use	50 ppm
7440-43-9	Cadmium	No intentional use	20 ppm (50 ppm for pigments)
7439-97-6	Mercury	No intentional use	4 ppm (25 ppm for pigments)
7439-92-1	Lead	No intentional use	100 ppm
18540-29-9	Chromium	No intentional use	10 ppm

Volatile Organic Compounds (VOC)

Potential Uses in Apparel and Footwear Textile Processing:

These volatile organic compounds 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.

General Techniques for Analysing Chemicals:

GC-MS

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
71-43-2	Benzene	No intentional use	50 ppm
1330-20-7	Xylene	No intentional use	500 ppm
95-48-7	o-cresol	No intentional use	500 ppm
106-44-5	p-cresol	No intentional use	500 ppm
108-39-4	m-cresol	No intentional use	500 ppm

Chapter 2 MRSL for Leather Processing

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

Potential Uses in Apparel and Footwear Textile Processing:

APEOs can be used in leather processing or found in a variety of formulations such as detergents, wetting agents, emulsifier/dispersing agents/dedusting agents for dyes and prints, dyes and pigment preparations, degreasing and fur scouring agents, fat liquors and greases, finishing agents. NP and OP are not used by the leather industry, but could be present as contaminants.

General Techniques for Analysing Chemicals:

Liquid chromatography- mass spectrometry (LC-MS),
gas chromatography-mass spectrometry
(GC-MS)
EN ISO 18219-1, EN ISO 18219-2

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
104-40-5	Nonylphenol (NP), mixed isomers	No intentional use	250 ppm
11066-49-2			
25154-52-3			
84852-15-3			
140-66-9	Octylphenol (OP), mixed isomers	No intentional use	250 ppm
1806-26-4			
27193-28-8			
9002-93-1	Octylphenol ethoxylates (OPEO)	No intentional use	500 ppm
9036-19-5			
68987-90-6			
9016-45-9	Nonylphenol ethoxylates (NPEO)	No intentional use	500 ppm
26027-38-3			
37205-87-1			
68412-54-4			
127087-87-0			

Chlorobenzenes and Chlorotoluenes

Potential Uses in Apparel and Footwear Textile Processing:

Chlorobenzenes and chlorotoluenes can be used for degreasing sheep and pig skins. They can also be used as solvents (e.g., in chemical synthesis).

General Techniques for Analysing Chemicals:

GC-MS

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
95-50-1	1,2-dichlorobenzene	No intentional use	1000 ppm
Multiple	Other isomers of mono-, di-, tri-, tetra-, penta and hexachlorobenzene and mono-, di-, tri-, tetra- and penta-chlorotoluene	No intentional use	Sum = 200 ppm

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.

General Techniques for Analysing Chemicals:

GC-MS EN ISO 17070

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
25167-83-3	Tetrachlorophenol (TeCP)	No intentional use	Sum = 20 ppm
87-86-5	Pentachlorophenol (PCP)	No intentional use	Sum = 20 ppm
4901-51-3	2,3,4,5-tetrachlorophenol	No intentional use	Sum = 50 ppm
58-90-2	2,3,4,6-tetrachlorophenol	No intentional use	Sum = 50 ppm
935-95-5	2,3,5,6-tetrachlorophenol	No intentional use	Sum = 50 ppm
95-57-8	2-chlorophenol	No intentional use	Sum = 50 ppm
120-83-2	2,4-dichlorophenol	No intentional use	Sum = 50 ppm
583-78-8	2,5-dichlorophenol	No intentional use	Sum = 50 ppm
87-65-0	2,6-dichlorophenol	No intentional use	Sum = 50 ppm
95-95-4	2,4,5-trichlorophenol	No intentional use	Sum = 50 ppm
88-06-2	2,4,6-trichlorophenol	No intentional use	Sum = 50 ppm
591-35-5	3,5-dichlorophenol	No intentional use	Sum = 50 ppm
576-24-9	2,3-dichlorophenol	No intentional use	Sum = 50 ppm
95-77-2	3,4-dichlorophenol	No intentional use	Sum = 50 ppm
108-43-0	3-chlorophenol	No intentional use	Sum = 50 ppm
106-48-9	4-chlorophenol	No intentional use	Sum = 50 ppm
15950-66-0	2,3,4-trichlorophenol	No intentional use	Sum = 50 ppm
933-78-8	2,3,5-trichlorophenol	No intentional use	Sum = 50 ppm
609-19-8	3,4,5-trichlorophenol	No intentional use	Sum = 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 dyeing of leather. Restricted amines also may be present or formed during cleavage of unintended impurities in raw materials used for dyestuff production.

General Techniques for Analysing Chemicals:

LC, GC

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
101-14-4	4,4'-methylene-bis-(2-chloro-aniline)	No intentional use	150 ppm
101-77-9	4,4'-methylenedianiline	No intentional use	150 ppm
101-80-4	4,4'-oxydianiline	No intentional use	150 ppm
106-47-8	4-chloroaniline	No intentional use	150 ppm
119-90-4	3,3'-dimethoxybenzidine	No intentional use	150 ppm
119-93-7	3,3'-dimethylbenzidine	No intentional use	150 ppm
120-71-8	6-methoxy-m-toluidine	No intentional use	150 ppm
137-17-7	2,4,5-trimethylaniline	No intentional use	150 ppm
139-65-1	4,4'-thiodianiline	No intentional use	150 ppm
60-09-3	4-aminoazobenzene	No intentional use	150 ppm
615-05-4	4-methoxy-m-phenylenediamine	No intentional use	150 ppm
838-88-0	4,4'-methylenedi-o-toluidine	No intentional use	150 ppm
87-62-7	2,6-xylidine	No intentional use	150 ppm
90-04-0	o-anisidine	No intentional use	150 ppm
91-59-8	2-naphthylamine	No intentional use	150 ppm
91-94-1	3,3'-dichlorobenzidine	No intentional use	150 ppm
92-67-1	4-aminodiphenyl	No intentional use	150 ppm

Continued on
next page

Dyes – Azo (Forming Restricted Amines) - continuing

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
92-87-5	Benzidine	No intentional use	150 ppm
95-53-4	o-toluidine	No intentional use	150 ppm
95-68-1	2,4-xylidine	No intentional use	150 ppm
95-69-2	4-chloro-o-toluidine	No intentional use	150 ppm
95-80-7	4-methyl-m-phenylenediamine	No intentional use	150 ppm
97-56-3	o-aminoazotoluene	No intentional use	150 ppm
99-55-8	5-nitro-o-toluidine	No intentional use	150 ppm

Dyes – Navy Blue Colourant

Potential Uses in Apparel and Footwear Textile Processing:

Navy Blue colourants are regulated, were not sold commercially, and should not have been used for dyeing of leather.

General Techniques for Analysing Chemicals:

LC (No test reference available)

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
118685-33-9	Component 1: C ₃₉ H ₂₃ ClCrN ₇ O ₁₂ S ₂ ·2Na	No intentional use	250 ppm
Not Allocated	Component 2: C ₄₆ H ₃₀ CrN ₁₀ O ₂₀ S ₂ ·3Na	No intentional use	250 ppm

Dyes – Carcinogenic or Equivalent Concern

Potential Uses in Apparel and Footwear Textile Processing:

Most of these substances are regulated in many countries. All should no longer be used for dyeing of leather.

General Techniques for Analysing Chemicals:

LC

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
1937-37-7	C.I. Direct Black 38	No intentional use	250 ppm
2602-46-2	C.I. Direct Blue 6	No intentional use	250 ppm
3761-53-3	C.I. Acid Red 26	No intentional use	250 ppm
569-61-9	C.I. Basic Red 9	No intentional use	250 ppm
573-58-0	C.I. Direct Red 28	No intentional use	250 ppm
632-99-5	C.I. Basic Violet 14	No intentional use	250 ppm
2475-45-8	C.I. Disperse Blue 1	No intentional use	250 ppm
2475-46-9	C.I. Disperse Blue 3	No intentional use	250 ppm
2580-56-5	C.I. Basic Blue 26 (with Michler's Ketone > 0.1%)	No intentional use	250 ppm
569-64-2	C.I. Basic Green 4 (malachite green chloride)	No intentional use	250 ppm
2437-29-8	C.I. Basic Green 4 (malachite green oxalate)	No intentional use	250 ppm
10309-95-2	C.I. Basic Green 4 (malachite green)	No intentional use	250 ppm
82-28-0	Disperse Orange 11	No intentional use	250 ppm

Dyes – Disperse (Sensitising)

Disperse dyes have no applicability to leather processing.

Potential Uses in Apparel and Footwear Textile Processing:

General Techniques for Analysing Chemicals:

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
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Fat liquoring agents

Potential Uses in Apparel and Footwear Textile Processing:

Short-chain chlorinated paraffins can be found as contaminants within longchain chlorinated paraffins and sulfo-chlorinated paraffin's, used as fat liquoring agents.

General Techniques for Analysing Chemicals:

Gas chromatography/ electron capture negative ion-mass spectrometry (GC/ECNI-MS)
EN ISO 18219

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
85535-84-8	Short-chain chlorinated paraffin (C10 – C13)	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, but they could be used in processing leather for technical/ industrial purposes (e.g., drive belts) and upholstery leather for trains and planes. The mentioned substances should no longer be used in apparel and footwear.

General Techniques for Analysing Chemicals:

GC-MS

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
115-96-8	Tris(2-chloroethyl)phosphate (TCEP)	No intentional use	250 ppm
1163-19-5	Decabromodiphenyl ether (DecaBDE)	No intentional use	250 ppm
126-72-7	Tris(2,3,-dibromopropyl)-phosphate (TRIS)	No intentional use	250 ppm
32534-81-9	Pentabromodiphenyl ether (PentaBDE)	No intentional use	250 ppm
32536-52-0	Octabromodiphenyl ether (OctaBDE)	No intentional use	250 ppm
5412-25-9	Bis(2,3-dibromopropyl)phosphate (BIS)	No intentional use	250 ppm
545-55-1	Tris(1-aziridinyl)phosphine oxide (TEPA)	No intentional use	250 ppm
59536-65-1	Polybromobiphenyl (PBB)	No intentional use	250 ppm
79-94-7	Tetrabromobisphenol A (TBBPA)	No intentional use	250 ppm
3194-55-6	Hexabromocyclodecane (HBCDD)	No intentional use	250 ppm
3296-90-0	2,2-bis(bromomethyl)-1,3-propanediol (BBMP)	No intentional use	250 ppm
13674-87-8	Tris(1,3-dichloro-isopropyl) phosphate (TDCP)	No intentional use	250 ppm

Glycols

Potential Uses in Apparel and Footwear Textile Processing:

In apparel and footwear, glycol ethers have a wide range of uses including as solvents for finishing/cleaning, printing agents and dissolving and diluting fats, oils and adhesives (e.g., in degreasing or cleaning operations). Some polar solvents (glycol ethers) are necessary for the use of water-based leather finishing systems.

The mentioned glycol ethers are classified as carcinogenic, mutagenic or reprotoxic substances and should not be used in processing leather.

General Techniques for Analysing Chemicals:

High-performance liquid chromatography (HPLC), LC- MS

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
111-96-6	Bis(2-methoxyethyl)-ether	No intentional use	50 ppm
110-80-5	2-ethoxyethanol	No intentional use	50 ppm
111-15-9	2-ethoxyethyl acetate	No intentional use	50 ppm
110-71-4	Ethylene glycol dimethyl ether	No intentional use	50 ppm
109-86-4	2-methoxyethanol	No intentional use	50 ppm
110-49-6	2-methoxyethylacetate	No intentional use	50 ppm
112-49-2	Triethylene glycol dimethyl ether	No intentional use	50 ppm
70657-70-4	2-methoxypropylacetate	No intentional use	1000 ppm

Halogenated Solvents

Potential Uses in Apparel and Footwear Textile Processing:

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

General Techniques for Analysing Chemicals:

GC-MS

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
107-06-2	1,2-dichloroethane	No intentional use	5 ppm
75-09-2	Methylene	No intentional use	5 ppm
79-01-6	Trichloroethylene	No intentional use	40 ppm
127-18-4	Tetrachloroethylene	No intentional use	5 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 productions and heat stabilizers in plastics/rubber.

Polyurethane thickeners, which could contain traces of DBT, are commonly used for viscosity adjustments of leather chemicals formulations.

General Techniques for Analysing Chemicals:

GC-MS, low resolution mass spectrometry (LRMS)

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
Multiple	Dibutyltin (DBT)	No intentional use	20 ppm (*EXCEPTION* 100 ppm for polyurethane based thickeners used at <20% loading)
Multiple	Mono-, di- and tri-methyltin derivatives	No intentional use	5 ppm
Multiple	Mono-, di- and tri-butyltin derivatives	No intentional use	5 ppm
Multiple	Mono-, di- and tri-phenyltin derivatives	No intentional use	5 ppm
Multiple	Mono-, di- and tri-octyltin derivatives	No intentional use	5 ppm

Polycyclic Aromatic Hydrocarbons (PAHs)

Potential Uses in Apparel and Footwear Textile Processing:

In the leather chemical industry, naphthalene is used as a raw material for manufacture of synthetic tanning agents (syntans) and for manufacture of active substances in dispersing agents used during leather processing.

General Techniques for Analysing Chemicals:

GC-MS

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
50-32-8	Benzo[a]pyrene (BaP)	No intentional use	20 ppm
120-12-7	Anthracene	No intentional use	Sum = 200 ppm
129-00-0	Pyrene	No intentional use	Sum = 200 ppm
191-24-2	Benzo[ghi]perylene	No intentional use	Sum = 200 ppm
192-97-2	Benzo[e]pyrene	No intentional use	Sum = 200 ppm
193-39-5	Indeno[1,2,3-cd]pyrene	No intentional use	Sum = 200 ppm
205-82-3	Benzo[j]fluoranthene	No intentional use	Sum = 200 ppm
205-99-2	Benzo[b]fluoranthene	No intentional use	Sum = 200 ppm
206-44-0	Fluoranthene	No intentional use	Sum = 200 ppm
207-08-9	Benzo[k]fluoranthene	No intentional use	Sum = 200 ppm
208-96-8	Acenaphthylene	No intentional use	Sum = 200 ppm
218-01-9	Chrysene	No intentional use	Sum = 200 ppm
53-70-3	Dibenz[a,h]anthracene	No intentional use	Sum = 200 ppm
56-55-3	Benzo[a]anthracene	No intentional use	Sum = 200 ppm
83-32-9	Acenaphthene	No intentional use	Sum = 200 ppm
85-01-8	Phenanthrene	No intentional use	Sum = 200 ppm
86-73-7	Fluorene	No intentional use	Sum = 200 ppm
91-20-3	Naphthalene	No intentional use	Sum = 300 ppm

Perfluorinated and Polyfluorinated Chemicals (PFCs)

Durable water, oil and stain repellent finishes and soil release finishes (fluorinated polymers) based on long-chain technology are banned from intentional use. Long-chain compounds according to the Organisation for Economic Cooperation and Development (OECD) definition (<http://www.oecd.org/ehs/pfc/>) are based on long-chain perfluorocarboxylic acids (C8 and higher) and on long-chain perfluoroalkyl sulfonates (C6 and higher).

The main contaminants of this technology include:

Perfluoroalkyl sulfonates (PFSAs) with carbon chain lengths C6 and higher (e.g., PFOS, perfluorooctane sulfonate)

Perfluorocarboxylic acids with carbon chain lengths C8 and higher (e.g., PFOA, perfluorooctanoic acid)

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 use for polymers like polytetrafluoroethylene (PTFE).

General Techniques for Analysing Chemicals:

LC-MS

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
Multiple	Perfluorooctane sulfonate (PFOS) and related substances	No intentional use	Sum = 2 ppm
Multiple	Perfluorooctanoic acid (PFOA) and related substances	No intentional use	Sum = 2 ppm

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 are sometimes used to facilitate moulding of plastic by decreasing its melting temperature. Polymeric coatings for leather finishing, dedusting agents in colourants, fat liquors and greases could be a source for phthalates in formulations for leather processing.

General Techniques for Analysing Chemicals:

GC-MS

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
117-81-7	Di(ethylhexyl) phthalate (DEHP)	No intentional use	Sum of all phthalates = 250 ppm
117-82-8	Bis(2-methoxyethyl) phthalate (DMEP)	No intentional use	Sum of all phthalates = 250 ppm
117-84-0	Di-n-octyl phthalate (DNOP)	No intentional use	Sum of all phthalates = 250 ppm
26761-40-0	Di-iso-decyl phthalate (DIDP)	No intentional use	Sum of all phthalates = 250 ppm
28553-12-0	Di-isononyl phthalate (DINP)	No intentional use	Sum of all phthalates = 250 ppm
84-75-3	Di-n-hexyl phthalate (DnHP)	No intentional use	Sum of all phthalates = 250 ppm
84-74-2	Dibutyl phthalate (DBP)	No intentional use	Sum of all phthalates = 250 ppm
85-68-7	Butyl benzyl phthalate (BBP)	No intentional use	Sum of all phthalates = 250 ppm
84-76-4	Dinonyl phthalate (DNP)	No intentional use	Sum of all phthalates = 250 ppm
84-66-2	Diethyl phthalate (DEP)	No intentional use	Sum of all phthalates = 250 ppm
131-16-8	Di-n-propyl phthalate (DPRP)	No intentional use	Sum of all phthalates = 250 ppm
84-69-5	Di-isobutyl phthalate (DIBP)	No intentional use	Sum of all phthalates = 250 ppm
84-61-7	Di-cyclohexyl phthalate (DCHP)	No intentional use	Sum of all phthalates = 250 ppm
27554-26-3	Di-iso-octyl phthalate (DIOP)	No intentional use	Sum of all phthalates = 250 ppm
68515-42-4	1,2-benzenedicarboxylic acid, di-C7-11-branched and linearalkyl esters (DHNUP)	No intentional use	Sum of all phthalates = 250 ppm
71888-89-6	1,2-benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP)	No intentional use	Sum of all phthalates = 250 ppm

Total Heavy Metals

Listed metals are banned from intentional use in textile manufacturing/finishing. Additionally, residual traces of antimony, zinc, copper, nickel, tin, barium, cobalt, iron, manganese, selenium and silver 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/>).

Potential Uses in Apparel and Footwear Textile Processing:

Arsenic and its compounds can be used in some preservatives, pesticides and defoliants for cotton. It is also associated with synthetic fibres, paints, inks, trims and plastics.

Arsenic is not a typical residue in leather chemicals.

General Techniques for Analysing Chemicals:

Inductively coupled plasma- optical emission spectrometry (ICP-OES), atomic absorption spectroscopy (AAS)

Cr (III) Tanning agents can be monitored for Cr(VI)

EN ISO 17075 (Current Use) ISO/DIS 19071 (Draft)

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
7440-38-2	Arsenic	No intentional use	50 ppm
7440-43-9	Cadmium	No intentional use	20 ppm (50 ppm for pigments)
7439-97-6	Mercury	No intentional use	4 ppm (25 ppm for pigments)
7439-92-1	Lead	No intentional use	100 ppm
18540-29-9	Chromium	No intentional use	10 ppm

Volatile Organic Compounds (VOC)

Potential Uses in Apparel and Footwear Textile Processing:

These volatile organic compounds 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.

General Techniques for Analysing Chemicals:

GC-MS

Cas No	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit
71-43-2	Benzene	No intentional use	50 ppm
95-48-7	o-cresol	No intentional use	500 ppm
106-44-5	p-cresol	No intentional use	500 ppm
108-39-4	m-cresol	No intentional use	500 ppm