

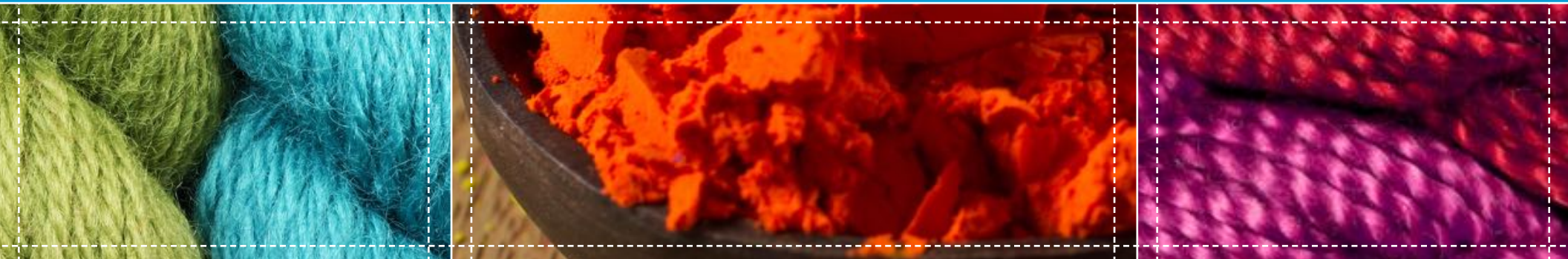


Apparel and Footwear International RSL Management Group



# RESTRICTED SUBSTANCES LIST

December 2015 | Version 01



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## AFIRM Mission

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 Vision

AFIRM continues to be a recognized global center of excellence, providing resources to enable continuous advancement of chemical management best practices. We 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. It is understood that in adopting this vision, AFIRM's mission, objectives, and projects will continue to be product-focused or RSL-related.

## Policy Statement and Uses of This RSL

AFIRM has created the following Restricted Substance List to assist and guide supply chain participants seeking to increase product quality and safety or reduce their environmental impact by limiting the use of certain substances (“AFIRM RSL”). AFIRM member brands may differ on individual parameters; suppliers are advised to check with the customer regarding brand-specific requirements. The AFIRM RSL should leverage AFIRM's mission – “to reduce the use and impact of harmful substances in the apparel and footwear supply chain” – by providing a single set of information for maximum and in-depth implementation within the supply chain.

Some examples of uses for the AFIRM RSL, depending on the objectives of the user, include:

- Providing a tool for vendors to establish chemical management knowledge and processes.
- Building base compliance with AFIRM member chemical restrictions.
- Providing a common base for testing products, which may be accepted by multiple AFIRM brands.

AFIRM member companies determine and communicate to their vendors their testing requirements and acceptance of test reports.

For more information about AFIRM, visit [www.afirm-group.com](http://www.afirm-group.com).

## Legal Statement

The AFIRM RSL constitutes information from AFIRM only and does not represent any individual AFIRM member. Individual brand RSLs may differ in specific parameters.

The AFIRM RSL is not intended to and does not establish any industry standard of care. The AFIRM RSL may not always provide the most appropriate approach for any individual company's chemical management program. Many brands have implementation guidelines, and suppliers must follow those guidelines where required. The AFIRM RSL does not constitute legal advice and is not a substitute for legal advice. There is no warranty, express or implied, as to the completeness or utility of the information contained in this AFIRM RSL, including, without limitation, that the information is current and error-free. AFIRM disclaims liability of any kind whatsoever resulting from any use of or reliance on the AFIRM RSL.

## Links and References

Be proactive! These links may provide additional important information and should be visited on a regular basis.

### **Material definitions and related test parameters**

[www.afirm-group.com/wp-content/uploads/2013/04/AFIRMSupplierToolkit.pdf](http://www.afirm-group.com/wp-content/uploads/2013/04/AFIRMSupplierToolkit.pdf)

### **AFIRM Supplier Toolkit**

[www.afirm-group.com/toolkit/](http://www.afirm-group.com/toolkit/)

- Chinese, Vietnamese, and Spanish translations are available

### **Additional restricted substances with possible relevance**

<http://echa.europa.eu>

### **Candidate list of substances of very high concern (SVHC)**

<http://echa.europa.eu/de/candidate-list-table>

### **Overview of legal chemical limits and country of origin**

<https://www.wewear.org/industry-resources/restricted-substances-list/>

### **Regulated volatile organic compounds (VOCs), mainly the EC 842/2006**

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:161:0001:0011:EN:PDF>

### **Regulated VOCs, EC 1005/2009**

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:286:0001:0030:EN:PDF>

## Definition of Ages

Various countries define the terms “babies,” “children,” and “adults” differently. Based on legislation, the age ranges listed in Table 2 satisfy the most restrictive global requirements.

**Table 2. Definition of Ages**

	Age Range
Babies	0 to 36 months
Children	36 months to 14 years
Adults	14 years and older

## AFIRM Restricted Substances List

CAS No.	Substance Rate of Occurrence*	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement			
<b>Acetophenone and 2-Phenyl-2-Propanol</b>							
98-86-2	Acetophenone	2	50 ppm each	Potential breakdown products in EVA foam when using dicumyl peroxide as a blowing agent.			
617-94-7	2-Phenyl-2-propanol	2					
<b>Alkylphenol (AP) and Alkylphenol Ethoxylates (APEOs), including all isomers</b>							
104-40-5	Nonylphenol (NP), mixed isomers	1	Total: 100 ppm	<p>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.</p> <p>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 reflects anticipated EU legislation and was set to provide suppliers with advance warning and direction for continuous improvement.</p>			
11066-49-2		1					
25154-52-3		1					
84852-15-3		1					
140-66-9	Octylphenol (OP), mixed isomers	1	Total: 100 ppm				
1806-26-4		1					
27193-28-8		1					
9002-93-1	Octylphenol ethoxylates (OPEOs)	1			Total: 100 ppm		
9036-19-5		1					
68987-90-6	1						
9016-45-9	Nonylphenol ethoxylates (NPEOs)	1				Total: 100 ppm	
26027-38-3		1					
37205-87-1		1					
68412-54-4		1					
127087-87-0		1					
Textile: EN ISO 18254:2014 Leather: EN ISO 18218-1:2015							

\* 1 Historically widely used; high occurrence level

2 Mid occurrence level

3 Low risk of failures

CAS No.	Substance Rate of Occurrence*	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement
	<b>Azo-amines</b>			
92-67-1	4-Aminobiphenyl	1	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.	Textile: (EU): EN 14362-1:2015 Leather: (EU): CEN ISO/TS 17234-1:2015  p-Aminoazobenzene: Textile: EN 14362-3:2015 Leather: 17234-2:2011
92-87-5	Benzidine	1		
95-69-2	4-Chlor-o-toluidine	1		
91-59-8	2-Naphthylamine	1		
97-56-3	o-Aminoazotoluene	1		
99-55-8	2-Amino-4-nitrotoluene	1		
106-47-8	p-Chloraniline	1		
615-05-4	2,4-Diaminoanisole	1		
101-77-9	4,4'-Diaminodiphenylmethane	1		
91-94-1	3,3'-Dichlorobenzidine	1		
119-90-4	3,3'-Dimethoxybenzidine	1		
119-93-7	3,3'-Dimethylbenzidine	1		
838-88-0	3,3'-dimethyl-4,4'-diaminodiphenylmethane	1		
120-71-8	p-Cresidine	1		
101-14-4	4,4'-Methylen-bis(2-chloraniline)	1		
101-80-4	4,4'-Oxydianiline	1		
139-65-1	4,4'-Thiodianiline	1		
95-53-4	o-Toluidine	1		
95-80-7	2,4-Toluyldiamine	1		
137-17-7	2,4,5-Trimethylaniline	1		
95-68-1	2,4 Xylidine	1		
87-62-7	2,6 Xylidine	1		
90-04-0	2-Methoxyaniline (= o-Anisidine)	1		
60-09-3	p-Aminoazobenzene	1		

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CAS No.	Substance Rate of Occurrence*	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement
<b>Bisphenol-A</b>				
80-05-7	Bisphenol-A (BPA) 3	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 oral cavity.	Sample preparation: Extraction with methanol Measurement: DIN EN ISO 18857-2 (mod)
<b>Chlorinated Paraffins</b>				
85535-84-8	Short-chain chlorinated Paraffins (SCCP) (C10-C13) 2	1000 ppm	May be used as flame retardants or as fat liquoring agents in leather production. They also can be used as plasticizers.	ISO 18219:2015
85535-84-9	Medium-chain chlorinated Paraffins (MCCP) (C14-C17) 2	1000 ppm		
<b>Chlorophenols</b>				
15950-66-0	2,3,4-Trichlorophenol 3	0.5 ppm each	Chlorophenols are polychlorinated compounds used as preservatives or pesticides. Pentachlorophenol (PCP) and tetrachlorophenol (TeCP) are sometimes used to prevent mould and kill insects when growing cotton and when storing/transporting fabrics. PCP and TeCP can also be used as preservatives in print pastes.	KOH extraction, 15 hours at 90 degrees C § 64 LFGB B 82.02-08 or DIN EN ISO 17070:2015
933-78-8	2,3,5-Trichlorophenol 3			
933-75-5	2,3,6-Trichlorophenol 3			
95-95-4	2,4,5-Trichlorophenol 3			
88-06-2	2,4,6-Trichlorophenol 3			
609-19-8	3,4,5-Trichlorophenol 3			
4901-51-3	2,3,4,5-Tetrachlorophenol (TeCP) 3			
58-90-2	2,3,4,6-Tetrachlorophenol (TeCP) 3			
935-95-5	2,3,5,6-Tetrachlorophenol (TeCP) 3			
87-86-5	Pentachlorophenol (PCP) 3			

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CAS No.	Substance Rate of Occurrence*	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement
<b>Chlororganic Carriers</b>				
95-49-8	2-Chlorotoluene	3	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.	DIN 54232:2010
108-41-8	3-Chlorotoluene	3		
106-43-4	4-Chlorotoluene	3		
32768-54-0	2,3-Dichlorotoluene	3		
95-73-8	2,4-Dichlorotoluene	3		
19398-61-9	2,5-Dichlorotoluene	3		
118-69-4	2,6-Dichlorotoluene	3		
95-75-0	3,4-Dichlorotoluene	3		
2077-46-5	2,3,6-Trichlorotoluene	3		
6639-30-1	2,4,5-Trichlorotoluene	3		
76057-12-0	2,3,4,5-Tetrachlorotoluene	3		
875-40-1	2,3,5,6-Tetrachlorotoluene	3		
877-11-2	Pentachlorotoluene	3		
541-73-1	1,3-Dichlorobenzene	3		
106-46-7	1,4-Dichlorobenzene	3		
87-61-6	1,2,3-Trichlorobenzene	3		
120-82-1	1,2,4-Trichlorobenzene	3		
108-70-3	1,3,5-Trichlorobenzene	3		
634-66-2	1,2,3,4-Tetrachlorobenzene	3		
634-90-2	1,2,3,5-Tetrachlorobenzene	3		
95-94-3	1,2,4,5-Tetrachlorobenzene	3		
608-93-5	Pentachlorobenzene	3		
118-74-1	Hexachlorobenzene	3		
95-50-1	1,2-Dichlorobenzene	3	10 ppm	

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2 Mid occurrence level

3 Low risk of failures

CAS No.	Substance Rate of Occurrence*	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement
<b>Dimethylformamide</b>				
68-12-2	Dimethylformamide (DMFa) 2	500 ppm	DMFa is a solvent used in plastics, rubber, and polyurethane (PU) coating. It has a strong smell in finished products. Water-based PU does not contain DMFa and is therefore preferable.	DIN CEN ISO/TS 16189:2013
<b>Dimethylfumarate</b>				
624-49-7	Dimethylfumarate (DMFu) 2	0.1 ppm	DMFu is an anti-mold agent used in sachets in packaging to prevent the buildup of mold, especially during shipping.	ISO/TS 16186:2012

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CAS No.	Substance Rate of Occurrence*	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement
<b>Dyes, Forbidden and Disperse</b>				
2475-45-8	C.I. Disperse Blue 1	2	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 are prohibited from use for dyeing of textiles.	DIN 54231:2005
2475-46-9	C.I. Disperse Blue 3	2		
3179-90-6	C.I. Disperse Blue 7	2		
3860-63-7	C.I. Disperse Blue 26	2		
12222-75-2	C.I. Disperse Blue 35	2		
69766-76-6	C.I. Disperse Blue 102	2		
12223-01-7	C.I. Disperse Blue 106	2		
61951-51-7	C.I. Disperse Blue 124	2		
23355-64-8	C.I. Disperse Brown 1	2		
2581-69-3	C.I. Disperse Orange 1	2		
730-40-5	C.I. Disperse Orange 3	2		
82-28-0	C.I. Disperse Orange 11	2		
12223-33-5	C.I. Disperse Orange 37/76/59	2		
13301-61-6		2		
51811-42-8		2		
85136-74-9	C.I. Disperse Orange 149	2		
2872-52-8	C.I. Disperse Red 1	2		
2872-48-2	C.I. Disperse Red 11	2		
3179-89-3	C.I. Disperse Red 17	2		
61968-47-6	C.I. Disperse Red 151	2		
119-15-3	C.I. Disperse Yellow 1	2		
2832-40-8	C.I. Disperse Yellow 3	2		
6300-37-4	C.I. Disperse Yellow 7	2		
6373-73-5	C.I. Disperse Yellow 9	2		
6250-23-3	C.I. Disperse Yellow 23	2		
12236-29-2	C.I. Disperse Yellow 39	2		
54824-37-2	C.I. Disperse Yellow 49	2		

\* 1 Historically widely used; high occurrence level    2 Mid occurrence level    3 Low risk of failures

CAS No.	Substance Rate of Occurrence*	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement
<b>Dyes, Forbidden and Disperse, continued</b>				
54077-16-6	C.I. Disperse Yellow 56	2	<p>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).</p> <p>Restricted disperse dyes are suspected of causing allergic reactions and are prohibited from use for dyeing of textiles.</p>	DIN 54231:2005
3761-53-3	C.I. Acid Red 26	2		
569-61-9	C.I. Basic Red 9	2		
569-64-2	C.I. Basic Green 4	2		
2437-29-8		2		
10309-95-2		2		
548-62-9	C.I. Basic Violet 3	2		
632-99-5	C.I. Basic Violet 14	2		
2580-56-5	C.I. Basic Blue 26	2		
1937-37-7	C.I. Direct Black 38	2		
2602-46-2	C.I. Direct Blue 6	2		
573-58-0	C.I. Direct Red 28	2		
16071-86-6	C.I. Direct Brown 95	2		
60-11-7	4-Dimethylaminoazobenzene (Solvent Yellow 2)	2		
6786-83-0	C.I. Solvent Blue 4	2		
561-41-1	4,4'-bis(dimethylamino)-4''-(methylamino)trityl alcohol	2		
<b>Dyes, Navy Blue</b>				
118685-33-9	Component 1: C <sub>39</sub> H <sub>23</sub> ClCrN <sub>7</sub> O <sub>12</sub> S <sub>2</sub> Na	3	<p>Navy blue colourants are regulated and are prohibited from use for dyeing of textiles. (Index 611-070-00-2)</p>	DIN 54231:2005
Not allocated	Component 2: C <sub>46</sub> H <sub>30</sub> CrN <sub>10</sub> O <sub>20</sub> S <sub>2</sub> ·3Na	3		

\* 1 Historically widely used; high occurrence level 2 Mid occurrence level 3 Low risk of failures

CAS No.	Substance Rate of Occurrence*	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement
<b>Flame Retardants</b>				
126-72-7	Tris(2,3,-dibromopropyl) phosphate (TRIS)	3	Total: 5 ppm  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.	Methanol extraction, GC/MS
545-55-1	Tris(1-aziridinyl)phosphine oxide (TEPA)	3		LC-MS
32534-81-9	Pentabromodiphenyl ether (PentaBDE)	3		Acetonitril extraction, LC-DAD-MS, and confirmation with GC/MS
32536-52-0	Octabromodiphenyl ether (OctaBDE)	3		
1163-19-5	Decabromodiphenyl ether (DecaBDE)	3		Methanol extraction, GC/MS
79-94-7	Tetrabromobisphenol A (TBBP A)	3		
115-96-8	Tris(2-chloroethyl)phosphate (TCEP)	3		
59536-65-1	Polybromobiphenyls (PBB)	3		
5412-25-9	Bis(2,3-dibromopropyl) phosphate (BIS)	3		
3194-55-6	Hexabromocyclododecane (HBCDD)	3		
3296-90-0	2,2-bis(bromomethyl)-1,3-propanediol (BBMP)	3		
13674-87-8	Tris(1,3-dichloro-isopropyl) phosphate (TDCPP)	3		
25155-23-1	Trixylyl phosphate (TXP)	3		
<b>Fluorinated Greenhouse Gases</b>				
Various	See Regulation (EC) No 842/2006 for a complete list.	2	0.1 ppm each	Sample preparation: Purge and trap — thermal desorption or SPME Measurement: GC/MS
<b>Formaldehyde</b>				
50-00-0	Formaldehyde	1	Adults and children: 75 ppm Babies: 16 ppm	Textile: JIS L 1041-1983 A (Japan Law 112) or EN ISO 14184-1:2011 Leather: ISO 17226-1:2008

\* 1 Historically widely used; high occurrence level

2 Mid occurrence level

3 Low risk of failures

CAS No.	Substance Rate of Occurrence*	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement
<b>Heavy Metals</b>				
7440-36-0	Antimony (Sb) 3	Extractable: 30 ppm	Found in or used as a catalyst in polymerisation of polyester, flame retardants, fixing agents, pigments and alloys.	Sample preparation: EN ISO 105-E04:2013 Measurement: EN ISO 17294-2:2014
7440-38-2	Arsenic (As) 3	Extractable: 0.2 ppm Total: 100 ppm for all materials except plastic	Arsenic and its compounds can be used in preservatives, pesticides and defoliants for cotton, synthetic fibres, paints, inks, trims and plastics.	Sample preparation: Extractable: Textiles: EN ISO 105-E04:2013 Leather: DIN EN ISO 17072-1:2014 Total: Microwave digestion with H <sub>2</sub> O <sub>2</sub> /HNO <sub>3</sub> Measurement: EN ISO 17294-2 :2014
7440-43-9	Cadmium (Cd) 3	Extractable: 0.1 ppm Total: Adults: 75 ppm Children and babies: 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. The next update will lower the total limit to 40 ppm for all.	Sample preparation: Extractable: Textiles: EN ISO 105-E04:2013 Leather: DIN EN ISO 17072-1:2014 Total: Microwave digestion with H <sub>2</sub> O <sub>2</sub> /HNO <sub>3</sub> Measurement: EN ISO 17294-2:2014
7440-47-3	Chromium (Cr) 3	Extractable for textiles: 1 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.	Sample preparation: EN ISO 105-E04:2013 Measurement: EN ISO 17294-2:2014
18540-29-9	Chromium VI 1	Extractable: Adults: 3 ppm Children and babies: 0.5 ppm Knitted textiles, not leather	Though typically associated with leather tanning, Chromium VI also may be used in the dyeing of wool (after the chroming process).	Sample preparation: Textile: EN ISO 105-E04:2013 Leather ageing: Conditions for leather ageing: 24 hours, 80 degrees C, maximum 5% relative humidity, no ventilation; EN 17075-1:2015 Measurement: Textile: EN ISO 17294-2 Leather: EN 17075-1:2015 Ageing test is used at brand discretion.
7440-48-4	Cobalt (Co) 3	Extractable: 1 ppm	Cobalt and its compounds can be used in alloys, pigments, dyestuff, and the production of plastic buttons.	Sample preparation: EN ISO 105-E04:2013 Measurement: EN ISO 17294-2

\* **1** Historically widely used; high occurrence level**2** Mid occurrence level**3** Low risk of failures

CAS No.	Substance Rate of Occurrence*	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement
<b>Heavy Metals, continued</b>				
7440-50-8	Copper (Cu) 2	Extractable: 25 ppm	Copper and its compounds can be found in alloys and pigments, and in textiles as an antimicrobial agent.	Sample preparation: EN ISO 105-E04:2013 Measurement: EN ISO 17294-2:2014
7439-92-1	Lead (Pb) 3	Extractable: Adults and children: 1 ppm Babies: 0.2 ppm Total: 90 ppm	May be associated with plastics, paints, inks, pigments and surface coatings.	Sample preparation: Extractable: EN ISO 105-E04:2013 Total: Microwave digestion with H2O2/HNO3 Lead in paint and surface coating: CPSIA Section 101 16 CFR 1303 Measurement: EN ISO 17294-2:2014
7439-97-6	Mercury (Hg) 3	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.	Sample preparation: Extractable: EN ISO 105-E04:2013 Total: Microwave digestion with H2O2/HNO3 Measurement: EN ISO 17294-2:2014
7440-02-0	Nickel (Ni) 1	Extractable: 1 ppm Release: Prolonged skin contact: 0.5 µg/cm <sup>2</sup> /week Pierced part: 0.2 µg/cm <sup>2</sup> /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.	Sample preparation: Textile: EN ISO 105-E04:2013 Metal parts: EN 12472:2005+ A1:2009 Measurement: Textile: EN ISO 17294-2:2014 Metal parts: EN 1811:2015
7782-49-2	Selenium (Se) 3	Extractable: 500 ppm	May be found in synthetic fibres, paints, inks, plastics and metal trims.	Sample preparation: EN ISO 105-E04:2013 Measurement: EN ISO 17294-2:2014

\* 1 Historically widely used; high occurrence level2 Mid occurrence level3 Low risk of failures



CAS No.	Substance Rate of Occurrence*	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement			
<b>N-Nitrosamine</b>							
62-75-9	N-nitrosodimethylamine (NDMA)	2	0.5 ppm each	Can be formed as by-product in the production of rubber.	GB/T 24153-2009		
55-18-5	N-nitrosodiethylamine (NDEA)	2					
621-64-7	N-nitrosodipropylamine (NDPA)	2					
924-16-3	N-nitrosodibutylamine (NDBA)	2					
100-75-4	N-nitrosopiperidine (NPIP)	2					
930-55-2	N-nitrosopyrrolidine (NPYR)	2					
59-89-2	N-nitrosomorpholine (NMOR)	2					
614-00-6	N-nitroso N-methyl N-phenylamine (NMPPhA)	2					
612-64-6	N-nitroso N-ethyl N-phenylamine (NEPhA)	2					
<b>Organotin Compounds</b>							
Various	Dibutyltin (DBT)	3	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.	CEN/ISO 16179:2012		
Various	Dioctyltin (DOT)	3					
Various	Monobutyltin (MBT)	3					
Various	Tributyltin (TBT)	3	0.5 ppm each				
Various	Triphenyltin (TPhT)	3					
Various	All tri-substituted Organotin compounds	3	1 ppm each				
<b>Ortho-phenylphenol</b>							
90-43-7	Ortho-phenylphenol (OPP)	2	1000 ppm			OPP can be used for its preservative properties in leather or as a carrier in dyeing processes.	Sample Preparation: §64 BVL B 82.02.08 Measurement: GC-MS, LC-MS for confirmation
<b>Ozone-depleting Substances</b>							
Various	See Regulation (EC) No 1005/2009 for a complete list.	3		Ozone-depleting substances are prohibited from use.	KOH extraction, 15 hours at 90 degrees C; § 64 LFGB B 82.02-08 or DIN EN ISO 17070:2015		

\* 1 Historically widely used; high occurrence level    2 Mid occurrence level    3 Low risk of failures

CAS No.	Substance Rate of Occurrence*	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement
<b>Perfluorinated and Polyfluorinated Chemicals (PFCs)</b>				
2795-39-3	Perfluorooctane Sulfonate (PFOS)	2	1 µg/m <sup>2</sup> each	PFOA and PFOS may be present as unintended byproducts in long-chain commercial water, oil and stain repellent agents. PFOA may also be used in polymers like polytetrafluoroethylene (PTFE)
3825-26-1	Perfluorooctanoic Acid (PFOA) and its salts and esters	2		
<b>Pesticides, Agricultural</b>				
Various	See Appendix A for a complete list.	3	0.5 ppm each	May be found in natural fibres, primarily cotton.
<b>Phthalates</b>				
28553-12-0	Di-Iso-nonylphthalate (DINP)	1	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: <ul style="list-style-type: none"> <li>Flexible plastic components (e.g., PVC)</li> <li>Print pastes</li> <li>Adhesives</li> <li>Plastic buttons</li> <li>Plastic sleeveings</li> <li>Polymeric coatings</li> </ul> The listed phthalates are those most commonly used across industry sectors. Find more information about phthalates restricted by legislation in the REACH SVHC list, which is updated frequently.
117-84-0	Di-n-octylphthalate (DNOP)	1		
117-81-7	Di(2-ethylhexyl)-phthalate (DEHP)	1		
26761-40-0	Diisodecylphthalate (DIDP)	1		
85-68-7	Butylbenzylphthalate (BBP)	1		
84-74-2	Dibutylphthalate (DBP)	1		
84-69-5	Diisobutylphthalate (DIBP)	1		
68515-42-4	Di(C7-C11 alkyl) phthalate (DHNUP), linear + branched	1		
71888-89-6	Di(C6-C8 alkyl) phthalate (DIHP), branched, C7 rich	1		
117-82-8	Di(2-methoxyethyl) phthalate (DMEP)	1		
84-75-3	Di-n-hexylphthalate (DnHP)	1		
84-66-2	Diethylphthalate (DEP)	1		
605-50-5	Diisopentylphthalate (DIPP)	1		
776297-69-9	n-Pentylisopentylphthalate (NPIPP)	1		
131-18-0	Di-n-pentylphthalate (DPP)	1		
68515-50-4	Dihexylphthalate, branched + linear	1		
131-11-3	Dimethylphthalate (DMP)	1		
84777-06-0	1,2-Benzenedicarboxylic acid, dipentylester, branched + linear	1		
				Sample preparation: CPSC-CH-C1001-09 Measurement: Textile: GC-MS, EN ISO 14389:2014 Leather: GC-MS

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CAS No.	Substance Rate of Occurrence*	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement
<b>Polycyclic Aromatic Hydrocarbons (PAHs)</b>				
83-32-9	Acenaphthene	1	Total: 10 ppm	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
208-96-8	Acenaphthylene	1		
120-12-7	Anthracene	1		
191-24-2	Benzo(g,h,i)perylene	1		
86-73-7	Fluorene	1		
206-44-0	Fluoranthene	1		
193-39-5	Indeno(1,2,3-cd)pyrene	1		
91-20-3	Naphthalene**	1		
85-01-8	Phenanthrene	1		
129-00-0	Pyrene	1		
56-55-3	Benzo(a)anthracene	1	1 ppm each Child care articles: 0.5 ppm each	AFPS GS 2014
50-32-8	Benzo(a)pyrene	1		
205-99-2	Benzo(b)fluoranthene	1		
192-97-2	Benzo[e]pyrene	1		
205-82-3	Benzo[j]fluoranthene	1		
207-08-9	Benzo(k)fluoranthene	1		
218-01-9	Chrysene	1		
53-70-3	Dibenzo(a,h)anthracene	1		

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CAS No.	Substance Rate of Occurrence*	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement
<b>Volatile Organic Compounds (VOCs)</b>				
71-43-2	Benzene	2	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.	120 degrees C for one hour headspace solvent extraction GC-MS; Methanol extraction at 60 degrees
56-23-5	Carbon tetrachloride	2		
67-66-3	Chloroform	2		
107-06-2	1,2-Dichloroethane	2		
75-35-4	1,1-Dichloroethylene	2		
127-19-5	Dimethylacetamide (DMAC)	2		
76-01-7	Pentachloroethane	2		
630-20-6	1,1,1,2- Tetrachloroethane	2		
79-34-5	1,1,1,2,2- Tetrachloroethane	2		
127-18-4	Tetrachloroethylene (PER)	2		
108-88-3	Toluene	2		
71-55-6	1,1,1- Trichloroethane	2		
79-00-5	1,1,2- Trichloroethane	2		
79-01-6	Trichloroethylene	2		
1330-20-7	Xylenes (meta-, ortho-, para-)	2		

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## 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	115-32-2	Dicofol	319-86-8	g-Hexachlorocyclohexane with and without Lindane
		141-66-2	Dicrotophos		
93-76-5	2,4,5-T	60-57-1	Dieldrine	118-74-1	Hexachlorobenzene
93-72-1	2,4,5-TP ChemRRV	60-51-5	Dimethoate	465-73-6	Isodrine
94-75-7	2,4-D	88-85-7	Dinoseb, its salts and acetate	4234-79-1	Kelevane
309-00-2	Aldrine	57648-21-2	DTTB (Timiperone)	143-50-0	Kepone
86-50-0	Azinophosmethyl	115-29-7	Endosulfan	7784-40-9	Lead hydrogen arsenate
2642-71-9	Azinophosethyl	959-98-8	Endosulfan I (alpha)	58-89-9	Lindane
4824-78-6	Bromophos-ethyl	33213-65-9	Endosulfan II (beta)	121-75-5	Malathione
2425-06-1	Captafol	72-20-8	Endrine	94-74-6	MCPA
63-25-2	Carbaryl	66230-04-4	Esfenvalerate	94-81-5	MCPB
510-15-6	Chlorbenzilat	108-93-4	Ethylendibromid	93-65-2	Mecoprop
57-74-9	Chlordane	56-38-2	Ethylparathione	10265-92-6	Metamidophos
6164-98-3	Chlordimeform	51630-58-1	Fenvalerate	72-43-5	Methoxychlor
470-90-6	Chlorfenvinphos	1336-36-3	Halogenated biphenyls, including Polychlorinatedbiphenyl (PCB)	2385-85-5	Mirex
1897-45-6	Chlorthalonil	53469-21-9		6923-22-4	Monocrotophos
56-72-4	Coumaphos	Various		56-38-2	Parathion
68359-37-5	Cyfluthrin	Various	Halogenated terphenols, including polychlorinated terphenyl (PCT)	298-00-0	Parathion-methyl
91465-08-6	Cyhalothrin			608-90-2	Pentabromobenzene
52315-07-8	Cypermethrin	Various	Halogenated naphthalenes, including polychlorinated naphthalenes (PCNs)	1825-21-4	Pentachloroanisole
78-48-8	S,S,S-Tributyl phosphorotrithioate (Tribufos)			52645-53-1	Permethrine
52918-63-5	Deltamethrin	Various	Halogenated diarylalkanes	7786-34-7	Phosdrin/Mevinphos
53-19-0	DDD	99688-47-8	Halogenated diphenyl methanes, including Monomethyl-dibromo-diphenyl methane, Monomethyl-dichloro-dephenyl methane, and Monomethyl-tetrachloro-diphenyl methane	72-56-0	Perthane
72-54-8		81161-70-8		31218-83-4	Propethamphos
3424-82-6		76253-60-6		41198-08-7	Profenophos
72-55-9	DDE	76-44-8	Heptachlor	13593-03-8	Quinalphos
50-29-3	DDT	1024-57-3	Heptachloroepoxide	82-68-8	Quintozene
789-02-6		36355-01-8	Hexabromobiphenyl	8001-50-1	Strobane
333-41-5	Diazinone	319-84-6	a-Hexachlorocyclohexane with and without Lindane	297-78-9	Telodrine
1085-98-9	Dichlofluanide			8001-35-2	Toxaphene
120-36-2	Dichloroprop	319-85-7	b-Hexachlorocyclohexane with and without Lindane	731-27-1	Tolyfluanide
				1582-09-8	Trifluraline



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