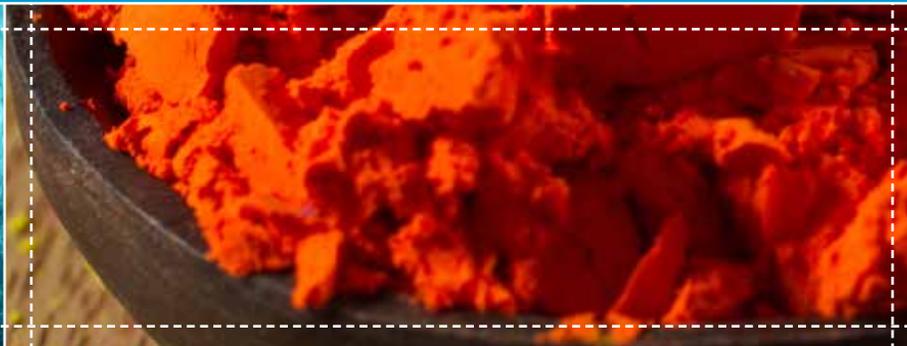


Apparel and Footwear International RSL Management Group



RESTRICTED SUBSTANCES LIST

Version 04 | 2019



New for 2019

- New Classes of Chemical Substances
- Updates to Test Methods and Limits
- Scope of the AFIRM RSL
- Definition of Material Types

Table of Contents

AFIRM Mission	3
AFIRM Vision	3
Legal Statement	3
Policy Statement	3
Scope of the AFIRM RSL	4
Uses of the AFIRM RSL.....	5
Links and References	5
Additional Substances and Parameters to Consider.....	6
AFIRM Chemical Information Sheets	7
Definition of Ages	7
Definition of Reporting Limits.....	8
Definition of Material Types	8
Change Log for the 2019 AFIRM RSL.....	10
Materials in Which Restricted Substances Are Likely to Be Found	11
AFIRM Restricted Substances List	14
Appendix A: Pesticides, Agricultural	33

For more information about AFIRM,
visit www.afirm-group.com.

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.

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.

Policy Statement

AFIRM has created the following Restricted Substances List ("AFIRM RSL") 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 in apparel, footwear, accessories and related products including sporting good equipment.

Scope of the AFIRM RSL

The AFIRM RSL covers apparel, footwear, accessories, and equipment. Electrical and electronic components of products are excluded, as there are specific requirements for these items not covered under the current AFIRM RSL.

- **Apparel.** Any garment worn on the body intended to protect, cover, or adorn.
- **Footwear.** Any durable covering for the feet intended to protect, cover, or comfort.
- **Accessories.** Any product intended to complement apparel, both carried and worn.
Note: Jewelry is excluded, as it may be subject to additional safety and chemical requirements.
Note: There may be additional requirements for some accessories, such as sunglasses.
- **Equipment.** Any product intended for use in sport or exercise, including protective equipment.
Note: There may be safety and performance standards (e.g. NOCSAE) for protective equipment, which are not covered in this document.
Note: There may also be specific requirements for items that come into contact with food and the mouth.

Because AFIRM member brands may differ on the types of products classified under each of these categories, suppliers are advised to check with their customers regarding brand-specific definitions, requirements, and product applicability. AFIRM has provided examples of products to which the AFIRM RSL may be applied, including but not limited to those listed in Table 1.

Table 1. Examples of Products within the Scope of the AFIRM RSL

Apparel	Footwear	Accessories	Equipment
<ul style="list-style-type: none"> • Shirts • Pants/trousers • Shorts • Skirts • Dresses • Swimwear • Socks • Jackets • Vests • Sweatshirts and hoodies • Sweaters • Underwear • Sleepwear and loungewear 	<ul style="list-style-type: none"> • Lifestyle • Athletic (e.g. running, training) • Sports (e.g. basketball, soccer, football, baseball) • Sandals • Flip flops • Boots • Slippers 	<ul style="list-style-type: none"> • Hats • Headbands • Scarves • Handbags • Backpacks • Sunglasses • Shoelaces • Belts • Hair clips • Gloves (e.g. winter) 	<ul style="list-style-type: none"> • Shin and leg guards • Gloves (e.g. baseball, football, golf) • Chest protectors • Balls (e.g. basketball, football, soccer) • Helmets • Shoulder, knee, and elbow pads • Yoga mats and blocks • Rackets (e.g. tennis, racquetball, badminton) • Fitness equipment (e.g. treadmills) • Bicycles

Uses of the 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 leverages 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 full or base compliance with AFIRM member chemical restrictions.
- Providing a common base for testing, 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.

Links and References

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

AFIRM Packaging Restricted Substances List

www.afirm-group.com/packaging-restricted-substance-list/

AFIRM Chemistry Toolkit

www.afirm-group.com/toolkit

- English, Chinese, Vietnamese, and Spanish versions

AFIRM Chemical Information Sheets

www.afirm-group.com/chemical-information-sheets

- English, Chinese, Vietnamese, and Spanish versions

Overview of legal chemical limits and country of origin

https://www.aafaglobal.org/AAFA/Solutions_Pages/Restricted_Substance_List

Regulated fluorinated greenhouse gases; EC 842/2006

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

Regulated substances that deplete the ozone layer; EC 1005/2009

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

Zero Discharge of Hazardous Chemicals (ZDHC) Foundation Manufacturing Restricted Substances List (MRSL)

https://www.roadmaptozero.com/mrsl_online/

Additional Substances and Parameters to Consider

EU REACH Substances of Very High Concern

Based on scientific evidence indicating potential hazards to human health or the environment, the European Commission (EC) and European Union (EU) member states propose substances of very high concern (SVHCs) for placement on the European Chemicals Agency (ECHA) “Candidate List of Substances of Very High Concern for Authorisation.” Placing a substance on the Candidate List triggers specific obligations for importers, producers, and suppliers of any article that contains one or more of these substances above 0.1 percent by weight per component. The obligations include providing sufficient information to allow safe use of the article to brand and retail customers or, upon request, to a consumer within 45 days of receipt of the request.

In addition, ECHA must be notified if the substance(s) are present in article components above 0.1 percent in quantities totaling over one ton per producer or importer per year. Notification is not required if the substance has already been registered for that use or when the producer or importer of an article can exclude exposure of humans and the environment during the use and disposal of the article. In such cases, the producer or importer must supply appropriate instructions to the recipient of the article.

ECHA periodically updates the Candidate List; find the most current version at <https://www.echa.europa.eu/candidate-list-table>.

AFIRM member brands may differ on how they address SVHCs as well as the legal obligations. AFIRM advises suppliers to consult with their customers regarding brand-specific requirements for SVHCs.

California Proposition 65 Substances

Each year, California publishes a list of chemicals known to the state to cause cancer or reproductive toxicity. Businesses that expose individuals to one or more of these chemicals must provide a clear and reasonable warning before the exposure occurs. For consumer products, this is typically through warning labels on the products or retail signage. Note that this warning is not the same as a regulatory requirement indicating that the product is “unsafe” if a specific concentration is exceeded. Enforcement is carried out through civil lawsuits brought by the California attorney general, district attorneys, or private parties acting in the public interest.

Additional information can be found at <https://oehha.ca.gov/proposition-65>.

AFIRM member brands may differ on how they address warning-label requirements. AFIRM advises suppliers to consult with their customers regarding brand-specific requirements for Proposition 65 substances.

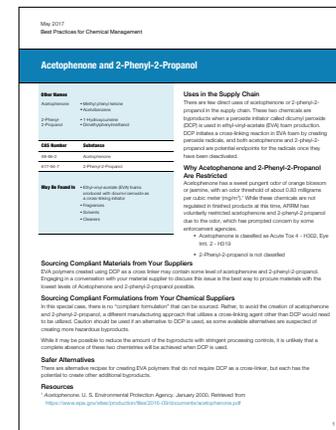
AFIRM Chemical Information Sheets

AFIRM member brands have produced a comprehensive set of educational materials advising suppliers about best practices for chemicals management. 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 material manufacturing process, and how to maintain compliance with the AFIRM RSL.

The sheets contain some information relevant to packaging, and future revisions will include more specific information.

The complete library of chemical information sheets is available on the AFIRM website at <http://afirm-group.com/information-sheets>; additionally, links to individual information sheets are embedded in the pages that follow.

- ✦ The plus symbol next to a chemical or class of chemicals in the AFIRM RSL indicates that a information sheet is available; simply click on the chemical name, and your web browser will load a PDF of the information sheet for that substance.



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

Definition of Reporting Limits

Values above which labs should report substances detected for purposes of data capture and harmonization. By reporting these values, instead of a simple PASS/FAIL, the supply chain can capture information regarding the presence of substances below the RSL limit. The reporting limits also allow data to be harmonized between various testing labs.

Reporting limits are values at or above the method Practical Quantification Limit (PQL). The PQL represents the lowest level at which accurate, precise, and robust data can be reported. AFIRM RSL reporting limits are widely achievable by laboratories across the global analytical testing industry and allow for combined (composite) testing where applicable.

Definition of Material Types

For the purpose of this RSL, AFIRM offers these definitions of material types and provides examples of materials in Table 3, on the next page.

Natural fibers. Animal or vegetable fibers (including semi-synthetics).

Blended fibers. Woven or knitted materials created by blending two or more fiber types. For the purpose of this RSL, a blended fiber consists of a natural and a synthetic fiber.

Synthetic fibers. Human-made fibers based on synthetic chemicals (often from petroleum sources) such as polymers and extruded fibers.

Artificial leather. A leather-like material composed of a textile backing and, typically, a PU or PVC coating.

Natural leather. Created by tanning animal rawhides.

Coating. A fluid, semi-fluid, or other material, with or without a suspension of finely divided coloring matter, which changes to a solid film when a thin layer is applied to a metal, wood, stone, paper, leather, cloth, plastic, or other surface.

Coatings do not include printing inks or those materials which actually become a part of the substrate, such as the pigment in a plastic article or those materials which are actually bonded to the substrate, such as by electroplating or ceramic glazing.

Printing. The process of applying color to a fabric in definite patterns or designs.

Natural materials. Material derived from animals or plants that have undergone very little modification. Includes horn, bone, cork, wood, paper, and straw. Excludes natural fibers, natural leather, feathers, down, and metals.

Polymers and plastics. Plastics are composed of various polymers (typically from petroleum sources) usually mixed with additives including colorants, plasticizers, stabilizers, and fillers. These additives affect the chemical composition, chemical properties, and mechanical properties of the plastic.

Natural rubber. Elastic material made from latex sap or trees that can be vulcanized.

Synthetic rubber. Material made from petroleum-based monomers with properties similar to natural rubber.

Foam. Spongy material made by trapping air bubbles in a solid. These can be open cell or closed cell.

Metals. Chemical elements that can be lustrous, ductile, malleable, and good conductors of heat and electricity.

Feathers and down. Includes the smaller down feathers as well as the larger contour and flight feathers. See the International Down and Feather Bureau for specific down and feather definitions.

Glue. A substance capable of holding materials together by surface attachment.

Table 3. Examples of Materials within the Scope of the AFIRM RSL

Natural Fibers <small>Including semi-synthetics</small>	Blended Fibers	Synthetic Fibers	Artificial Leather	Natural Leather	Coatings & Prints	Natural Materials	Polymers, Plastics, Foams, Natural Rubber & Synthetic Rubber	Metal	Feathers & Down	Glue
<ul style="list-style-type: none"> • Cotton • Wool • Silk • Hemp • Cashmere • Linen • Fur • Rayon (Semi-synthetic) • Lyocell (Semi-synthetic) 	<ul style="list-style-type: none"> • Cotton-Polyester • Wool-Nylon • Ramie-Polyester 	<ul style="list-style-type: none"> • Polyester • Acrylic • Nylon • Polyamide 	<ul style="list-style-type: none"> • Polyurethane (PU) • Polyvinyl Chloride (PVC) 	<ul style="list-style-type: none"> • Leather 	<p>Printing techniques such as:</p> <ul style="list-style-type: none"> • Heat transfers • Dye sublimation printing • Screen printing • Direct-to-garment printing • Discharge printing • Plastisol transfers <p>Coatings such as:</p> <ul style="list-style-type: none"> • Polyvinyl chloride (PVC) • Polyurethane (PU) 	<ul style="list-style-type: none"> • Horn • Bone • Cork • Wood • Paper • Straw • Stone 	<ul style="list-style-type: none"> • Ethylene vinyl acetate (EVA) • Polystyrene (PS) • Polyethylene (PE) • Acrylonitrile butadiene styrene (ABS) • Neoprene • Polypropylene (PP) • Polycarbonate (PC) • Polyamide (PA) • Polyurethane (PU) • Polyvinyl chloride (PVC) • Thermoplastic polyurethane (TPU) • Thermoplastic elastomer (TPE) • Styrene ethylene butylene styrene (SEBS) 	<ul style="list-style-type: none"> • Stainless steel • Brass • Copper • Gold • Silver • Aluminum 	<ul style="list-style-type: none"> • Feathers • Down 	<ul style="list-style-type: none"> • Hot melt adhesive • Powdered adhesive • Flock adhesive • Contact adhesive • Latex glue • Polyurethane glue • Neoprene cement

Notes:

- This list provides examples of materials within each category but is not all-inclusive.
- Glass is an artificial material that does not fit into any of these categories. AFIRM recommends testing for total Lead and total Cadmium.

Change Log for the 2019 AFIRM RSL

CAS No.	Substance	Modification	Page
3165-93-3	Azo-amines and Arylamine Salts	Added with a limit of 20 ppm each (EU CMR Regulation): 4-Chloro-o-toluidinium chloride, 2-Naphthylammoniumacetate, 2,4-Diaminoanisole sulphate, and 2,4,5-Trimethylaniline hydrochloride	16
553-00-4			
39156-41-7			
21436-97-5			
80-09-1	Bisphenols	Added for recommended reporting of results when a Bisphenol A (BPA) test is performed: Bisphenol S (BPS), Bisphenol F (BPF), and Bisphenol AF (BPAF)	17
620-92-8			
1478-61-1			
5216-25-1	Chlororganic Carriers	Added with a combined 1 ppm limit for all listed Chlororganic Carriers (EU CMR Regulation - 2018/1513): p-Chlorobenzotrichloride, Benzotrichloride, and Benzyl Chloride	19
98-07-7			
100-44-7			
7440-47-3	Heavy Metals, Chromium VI	Changed textiles limit to 1 ppm extractable for all textiles (EU CMR Regulation - 2018/1513)	24
71888-89-6	Phthalates	Added with a 500 ppm limit each, 1000 ppm total of all Phthalates (EU CMR Regulation - 2018/1513): 1,2-Benzenedicarboxylic acid, Bis(2-methoxyethyl) phthalate, and Diisopentyl phthalate (DIPP) Added with 500 ppm limit each, 1000 ppm total of all Phthalates: Dipropyl phthalate (DPRP); Diisooctyl phthalate (DIOP); Diisohexyl phthalate (DIHP); 1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters (DHNUP); and 1,2-benzenedicarboxylic acid Dipentyl ester, branched and linear	29
117-82-8			
605-50-5			
131-16-8			
27554-26-3			
68515-50-4			
68515-42-4			
84777-06-0			
91-22-5	Quinoline	Added with a limit of 50 ppm (EU CMR Regulation - 2018/1513)	30
75-12-7	Solvents / Residuals	Created new category to include DMFa and DMAC. Added Formamide with a 1000 ppm limit.	31
872-50-4		Added N-methyl-2-pyrrolidone (NMP) with a limit of 1000 ppm (EU CMR Regulation - 2018/1513 and SVHC limit)	
3846-71-7	UV Absorbers / Stabilizers	Added new category for UV Stabilizers with restrictions on UV 320, UV 327, UV 328, and UV 350	31
3864-99-1			
25973-55-1			
36437-37-3			

Materials in Which Restricted Substances Are Likely to Be Found

In the apparel and footwear supply chain, certain types of fibers and materials are more likely to contain restricted substances. Many brands require product or material testing prior to shipment to ensure that articles comply with their RSLs; this information is included in brand-specific requirements.^A

AFIRM Group brands agree on the chemicals included in the AFIRM RSL, the allowable limits, and the test methods. The responsibility for managing testing programs—which specific restricted chemicals should be tested in which specific materials and the frequency of such tests—remains with individual brands.

The risk matrix shown in Table 4, on the next page, highlights the restricted substance risks associated with different fibers and materials, and is presented as a guidance tool. It is based on our many years of experience in manufacturing and in managing restricted substances across a wide range of materials. The aim is to provide information on those substances that have historically been deliberately used or found as reagent/contaminants in different materials.^B It uses the following color code:

- 1 Red indicates that a chemical has been in widespread use and/or frequently detected in a particular material.
- 2 Orange indicates that a chemical has been deliberately used and/or detected in a particular material occasionally.
- 3 Yellow indicates there is a very low but theoretical chance that a chemical could be used and/or detected.
- White indicates that we believe there is an almost negligible risk of a chemical being used and/or detected.

In the absence of a brand RSL and testing program, the matrix outlined in Table 2 is a good starting point until you gain a true understanding of the risks within your specific supply chain. Use of this matrix should be accompanied by due diligence across all chemistries of concern.

A unified RSL enables AFIRM brands to share test data more easily, and we anticipate that the risk matrix will evolve to reflect realistic risks at any given time.

Individual brand testing programs, to the extent they are different, supersede this guidance tool.

A. See Section 5 of the AFIRM Chemistry Toolkit for more information on testing and Appendix B of the AFIRM Chemistry Toolkit for a model testing program if your customer does not have one of its own.

B. If a substance is a component of a combined material (for example, a laminated component like polymer material + textile lining), we recommend testing according to different material types.

Materials in Which Restricted Substances Are Likely to Be Found

Table 4. Risk Matrix

Substance	Natural Fibers <small>Including semi-synthetics</small>	Blended Fibers	Synthetic Fibers	Artificial Leather <small>With fiber backing</small>	Natural Leather	Coatings & Prints	Natural Materials <small>Including horns, bones, cork, wood, paper, and straw</small>	Polymers, Plastics, Foams, Natural Rubber & Synthetic Rubber ^C	Metal	Feathers & Down	Glue <small>Not in finished product</small>
Acetophenone and 2-Phenyl-2-Propanol								1 ^A			
Acidic and Alkaline Substances (pH)	1	1	1	1	1						
Alkylphenol (AP) and Alkylphenol Ethoxylates (APEOs), including all isomers	1	1	1	1	1	1	1	1		3	1
Azo-amines and Arylamine salts	1	1	1	1	1	1	1			1	
Bisphenol-A								1 ^B			
Chlorinated Paraffins, SCCP (C10-C13) and MCCP (C14-C17)	3	3	3	3	1	3		2			
Chlorophenols (Tri-, Tetra-, and Pentachlorophenols)	3	3		3	3	3				3	
Chlororganic Carriers		2	2		3						
Dimethylfumarate (DMFu)	3	3	3	3	3	3		3			
Dyes, Forbidden and Disperse		2	2	2		2					
Dyes, Navy Blue		3	3	3		3					
Flame Retardants	3 (If finish is applied)										
Fluorinated Greenhouse Gases											
Formaldehyde	1	1	2	2	1	1	1				1
Heavy Metals, Chromium VI	3				1						
Heavy Metals, Nickel Release									1		

A. 'Red risk-level 1' applies only to Ethylene-Vinyl Acetate (EVA) foam. All other materials are 'yellow risk-level 3.'
 B. 'Red risk-level 1' applies only to Polycarbonate materials. All other materials are 'white risk level.'

Substance	Natural Fibers Including semi-synthetics	Blended Fibers	Synthetic Fibers	Artificial Leather With fiber backing	Natural Leather	Coatings & Prints	Natural Materials Including horns, bones, cork, wood, paper, and straw	Polymers, Plastics, Foams, Natural Rubber & Synthetic Rubber ^C	Metal	Feathers & Down	Glue Not in finished product
Heavy Metals, Cadmium Total				3		2		3	2		
Heavy Metals, Lead Total				3		2		2 ^C	2		
Heavy Metals, Additional Total (Hg & As)				3		3		3	3		
Heavy Metals, Extractable	2	2	2	2	2	2		2			
N-Nitrosamines								2 ^D			
Organotin Compounds	3	3	3	3	3	3		3			3
Ortho-phenylphenol (OPP)	2	2	2	2	2	2					
Ozone-depleting Substances	3										
Perfluorinated and Polyfluorinated Chemicals (PFCs)	2 (If water- or stain-repellant finish is applied)										
Pesticides, Agricultural	3	3			3						
Phthalates				1		1		1			1
Polycyclic Aromatic Hydrocarbons (PAHs)				3		1		1			1
Quinoline		3	3								
Solvents / Residuals (e.g. DMFa, DMAC, NMP, Formamide)				1 ^E		1 ^E		1 ^F			2
Styrene Monomer								2 ^G			
UV Stabilizers / Inhibitors								2			
Vinyl Chloride Monomer						2 ^H		2 ^H			
Volatile Organic Compounds (VOCs)	2	2	2	2	2	2		2			2

C. 'Orange risk-level 2' applies only to Foams. All other materials are 'yellow risk-level 3.'
 D. 'Orange risk-level 2' applies only to rubber. All other materials are 'white risk level.'
 E. 'Red risk-level 1' applies only to DMFa in Polyurethane (PU) coatings. All other materials are 'yellow risk-level 3.'
 F. 'Orange risk-level 2' applies only to Formamide in Ethylene-Vinyl Acetate (EVA) foam. All other materials are 'yellow risk-level 3.'
 G. 'Orange risk-level 2' applies only to Styrene-based polymers. All other materials are 'white risk-level.'
 H. 'Orange risk-level 2' applies only to PVC. All other materials are 'white risk-level.'

AFIRM Restricted Substances List

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses	Suitable Test Method Sample Preparation & Measurement	Reporting Limit 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 degrees 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	<p>pH value is a characteristic number, ranging from pH 1 to pH 14, which indirectly shows the content of acidic or alkaline substances in a product.</p> <p>pH values less than 7 indicate sources of acidic substances, and values greater than 7 indicate sources of alkaline substances. To avoid irritation or chemical burns to the skin, the pH value of products must be in the range of human skin—approximately pH 5.5.</p> <p>AFIRM recommends the limits cited to comply with all global regulations for all products.</p>	Textiles and Artificial Leather: EN ISO 3071:2006 (KCl Solution) Leather: EN ISO 4045:2018	N/A

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses	Suitable Test Method Sample Preparation & Measurement	Reporting Limit Limits above which test results should be reported
	Alkylphenols (APs) + Alkylphenol Ethoxylates (APEOs) + including all isomers				
Various	Nonylphenol (NP), mixed isomers	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>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.</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 covers EU legislation restricting NPEOs, effective 3 February 2021, and provides advance warning to suppliers.</p>	<p>Textiles: Extraction: 1 g sample/20 mL THF, sonication for 60 minutes at 70 degrees C</p> <p>Measurement: EN ISO 18857-2:2011 (with derivatization)</p> <p>Leather: EN ISO 18218-2:2015</p> <p>Polymers: 1 g sample/20 mL THF, sonication for 60 minutes at 70 degrees C analysis with LC/MS or LC/MS/MS</p> <p>All other materials: 1 g sample/20 mL THF, sonication for 60 minutes at 70 degrees C analysis with GC/MS</p>	Sum of NP & OP: 10 ppm
Various	Octylphenol (OP), mixed isomers				
Various	Nonylphenol ethoxylates (NPEOs)	Total: 100 ppm		<p>All materials except Leather: EN ISO 18254-1:2016 with determination of APEO using LC/MS or LC/MS/MS</p> <p>Leather: EN ISO 18218-1:2015</p>	Sum of NPEO & OPEO: 20 ppm
Various	Octylphenol ethoxylates (OPEOs)				

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses	Suitable Test Method Sample Preparation & Measurement	Reporting Limit Limits above which test results should be reported
	Azo-amines + and Arylamine Salts				
92-67-1	4-Aminobiphenyl	20 ppm each	<p>Azo dyes and pigments are colorants that incorporate one or several azo groups (-N=N-) bound with aromatic compounds.</p> <p>Thousands of azo dyes exist, but only those which degrade to form the listed cleavable amines are restricted.</p> <p>Azo dyes that release these amines are regulated and should no longer be used for dyeing textiles.</p>	<p>All materials except Leather: EN ISO 14362-1:2017 Leather: EN ISO 17234-1:2015</p> <p>p-Aminoazobenzene: All materials except Leather: EN ISO 14362-3:2017 Leather: EN ISO 17234-2:2011</p>	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				

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses	Suitable Test Method Sample Preparation & Measurement	Reporting Limit Limits above which test results should be reported
	Bisphenols +				
80-05-7	Bisphenol-A (BPA)	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 degrees C, analysis with LC/MS	1 ppm
80-09-1	Bisphenol S (BPS)	For informational purposes only.	Applicable to food and drink containers, and items intended to come into contact with the mouth.		1 ppm each
620-92-8	Bisphenol F (BPF)	AFIRM recommends testing polycarbonate materials to assess content levels.	BPA alternatives with known or suspected similar hazards are used in the production of epoxy resins, polycarbonate plastics, flame retardants, and PVC.		
1478-61-1	Bisphenol AF (BPAF)				
	Chlorinated Paraffins +				
85535-84-8	Short-chain Chlorinated Paraffins (SCCPs) (C10-C13)	1000 ppm	May be used as softeners, flame retardants, or fat-liquoring agents in leather production; also as a plasticizer in polymer production.	All materials: Combined CADS/ISO 18219:2015 method V1:06/17 (extraction ISO 18219 and analysis by GC/NCI/MS) For more information on the standard method, click here .	100 ppm
85535-85-9	Medium-chain Chlorinated Paraffins (MCCPs) (C14-C17)	1000 ppm			100 ppm

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses	Suitable Test Method Sample Preparation & Measurement	Reporting Limit Limits above which test results should be reported
	Chlorophenols †				
15950-66-0	2,3,4-Trichlorophenol (TriCP)	0.5 ppm each	<p>Chlorophenols are polychlorinated compounds used as preservatives or pesticides.</p> <p>Pentachlorophenol (PCP), Tetrachlorophenol (TeCP), and Trichlorophenols (TriCP) are sometimes used to prevent mold and kill insects when growing cotton and when storing/transporting fabrics.</p> <p>PCP, TeCP, and TriCP can also be used as in-can preservatives in print pastes and other chemical mixtures.</p>	<p>All materials: 1 M KOH extraction, 16 hours at 90 degrees C, derivatization and analysis § 64 LFGB B 82.02-08 or DIN EN ISO 17070:2015</p>	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)				

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses	Suitable Test Method Sample Preparation & Measurement	Reporting Limit 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 fibers. 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	Benzotrighloride				
100-44-7	Benzyl Chloride				
95-50-1	1,2-Dichlorobenzene	10 ppm			1 ppm

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses	Suitable Test Method Sample Preparation & Measurement	Reporting Limit 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	<p>Disperse dyes are a class of water-insoluble dyes that penetrate the fiber system of synthetic or manufactured fibers and are held in place by physical forces without forming chemical bonds. Disperse dyes are used in synthetic fiber (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>	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					
85136-74-9	C.I. Disperse Orange 149				
2872-52-8	C.I. Disperse Red 1				
2872-48-2	C.I. Disperse Red 11				

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses	Suitable Test Method Sample Preparation & Measurement	Reporting Limit Limits above which test results should be reported
	Dyes, continued				
3179-89-3	C.I. Disperse Red 17	50 ppm each	<p>Disperse dyes are a class of water-insoluble dyes that penetrate the fiber system of synthetic or manufactured fibers and are held in place by physical forces without forming chemical bonds. Disperse dyes are used in synthetic fiber (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>	All materials: DIN 54231:2005	15 ppm each
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				
569-64-2	C.I. Basic Green 4				
2437-29-8					
10309-95-2					
548-62-9	C.I. Basic Violet 3				
632-99-5	C.I. Basic Violet 14				
2580-56-5	C.I. Basic Blue 26				
1937-37-7	C.I. Direct Black 38				
2602-46-2	C.I. Direct Blue 6				
573-58-0	C.I. Direct Red 28				
16071-86-6	C.I. Direct Brown 95				
60-11-7	4-Dimethylaminoazobenzene (Solvent Yellow 2)				
6786-83-0	C.I. Solvent Blue 4				
561-41-1	4,4'-bis(dimethylamino)-4''-(methylamino)trityl alcohol				

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses	Suitable Test Method Sample Preparation & Measurement	Reporting Limit Limits above which test results should be reported
	Dyes, Navy Blue †				
118685-33-9	Component 1: C39H23ClCrN7O12S·2Na	50 ppm each	Navy blue colorants are regulated and 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				
	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 (PBDEs)				
79-94-7	Tetrabromobisphenol A (TBBP A)				
59536-65-1	Polybromobiphenyls (PBB)				
3194-55-6	Hexabromocyclododecane (HBCDD)			All materials: EN ISO 17881-2:2016	
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-aziridiny)phosphine oxide (TEPA)				
115-96-8	Tris(2-chloroethyl)phosphate (TCEP)				
5412-25-9	Bis(2,3-dibromopropyl) phosphate (BDBPP)				

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses	Suitable Test Method Sample Preparation & Measurement	Reporting Limit Limits above which test results should be reported
	Fluorinated Greenhouse Gases +				
Various	See Regulation (EC) No 842/2006 for a complete list.	0.1 ppm each	Prohibited from use. May be used as foam blowing agents, solvents, fire retardants, and aerosol propellants.	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 and Footwear, composite wood materials (such as particle board and plywood) must comply with existing California and forthcoming U.S. 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: prEN ISO 17226-2:2017 with prEN ISO 17226-1:2017 confirmation method in case of interferences. Alternatively, prEN ISO 17226-1:2017 can be used on its own.	16 ppm
	Heavy Metals (Extractable + and Total Content +)				
7440-36-0	Antimony (Sb)	Extractable: 30 ppm	Found in or used as a catalyst in polymerization 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 defoliant for cotton, synthetic fibers, 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

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses	Suitable Test Method Sample Preparation & Measurement	Reporting Limit Limits above which test results should be reported
	Heavy Metals, continued				
7440-39-3	Barium (Ba)	Extractable: 1000 ppm	Barium and its compounds can be used in pigments for inks, plastics, and surface coatings, as well as in dyeing, mordants, filler in plastics, textile finishes, 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; color-fastness after-treatments; dyes for wool, silk, and polyamide (especially dark shades); and leather tanning.	Textiles: 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 "after-chroming" process for wool dyeing (Chrome salts applied to acid-dyed wool to improve fastness).	Textiles: 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
7440-48-4	Cobalt (Co)	Extractable: Adults: 4 ppm Children and 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

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses	Suitable Test Method Sample Preparation & Measurement	Reporting Limit Limits above which test results should be reported
7440-50-8	Copper (Cu)	Extractable: Adults: 50 ppm Children and 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 coatings: 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 Eyewear frames: 0.5 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 and 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

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses	Suitable Test Method Sample Preparation & Measurement	Reporting Limit 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 degrees C for 45 minutes or Extraction in Methanol GC/MS, sonication at 60 degrees C for 60 minutes	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 (NMPHA)				
612-64-6	N-nitroso N-ethyl N-phenylamine (NEPhA)				

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses	Suitable Test Method Sample Preparation & Measurement	Reporting Limit Limits above which test results should be reported
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)	0.5 ppm each			
Various	Tributyltin (TBT)				
Various	Triphenyltin (TPhT)				
Ortho-phenylphenol †					
90-43-7	Ortho-phenylphenol (OPP)	1000 ppm	OPP is used for its preservative properties in leather or as a carrier in polyester dyeing processes.	All materials: 1 M KOH extraction, 16 hours at 90 degrees 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	Prohibited from use. Ozone-depleting substances have been used as a foaming agent in PU foams as well as a dry-cleaning agent.	All materials: GC/MS headspace 120 degrees C for 45 minutes	5 ppm

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses	Suitable Test Method Sample Preparation & Measurement	Reporting Limit Limits above which test results should be reported
	Perfluorinated and Polyfluorinated Chemicals (PFCs) †				
Various	Perfluorooctane Sulfonate (PFOS) and related substances	1 µg/m ²	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 25 ppb total			
Various	PFOA-related substances	1000 ppb total			1000 ppb total
	Pesticides, Agricultural †				
Various	See Appendix A for a complete list.	0.5 ppm each	May be found in natural fibers, 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

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses	Suitable Test Method Sample Preparation & Measurement	Reporting Limit Limits above which test results should be reported
	Phthalates +				
28553-12-0	Di-Iso-nonylphthalate (DINP)	500 ppm each Total: 1000 ppm	<p>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 molding of plastic by decreasing its melting temperature.</p> <p>Phthalates can be found in:</p> <ul style="list-style-type: none"> • Flexible plastic components (e.g., PVC) • Print pastes • Adhesives • Plastic buttons • Plastic sleeveings • Polymeric coatings <p>Find more information about additional Phthalates on the REACH substances of very high concern (SVHC) candidate list, which is updated frequently.</p>	<p>Sample preparation for all materials: CPSC-CH-C1001-09.4</p> <p>Measurement: Textiles: 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).</p> <p>All materials except textiles: GC/MS</p>	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, di-C6-8-branched alkyl esters, C7-rich				
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 (DHNU)				
84777-06-0	1,2-Benzenedicarboxylic acid Dipentyl ester, branched and linear				

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses	Suitable Test Method Sample Preparation & Measurement	Reporting Limit Limits above which test results should be reported
Polycyclic Aromatic Hydrocarbons (PAHs) †					
83-32-9	Acenaphthene	No individual restriction	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	All materials: AFPS GS 2014	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	Total: 10 ppm	**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).	All materials: AFPS GS 2014	0.2 ppm each
56-55-3	Benzo(a)anthracene				
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	1 ppm each Child care articles: 0.5 ppm each			
53-70-3	Dibenzo(a,h)anthracene				
Quinoline †					
91-22-5	Quinoline	50 ppm	Found as an impurity in polyester and some dyestuffs.	All materials: AFPS GS 2014	10 ppm

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses	Suitable Test Method Sample Preparation & Measurement	Reporting Limit Limits above which test results should be reported
Solvents / Residuals †					
68-12-2	Dimethylformamide (DMFa)	500 ppm	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 each	Byproduct in the production of EVA foams.		
127-19-5	Dimethylacetamide (DMAC)		Solvent used in the production of elastane fibers and sometimes as substitute for DMFa.		
872-50-4	N-Methyl-2-pyrrolidone (NMP)		Industrial solvent used in production of water-based Polyurethanes and other polymeric materials. May also be used as a surface treatment for 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.	ADIN 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				

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses	Suitable Test Method Sample Preparation & Measurement	Reporting Limit Limits above which test results should be reported
	Volatile Organic Compounds (VOCs) †				
71-43-2	Benzene	5 ppm	<p>These VOCs should not be used in textile auxiliary chemical preparations.</p> <p>They are associated with solvent-based processes such as solvent-based polyurethane coatings and glues/adhesives.</p> <p>They should not be used for any kind of facility cleaning or spot cleaning.</p>	<p>For general VOC screening: GC/MS headspace 45 minutes at 120 degrees C</p>	<p>Benzene: 5 ppm Other: 20 ppm each</p>
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 (PERC)				
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-)				
108-38-3					
95-47-6					
106-42-3					

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	333-41-5	Diazinone	118-74-1	Hexachlorobenzene
		1085-98-9	Dichlofluanide	465-73-6	Isodrine
93-76-5	2,4,5-T	120-36-5	Dichloroprop	4234-79-1	Kelevane
94-75-7	2,4-D	115-32-2	Dicofol	143-50-0	Kepone
309-00-2	Aldrine	141-66-2	Dicrotophos	58-89-9	Lindane
86-50-0	Azinophosmethyl	60-57-1	Dieldrine	121-75-5	Malathione
2642-71-9	Azinophosethyl	60-51-5	Dimethoate	94-74-6	MCPA
4824-78-6	Bromophos-ethyl	88-85-7	Dinoseb, its salts and acetate	94-81-5	MCPB
2425-06-1	Captafol	63405-99-2	DTTB (4, 6-Dichloro-7 (2,4,5-trichloro-phenoxy) -2-Trifluoro methyl benz imidazole)	93-65-2	Mecoprop
63-25-2	Carbaryl			10265-92-6	Metamidophos
510-15-6	Chlorbenzilat	115-29-7	Endosulfan	72-43-5	Methoxychlor
57-74-9	Chlordane	959-98-8	Endosulfan I (alpha)	2385-85-5	Mirex
6164-98-3	Chlordimeform	33213-65-9	Endosulfan II (beta)	6923-22-4	Monocrotophos
470-90-6	Chlorfenvinphos	72-20-8	Endrine	298-00-0	Parathion-methyl
1897-45-6	Chlorthalonil	66230-04-4	Esfenvalerate	1825-21-4	Pentachloroanisole
56-72-4	Coumaphos	106-93-4	Ethylendibromid	7786-34-7	Phosdrin/Mevinphos
68359-37-5	Cyfluthrin	56-38-2	Ethylparathione; Parathion	72-56-0	Perthane
91465-08-6	Cyhalothrin	51630-58-1	Fenvalerate	31218-83-4	Propethamphos
52315-07-8	Cypermethrin	Various	Halogenated naphthalenes, including polychlorinated naphthalenes (PCNs)	41198-08-7	Profenophos
78-48-8	S,S,S-Tributyl phosphorotrithioate (Tribufos)			13593-03-8	Quinalphos
52918-63-5	Deltamethrin	76-44-8	Heptachlor	82-68-8	Quintozene
53-19-0	DDD	1024-57-3	Heptachloroepoxide	8001-50-1	Strobane
72-54-8		319-84-6	a-Hexachlorocyclohexane with & without Lindane	297-78-9	Telodrine
3424-82-6	DDE	319-85-7	b-Hexachlorocyclohexane with & without Lindane	8001-35-2	Toxaphene
72-55-9				731-27-1	Tolyfluanide
50-29-3	DDT	319-86-8	g-Hexachlorocyclohexane with & without Lindane	1582-09-8	Trifluraline
789-02-6					



www.afirm-group.com