



Apparel and Footwear International RSL Management Group



RESTRICTED SUBSTANCES LIST

Version 07 | 2022



New for 2022!

AFIRM Explainer Videos: See page 6 for a link to this exciting new content.

- Introduction to AFIRM
- Understanding the AFIRM RSL
- How to Select Materials/Products
- How to Read a Test Report
- Failure Resolution



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.....	6
Links and References.....	6
Additional Substances and Parameters to Consider	7
AFIRM Chemical Information Sheets	8
Definition of “Ages”	8
Definition of “Child Care Articles”	8
Definition of Reporting Limits.....	9
Definition of Material Types	9
Change Log for the 2022 AFIRM RSL	11
AFIRM RSL Testing Matrix.....	13
AFIRM Restricted Substances List	16
Appendix A. South Korea KC Mark Soluble Heavy Metal Requirements....	37
Appendix B. Perfluorinated and Polyfluorinated Chemicals	38
Appendix C. Pesticides and Herbicides, Agricultural	39

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 and footwear. AFIRM acknowledges that a brand's offerings may include closely related products utilizing the same or similar materials, such as accessories, jewelry, sporting good equipment, wearables, and home textiles. The AFIRM RSL may be applied to these additional product types, and examples are included in the scope of this document for guidance; however, the primary focus of the AFIRM RSL remains apparel and footwear. AFIRM recommends that suppliers check with their brand customers for specific requirements regarding additional product categories.

Scope of the AFIRM RSL

Per the Policy Statement on the previous page, the primary focus of the AFIRM Group and the AFIRM RSL is apparel and footwear. However, the AFIRM RSL may also be applied to accessories, jewelry, sporting good equipment, wearables, and home textiles.

- **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.
- **Jewelry.** Small decorative items worn for personal adornment such as rings, necklaces, earrings, pendants, bracelets and cufflinks. Jewelry may be attached to the body or clothing.
- **Sporting Good Equipment.** Any product intended for use in sport or exercise, including protective equipment.
- **Wearables.** Battery-powered electronic devices intended to be worn on the body during normal use. The AFIRM RSL covers components used on the external portion (i.e. skin contact) of the wearable product. Please note that certain wearable products, such as fitness trackers worn on the wrist, could also be classified as jewelry. AFIRM recommends that suppliers check with their brand customers regarding specific testing requirements for wearable components.
- **Home Textiles.** Any product intended for functional or decorative purposes in the home.

For guidance purposes, AFIRM provides examples of products to which the AFIRM RSL may be applied, including but not limited to those listed in Table 1, on the next page.

Additional Product-specific Regulatory Requirements

Please note that the following items have additional product-specific regulatory requirements that fall outside the scope of the AFIRM RSL. Suppliers must take additional steps to ensure products produced in their facilities comply with all such requirements—which include safety, flammability, and more.

- **Toys.** These products have regulatory and specific chemical requirements.
- **Sunglasses and Children's Jewelry.** These types of accessories have non-chemical safety requirements.
- **Protective Equipment.** These products have non-chemical safety and performance standards (e.g. NOCSAE).
- **Food-contact Materials.** These products have regulatory and specific chemical requirements.
- **Electrical and Electronic Components.** Components of products that do not come into contact with the skin are subject to other regulatory requirements (e.g. RoHS, EU Battery Directive).

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.

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

Apparel	Footwear	Accessories	Equipment	Wearables	Home Textiles
<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) • Jewelry 	<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 	<ul style="list-style-type: none"> • Fitness trackers (worn on wrist, chest, finger, ear, etc.) • Heart-rate monitors • Digital watches • Smart watches • Smart apparel and footwear • Wireless headphones and earbuds 	<ul style="list-style-type: none"> • Towels • Bathrobes • Bed linens (e.g. sheets, pillowcases, duvets) • Blankets

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

- English, Chinese, Vietnamese, Japanese, Indonesian, and Spanish versions

AFIRM Chemistry Toolkit
www.afirm-group.com/toolkit

- English, Chinese, Vietnamese, Japanese, Indonesian, and Spanish versions

NEW FOR 2022! AFIRM Explainer Videos
<https://afirm-group.com/start-here/>

- English available, with translations forthcoming

AFIRM Chemical Information Sheets
www.afirm-group.com/chemical-information-sheets

- English, Chinese, Vietnamese, Japanese, Indonesian, 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; Regulation (EU) No 517/2014
https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2014.150.01.0195.01.ENG&toc=OJ:L:2014:150:FULL

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://mrsl.roadmaptozero.com/>

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.

Specific In-country Testing and Certification Requirements

Some countries—such as Korea, Russia, and Saudi Arabia—have specific requirements for certain products. This includes requiring that testing be performed at an approved laboratory in-country, special certification marks, and even unique testing not required by any other country. The AFIRM RSL covers these substance limit requirements, but test methods may vary, and AFIRM member brands may differ on how they address these legal obligations. AFIRM advises suppliers to consult with their customers regarding brand-specific requirements for countries which may have specific testing and/or certification requirements.

Biocides, Nanoparticles, Endocrine Disruptors, Etc.

Some brands may have specific requirements regarding the use of substances of concern such as biocides, nanoparticles, and endocrine disruptors. AFIRM recommends checking with your customers regarding individual policies or requirements.

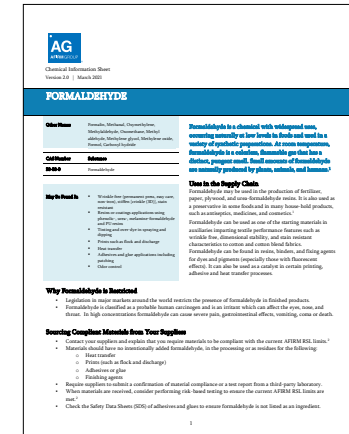
AFIRM Chemical Information Sheets

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 an 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 “Child Care Article”

Various countries define the term “child care article” differently. The most restrictive definition (based on global chemical legislation) includes articles designed or intended by the manufacturer to facilitate sleeping, relaxation, hygiene, feeding, sucking, or teething for children three years of age or younger.

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.

Crystal. In this variety of glass, also known as lead glass, lead replaces calcium content of a typical potash glass. The addition of lead oxide gives crystal a much higher index of refraction than normal glass, and consequently much greater sparkle. Crystal typically contains at least 24% lead and is therefore exempt from many regulatory requirements for jewelry. In the European Union, labeling of crystal products is regulated by Council Directive 69/493/EEC, which defines four categories based on the chemical composition and properties of the material.

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. Includes metals deposited by physical vapor deposition (PVD), chemical vapor deposition (CVD), or electroplating.

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

NOTE: This list provides examples of materials within each category but is not all-inclusive.

Natural Fibers <small>Including semi-synthetics</small>	Blended Fibers	Synthetic Fibers	Artificial Leather	Natural Leather	Coatings & Prints	Natural Materials	Other 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 hair • 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 • Fur skin 	<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) • UV-cured 	<ul style="list-style-type: none"> • Horn • Bone • Cork • Wood • Paper • Straw • Stone 	<ul style="list-style-type: none"> • Glass • Synthetic stone • Porcelain • Ceramic • Crystal 	<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 • Epoxies • Silicone adhesive • UV-cured adhesive

Change Log for the 2022 AFIRM RSL

CAS No.	Substance / Material	Modification	Page
N/A	Fur	<ul style="list-style-type: none"> • Changed Fur to “Fur hair” under “Natural Fibers” category in Table 3. • Added “Fur skin” to “Natural Leather” category in Table 3. 	10
Various	Bisphenols	<ul style="list-style-type: none"> • Added testing recommendation for Bisphenols to Table 4 for “Synthetic Fibers,” “Natural & Synthetic Blends,” and “Natural Leather.” • Added additional information about potential uses and separate reporting limits for individual samples (0.1 ppm) and composite samples (1 ppm). 	14, 19
N/A	pH value	<ul style="list-style-type: none"> • Changed leather pH range to 3.2 – 4.5 for superior chemical fixation, better quality, and to prevent oxidation from CrIII to CrVI. • Added references to unique requirements for Egypt, Morocco, and the Gulf Cooperation Council (GCC). 	16
Various	Alkylphenols (APs) Alkylphenol Ethoxylates (APEOs) including all isomers	<ul style="list-style-type: none"> • Changed APs limit to 10 ppm total and APs/APEOs combined to 100 ppm total to cover regulations in China and South Korea. • Reduced reporting limit for APs to 3 ppm. 	17
85535-84-8 85535-85-9	Chlorinated Paraffins	<ul style="list-style-type: none"> • Updated methods to ISO 18219:2021 for leather and ISO 22818:2021 for textiles. 	19
Various	Chlorophenols	<ul style="list-style-type: none"> • Updated method to DIN 50009:2021 for all materials. 	20
95-50-1	1,2-Dichlorobenzene	<ul style="list-style-type: none"> • Added reference to unique Gulf Cooperation Council (GCC) restriction. 	21
624-49-7	Dimethylfumarate (DMFu)	<ul style="list-style-type: none"> • Updated method to ISO 16186:2021 for all materials. 	22
Various	Disperse Dyes and Dyes, Navy Blue	<ul style="list-style-type: none"> • Changed limit to 30 ppm per United Arab Emirates regulation. 	22–24
Various	Flame Retardants	<ul style="list-style-type: none"> • Added information about other flame retardants restricted under the Stockholm Convention and Aarhus Protocol. 	24
50-00-0	Formaldehyde	<ul style="list-style-type: none"> • Updated leather test method to EN ISO 17226-2:2019 with EN ISO 17226-1:2021 confirmation method in case of interferences. • Added references to unique United Arab Emirates and Indonesia regulations. 	25

CAS No.	Substance / Material	Modification	Page
Various	Heavy Metals (Non-Jewelry)	<ul style="list-style-type: none"> Added Appendix A for South Korea KC mark soluble Heavy Metal requirements. 	26–28, 37
7440-47-3	Heavy Metals (Non-Jewelry), Chromium	<ul style="list-style-type: none"> Deleted Egypt 60 ppm limit for soluble Chromium in leather footwear for babies (regulation repealed). Added reference to Egypt requirement for leather products — 2 ppm for babies and 200 ppm for other ages. Deleted 60 ppm limit for coatings/paints, which is now covered in Appendix A. Changed limit for extractable Chromium to 1 ppm for baby textiles. 	27
7440-50-8	Heavy Metals (Non-Jewelry), Copper	<ul style="list-style-type: none"> Added reference to unique Indonesia regulation. 	27
7439-92-1	Heavy Metals (Non-Jewelry), Lead	<ul style="list-style-type: none"> Changed extractable limit for children's textiles to 0.2 ppm per United Arab Emirates regulation. Changed extractable reporting limit to 0.2 ppm. Added reference to unique Indonesia regulation. 	28
7440-02-2	Heavy Metals, Nickel Release	<ul style="list-style-type: none"> Updated method to EN 12472:2020 for both non-jewelry and jewelry. 	28, 30
90-43-7	Ortho-phenylphenol (OPP)	<ul style="list-style-type: none"> Updated method to DIN 50009:2021 for all materials. 	31
68515-50-4	Phthalates	<ul style="list-style-type: none"> Corrected name for 1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear. 	33
Various	UV Absorbers / Stabilizers	<ul style="list-style-type: none"> Reduced reporting limit to 100 ppm each. 	35




AFIRM RSL Testing Matrix

In 2020, AFIRM redefined the recommended testing approach included in the RSL. In previous years, AFIRM published a Risk Matrix, which gave guidance on risks for each listed substance or class of substances in different materials.

The Testing Matrix is a more prescriptive approach to help brands and suppliers effectively manage chemical risks by adopting a common testing approach for use and acceptance across different brands. Chemicals assigned a Level 1 in materials should be viewed as the minimum amount of testing required to satisfy AFIRM member requirements, and chemicals assigned a Level 2 are recommended for additional testing and may be required at brand discretion. Regular and self-governed testing of all relevant substances by suppliers will help to ensure the widest acceptance of third-party test reports by international brands.

The Testing Matrix was developed by AFIRM brands utilizing multiple sources of information, including industry RSL testing information, a broad understanding of global supply chain operations, and from nearly two decades of managing restricted substances across a wide range of materials.

The Testing Matrix uses the following color codes:

-  **1 Red = Higher risk.** Testing required.
-  **2 Orange = Lower risk.** Testing recommended and may be required at brand discretion.
-  **Blank = Lowest risk.** Not anticipated in material.

Suppliers must check with their brand customers to understand if they will accept test reports according to this AFIRM Testing Matrix. Individual brand testing programs, to the extent they are different, supersede the AFIRM RSL Testing Matrix unless a brand indicates otherwise.

It is a goal of the AFIRM Group to reduce the testing burden on suppliers and streamline the RSL testing approach, while further reducing risk of restricted substances in materials and products. As brands adopt the AFIRM Testing Matrix into their RSL process, suppliers and AFIRM brands will be able to share test reports and data more easily, reducing the need for multiple RSL test submissions to satisfy different RSL requirements.

NOTE:

The test methods listed in the RSL for specific materials correspond to the Testing Matrix. A blank color code for any material will not have a corresponding test method. For example, Metal has a blank color code for APEOs and therefore no test method is listed for APEOs in Metal in the RSL. If the RSL states “All Materials” or “All Materials Except,” this means the test method is applicable to all materials listed with a color of 1 or 2 that do not have a specific test method listed. AFIRM recommends consulting your testing laboratory to determine the best test method for any material not currently listed in this document.

Table 4. AFIRM RSL Testing Matrix

NOTE: For recycled materials, additional testing may be required at Level 1; check with each brand on requirements.

Substance	Natural Fibers	Synthetic Fibers	Natural & Synthetic Blends	Artificial Leather	Natural Leather	Natural Materials	Metals	Other: Porcelain, Ceramic, Glass, Crystal, Etc.	Feathers & Down	Polymers							Coatings & Prints	Glue	
										EVA	PU Foams	All other PU & TPU	Rubber <small>Excludes Latex and Silicon Rubbers</small>	Polycarbonate	ABS	PVC			All Other Foams, Plastics & Polymers
Acetophenone and 2-Phenyl-2-Propanol										2									
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	1	1	1	1	1	1	1	1	
Azo-amines and Aryl Amine salts	1	1	1	1A	1	1A			1A								1		
Bisphenols		2	2		2					2	2	2	2	1	2	2	2		
Chlorinated Paraffins				2	1					2	2	1	1	2	2	1	2		
Chlorophenols	2	2	2		2														
Chlorinated Benzenes and Toluenes		2	2	2															
Dimethylfumarate (DMFu)					2														
Dyes, Forbidden and Disperse		1	1	1													2		
Dyes, Navy Blue		2	2																
Flame Retardants	2B																		
Fluorinated Greenhouse Gases																			
Formaldehyde	1	1	1	2	1	1C							2					1	1

A Level 1 for dyed/colored materials. **D** Level 2 for Wool materials. **H** Level 1 for Cadmium and Lead only; Crystal is exempt for Lead. **L** Level 1 if a Fluorinated finish is applied.
B Level 2 if Flame Retardant use or contamination is suspected. **E** Level 2 if extractable Chrome above 1 ppm. **J** Level 1 for PVC materials. **M** Level 1 if Rubber or black Polymeric materials, otherwise Level 2.
C Level 1 for Wood, Paper, and Straw materials. **F** Copper is exempt from restriction limits in Metal parts. **K** Level 2 for Styrene/Butadiene Rubbers (SBRs) only. **N** Level 1 for PU-based materials.
G Level 2 for plant-based fibers; N/A for animal-based fibers.

Substance	Natural Fibers	Synthetic Fibers	Natural & Synthetic Blends	Artificial Leather	Natural Leather	Natural Materials	Metals	Other: Porcelain, Ceramic, Glass, Crystal, Etc.	Feathers & Down	Polymers							Coatings & Prints	Glue	
										EVA	PU Foams	All other PU & TPU	Rubber <small>Excludes Latex and Silicon Rubbers</small>	Polycarbonate	ABS	PVC			All Other Foams, Plastics & Polymers
Heavy Metals, Chromium VI	2D	2E			1														
Heavy Metals, Extractable	1	1	1	2	1		2F			2	2	2	2	2	2	2	2	2	
Heavy Metals, Nickel Release							1												
Heavy Metals, Total	2G		2G	1	2		1	1H		1	1	1	1	1	1	1	1	2	
Monomers, Styrene & Vinyl Chloride				1J								2K		2	1		1J		
N-Nitrosamines												2							
Organotin Compounds		2	2	1	2						1	1	1		1	1	1	1	
Ortho-phenylphenol (OPP)	2	2	2	2	2												2		
Ozone-depleting Substances																			
Perfluorinated and Polyfluorinated Chemicals (PFCs)	1L																		
Pesticides, Agricultural																			
Phthalates				1						1	1	1	1	2	2	1	1	1	1
Polycyclic Aromatic Hydrocarbons (PAHs)				2						1M	1M	1M	1			1M	1M	1M	1M
Quinoline		2	2																
Solvents / Residuals, DMFa				1							1	1						1N	1N
Solvents / Residuals, DMAC and NMP				1							2	2				2	2	2	
Solvents / Residuals, Formamide										2							2		
UV Absorbers / Stabilizers										2	2	2	2	2	2	2	2		
Volatile Organic Compounds (VOCs)				2						2	2	2	2	2	2	2	2	2	1

A Level 1 for dyed/colored materials.
B Level 2 if Flame Retardant use or contamination is suspected.
C Level 1 for Wood, Paper, and Straw materials.

D Level 2 for Wool materials.
E Level 2 if extractable Chrome above 1 ppm.
F Copper is exempt from restriction limits in Metal parts.
G Level 2 for plant-based fibers; N/A for animal-based fibers.

H Level 1 for Cadmium and Lead only; Crystal is exempt for Lead.
J Level 1 for PVC materials.
K Level 2 for Styrene/Butadiene Rubbers (SBRs) only.

L Level 1 if a Fluorinated finish is applied.
M Level 1 if Rubber or black Polymeric materials, otherwise Level 2.
N Level 1 for PU-based materials.

AFIRM Restricted Substances List

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses & Additional Information	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 certain cross-linking agents, including Dicumyl Peroxide.	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					
N/A	pH value	Textiles: 4.0–7.5 Leather: 3.2–4.5	<p>pH value is a characteristic number, ranging from pH 0 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 global regulations and to minimize the chances of Chromium VI formation during tanning and processing of leather.</p> <p>Important: Egypt, Morocco, and the Gulf Cooperation Council (GCC) require pH for leather not lower than 3.5.</p>	Textiles and Artificial Leather: EN ISO 3071:2020 Leather: EN ISO 4045:2018	N/A

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses & Additional Information	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 APs: 10 ppm Total APs + APEOs: 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.</p> <p>Recycled products: Contact your brand customer for information about potential exemptions from the limit on NPEOs in recycled textile products.</p>	<p>Textiles and Leather: EN ISO 21084:2019</p> <p>Polymers and all other materials: 1 g sample/20 mL THF, sonication for 60 minutes at 70 degrees C, analysis according to EN ISO 21084:2019</p>	Total of NP + OP: 3 ppm
Various	Octylphenol (OP), mixed isomers				
Various	Nonylphenol ethoxylates (NPEOs)			<p>All materials except Leather: EN ISO 18254-1:2016 with determination of APEO using LC/MS or LC/MS/MS</p> <p>Leather: Sample prep and analysis using EN ISO 18218-1:2015 with quantification according to EN ISO 18254-1:2016</p>	Total of NPEOs + OPEOs: 20 ppm
Various	Octylphenol ethoxylates (OPEOs)				

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses & Additional Information	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 cleaved 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-Toluenediamine				
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 & Additional Information	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, PVC, polyamide dye-fixing agents, and sulfone- and phenol-based leather tanning agents.	All materials: Extraction: 1 g sample/20 ml THF, sonication for 60 minutes at 60 degrees C, analysis with LC/MS	0.1 ppm for individual samples 1 ppm for composite samples
80-09-1	Bisphenol S (BPS)	AFIRM recommends testing synthetic textiles & blends, polycarbonate plastics, and natural leather to assess concentrations of Bisphenols in preparation for future restriction.	May be found in recycled polymeric and paper materials due to polycarbonate plastic and thermal receipt paper made with Bisphenols entering waste streams.		1 ppm each
620-92-8	Bisphenol F (BPF)		BPA is formally restricted in items intended to come in contact with the mouth.		
1478-61-1	Bisphenol AF (BPAF)		AFIRM is currently investigating all relevant sources of Bisphenols and their concentrations in products with legislation imposing strict limits pending in multiple jurisdictions. Restriction of these substances is likely in a future update.		
	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.	Leather: ISO 18219-1:2021 (SCCP) ISO 18219-2:2021 (MCCP)	100 ppm
85535-85-9	Medium-chain Chlorinated Paraffins (MCCPs) (C14-C17)	1000 ppm		Textiles: ISO 22818:2021 (SCCP + MCCP)	100 ppm

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses & Additional Information	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>	All materials: DIN 50009:2021	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) and its salts and esters				

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses & Additional Information	Suitable Test Method Sample Preparation & Measurement	Reporting Limit Limits above which test results should be reported
	Chlorinated Benzenes and Toluenes †				
95-49-8	2-Chlorotoluene	Total: 1 ppm	<p>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.</p> <p>Cross-contamination from anti-moth agents and poly shipping bags may cause failures.</p> <p>Important: The Gulf Cooperation Council (GCC) maintains a limit of 1 ppm for 1,2-Dichlorobenzene in textiles.</p>	All materials: EN 17137:2018	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

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses & Additional Information	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 that may be used in sachets in packaging to prevent the buildup of mold, especially during shipping.	All materials: ISO 16186:2021	0.05 ppm
	Dyes (Forbidden † and Disperse †)				
2475-45-8	C.I. Disperse Blue 1	30 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 & Additional Information	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	30 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 & Additional Information	Suitable Test Method Sample Preparation & Measurement	Reporting Limit Limits above which test results should be reported
	Dyes, Navy Blue †				
118685-33-9	Component 1: C ₃₉ H ₂₃ ClCrN ₇ O ₁₂ S ₂ Na	30 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: C ₄₆ H ₃₀ CrN ₁₀ O ₂₀ S ₂ ·3Na				
	Flame Retardants †				
84852-53-9	Decabromodiphenyl ethane (DBDPE)	10 ppm each	With very limited exceptions, flame-retardant substances, including the entire class of organohalogen flame retardants, should no longer be applied to materials during production. Listed here are examples of flame-retardant substances used historically across the apparel and footwear industry. It is not intended to be a complete list. Other flame retardants not applicable to this industry are regulated worldwide by the Stockholm Convention and the Aarhus Protocol, which have been implemented in the European Union under the POPs Regulation.	All materials: EN ISO 17881-1:2016	5 ppm each
32534-81-9	Pentabromodiphenyl ether (PentaBDE)				
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-aziridinyl)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 & Additional Information	Suitable Test Method Sample Preparation & Measurement	Reporting Limit Limits above which test results should be reported
	Fluorinated Greenhouse Gases †				
Various	See Regulation (EU) No 517/2014 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 U.S. Formaldehyde emission requirements (40 CFR 770). Suppliers are advised to refer to brand-specific requirements for these materials. Important: United Arab Emirates Cabinet Resolution No. (54) restricts Formaldehyde in children's textiles to 20 ppm. Indonesia Ministerial Regulation No. 18 limits Formaldehyde to "not detected" (16 ppm) in the following products: towels, bedding, and handkerchiefs.	All materials except Leather: JIS L 1041-2011 A (Japan Law 112) or EN ISO 14184-1:2011 Leather: EN ISO 17226-2:2019 with EN ISO 17226-1:2021 confirmation method in case of interferences. Alternatively, EN ISO 17226-1:2021 can be used on its own.	16 ppm

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses & Additional Information	Suitable Test Method Sample Preparation & Measurement	Reporting Limit Limits above which test results should be reported
	Heavy Metals (Non-Jewelry) Extractable † and Total Content †		See Appendix A for separate South Korea KC Mark soluble Heavy Metal requirements.		
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 17072-1:2019	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 fibers, paints, inks, trims, and plastics.	Extractable: All materials except Leather: DIN EN 16711-2:2016 Leather: DIN EN ISO 17072-1:2019 Total: All materials except Leather: DIN EN 16711-1:2016 Leather: DIN EN ISO 17072-2:2019	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, 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 17072-1:2019	Extractable: 100 ppm
7440-43-9	Cadmium (Cd)	Extractable: 0.1 ppm Total: 40 ppm	Cadmium compounds may be 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 17072-1:2019 Total: All materials except Leather: DIN EN 16711-1:2016 Leather: DIN EN ISO 17072-2:2019	Extractable: 0.05 ppm Total: 5 ppm

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses & Additional Information	Suitable Test Method Sample Preparation & Measurement	Reporting Limit Limits above which test results should be reported
	Heavy Metals (Non-Jewelry), continued		See Appendix A for separate South Korea KC Mark soluble Heavy Metal requirements.		
7440-47-3	Chromium (Cr)	Extractable: Textiles: Babies: 1 ppm Adults and children: 2 ppm	Chromium compounds can be used as dyeing additives; dye-fixing agents; colorfastness after-treatments; dyes for wool, silk, and polyamide (especially dark shades); and leather tanning. Important: Egypt restricts extractable Chromium to 2 ppm in leather products for babies and 200 ppm in leather products for other ages.	Textiles: DIN EN 16711-2:2016 Leather: EN ISO 17072-1:2019	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 17072-1:2019	Extractable: 0.5 ppm
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. Copper is exempt from restriction limits in Metal parts. Indonesia Ministerial Regulation No. 18 limits copper to 25 ppm the following products: towels, bedding, and handkerchiefs.	All materials except Leather: DIN EN 16711-2:2016 Leather: DIN EN ISO 17072-1:2019	Extractable: 5 ppm

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses & Additional Information	Suitable Test Method Sample Preparation & Measurement	Reporting Limit Limits above which test results should be reported
	Heavy Metals (Non-Jewelry), continued		See Appendix A for separate South Korea KC Mark soluble Heavy Metal requirements.		
7439-92-1	Lead (Pb)	Extractable: Adults: 1 ppm Children and babies: 0.2 ppm Total: 90 ppm	May be associated with alloys, plastics, paints, inks, pigments and surface coatings. Crystal or "lead glass" is exempt from total Lead restrictions. Indonesia Ministerial Regulation No. 18 limits extractable Lead to 0.2 ppm in the following products: towels, bedding, and handkerchiefs.	Extractable: All materials except Leather: DIN EN 16711-2:2016 Leather: DIN EN ISO 17072-1:2019 Total: Non-metal: CPSC-CH-E1002-08.3 Metal: CPSC-CH-E1001-08.3 Lead in paint and surface coatings: CPSC-CH-E1003-09.1	Extractable: 0.2 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 and as catalysts in the manufacture of PU and vinyl chloride for use in PVC.	Extractable: All materials except Leather: DIN EN 16711-2:2016 Leather: DIN EN ISO 17072-1:2019 Total: All materials except Leather: DIN EN 16711-1:2016 Leather: DIN EN ISO 17072-2:2019	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 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 17072-1:2019 Release: EN 12472:2020 and EN 1811:2011+A1:2015 Release (eyewear frames): EN 16128:2015	Extractable: 0.1 ppm Release: 0.5 µg/cm ² /week
7782-49-2	Selenium (Se)	Extractable: 500 ppm	May be found in synthetic fibers, paints, inks, plastics and metal trims.	All materials except Leather: DIN EN 16711-2:2016 Leather: DIN EN ISO 17072-1:2019	Extractable: 50 ppm

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses & Additional Information	Suitable Test Method Sample Preparation & Measurement	Reporting Limit Limits above which test results should be reported
	Heavy Metals (Jewelry)				
7440-36-0	Antimony (Sb)	Paints & Coatings: Extractable: 60 ppm	Antimony and its compounds can be used as a Flame Retardant in paints, as well as a colorant in pigments.	ASTM F2923:2020 ★	Extractable: 5 ppm
7440-38-2	Arsenic (As)	Paints & Coatings: Extractable: 25 ppm	Arsenic and its compounds can be used in paints and inks.	ASTM F2923:2020 ★	Extractable: 5 ppm
7440-39-3	Barium (Ba)	Paints & Coatings: Extractable 1000 ppm	Barium and its compounds can be used in pigments for inks	ASTM F2923:2020 ★	Extractable: 100 ppm
7440-43-9	Cadmium (Cd)	Substrates, Paints & Coatings: Total: Adults: 75 ppm Children: 40 ppm	Cadmium and its compounds are used as pigments (especially in red, orange, yellow, and green). It can also be used in alloys to improve hardness or be found as a contaminant	ASTM F2923:2020 ★	Total: 5 ppm
7440-47-3	Chromium (Cr)	Paints & Coatings: Extractable: 60 ppm	Chromium and its compounds can be used as pigments in paints. It can also be used as part of alloys such as stainless steel.	ASTM F2923:2020 ★	Extractable: 5 ppm
7439-92-1	Lead (Pb)	Substrates, Paints & Coatings: Total: 90 ppm	Lead and its compounds may be associated with plastics, paints, inks, pigments, and surface coatings. It can also be found in metals as a contaminant. Crystal or "lead glass" is exempt from total Lead restrictions.	ASTM F2923:2020 ★	Total: 10 ppm
				★ Sample preparation for jewelry and wearables: Wax areas not intended for skin-contact: EN 1811:2011+A1:2015	

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses & Additional Information	Suitable Test Method Sample Preparation & Measurement	Reporting Limit Limits above which test results should be reported
	Heavy Metals (Jewelry), continued				
7439-97-6	Mercury (Hg)	Paints & Coatings: Extractable: 60 ppm	Mercury and its compounds may be used in paints and can be found as a contaminant in alloys and in gold due to its use during the extraction process.	ASTM F2923:2020 ★	Extractable: 5 ppm
7440-02-0	Nickel (Ni) †	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 the corrosion-resistance and hardness of alloys. They can also occur as impurities in pigments and alloys.	EN 12472:2020 and EN 1811:2011+A1:2015 ★	Release: Prolonged skin contact: 0.5 µg/cm ² /week Pierced part: 0.2 µg/cm ² /week
7782-49-2	Selenium (Se)	Paints & Coatings: Extractable: 500 ppm	Selenium and its compounds may be found in paints and inks.	ASTM F2923:2020 ★	Extractable: 50 ppm
★ Sample preparation for jewelry and wearables: Wax areas not intended for skin-contact: EN 1811:2011+A1:2015					
	Monomers †				
100-42-5	Styrene, Free	500 ppm	Styrene is a precursor for polymerization and may be present in various Styrene copolymers like plastic buttons. Free styrene is restricted, not total styrene.	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

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses & Additional Information	Suitable Test Method Sample Preparation & Measurement	Reporting Limit Limits above which test results should be reported
	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. EN ISO 19577:2019	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.	All materials: CEN ISO/TS 16179:2012 or EN ISO 22744-1:2020	0.1 ppm each
Various	Dioctyltin (DOT)				
Various	Monobutyltin (MBT)				
Various	Tricyclohexyltin (TCyHT)				
Various	Trimethyltin (TMT)				
Various	Trioctyltin (TOT)				
Various	Tripropyltin (TPT)				
Various	Tributyltin (TBT)	0.5 ppm each	In textiles and apparel, organotins are associated with plastics/rubber, inks, paints, metallic glitter, polyurethane products and heat transfer material.		
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: DIN 50009:2021	100 ppm

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses & Additional Information	Suitable Test Method Sample Preparation & Measurement	Reporting Limit Limits above which test results should be reported
	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
	Perfluorinated and Polyfluorinated Chemicals (Regulated PFCs or 'PFAS') †				
Various	Perfluorooctane Sulfonate (PFOS) and related substances	1 µg/m ² total	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).	All materials: EN ISO 23702-1	1 µg/m ² total
Various	Perfluorooctanoic Acid (PFOA) and its salts	25 ppb total	Refer to Appendix B for the list of substances and CAS Numbers included in this restriction. In addition to this list, all PFOA- and PFOS-related substances are prohibited from use and are regulated worldwide by the Stockholm Convention and the Aarhus Protocol, which have been implemented in the European Union under the POPs Regulation.		25 ppb total
Various	PFOA-related substances	1000 ppb total			1000 ppb total
	Pesticides and Herbicides, Agricultural †				
Various	See Appendix C 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 & Additional Information	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>Listed here are all legally restricted phthalates as well as those included on the REACH substances of very high concern (SVHC) candidate list at the time of publication. Suppliers should assume that the AFIRM RSL includes all phthalates on the SVHC list—whether itemized here or not—since the list is updated frequently.</p>	<p>Sample preparation for all materials: CPSC-CH-C1001-09.4</p> <p>Measurement:</p> <p>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 (DIIPP)				
131-16-8	Dipropyl phthalate (DPRP)				
27554-26-3	Diisooctyl phthalate (DIOP)				
68515-50-4	1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear				
71850-09-4	Diisohexyl phthalate (DIHxP)				
68515-42-4	1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters (DHNUP)				
84777-06-0	1,2-Benzenedicarboxylic acid Dipentyl ester, branched and linear				
68648-93-1	1,2-Benzenedicarboxylic acid, di-C6-10-alkyl esters or mixed decyl and hexyl and octyl diesters with $\geq 0.3\%$ of dihexyl phthalate; 1,2-Benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters; 1,2-Benzenedicarboxylic acid, di-C6-10-alkyl esters				
68515-51-5					
776297-69-9	n-Pentyl-isopentylphthalate (nPIPP)				

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses & Additional Information	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 2019	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	**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).		
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				
Quinoline †					
91-22-5	Quinoline	50 ppm	Found as an impurity in polyester and some dyestuffs. Quinoline can be included with disperse dye testing, as the same method is used for both.	All materials: DIN 54231:2005 with methanol extraction at 70 degrees C	10 ppm

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses & Additional Information	Suitable Test Method Sample Preparation & Measurement	Reporting Limit Limits above which test results should be reported
Solvents and 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.	Textiles: EN 17131:2019 All other 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.	DIN EN 62321-6:2016-05 (Extraction in THF, analysis by GC/MS)	100 ppm each
3864-99-1	UV 327				
25973-55-1	UV 328				
36437-37-3	UV 350				
2440-22-4	Drometrizole	For informational purposes only. AFIRM recommends testing to assess content levels.	Used as UV Absorbers for Plastics (PVC, PET, PC, PA, ABS, and other Polymers), Rubber, and Polyurethane.		

CAS No.	Substance	Limits Component Materials in Finished Product	Potential Uses & Additional Information	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. South Korea KC Mark Soluble Heavy Metal Requirements

South Korea KC Mark requirements apply to the migration of Heavy Metals from surface coatings/paints, synthetic resins, and paper materials in products intended to be placed in the mouth of children and products intended for infants.

CAS No.	Substance	Limits	Suitable Test Method
7440-36-0	Antimony (Sb)	60 ppm	ISO 8124-3:2010
7440-38-2	Arsenic (As)	25 ppm	
7440-39-3	Barium (Ba)	1000 ppm	
7440-43-9	Cadmium (Cd)	75 ppm	
7440-47-3	Chromium (Cr)	60 ppm	
7439-92-1	Lead (Pb)	90 ppm	
7439-97-6	Mercury (Hg)	60 ppm	
7782-49-2	Selenium (Se)	500 ppm	

Appendix B. Perfluorinated and Polyfluorinated Chemicals (PFCs or 'PFAS')

CAS No.	PFC (PFAS) Name	CAS No.	PFC (PFAS) Name
	PFOS and Related Substances		PFOA and Its Salts
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	335-67-1	Perfluorooctanoic acid (PFOA)
2795-39-3	Perfluorooctanesulfonic acid, potassium salt (PFOS-K)	335-95-5	Sodium perfluorooctanoate (PFOA-Na)
29457-72-5	Perfluorooctanesulfonic acid, lithium salt (PFOS-Li)	2395-00-8	Potassium perfluorooctanoate (PFOA-K)
29081-56-9	Perfluorooctanesulfonic acid, ammonium salt (PFOS-NH ₄)	335-93-3	Silver perfluorooctanoate (PFOA-Ag)
70225-14-8	Perfluorooctane sulfonate diethanolamine salt (PFOS-NH(OH) ₂)	335-66-0	Perfluorooctanoyl fluoride (PFOA-F)
56773-42-3	Perfluorooctanesulfonic acid, tetraethylammonium salt (PFOS-N(C ₂ H ₅) ₄)	3825-26-1	Ammonium pentadecafluorooctanoate (APFO)
4151-50-2	N-Ethylperfluoro-1-octanesulfonamide (N-Et-FOSA)		PFOA-related Substances
31506-32-8	N-Methylperfluoro-1-octanesulfonamide (N-Me-FOSA)		
1691-99-2	2-(N-Ethylperfluoro-1-octanesulfonamido)-ethanol (N-Et-FOSE)	39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)
24448-09-7	2-(N-Methylperfluoro-1-octanesulfonamido)-ethanol (N-Me-FOSE)	376-27-2	Methyl perfluorooctanoate (Me-PFOA)
307-35-7	Perfluoro-1-octanesulfonyl fluoride (POSF)	3108-24-5	Ethyl perfluorooctanoate (Et-PFOA)
754-91-6	Perfluorooctane sulfonamide (PFOSA)	678-39-7	2-Perfluorooctylethanol (8:2 FTOH)
		27905-45-9	1H,1H,2H,2H-Perfluorodecyl acrylate (8:2 FTA)
		1996-88-9	1H,1H,2H,2H-Perfluorodecyl methacrylate (8:2 FTMA)

Appendix C. Pesticides and Herbicides, 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