Product Restricted Substances List

Version 10.0 – April 2023

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PURPOSE OF ECCO PRSL

The ECCO PRSL (Product Restricted Substances List) describes chemical restrictions for materials and components to ensure products comply with the strictest global legislation and harmful substances are limited or even eliminated. ECCO PRSL is generally updated on a yearly basis. Updates are sent to our suppliers and confirmation is requested.

The PRSL provides a comprehensive overview about:

- Hazardous substances which are actually prohibited or restricted
- Specific threshold limit values per substance
- A reference test method to be used for testing
- An ECCO specific test matrix to clarify which materials require which type of testing

In ECCO, we expect our suppliers and test institutes to provide and to test materials in compliance with this PRSL.
Besides this PRSL, materials supplied to ECCO shall be in compliance with any set forth legislation, concerning restricted substances, applicable to where ECCO produces and sells products. Including but not limited to the following:

- REACH regulation (EC) No.1907/2006 including all amendments. ECCO does not allow any substance of very high concern (SVHC) as defined by the EU Candidate List above 0.1% of weight per material, except if lower limit applies as per other part of this document.
- The US Consumer Product Safety Improvement Act (CPSIA)
- The Safe Drinking Water and Toxic Enforcement Act of 1986 in California (Californian Proposition 65)

AFIRM Group

ECCO is a member of the AFIRM Group. ECCO PRSL is aligned with AFIRM RSL. ECCO has in addition a few specific requirements on chemical and material restrictions, which can be found in Appendix D of this document.

QUESTIONS & ANSWERS

QUESTION 1:
How shall an ECCO supplier conduct RCS testing?

In ECCO, we expect our suppliers to supply and test materials in compliance with this PRSL. We ONLY accept tests carried out in ISO/IEC 17025:2017 certified 3rd party testing institutions. Lab staff/test method must be internationally accredited before conducting testing. Suppliers are to ensure test institutions use the most recent PRSL, and that the latest test method is always used. Submitted samples have to be identical to the bulk materials supplied to ECCO.

All ECCO material suppliers have to:

- Conduct RCS testing according to latest ECCO PRSL minimum once a year
- Retain and submit the necessary compliance records to ECCO
- Supplier providing wet blues must also ensure all deliveries are free from Chromium VI

Supplier of packaging materials shall refer to AFIRM packaging RSL for testing requirements. The same rules of testing and reporting do though apply as described in this document.

MRSL: The Manufacturing Restricted Substances List (MRSL) industry-wide tool bans the intentional use of priority chemicals during the manufacturing of textiles, synthetic leather and natural leather, and sets impurity limits for these substances within chemical formulations supplied to material vendors If you are a chemical supplier distributing to ECCO shoe production units, you have to comply with ZDHC MRSL – Zero Discharge of Hazardous Chemicals.

QUESTION 2:
How shall test records look like?

After testing, suppliers must retain the test records and submit a copy of test report (results must be successful) to ECCO.

The records must include the following information:

1. Name and address of testing institute
2. Supplier and contact person
3. Customer name e.g. ECCO
4. Reference master standard e.g. latest version of ECCO PRSL or AFIRM RSL
5. Material name and code
6. Material color name and code
7. Material composition e.g. polyester, leather etc.
8. Hazardous substances the material has been tested for and corresponding test results
9. Test method used for testing and relevant pre-treatment (must be consistent with ECCO PRSL)
10. Reference requirements (must be consistent with ECCO PRSL)
11. Test result

QUESTION 3:
When shall a supplier submit RCS compliance records?

- First time supplying the material code to ECCO for bulk purposes, suppliers must proactively submit the applicable compliance records including RSL reports.

- Suppliers must retest the material every 12 months to evident that the material complies with ECCO PRSL.
- Additional testing is required in case of any composition changes at the supplier or sub-supplier side. Corresponding test reports shall be shared with ECCO.

QUESTION 4:
Where shall a supplier send the test records?

All RCS test records need to be submitted proactively to the suppliers corresponding key account in ECCO responsible for purchasing.

QUESTION 5:
Does ECCO accept other test reports?

Yes, to demonstrate compliance ECCO accepts materials that are certified according to Oeko-Tex Standard 100 (Product Class II or higher) or Bluesign according to the current standard requirements as an alternative.

ECCO accepts test reports for materials that are supplied to other AFIRM group members as a basis. Please make sure that prevailing ECCO specific test requirements and test matrix as described in ECCO PRSL are followed on top.

QUESTION 6:
Can RCS material testing be combined?

To avoid unnecessary testing and therewith costs, ECCO allows supplier to conduct combined testing for same composition based on the following Option 1 & 2:

Option 1: Same composition

Conditions	Mandatory compliance records
Applicable for materials which have the **same composition** but **different material codes**. Applicable e.g. for leathers, which only differ in the grain, emboss, and/or thickness. *(For materials with different thickness, the lowest substance must be tested)*	"*Certificate of RCS Compliance for Same Composition*"* Testing with multiple colours. One test report specifying the tested material codes.

Option 2: Same material code

Conditions	Mandatory compliance records
Applicable for materials which have the **same material code** but **multiple colour codes**. *(All base colours need to comply with ECCO RCS requirements - composition of colour mixtures shall be mentioned to ECCO)* *Base colours: Black, white, yellow, red, blue.*	"*Certificate of RCS Compliance for Same Composition*"* Testing with multiple colours. One test report specifying the tested material code.

* Please find ECCO's link to Appendix 1: "*Certificate of RCS Compliance for Same Composition":*
https://group.ecco.com/en/responsibility/chemicals

QUESTION 7:
What happens if a supplier fails to submit the records?

If the supplier fails to submit the necessary records timely, ECCO business unit purchasing the materials will get a sample from the first bulk delivery, send it for testing and charge back all the associated testing costs to the respective supplier.

- ECCO may cancel all orders and return all stock of materials received from the supplier, at the supplier's risk and expenses.
- If the supplied materials are found to be non-compliant, the affected business unit shall request corrective actions from the supplier.
- ECCO may also consider it a material breach of the cooperation and terminate the cooperation with the supplier immediately.

DEFINITIONS

Components: Components can consist of several different materials (e.g. inlay soles made of foam with a textile or leather cover; laces consisting of cord of natural or artificial textile and aglets made of plastic or metal) might therefore be tested according to several corresponding material groups.

Limits: Some restrictions require that substance limits not be exceeded while others require that substance concentrations be below designated limits (e.g., chromium VI must be below 3 ppm to be compliant with EU law). Test results should always be below designated limits to ensure compliance with all market requirements.

PFAS: (Per- and Polyfluoroalkyl Substances) Large group of synthetic chemicals resistant to stains, oils and water. Earlier also described as **PFC:** (Perfluorinated and Polyfluorinated Chemicals); This term might still be found in the industry.

ECCO continues to actively investigate alternatives free of fluorinated carbons to ensure high performance of WR (water repellent) materials and products with less environmental impact. A phase-out requires a strong cross-functional collaboration in the supply chain from chemical and material suppliers to experts in ECCO who plan, produce and test our products. **NEW:** Criteria for full PFAS restriction. See pages 29 and 35 for important updates regarding this class of chemicals.

Reporting limits: Reporting limits are values at or above the practical quantification limit (PQL) for the test method. The PQL represents the lowest level at which accurate, precise and robust data can be reported. Reporting limits are values above which labs should report detected substances for purposes of data capture and harmonization.

Definitions of materials:

For the purpose of this PRSL, definitions of material types are offered in the following as well as examples of materials types in the table at page 9.

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.

Synthetic coated fabrics Leather-like materials composed of a textile backing and, typically, a PU or PVC coating. May be referred to as "artificial", "imitation", "vegan", or "synthetic" leather, and also "pleather".

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.
See definition of "Synthetic Coated Fabric" for synthetic leather where the coating becomes part of the substrate.

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, 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.

Definition of ages:

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

+ Technical information sheets: AFIRM member brands have produced educational materials advising suppliers about best practices for chemical 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 PRSL.

The **plus symbol +** next to a chemical or a class of chemical indicates that a technical information sheet is available; simply click on the chemical name and your web browser will load the document as a PDF. All chemical information sheets are available in 6 languages (Chinese, English, Indonesian, Japanese, Spanish, and Vietnamese).

LINK LIST

ECCO PRSL

ECCO Certificate of RCS Compliance for Same Composition

AFIRM RSL

AFIRM packaging RSL

AFIRM technical information sheets

ZDHC MRSL

EXPLAINER VIDEOS

AFIRM has created 5 explainer videos. The videos are already available in English. Soon to come are Chinese, Japanese, Indonesian, Spanish and Vietnamese translation.
Check out following topics:

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

Pictures in this document are kindly provided by ECCO Leather.

MATERIAL TYPES

Below table provides examples of materials within each category; please note this is not an all-inclusive list.

Natural Fibers (Including Semi-synthetics)	**Blended Fibers**	**Synthetic Fibers**	**Synthetic Coated Fabrics**	**Natural Leather / Fur skin**	**Coatings & Prints**	**Natural Materials**	**Other materials**	**Polymers, Plastics, Foams, Natural Rubber & Synthetic Rubber**	**Metal**	**Feathers & Down**	**Glue**
• Cotton • Wool • Silk • Hemp • Cashmere • Linen • Fur (hair) • Rayon (Semi-synthetic) • Lyocell (Semi-synthetic) • Leather-protein	• Cotton-Polyester • Wool-Nylon • Ramie-Polyester	• Polyester • Acrylic • Nylon • Polyamide	Textiles with: • Polyurethane (PU) Coating • Polyvinyl Chloride (PVC) Coating • Other Polymeric Coating	• Leather • Fur (skin) • Bonded/ recycled leather	Printing techniques such as: • Heat transfers • Dye sublimation • Screen printing • Direct-to-garment printing • Discharge printing • Plastisol transfers Coatings such as: • Polyvinyl chloride (PVC) • Polyurethane (PU) • UV-cured	• Horn • Bone • Cork • Wood • Paper • Straw • Stone • Shell (e.g. coconut or mother of pearl)	• Glass • Synthetic stone • Porcelain • Ceramic • Crystal	• 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)	• Stainless steel • Brass • Copper • Gold • Silver • Aluminum	• Feathers • Down	• Hot melt adhesive • Powdered adhesive • Flock adhesive • Contact adhesive • Latex glue • Polyurethane glue • Neoprene cement • Epoxies • Silicone adhesive • UV-cured adhesive

HISTORY TRACKER

- **CHANGES FROM PRSL 9.0**

General changes

Subject	Modification	Page
Synthetic Coated Fabrics	Replaced material type 'Artificial Leather with Synthetic Coated Fabrics and revised definition	6 , 9
Limits	Revised definition to emphasize report measures shall be below designated limits in order to ensure compliance with all market requirements	6
RSL Testing Matrix Changes	See Test Matrix for various changes.	12-13

Changes of substances, limits and chemical testing

CAS No	Substance	Modification	Page
Various	Azo-amines and Aryl Amine salts	Specified that testing is necessary for dyed/colored materials only.	12
N/A	Acidic and Alkaline Substances	Added pH range of 3.5 – 7.0 for non-chrome-tanned leather.	14
Various	Azo-amines and Aryl Amine salts	Updated method EN ISO 17234-1 for leather from 2015 to 2020 version.	16
Various	Bisphenols	Clarified that 1 ppm BPA limit is for items intended to come in contact with the mouth only. Added information about proposed restriction in the European Union (EU) including Bisphenol B (BPB). Level 1 Testing for Bisphenols is recommended in multiple materials to educate suppliers and advise them to begin seeking alternatives from their chemical suppliers.	17
85535-84-8 85535-85-9	Chlorinated Paraffins	Clarified that ISO 22818 applies to textiles and all other materials.	17
Various	Dyes (Forbidden, Disperse, and Navy Blue) and Quinoline	Updated method to DIN 54231:2022.	20-21, 31
Various	Flame Retardants	Clarified that flame-retardant restrictions apply to other potential uses as well.	22
Various	Heavy Metals (Jewelry)	Specified method ASTM F963-17 as referenced in ASTM F2923:2020.	26-27
Various	N-Nitrosamines	Specified method ISO 19577:2019 with LC/MS/MS verification only for testing.	28
Various	Per- and Polyfluoroalkyl Substances (PFAS)	Added restriction on total organic fluorine with method EN 14582:2016 or ASTM D7359:2018 based on new legislation in California. Added methods EN 17681-1:2022 and EN 17681-2:2022 for testing specific substances. Added new restrictions on PFAS subgroups: PFHxS and its salts and related substances as well as C9 - C14 PFCAs and their salts and related substances.	29, 35
Various	Polycyclic Aromatic Hydrocarbons (PAHs)	Added methods EN 17132 and EN 16190.	31
Various	Solvents and Residuals	Method DIN CEN ISO/TS 16189:2013 updated to ISO 16189:2021 for all other materials.	32
Various	UV Stabilizers	Method updated to ISO 24040 with extraction in THF, analysis by GC/MS.	32

TEST MATRIX

In alignment to the latest version of AFIRM RSL, ECCO also redefined its test matrix. This test matrix replaces the former risk matrix. The test 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 but it is not mandatory for ECCO suppliers unless ECCO indicates specifically. Regular and self-governed testing of all relevant substances by suppliers will help to ensure the widest acceptance of 3rd party test reports by international brands.

The test 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 Test matrix uses the following color codes:

1	Dark Grey = Higher risk. Testing required.
2	Light Grey = Lower risk. Recommended additional testing – ECCO keeps the right to request Level 2 tests from its suppliers in case of compliance issues, otherwise it is no obligation.
	Blank = Lowest risk. Not anticipated in material.

See footnotes for material-specific testing recommendations and exceptions.

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 ECCO adopts the AFIRM Test Matrix into its PRSL process, suppliers and AFIRM brands will be able to share test reports and data more easily, reducing the need for multiple PRSL test submissions to satisfy different PRSL requirements.

Note: The test methods listed in the PRSL for specific materials correspond to the test 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 PRSL. If the PRSL 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. It is recommended to consult your testing laboratory to determine the best test method for any material not currently listed in this document.

Substance	Natural Fibers	Synthetic Fibers	Natural & Synthetic Fibre blends	Synthetic Coated Fabrics	Natural Leather & Fur Skin	Natural Materials	Metals	Other: Porcelain, Ceramic, Glass, Crystal, Etc.	Feathers & Down	Polymers									Coatings, Prints	Glue
										EVA	PU Foams	All other PU & TPU	Rubber Excludes Latex and Silicone Rubbers	Polycarbonate	ABS	PVC	All other Foams, Plastic and Polymers			
Acetophenone and 2-Phenyl-2-Propanol										2										
Acidic and Alkaline Substances (pH Value)	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	1	1
Azo-amines and Aryl Amine Salts	1A	1A	1A	1A	1A	1A			1A									1		
Bisphenols		1	1	1	1					2	2	2	2	1	2	2	2			
Chlorinated Paraffins, SCCP (C10-C13) and MCCP (C14-C17)				2J	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		1A	1A	1A														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 (non-white only)
B Level 2 if flame retardants use or contamination is suspected only
C Level 1 for wood, paper and straw materials
D Level 2 for wool materials only
E Level 2 if extractable Chrome above 1 ppm only
F Copper is exempt from restriction limits in Metal parts
G Level 2 for plant-based fibres only; N/A for animal-based fibres
H Level 1 for Cadmium and Lead only;
J Level 1 for PVC materials only, otherwise Level 2
K Level 2 for Styrene/Butadiene rubbers (SBR) only
L Level 1 if PFAS use or contamination suspected
M Level 1 if rubber or black polymeric materials Otherwise level 2
N Level 1 for PU- and PVC based materials only

Substance	Natural Fibers	Synthetic Fibers	Natural & Synthetic Fibre blends	Synthetic Coated Fabrics	Natural Leather & Fur Skin	Natural Materials	Metals	Other: Porcelain, Ceramic, Glass, Crystal,	Feathers & Down	Polymers									Coatings, Prints	Glue
										EVA	PU Foams	All other PU & TPU	Rubber Excludes Latex and Silicone Rubbers	Polycarbonate	ABS	PVC	All other Foams, Plastic and 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	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																				
Per- and Polyfluoroalkyl Substances (PFAS) / (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	
ECCO SPECIAL NEEDS:																				
Leather preservatives (TCMTB, CMK, OIT)					2															

A Level 1 for dyed/colored materials only
B Level 2 if flame retardants use only or contamination is suspected only
C Level 1 for wood, paper and straw materials
D Level 2 for wool materials only
E Level 2 if extractable Chrome above 1 ppm only
F Copper is exempt from restriction limits in Metal parts
G Level 2 for plant-based fibres only; N/A for animal-based fibres
H Level 1 for Cadmium and Lead only;
J Level 1 for PVC materials only, Otherwise Level 2
K Level 2 for Styrene/Butadiene rubbers (SBR) only
L Level 1 if PFAS use or contamination suspected
M Level 1 if rubber or black polymeric materials, Otherwise Level 2
N Level 1 if PU- and PVC-based materials

PRODUCT RESTRICTED SUBSTANCES LIST

CAS No	Substance	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	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 cross-linking agent.	Extraction in acetone or methanol GC/MS, sonication for 30 minutes at 60°C	25 ppm each
617-94-7	2-Phenyl-2-Propanol				
	Acidic and Alkaline Substances				
Various	pH value	Textiles: 4.0–7.5 Leather: Cr-tanned: 3.2–4.5 Other: 3.5 – 7.0	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. 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. ECCO recommends the limits cited to comply with global regulations and to minimize the chances of chromium VI formation during tanning and processing of leather. Important: Egypt, Morocco, and the Gulf Cooperation Council (GCC) require pH for leather not lower than 3.5.	Textiles and Artificial Leather: EN ISO 3071:2020 Leather: EN ISO 4045:2018	N/A

CAS No	Substance	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	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 + APEO: 100 ppm	APEOs can be used as or found in detergents, scouring agents, spinning oils, wetting agents, softeners, emulsifying/dispersing agents for dyes and prints, impregnating agents, de-gumming for silk production, dyes and pigment preparations, polyester padding and down/feather fillings. APs are used as intermediaries in the manufacture of APEOs and antioxidants used to protect or stabilize polymers. Biodegradation of APEOs into APs is the main source of APs in the environment. APEOs and formulations containing APEOs are prohibited from use throughout supply chain and manufacturing processes. We acknowledge that residual or trace concentrations of APEOs may still be found at levels exceeding 100 ppm and that more time is necessary for the supply chain to phase them out completely. Recycled products: ECCO applies the same limits on NPEO on virgin as well as recycled materials	Textiles and Leather: EN ISO 21084:2019 Polymers and all other materials: 1 g sample/20 mL THF, sonication for 60 minutes at 70°C, analysis according to EN ISO 21084:2019	Total of NP & OP: 3 ppm
Various	Octylphenol (OP), mixed isomers				
Various	Nonylphenol ethoxylates (NPEOs)			All materials except Leather: EN ISO 18254-1:2016 with determination of APEO using LC/MS or LC/MS/MS Leather: sample prep and analysis using EN ISO 18218-1:2015 quantification according to EN ISO 18254-1:2016	Total of NPEO & OPEO: 20 ppm
Various	Octylphenol ethoxylates (OPEOs)				

CAS No	Substance	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	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	Azo dyes and pigments are colorants that incorporate one or several azo groups (-N=N-) bound with aromatic compounds. Thousands of azo dyes exist, but only those which degrade to form the listed cleavable amines are restricted. Azo dyes that release these amines are regulated and should no longer be used for dyeing textiles.	All materials except Leather: EN ISO 14362-1:2017 Leather: EN ISO 17234-1:2020 p-Aminoazobenzene: All materials except leather: EN ISO 14362-3:2017 Leather: EN ISO 17234-2:2011	5 ppm each
92-87-5	Benzidine				
95-69-2	4-Chloro-o-toluidine				
91-59-8	2-Naphthylamine				
97-56-3	o-Aminoazotoluene				
99-55-8	2-Amino-4-nitrotoluene				
106-47-8	p-Chloraniline				
615-05-4	2,4-Diaminoanisole				
101-77-9	4,4'-Diaminodiphenylmethane				
91-94-1	3,3'-Dichlorobenzidine				
119-90-4	3,3'-Dimethoxybenzidine				
119-93-7	3,3'-Dimethylbenzidine				
838-88-0	3,3'-dimethyl-4,4'-diaminodiphenylmethane				
120-71-8	p-Cresidine				
101-14-4	4,4'-Methylen-bis(2-chloraniline)				
101-80-4	4,4'-Oxydianiline				
139-65-1	4,4'-Thiodianiline				
95-53-4	o-Toluidine				
95-80-7	2,4-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 Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	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 Limit is applicable to items intended to come in contact with the mouth; however, see Potential Uses & Additional Information.	BPA may be used in the production of epoxy resins, polycarbonate plastics, flame retardants, and PVC. BPS may be used as a substitute for BPA and can be found along with BPF in polyamide dye-fixing agents and sulfone- and phenol- based leather tanning agents. BPA and BPS can be found in recycled polymeric and paper materials due to polycarbonate plastic and thermal receipt paper made with Bisphenols entering waste streams. Additional restrictions on the entire class of bisphenols are forthcoming with a new restriction proposal pending in the European Union. AFIRM recommends testing relevant materials for bisphenols according to the Testing Matrix and to begin working with suppliers to replace bisphenols with suitable alternatives in all products.	All materials: Extraction: 1 g sample/20 ml THF, sonication for 60 minutes at 60 °C, analysis with LC/MS	0.1 ppm for individual samples 1 ppm for composite samples
80-09-1	Bisphenol S (BPS)	BPA and other listed bisphenols should be substituted with safer alternatives in all applicable materials in preparation for forthcoming restrictions ECCO recommends testing synthetic textiles & blends, polycarbonate plastics, and natural leather to assess concentrations.			1 ppm each
77-40-7	Bisphenol B (BPB)				
620-92-8	Bisphenol F (BPF)				
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.	Leather: ISO 18219-1:2021 (SCCP) ISO 18219-2:2021 (MCCP) Textiles and all other materials: ISO 22818:2021 (SCCP + MCCP)	100 ppm
85535-85-9	Medium-chain Chlorinated Paraffins (MCCPs) (C14-C17)	1000 ppm			100 ppm

CAS No	Substance	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement	Reporting Limit Limits above which test results should be reported
	Chlorophenols ±				
15950-66-0	2,3,4-Trichlorophenol	0.5 ppm each	Chlorophenols are polychlorinated compounds used as preservatives or pesticides. Pentachlorophenol (PCP), Tetrachlorophenol (TeCP), and Trichlorophenols (TriCP) are sometimes used to prevent mould and kill insects when growing cotton and when storing/transporting fabrics. PCP, TeCP and TriCP can also be used as preservatives in print pastes.	All materials: DIN 50009:2021	0.5 ppm each
933-78-8	2,3,5-Trichlorophenol				
933-75-5	2,3,6-Trichlorophenol				
95-95-4	2,4,5-Trichlorophenol				
88-06-2	2,4,6-Trichlorophenol				
609-19-8	3,4,5-Trichlorophenol				
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 Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	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	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. Important: The Gulf Cooperation Council (GCC) maintains a limit of 1 ppm for 1,2-Dichlorobenzene in textiles.	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 Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	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	Disperse dyes are a class of water -insoluble dyes that penetrate the fibre-system of synthetic or manufactured fibres and are held in place by physical forces without forming chemical bonds. Disperse dyes are used in synthetic fibre (e.g., polyester, acetate, polyamide). Restricted disperse dyes are suspected of causing allergic reactions and are prohibited from use for dyeing of textiles.	All materials: DIN 54231:2022	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				
3179-89-3	C.I. Disperse Red 17				
61968-47-6	C.I. Disperse Red 151				
119-15-3	C.I. Disperse Yellow 1				
2832-40-8	C.I. Disperse Yellow 3				

CAS No	Substance	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement	Reporting Limit Limits above which test results should be reported
	Dyes, Forbidden and Disperse, continued				
6300-37-4	C.I. Disperse Yellow 7	30 ppm each	Disperse dyes are a class of water -insoluble dyes that penetrate the fibre-system of synthetic or manufactured fibres and are held in place by physical forces without forming chemical bonds. Disperse dyes are used in synthetic fibre (e.g., polyester, acetate, polyamide). Restricted disperse dyes are suspected of causing allergic reactions and are prohibited from use for dyeing of textiles.	All materials: DIN 54231:2022	15 ppm each
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				
	Dyes, Navy Blue +				
118685-33-9	Component 1: C39H23ClCrN7O12S.2Na	30 ppm each	Navy blue colorants are regulated and prohibited from use for dyeing of textiles. Index 611-070-00-2	All materials: DIN 54231:2022	15 ppm each
Not allocated	Component 2: C46H30CrN10O20S2.3Na				

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	Flame Retardants +				
84852-53-9	Decabromodiphenyl ethane (DBDPE)	10 ppm each	With very limited exceptions, flame-retardant chemicals, 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. The 10 ppm limit is established to account for incidental impurities, byproducts, and contaminants. Flame retardants should not be used for any other purpose, e.g., as softeners or plasticizers.	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)				
3296-90-0	2,2-bis(bromomethyl)-1,3-propanediol (BBMP)				
13674-87-8	Tris(1,3-dichloro-isopropyl) phosphate (TDCPP)			All materials: EN ISO 17881-2:2016	
25155-23-1	Trixylyl phosphate (TXP)				
126-72-7	Tris(2,3,-dibromopropyl) phosphate (TRIS)				
545-55-1	Tris(1-aziridinyl)phosphine oxide) (TEPA)				
115-96-8	Tris(2-chloroethyl)phosphate (TCEP)				
5412-25-9	Bis(2,3-dibromopropyl) phosphate (BDBPP)				
	Fluorinated Greenhouse Gases +				
Various	See Regulation (EU) No 517/2014 for a complete list. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R0517&from=en	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

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	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. 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
	Heavy Metals (Non-Jewelry) 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 17072-1:2019	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

CAS No	Substance	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement	Reporting Limit Limits above which test results should be reported
	Heavy Metals (Non-Jewelry), continued				
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
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. 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 dyeing of wool (after the chroming process).	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 Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement	Reporting Limit Limits above which test results should be reported
	Heavy Metals (Non-Jewelry) , continued				
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. 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/cm²/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/cm²/week
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 17072-1:2019	Extractable: 50 ppm

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	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 F963-17 as referenced in 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 F963-17 as referenced in 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 F963-17 as referenced in 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 F963-17 as referenced in 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 F963-17 as referenced in 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 F963-17 as referenced in ASTM F2923:2020	Total: 10 ppm

CAS No.	Substance	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	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 F963-17 as referenced in ASTM F2923:2020	Extractable: 5 ppm
7440-02-0	Nickel (Ni) ±	Release (metal parts): Prolonged skin contact: 0.5 µg/cm²/week Pierced part: 0.2 µg/cm²/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/cm²/week Pierced part: 0.2 µg/cm²/week
7782-49-2	Selenium (Se)	Paints & Coatings: Extractable: 500 ppm	Selenium and its compounds may be found in paints and inks.	ASTM F963-17 as referenced in ASTM F2923:2020	Extractable: 50 ppm
	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°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

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	N-Nitrosamines ±				
62-75-9	N-nitrosodimethylamine (NDMA)	0.5 ppm each	Can be formed as by-product in the production of rubber.	EN ISO 19577:2019 with LC/MS/MS verification if positive	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)				
	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 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			
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 dyeing processes.	All materials: DIN 50009:2021 or ISO 13365 alternatively	100 ppm
	Ozone-depleting Substances ±				
Various	See Regulation (EC) No 1005/2009 for a complete list.	5 ppm	Ozone-depleting substances are prohibited from use. Ozone depleting substances have been used as a foaming agent in PU foams as well as a dry-cleaning agent. They are prohibited from use.	All materials: GC/MS headspace 120°C for 45 minutes	5 ppm

CAS No	Substance	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement	Reporting Limit Limits above which test results should be reported
	Per- and Polyfluoroalkyl substances (regulated PFASs) ±				
Various	All PFAS as measured by total organic fluorine	100 ppm by 2025 50 ppm by 2027	Regulations around the world ban the use of PFAS in apparel and footwear, with partial or full exemptions for personal protective equipment and outdoor apparel for severe wet conditions. See California AB 1817 and check with your sourcing contact for ECCO's exemption policy, which may depend on the market. PFAS may be used in commercial water-, oil-, and stain-repellent agents as well as in breathable membranes that remove moisture, e.g., PTFE. Refer to Appendix B for a list of PFAS substances and CAS Numbers for which testing can be conducted to indicate whether PFAS chemistry is present above restricted levels due to intended use or unintended contamination. An update to AFIRM's PFAS Chemical Information Sheet will include guidance for phasing out the entire class of PFAS, with a recommended testing approach to ensure compliance with all global regulations using the methods included in this section.	EN 14582:2016 or ASTM D7359:2018	50 ppm total
Various	Perfluorooctane Sulfonate (PFOS) and related substances	1 µg/m² total		All materials: EN ISO 23702-1 or EN 17681-1:2022 & 17681-2:2022	1 µg/m² total
Various	Perfluorooctanoic Acid (PFOA) and its salts	25 ppb total			25 ppb total
Various	PFOA – related substances	1000 ppb total			1000 ppb total
Various	Perfluorohexane-1-sulphonic acid (PFHxS) and its salts	25 ppb total			25 ppb total
Various	PFHxS-related substances	1000 ppb total			1000 ppb total
Various	C9-C14 Perfluorocarboxylic acids (PFCAs) and their salts	25 ppb total			25 ppb total
Various	C9-C14 PFCA-related substances	260 ppb total			260 ppb total
Various	Other Perfluoroalkyl Carboxylic Acids (PFCAs)	For information purposes only. ECCO recommends testing to assess content levels.			100 ppb total
	Pesticides/ 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 Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	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	Esters of ortho-phthalic acid (Phthalates) are a class of organic compound commonly added to plastics to increase flexibility. They are sometimes used to facilitate the moulding of plastic by decreasing its melting temperature. Phthalates can be found in: • Flexible plastic components (e.g., PVC) • Print pastes • Adhesives • Plastic buttons • Plastic sleevings • Polymeric coatings 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 ECCO PRSL includes all phthalates on the SVHC list—whether itemized here or not—since the list is updated frequently.	Sample preparation for all materials: CPSC-CH-C1001-09.4 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). All materials except textiles: GC/MS	50 ppm each
117-84-0	Di-n-octylphthalate (DNOP)				
117-81-7	Di(2-ethylhexyl)-phthalate (DEHP)				
26761-40-0	Diisodecylphthalate (DIDP)				
85-68-7	Butylbenzylphthalate (BBP)				
84-74-2	Dibutylphthalate (DBP)				
84-69-5	Diisobutylphthalate (DIBP)				
84-75-3	Di-n-hexylphthalate (DnHP)				
84-66-2	Diethylphthalate (DEP)				
131-11-3	Dimethylphthalate (DMP)				
131-18-0	Di-n-pentyl phthalate (DPENP)				
84-61-7	Dicyclohexyl phthalate (DCHP)				
71888-89-6	1,2-Benzenedicarboxylic acid, 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	Di-hexylphthalate, branched and linear (DHxP)				
71850-09-4	Diisohexyl phthalate (DIHxP)				
68515-42-4	1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear				
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 ≥ 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 Raw Material & Finished Product		Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement	Reporting Limit Limits above which test results should be reported
	Polycyclic Aromatic Hydrocarbons (PAHs) ±					
83-32-9	Acenaphtene	No individual restriction	Total: 10 ppm	PAHs are natural components of crude oil and are common residues from oil refining. PAHs have a characteristic smell similar to that of car tires or asphalt. Oil residues containing PAHs are added to rubber and plastics as a softener or extender and may be found in rubber, plastics, lacquers and coatings. PAHs are often found in the outsoles of footwear and in printing pastes for screen prints. PAHs can be present as impurities in Carbon Black. They also may be formed from thermal decomposition of recycled materials during reprocessing. **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 2019 or EN 17132 or ISO 16190	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				
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 54231:2022 with methanol extraction at 70°C	10 ppm

CAS No	Substance	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	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.	Textiles: EN 17131:2019 All other materials: ISO 16189:2021	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.	ISO 24040 with 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. ECCO recommends testing to assess content levels.	Used as UV-absorbers for plastics (PVC, PET, PC, PA, ABS, and other polymers), rubber, polyurethane.		

CAS No	Substance	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	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	These VOCs should not be used in textile auxiliary chemical preparations. They are also associated with solvent-based processes such as solvent-based polyurethane coatings and glues/adhesives. They should not be used for any kind of facility cleaning or spot cleaning.	For general VOC screening: GC/MS headspace 45 minutes at 120°C	Benzene: 5 ppm Other: 20 ppm each
75-15-0	Carbon Disulfide	Total: 1000 ppm			
56-23-5	Carbon Tetrachloride				
67-66-3	Chloroform				
108-94-1	Cyclohexanone				
107-06-2	1,2-Dichloroethane				
75-35-4	1,1-Dichloroethylene				
100-41-4	Ethylbenzene				
76-01-7	Pentachloroethane				
630-20-6	1,1,1,2- Tetrachloroethane				
79-34-5	1,1,2,2- Tetrachloroethane				
127-18-4	Tetrachloroethylene (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: Per- and Polyfluoroalkyl substances (PFAS)

CAS No.	Substance	CAS No.	Substance
	PFOS and Related Substances		**PFHxS and Its Salts**
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	355-46-4	Perfluorohexane Sulfonic acid (PFHxS)
2795-39-3	Perfluorooctanesulfonic acid, potassium salt (PFOS-K)	3871-99-6	Perfluorohexane Sulfonic acid, potassium salt (PFHxS-K)
29457-72-5	Perfluorooctanesulfonic acid, lithium salt (PFOS-Li)	55120-77-9	Perfluorohexane Sulfonic acid, lithium salt (PFHxS-Li)
29081-56-9	Perfluorooctanesulfonic acid, ammonium salt (PFOS-NH_4)	68259-08-5	Perfluorohexane Sulfonic acid, ammonium salt (PFHxS-NH4)
70225-14-8	Perfluorooctane sulfonate diethanolamine salt (PFOS-$NH(OH)_2$)	82382-12-5	Perfluorohexane Sulfonic acid, sodium salt (PFHxS-Na)
56773-42-3	Perfluorooctanesulfonic acid, tetraethylammonium salt (PFOS-$N(C_2H_5)_4$)		**PFHxS-related Substances**
251099-16-8	Didecyldimethyl ammonium perfluorooctane sulfonate (PFOS-N(C10H21)2(CH3)2)		
4151-50-2	N-Ethylperfluoro-1-octanesulfonamide (N-Et-FOSA)	68259-15-4	N-Methylperfluoro-1-hexanesulfonamide (N-Me-FHxSA)
31506-32-8	N-Methylperfluoro-1-octanesulfonamide (N-Me-FOSA)	41997-13-1	Perfluorohexane sulfonamide (PFHxSA)
1691-99-2	2-(N-Ethylperfluoro-1-octanesulfonamido)-ethanol (N-Et-FOSE)		**C9 – C14 PFCAs and Their Salts**
24448-09-7	2-(N-Methylperfluoro-1-octanesulfonamido)-ethanol (N-Me-FOSE)		
307-35-7	Perfluoro-1-octanesulfonyl fluoride (POSF)	375-95-1	Perfluorononanoic Acid (PFNA, C9-PFCA)
754-91-6	Perfluorooctane sulfonamide (PFOSA)	335-76-2	Perfluorodecanoic Acid (PFDA, C10-PFCA)
	PFOA and Its Salts	2058-94-8	Perfluoroundecanoic Acid (PFUnA, C11-PFCA)
		307-55-1	Perfluorododecanoic Acid (PFDoA, C12-PFCA)
335-67-1	Perfluorooctanoic acid (PFOA)	72629-94-8	Perfluorotridecanoic Acid (PFTrDA, C13-PFCA)
335-95-5	Sodium perfluorooctanoate (PFOA-Na)	376-06-7	Perfluorotetradecanoic Acid (PFTeDA, C14-PFCA)
2395-00-8	Potassium perfluorooctanoate (PFOA-K)	172155-07-6	Perfluoro-3-7-dimethyloctanecarboxylate (PF-3,7-DMOA)
335-93-3	Silver perfluorooctanoate (PFOA-Ag)		**C9 – C14 PFCA-related Substances**
335-66-0	Perfluorooctanoyl fluoride (PFOA-F)		
3825-26-1	Ammonium pentadecafluorooctanoate (APFO)	17741-60-5	1H,1H,2H,2H-Perfluorododecyl acrylate (10:2 FTA)
	PFOA-related substances	2144-54-9	1H,1H,2H,2H-Perfluorododecyl methacrylate (10:2 FTMA)
		865-86-1	1H,1H,2H,2H-Perfluorododecanol (10:2 FTOH)
39108-34-4	1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	34598-33-9	2H,2H,3H,3H-Perufloroundecanoic acid (H4PFUnA)
376-27-2	Methyl perfluorooctanoate (Me-PFOA)	678-39-7	Perfluorocylethanol 8:2 (8:2 FTOH)
3108-24-5	Ethyl Perfluorooctanoate (Et-PFOA)	39239-77-5	1H,1H,2H,2H-perfluorotetradecan-1-ol (12:2 FTOH)
678-39-7	2-Perfluorooctylethanol (8:2 FTOH)	120226-60-0	1H,1H,2H,2H-Perfluorododecanesulphonic acid (10:2 FTS)
27905-45-9	1H,1H,2H,2H-Perfluorodecyl acrylate (8:2 FTA)	2043-54-1	1H,1H,2H,2H-Perfluorododecyl iodide (10:2 FTI)
1996-88-9	1H,1H,2H,2H-Perfluorodecyl methacrylate (8:2 FTMA)	30046-31-2	1H,1H,2H,2H-Perfluorotetradecyl iodide (12:2 FTI)
27854-31-5	2H,2H-Perfluorodecanoic acid (H2PFDA)		**Other Perfluoroalkyl Carboxylic Acids (PFCAs)**
		307-24-4	Perfluorohexanoic Acid (PFHxA, C6-PFCA)

APPENDIX C: Pesticides and Herbicides, Agricultural

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

APPENDIX D: ECCO Special Requirements

CAS No.	Substance	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement
21564-17-0	2 (thiocyanomthylthio) benzothiazole (TCMTB)	500 ppm	TCMTB, OIT, CMK and OPP (1000 ppm) are commonly used preservatives in leather production. ECCO requirements follow the concentration limit recommended by "Blauer Engel" to restrict these substances.	ISO 13365
26530-20-1	2-octylisothiazol-3(2H)-one (OIT)	250 ppm		
59-50-7	4-chloro-3-methylphenol (CMK)	600 ppm		