CRADLE TO CRADLE PRODUCTS INNOVATION INSTITUTE

CRADLE TO CRADLE CERTIFIED™ PRODUCT STANDARD VERSION 4

SECOND DRAFT REFERENCE DOCUMENT

RESTRICTED SUBSTANCES LIST (RSL)

JULY 2020

(NOTE: This reference document will be updated prior to release of the Version 4 standard and annually thereafter.)

1. Background

The following restrictions apply to all products seeking Cradle to Cradle certification or a Material Health Certificate at any certification level under Version 4 of the Cradle to Cradle Certified Product Standard (the Standard). Unless noted otherwise, the applicable thresholds may not be exceeded for the listed restricted substances in any homogeneous material subject to review in a certified product.

The restrictions are grouped into a core list that applies to all homogeneous materials subject to review in all products, and five supplementary lists, which include additional restrictions specific to certain material or product types (see section 2). Some substances are on multiple lists with differing thresholds or restriction conditions. In such cases, the most conservative applicable restriction must be met (e.g. PAHs are restricted with different thresholds on the Biological Materials and the Children's Products Lists. For a biological material in a children's product, PAH concentrations must be below the more conservative thresholds on the Children's Product List).

With the exception of restrictions for certain classes of organohalogens on the core list (see 'Notes' below), the restrictions for substances on the RSL are based on leading international chemical regulations. The chemical regulations included are those currently in effect in the European Union (EU) under Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), Restriction of Hazardous Substances (RoHS), the Stockholm Convention, and the Toy Directive, as well as one threshold based on the European Council of Vinyl Manufacturers (ECVM) Industry Charter. Where a substance or substance group on this RSL is also on the list of Chemicals Known to the State to Cause Cancer or Reproductive Toxicity under California Proposition 65 ("The Safe Drinking Water and Toxic Enforcement Act of 1986"), this is referenced.

A number of the regulatory restrictions were generalized to apply to a broader set of materials or products than the original regulation addresses. Where restrictions from separate regulations overlapped, they were summarized to reflect the most general among the overlapping restrictions, both in terms of the restrictions' scope and the group of chemicals covered (e.g., all lead compounds versus just lead sulfates). Where multiple regulatory thresholds exist for the same substance and general application, the most conservative threshold was used.

To reflect additional restrictions that are added to the source regulations over time, the RSL will be updated prior to the completion of Version 4 and annually thereafter. With each revision of this reference document, current certification holders will be granted a transition period for their certified products to become certified under the newly released version.

Notes:
The RSL also includes restrictions on certain classes of organohalogens (see Section 4.4 in the Standard). Organohalogens are not currently restricted via a class-based approach in any international chemical regulations, but are included on the RSL to provide a complete list of substances that are restricted from use in any Cradle to Cradle Certified product.

In addition to the restrictions listed in this document, the program includes restrictions based on chemical class and toxicological assessment as specified in the Standard. Materials with > 1% carbon-bonded halogen content by weight, and recognized PBTs, vPvBs, EU CLP Cat.1 & 2 CMRs, and substances causing an equivalent level of concern are restricted at the Silver level and above. Furthermore, only substances that are assessed as compatible with human and environmental health following the Cradle to Cradle Certified Material Health Assessment Methodology are allowed in products at the Gold and Platinum levels.

2. Definitions and Scope of Restricted Substances Lists

Core List for All Materials in All Products- The restrictions on the core list apply to all homogeneous materials subject to review in a product seeking certification.

Biological Nutrient Materials- The restrictions on this list apply to BN materials subject to review in any product. For the purpose of this list, BN materials are those that fall under one or more of the following categories: (1) Materials released directly to biosphere as part of their intended use or end-of-use (liquid formulated products, aerosols, materials designed for composting or other biodegradation pathways, etc.), (2) Materials for which partial or complete release to environment is unavoidable as a part of use or end-of-use of the product (paint; materials designed to abrade: brake pads, shoe soles, sliders; etc.), (3) Biological materials (wood, agricultural products, etc.) or biologically-derived materials that are commonly regarded as compostable/biodegradable (i.e. paper, cellulose, etc.).

Children's Products- The restrictions on this list apply to all homogeneous materials subject to review in a children's product. A children's product is defined as any product that is marketed towards or intended *specifically* for use by infants or children.

Formulated Consumer Products- The restrictions on this list apply to any homogeneous material subject to review in a formulated consumer product. Formulated consumer products are defined as any chemical mixture (paint, detergent, nail polish, etc.) intended for supply to the general public and/or intended for diffusive applications such as in surface cleaning and cleaning of fabrics.

Textile Materials- The restrictions on this list apply to textile materials subject to review in any product. A textile is defined as a material that is composed of natural or synthetic fibers and is produced by weaving, knitting, tufting, or felting. This includes face fibers in carpet, upholstery, as well as apparel textiles.

Footwear, Apparel & Jewelry Products- The restrictions on this list apply to any homogeneous material subject to review in jewelry, apparel, footwear, clothing, or related accessories. They also apply to any textile material which, under normal or reasonably foreseeable conditions of use, comes into contact with human skin to an extent similar to clothing. Apparel and jewelry are defined as a product that clothes or adorns any part of the human body.

3. Legend

Restriction Source	Symbol or Indicator	Notes
REACH Annex XVII	REACH [number (8, 62b, etc.)]	Regulation (EC) No 1907/2006, Numbers correspond to entry in Annex XVII
REACH Annex XIV – Authorization list	REACH Auth [number (8, 62b, etc.)]	Regulation (EC) No 1907/2006, numbers correspond to entry in Annex XVI
Restriction of Hazardous Substances	RoHS	Directives 2002/95/EC, 2011/65/EU, 2015/863/EU
Persistent Organic Pollutants Banned by Stockholm Convention and/or EU Commission	POPs	EU Commission Regulations No 2019/1021
ECVM Industry Charter for the production of VCM and PVC	ECVM	Industry guidelines
EU Toy Safety Directive 2009/48/EC	9/48/EC	
California's Proposition 65 October 2017	Prop 65	Chemical or chemical group listed on the list of *Chemicals Known to the State to Cause Cancer or Reproductive Toxicity*. *NOTE: Prop 65 was not used to derive restrictions. It is only noted as a cross-reference for restricted substances that are also included on the Prop 65 list.

Max. allowable concentration (ppm)	Entry	Interpretation
Non-use (when written in the 'max. allowable concentration' column)	Non-use	Shall not be used as intentional input, treatment, or as part of process chemicals. Restricted to 1,000 ppm if present as an unintentional contaminant unless otherwise noted.

4. Core Restricted Substances List for **All Materials in All Products**

	Sub-Grouping	Chemical(s) Name	Acronym or Trade Name	CAS Number(s)	Max. allowable concentration (ppm)	Restriction Notes	Restriction Source
Inorganics	**Asbestos**	Crocidolite		12001-28-4	Non-use		REACH 6a, Prop 65
		Amosite		12172-73-5	Non-use		REACH 6b, Prop 65
		Anthophyllite		77536-67-5	Non-use		REACH 6c, Prop 65
		Actinolite		77536-66-4	Non-use		REACH 6d, Prop 65
		Tremolite		77536-68-6	Non-use		REACH 6e, Prop 65
		Chyrostile		12001-29-5, 132207-32-0	Non-use		REACH 6f, Prop 65
	Metals & Metalloids	Arsenic and its compounds	**As**	several	1,000*	*1 ppm after extraction in footwear, clothing or related accessories, and textiles which, under normal or reasonably foreseeable conditions of use, come into contact with human skin to an extent similar to clothing	REACH 19, Auth 8, 9, 24, Prop 65
		Cadmium and its compounds	**Cd**	several	100*	*1 ppm after extraction in footwear, clothing or related accessories, and textiles which, under normal or reasonably foreseeable conditions of use, come into contact with human skin to an extent similar to clothing	REACH 23, RoHS, Prop 65
		Chromium VI and its compounds	**Cr VI**	several	1,000*	*1 ppm after extraction in footwear, clothing or related accessories, and textiles which, under normal or reasonably foreseeable conditions of use, come into contact with human skin to an extent similar to clothing ;2 ppm in cement (dry weight); 3 ppm in leather (dry weight); 0.2 ppm for BN materials; 1,000 ppm for all other materials	REACH 47, Auth 16-22, 28-31, RoHS, Prop 65
		Mercury and its compounds	**Hg**	several	1,000		REACH 18, RoHS, Prop 65
		Lead and its compounds	**Pb**	several	1,000*	* Shall not be used in paint. 1 ppm after extraction in footwear, clothing or related accessories, and textiles which, under normal or reasonably foreseeable conditions of use, come into contact with human skin to an extent similar to clothing Restriction threshold is 0.35% in steel, 0.4% in aluminum, and 4% in copper alloys, 1,000 ppm in all other non-BN materials.	REACH 16, 17, 63, Auth 10-12, RoHS, Prop 65
	Borates	Sodium perborate, perboric acid, sodium salt		15120-21-5, 11138-47-9	1,000		REACH Auth 48
		Sodium peroxometaborate		7632-04-4	1,000		REACH Auth 49
	Organometals	Phenylmercury acetate	**PMA**	62-38-4	100		REACH 62a
		Phenylmercury propionate		103-27-5	100		REACH 62b
		Phenylmercury 2-ethylhexanoate		13302-00-6	100		REACH 62c
		Phenylmercury octanoate		13864-38-5	100		REACH 62d
		Phenylmercury neodecanoate		26545-49-3	100		REACH 62e

	Sub-Grouping	Chemical(s) Name	Acronym or Trade Name	CAS Number(s)	Max. allowable concentration (ppm)	Restriction Notes	Restriction Source
Inorganics	**Organometals**	Tributyl tin	**TBT**	several	1,000		REACH 20, Prop 65
		Triphenyl tin	**TPT**	several	1,000		REACH 20, Prop 65
		Dibutyl tin	**DBT**	several	1,000		REACH 20
		Dioctyl tin compounds	**DOT**	several	1,000		REACH 20
		Dibutyltin hydrogen borate		75113-37-0	1,000		REACH 21
Organohalogens		Halogenated polymers (including PVC, PTFE, etc.), halogenated organic solvents, and other highly halogenated, carbon-based materials			See Section 4.4 of the Standard	Any material containing a sum total of 10% or more of carbon-bonded fluorine, chlorine, and/or bromine by weight is considered a highly halogenated carbon-based material and is thus not permitted for use (except in exempt materials/parts as noted in Section 4.4 of the Standard).	Cradle to Cradle Certified Product Standard
	Halogenated Flame Retardants (HFRs)	General restriction on halogenated flame retardants		several	See Section 4.4 of the Standard	In addition to the restrictions on specific HFRs listed below, carbon-bonded chlorine and bromine within any flame retardant in the material (intentionally added or present as an impurity) must be less than 1,000 ppm (except in exempt materials/parts as noted in Section 4.4 of the Standard).	Cradle to Cradle Certified Product Standard
		Polybrominated diphenyl ethers	**PBDEs**	several	10*	*The 10 ppm limit applies to each individual PBDE.	REACH 45, 67, RoHS, POPs, Prop 65 (only DE-71)
		Polybrominated biphenyls	**PBBs**	several	Non-use*	* If present as an unintentional trace contaminant the substance must be below detection with a detection limit of 5 ppm [limit based on AFIRM's Restricted Substances List v5.0]. .Restriction threshold is 0.1% (1,000 ppm) for electronic products.	REACH 8, POPs, ROHS, Prop 65
		Hexabromocyclododecane	**HBCDD**	3194-55-6, 25637-99-4, 134237-50-6, 134237-51-7, 134237-52-8	100		REACH Auth 3, POPs
		Tris(2-chloroethylphosphate)	**TCEP**	115-96-8	1,000*	*5 ppm for Children's products.	REACH Auth 13, 9/48/EC, Prop 65
	Halogenated Diphenyl Methanes	Monomethyl-tetrachlorodiphenyl methane	**Ugilec 141**	76253-60-6	10		REACH 24, POPs
		Monomethyl-dichloro-diphenyl methane	**Ugilec 121, 21**	81161-70-8	10		REACH 25, POPs
		Monomethyl-dibromo diphenyl methane bromobenzylbromotoluene, mixture of isomers	**DBBT**	99688-47-8	10		REACH 26, POPs
	Brominated Compounds	1-Bromopropane		106-94-5	1,000		REACH Auth 32, Prop 65

	Sub-Grouping	Chemical(s) Name	Acronym or Trade Name	CAS Number(s)	Max. allowable concentration (ppm)	Restriction Notes	Restriction Source
Organohalogens	**Chlorinated Compounds**	Polychlorinated terphenyls	**PCTs**	61788-33-8 and others	50		REACH 1
		Polychlorinated biphenyls	**PCBs**	several	Non-use*	* If present as an unintentional trace contaminant the substance must be present below detection with a detection limit of 0.1 ppm [limit based on Apple's Regulated Substances Specification 069-0135-K]. Testing is required for products that are colorants, dyes, or inks containing diarylide yellow, orange, and red and phthalocyanine blue and greens pigments.	POPs, Prop 65
		Polychlorinated naphthalenes		several	Non-use*	* If present as an unintentional trace contaminant, the substance must be below detection with a detection limit of 5 ppm [limit based on Apple's Regulated Substances Specification 069-0135-K].Polychlorinated naphthalenes means chemical compounds based on the naphthalene ring system, where one or more hydrogen atoms have been replaced by chlorine atoms	POPs
		Hexachlorobutadiene	**HCBD**	87-68-3	Non-use*	* If present as an unintentional trace contaminant, the substance must betesting is conducted, must be present below detection with a detection limit of 0.1 ppm [limit based on EPA test method 8260B]	POPs, Prop 65
		Pentachlorobenzene	**PeCB**	608-93-5	Non-use*	* If present as an unintentional trace contaminant, the substance must be below detection with a detection limit of 0.2 ppm [limit based on AFIRM's Restricted Substances List v5.0]	POPs
		Hexachlorooethane (perchloroethane)	**PCE**	67-72-1	1,000		REACH 41, Prop 65
		Pentachlorophenol and its salts and esters	**PCP**	87-86-5 and others	Non-use*	* If present as an unintentional trace contaminant, the substance must be below detection with a detection limit of 0.5 ppm [limit based on AFIRM's Restricted Substances List v5.0]	REACH 22, Prop 65
		Trichlorobenzene	**TCB**	120-82-1	1,000		REACH 49
		Trichloroethylene	**TCE**	79-01-6	1,000		REACH Auth 15
		2,2'-Dichloro-4,4'-methylenedianiline	**MOCA**	101-14-4	1,000*	*Also see textiles list. 30 ppm for textiles.	REACH Auth 27, Prop 65
		1,2-Dichloroethane	**EDC**	107-06-2	1,000		REACH Auth 26, Prop 65
		Chloroethylene (Vinyl chloride monomer)	**VCM**	75-01-4	5*	*5 ppm for general, 1 ppm for food and medical applications; may not be used as propellant	REACH 2, ECVM, Prop 65
		Short-chain chlorinated paraffins	**SCCPs**	85535-84-8	1,500*	*Threshold applies to solid homogeneous materials. For liquid mixtures the restriction limit value is 1%. Note that SCCPs are listed as a Cat. 2 carcinogen in Annex VL of CLP, thus they are restricted if subject to review (≥100 ppm) at the Silver level and above and at all levels for formulated consumer products.	POPs, Prop 65
	Fluorinated Compounds	General restriction on per- or polyfluoroalkyl substances (PFASs)	**PFASs**	several	See Section 4.4 of the Standard	PFAS-based materials, including fluoropolymers and PFAS-coatings, are not permitted for use (except in exempt materials/parts as noted in Section 4.4 of the Standard). If present as an impurity or minor additive in an otherwise non-fluorinated organic material, carbon-bonded fluorine within PFASs in the material must be less than 1,000 ppm.	Cradle to Cradle Certified Product Standard
		Perfluorooctane sulfonic acid and its derivatives	**PFOS, C-8**	1763-23-1	10*	*1 ug/m^2 for textiles and other coated materials	POPs
		Perfluorooctane sulfonates	**PFOS, C-8 salts**	several	10*	*1 ug/m^2 for textiles and other coated materials	POPs
		Perfluorooctanoic acid and its salts*	**PFOA**	Several	25*	This includes related substances as defined in Entry 68 of REACH Annex XVII. 25 ppm threshold applies to PFOA and its salts. The sum of PFOA related substances may not exceed 1,000 ppm.	REACH 68, Prop 65

	Sub-Grouping	Chemical(s) Name	Acronym or Trade Name	CAS Number(s)	Max. allowable concentration (ppm)	Restriction Notes	Restriction Source
Polycyclic Aromatic Hydrocarbons (PAH)		Benzo[a]pyrene	**BaP**	50-32-8	1*	Applies to rubber or plastic materials that come into direct, prolonged, or short-term repetitive contact with the human skin or the oral cavity, under normal or reasonably foreseeable conditions of use (i.e sport equipment, household utensils, trolleys, walking frames, tools for domestic use, apparel, jewelry, etc.). *Concentration threshold is 0.5 ppm for Children's products (see Children's products list). For all relevant materials, the sum of all PAHs may not exceed 10 ppm.	REACH 50a, Prop 65
		Benzo[e]pyrene	**BeP**	192-97-2	1*		REACH 50b
		Benzo[a]anthracene	**BaA**	56-55-3	1*		REACH 50c, Prop 65
		Chrysene	**CHR**	218-01-9	1*		REACH 50d, Prop 65
		Benzo[b]fluoranthene	**BbFA**	205-99-2	1*		REACH 50e, Prop 65
		Benzo[j]fluoranthene	**BjFA**	205-82-3	1*		REACH 50f, Prop 65
		Benzo[k]fluoranthene	**BkFA**	207-08-9	1*		REACH 50g, Prop 65
		Dibenzo[a,h]anthracene	**DBAhA**	53-70-3	1*		REACH 50h, Prop 65
Aromatics	**Ortho-phthalates**	Bis (2-ethylhexyl) phthalate	**DEHP**	117-81-7	1,000		REACH 51a, Auth 4, RoHS, Prop 65
		Dibutyl phthalate	**DBP**	84-74-2	1,000		REACH 51a, Auth 6, RoHS, Prop 65
		Benzyl butyl phthalate	**BBP**	85-68-7	1,000		REACH 51a, Auth 5, RoHS, Prop 65
		Di-n-pentyl phthalate	**DPP**	131-18-0	1,000		REACH 72, REACH Auth 38
		Diisopentylphthalate	**DIPP**	605-50-5	1,000		REACH Auth 33
		Diisobutyl phthalate	**DIBP**	84-69-5	1,000		REACH Auth 7, RoHS
		1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7 rich		71888-89-6	1,000		REACH Auth 34
		1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters		68515-42-4	1,000		REACH Auth 35
		1,2-Benzenedicarboxylic acid, dipentylester, branched and linear		84777-06-0	1,000		REACH Auth 36
		Bis(2-methoxyethyl) phthalate		117-82-8	1,000		REACH Auth 37
		N-pentyl-isopentylphthalate		776297-69-9	1,000		REACH Auth 39
		1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear		68515-50-4	1,000		REACH Auth 44
		Dihexyl phthalate		84-75-3	1,000		REACH Auth 45
		1,2-benzenedicarboxylic acid, di-C6-10-alkyl esters or mixed decyl and hexyl and octyl diesters		68648-93-1, 68515-51-5	1,000		REACH Auth 46

	Sub-Grouping	Chemical(s) Name	Acronym or Trade Name	CAS Number(s)	Max. allowable concentration (ppm)	Restriction Notes	Restriction Source
Aromatics	**Benzene**	Benzene		71-43-2	1,000*	*5 ppm for children's products, footwear, clothing or related accessories, and textiles which, under normal or reasonably foreseeable conditions of use, come into contact with human skin to an extent similar to clothing; 1,000 ppm for all other product types	REACH 5, 72 Prop 65
	Aromatic Amine (Anilines)	2-Naphthylamine and its salts		91-59-8 and others	1,000		REACH 12, Prop 65
		1,1'-biphenyl-4,4'-diamine and its salts	**Benzidine**	several	1,000		REACH 13, Prop 65
		4-Aminobiphenyl xenylamine and its salts		92-67-1 and others	1,000		REACH 15, Prop 65
		4,4'-Diaminodiphenylmethane	**MDA**	101-77-9	1,000*	*Also see textiles list. 30 ppm for textiles.	REACH Auth 2, Prop 65
	Phenol Derivatives	Nonylphenols	**NP**	several	1,000		REACH 46a
		Nonylphenol ethoxylates	**NPE**	several	1,000		REACH 46b
		2-(2H-benzotriazol-2-yl)-4,6-ditertpentylphenol	**UV-328**	25973-55-1	1,000		REACH Auth 51
		2,4-di-tert-butyl-6-(5-chlorobenzotriazol-2-yl)phenol	**UV-327**	3864-99-1	1,000		REACH Auth 52
		2-(2H-benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl)phenol	**UV-350**	36437-37-3	1,000		REACH Auth 53
		2-benzotriazol-2-yl-4,6-di-tert-butylphenol	**UV-320**	3846-71-7	1,000		REACH Auth 54
		4-(1,1,3,3-Tetramethyl)phenol, ethoxylated		several*	1,000	*Covers well-defined substances, those of unknown or variable composition, complex reaction products, biological (UVCB) substances, polymers and homologues. Including, but not limited to CASRNs: 9002-93-1, 2497-59-8, 2315-67-5, and 2315-61-9.	REACH Auth 42
		4-Nonylphenol, branched and linear, ethoxylated		several*	1,000	*Substances with a linear and/or branched alkyl chain with a carbon number of 9 covalently bound in position 4 to phenol, ethoxylated covering UVCB- and well-defined substances, polymers and homologues, which include any of the individual isomers and/or combinations thereof. Including, but not limited to CASRNs: 7311-27-5, 14409-72-4, 20427-84-3, 68412-54-4, 26027-38-3, 27942-27-4, 9016-45-9, 1119449-38-5, 1119449-37-4, 9016-45-9, 37205-87-1, 127087-87-0, and 26571-11-9.	REACH Auth 43
		Trixylyl phosphate		25155-23-1	1,000		REACH Auth 47
	Nitroaromatics	5-*tert*-butyl-2,4,6-trinitro-m-xylene	**Musk xylene**	81-15-2	1,000		REACH Auth 1
		4-nitrobiphenyl		92-93-3	1,000		REACH 14, Prop 65
		2,4-Dinitrotoluene	**DNT**	121-14-2	1,000		REACH Auth 14, Prop 65

Tar Products		Anthracene oil		90640-80-5	1,000		REACH Auth 40
		Pitch, coal tar, high temp.		65996-93-2	1,000		REACH Auth 41
Organic Solvents	**(Note: see also 'Organohalogens' for halogenated organic solvents]**	Formaldehyde, oligomeric reaction products with aniline		25214-70-4	1,000		REACH Auth 23
		Bis(2-methoxyethyl) ether	**Diglyme**	111-96-6	1,000		REACH Auth 25
		Dimethylfumarate	**DMF**	624-49-7	0.1		REACH 61
		5-sec-butyl-2-(2,4-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane [1], 5-sec-butyl-2-(4,6-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane [2]	**1,3-dioxanes**	several*	1,000	* covering any of the individual stereoisomers of [1] and [2] or any combination thereof. Including, but not limited to CASRNs: 117933-89-8 and 117933-89-8.	REACH Auth 50

5. Additional Restrictions for **Biological Nutrient Materials**

	Sub-Grouping	Chemical(s) Name	Acronym or Trade Name	CAS Number(s)	Max. allowable concentration (ppm)	Restriction Notes		Restriction Source
Inorganics	**Metals, Metalloids, & Selenium**	Aluminum and its compounds	**Al**	several	70,000*	Values here are metal migration limits rather than bulk concentration limits. If a limit is exceeded by a homogeneous material in bulk, compliance may alternatively be demonstrated by showing that the amount of leachable metal per bulk material (mg/kg) is below the relevant specified limit as per DIN EN 71-3: 2013.	*1,460 ppm in liquids; 5,625 ppm in brittle, powder-like or pliable products/materials	9/48/EC
		Antimony and its compounds	**Sb**	several	560*		*11.3 ppm in liquids; 45 ppm in brittle, powder-like or pliable products/materials	9/48/EC, Prop 65
		Arsenic and its compounds	**As**	several	47*		*0.9 ppm in liquids; 3.8 ppm in brittle, powder-like or pliable products/materials	9/48/EC, Prop 65
		Barium and its compounds	**Ba**	several	18,750*		*375 ppm in liquids; 1,500 ppm in brittle, powder-like or pliable products/materials	9/48/EC
		Boron and its compounds	**B**	several	15,000*		*300 ppm in liquids; 1,200 ppm in brittle, powder-like or pliable products/materials	9/48/EC
		Cadmium and its compounds	**Cd**	several	17*		*0.3 ppm in liquids; 1.3 ppm in brittle, powder-like or pliable products/materials	9/48/EC, Prop 65
		Chromium, trivalent and its compounds	**Cr III**	several	460*		*9.4 ppm in liquids; 37.5 ppm in brittle, powder-like or pliable products/materials	9/48/EC
		Chromium, hexavalent, and its compounds	**Cr VI**	several	0.2*		*0.005 ppm in liquids; 0.02 ppm in brittle, powder-like or pliable products/materials	9/48/EC, Prop 65
		Cobalt and its compounds	**Co**	several	130*		*2.6 ppm in liquids; 10.5 ppm in brittle, powder-like or pliable products/materials	9/48/EC, Prop 65
		Copper and its compounds	**Cu**	several	7,700*		*156 ppm in liquids; 622.5 ppm in brittle, powder-like or pliable products/materials	9/48/EC
		Lead and its compounds	**Pb**	several	160*		*3.4 ppm in liquids; 13.5 ppm in brittle, powder-like or pliable products/materials (including paint); Shall not be used in paint.	17, 9/48/EC, Prop 65
		Manganese and its compounds	**Mn**	several	15,000*		*300 ppm in liquids; 1,200 ppm in brittle, powder-like or pliable products/materials	9/48/EC
		Mercury and its compounds	**Hg**	several	94*		*1.9 ppm in liquids; 7.5 ppm in brittle, powder-like or pliable products/materials	9/48/EC, Prop 65
		Nickel and its compounds	**Ni**	several	930*		*18.8 ppm in liquids; 75 ppm in brittle, powder-like or pliable products/materials	9/48/EC, Prop 65
		Selenium and its compounds	**Se**	several	460*		*9.4 ppm in liquids; 37.5 ppm in brittle, powder-like or pliable products/materials	9/48/EC
		Strontium and its compounds	**Sr**	several	56,000*		*1,125 ppm in liquids; 4,500 ppm in brittle, powder-like or pliable products/materials	9/48/EC
		Tin and its compounds	**Sn**	several	180,000*		*3,750 ppm in liquids; 15,000 ppm in brittle, powder-like or pliable products/materials	9/48/EC
		Organostannic compounds	**Organic Sn**	several	12*		*shall not be used as biocide; 0.2 ppm in liquids; 0.9 ppm in brittle, powder-like or pliable products/materials	REACH 20, 9/48/EC
		Zinc and its compounds	**Zn**	several	46,000*		*938 ppm in liquids; 3,750 ppm in brittle, powder-like or pliable products/materials	9/48/EC

	Sub-Grouping	Chemical(s) Name	Acronym or Trade Name	CAS Number(s)	Max. allowable concentration (ppm)	Restriction Notes	Restriction Source
Tar Products		Creosote; wash oil		8001-58-9	1,000*	*shall not be used as intentional input or treatment for wood materials (in any amount), 1,000 ppm threshold applies to wood materials where prior application is unknown (i.e. recycled wood etc.)	REACH 31a
		Creosote oil; wash oil		61789-28-4	1,000*		REACH 31b
		Distillates (coal tar), naphthalene oils; naphthalene oil		84650-04-4	1,000*		REACH 31c
		Creosote oil, acenaphthene fraction; wash oil		90640-84-9	1,000*		REACH 31d
		Distillates (coal tar), upper; heavy anthracene oil		65996-91-0	1,000*		REACH 31e
		Tar acids, coal, crude; crude phenols		65996-85-2	1,000*		REACH 31g
		Creosote, wood		8021-39-4	1,000*		REACH 31h
		Low temperature tar oil, alkaline; extract residues (coal), low temperature coal tar alkaline		122384-78-5	1,000*		REACH 31i
Pesticides		Endosulfan Isomers	**Many**	several	Non-use*	*These substances are banned as intentional inputs for all BN materials in certified products, but must only be tested for in materials derived from agricultural products (i.e. plant or animal tissues/fibers) and be shown to be present below 0.5 ppm in such cases [limit based on AFIRM's Restricted Substances List v5.0]	POPs
		Aldrin	**HHDN**	309-00-2	Non-use*		POPs, Prop 65
		Alpha-hexachlorocyclohexane	**alpha-HCH**	319-84-6	Non-use*		POPs, Prop 65
		Beta-hexachlorocyclohexane	**beta-HCH**	319-85-7	Non-use*		POPs, Prop 65
		Chlordane	**Many**	57-74-9	Non-use*		POPs, Prop 65
		Chlordecone	**Kepone**	143-50-0	Non-use*		POPs, Prop 65
		Dieldrin	**HEOD**	60-57-1	Non-use*		POPs, Prop 65
		Endosulfan	**Many**	115-29-7, 959-98-8, 33213-65-9	Non-use*		POPs
		Endosulfan sulfate		1031-07-8	Non-use*		POPs
		Endrin	**Many**	72-20-8	Non-use*		POPs, Prop 65
		Heptachlor	**Many**	76-44-8	Non-use*		POPs, Prop 65
		Hexachlorobenzene	**HCB**	118-74-1	Non-use*		POPs, Prop 65
		Lindane (gamma-HCH)	**γ-HCH**	58-89-9	Non-use*		POPs
		Mirex		2385-85-5	Non-use*		POPs, Prop 65

	Sub-Grouping	Chemical(s) Name	Acronym or Trade Name	CAS Number(s)	Max. allowable concentration (ppm)	Restriction Notes	Restriction Source
Pesticides		P,P'-dichlorodiphenyltrichloroethane	**DDT**	50-29-3	Non-use*	*These substances are banned as intentional inputs for all BN materials in certified products, but must only be tested for in materials derived from agricultural products (i.e. plant or animal tissues/fibers) and be shown to be present below 0.5 ppm in such cases.	POPs, Prop 65
		Toxaphene	**Many**	92-93-3	Non-use*		POPs, Prop 65
Other	**Organic Substances**	Acrylamide		79-06-1	1,000		REACH 60, Prop 65
		Bisphenol A	**BPA**	80-05-7	200		REACH 66, Prop 65
		Bisphenol S	**BPS**	80-09-1	200	BPS added to restriction here based on the EU Committee for Risk Assessment (RAC) conclusion that it could be a likely substitute with comparable risk profile: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32016R2235	REACH 66
	Inorganic Salts	Inorganic ammonium salts		several	3*	*Shall not be used in cellulose insulation mixtures or cellulose insulation articles unless the emission of ammonia from those mixtures or articles results in a concentration of less than 3 ppm by volume (see ECHA for test details)	REACH 65

6. Additional Restrictions for **Children's Products**

	Sub-Grouping	Chemical(s) Name	Acronym or Trade Name	CAS Number(s)	Max. allowable concentration (ppm)	Restriction Notes	Restriction Source
CMRs	**Category 1 & 2**	Substances classified as carcinogenic, mutagenic or toxic for reproduction of category 1A, 1B or 2 under Regulation (EC) No 1272/2008 (CLP)	**CMRs**	Several	1,000*	* Limit is 200 ppm for gaseous preparations, where specific limits are noted in CLP Annex VI, those take precedence. Exceptions & exemptions specified in 2009/48/EC apply (i.e. for substances and mixtures that are inaccessible to children in any form, including inhalation or are listed as permitted in Appendix A of 2009/48/EC, such as nickel). An xlsx version of CLP Annex VI can be downloaded from ECHA here: https://echa.europa.eu/information-on-chemicals/annex-vi-to-clp. A single, fully searchable list is available through Pharos (https://www.pharosproject.net/hazard/list/show/324).	9/48/EC, Prop 65
Polycyclic Aromatic Hydrocarbons (PAHs)		Benzo[a]pyrene	**BaP**	50-32-8	0.5*	Applies to rubber or plastic materials that come into direct as well as prolonged or short-term repetitive contact with the human skin or the oral cavity. * the sum of all PAHs may not exceed 10 ppm.	REACH 50a, Prop 65
		Benzo[e]pyrene	**BeP**	192-97-2	0.5*		REACH 50b
		Benzo[a]anthracene	**BaA**	56-55-3	0.5*		REACH 50c, Prop 65
		Chrysene	**CHR**	218-01-9	0.5*		REACH 50d, Prop 65
		Benzo[b]fluoranthene	**BbFA**	205-99-2	0.5*		REACH 50e, Prop 65
		Benzo[j]fluoranthene	**BjFA**	205-82-3	0.5*		REACH 50f, Prop 65
		Benzo[k]fluoranthene	**BkFA**	207-08-9	0.5*		REACH 50g, Prop 65
		Dibenzo[a,h]anthracene	**DBAhA**	53-70-3	0.5*		REACH 50h, Prop 65
Other	**Organic Substances**	Toluene		108-88-3	1,000		REACH 48, Prop 65
		2-(2-methoxyethoxy)ethanol	**DEGME**	111-77-3	1,000		REACH 54
		Cyclohexane		110-82-7	1,000		REACH 57
		Acrylamide		79-06-1	1,000		REACH 60, Prop 65
		Bisphenol A	**BPA**	80-05-7	200		REACH 66, Prop 65
		Bisphenol S	**BPS**	80-09-1	200	BPS added to restriction here based on the EU Committee for Risk Assessment (RAC) conclusion that it could be a likely substitute with comparable risk profile: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32016R2235	REACH 66
		Di-isononyl phthalate	**DINP**	28553-12-0, 68515-48-0	1,000		REACH 52a, Prop 65
		Di-isodecyl phthalate	**DIDP**	26761-40-0, 68515-49-1	1,000		REACH 52b, Prop 65
		Di-n-octyl phthalate	**DNOP**	117-84-0	1,000		REACH 52c

	Sub-Grouping	Chemical(s) Name	Acronym or Trade Name	CAS Number(s)	Max. allowable concentration (ppm)	Restriction Notes		Restriction Source
Inorganics	**Metals, Metalloids, & Selenium**	Aluminum and its compounds	**Al**	several	70,000*	Values here are metal migration limits rather than bulk concentration limits. If a limit is exceeded by a homogeneous material in bulk, compliance may alternatively be demonstrated by showing that the amount of leachable metal per bulk material (mg/kg) is below the relevant specified limit as per DIN EN 71-3: 2013.	*1,460 ppm in liquids; 5,625 ppm in brittle, powder-like or pliable products/materials	9/48/EC
		Antimony and its compounds	**Sb**	several	560*		*11.3 ppm in liquids; 45 ppm in brittle, powder-like or pliable products/materials	9/48/EC, Prop 65
		Arsenic and its compounds	**As**	several	47*		*0.9 ppm in liquids; 3.8 ppm in brittle, powder-like or pliable products/materials	9/48/EC, Prop 65
		Barium and its compounds	**Ba**	several	18,750*		*375 ppm in liquids; 1,500 ppm in brittle, powder-like or pliable products/materials	9/48/EC
		Boron and its compounds	**B**	several	15,000*		*300 ppm in liquids; 1,200 ppm in brittle, powder-like or pliable products/materials	9/48/EC
		Cadmium and its compounds	**Cd**	several	17*		*0.3 ppm in liquids; 1.3 ppm in brittle, powder-like or pliable products/materials	9/48/EC, Prop 65
		Chromium, trivalent and its compounds	**Cr III**	several	460*		*9.4 ppm in liquids; 37.5 ppm in brittle, powder-like or pliable products/materials	9/48/EC
		Chromium, hexavalent, and its compounds	**Cr VI**	several	0.2*		*0.005 ppm in liquids; 0.02 ppm in brittle, powder-like or pliable products/materials	9/48/EC, Prop 65
		Cobalt and its compounds	**Co**	several	130*		*2.6 ppm in liquids; 10.5 ppm in brittle, powder-like or pliable products/materials	9/48/EC, Prop 65
		Copper and its compounds	**Cu**	several	7,700*		*156 ppm in liquids; 622.5 ppm in brittle, powder-like or pliable products/materials	9/48/EC
		Lead and its compounds	**Pb**	several	160*		*3.4 ppm in liquids; 13.5 ppm in brittle, powder-like or pliable products/materials (including paint); Shall not be used in paint.	17, 9/48/EC, Prop 65
		Manganese and its compounds	**Mn**	several	15,000*		*300 ppm in liquids; 1,200 ppm in brittle, powder-like or pliable products/materials	9/48/EC
		Mercury and its compounds	**Hg**	several	94*		*1.9 ppm in liquids; 7.5 ppm in brittle, powder-like or pliable products/materials	9/48/EC, Prop 65
		Nickel and its compounds	**Ni**	several	930*		*18.8 ppm in liquids; 75 ppm in brittle, powder-like or pliable products/materials	9/48/EC, Prop 65
		Selenium and its compounds	**Se**	several	460*		*9.4 ppm in liquids; 37.5 ppm in brittle, powder-like or pliable products/materials	9/48/EC
		Strontium and its compounds	**Sr**	several	56,000*		*1,125 ppm in liquids; 4,500 ppm in brittle, powder-like or pliable products/materials	9/48/EC
		Tin and its compounds	**Sn**	several	180,000*		*3,750 ppm in liquids; 15,000 ppm in brittle, powder-like or pliable products/materials	9/48/EC
		Organostannic compounds	**Organic Sn**	several	12*		*shall not be used as biocide; 0.2 ppm in liquids; 0.9 ppm in brittle, powder-like or pliable products/materials	REACH 20, 9/48/EC
		Zinc and its compounds	**Zn**	several	46,000*		*938 ppm in liquids; 3,750 ppm in brittle, powder-like or pliable products/materials	9/48/EC

	Sub-Grouping	Chemical(s) Name	Acronym or Trade Name	CAS Number(s)	Max. allowable concentration (ppm)	Restriction Notes	Restriction Source
Allergenic Fragrances		1-(*p*-Methoxyphenyl)-1-penten-3-one		104-27-8	Non-use		9/48/EC
		2-Pentylidene-cyclohexanone		25677-40-1	Non-use		9/48/EC
		2,4-Dihydroxy-3-methylbenzaldehyde		6248-20-0	Non-use		9/48/EC
		3,7-Dimethyl-2-octen-1-ol	**6,7-Dihydrogeraniol**	40607-48-5	Non-use		9/48/EC
		3.6,10-Trimethyl-3.5,9-undecatrien-2-one		1117-41-5	Non-use		9/48/EC
		4-*tert*-Butylphenol		98-54-4	Non-use		9/48/EC
		4-(*p*-Methoxyphenyl)-3-butene-2-one		943-88-4	Non-use		9/48/EC
		4-Ethoxyphenol	**4-EP**	622-62-8	Non-use		9/48/EC
		4-Methoxyphenol	**4-MP**	150-76-5	Non-use		9/48/EC
		4-Phenyl-3-buten-2-one		122-57-6	Non-use		9/48/EC
		4,6-Dimethyl-8-tert-butylcoumarin		17874-34-9	Non-use		9/48/EC
		5-Methyl-2,3-hexanedione		13706-86-0	Non-use		9/48/EC
		6-Isopropyl-2-decahydronaphthalenol		34131-99-2	Non-use		9/48/EC
		6-Methylcoumarin		92-48-8	Non-use		9/48/EC
		6,10-Dimethyl-3.5,9-undecatrien-2-one		0141-10-6	Non-use		9/48/EC
		7-Ethoxy-4-methylcoumarin		87-05-8	Non-use		9/48/EC
		7-Methoxycoumarin	**Herniarin**	531-59-9	Non-use		9/48/EC
		7-Methylcoumarin		2445-83-2	Non-use		9/48/EC
		7,11-Dimethyl-4.6,10-dodecatrien-3-one		26651-96-7	Non-use		9/48/EC
		Alanroot oil (Inula helenium)		97676-35-2	Non-use		9/48/EC
		Allylisothiocyanate		57-06-7	Non-use		9/48/EC
		Amyl cinnamal		122-40-7	Non-use		9/48/EC

	Sub-Grouping	Chemical(s) Name	Acronym or Trade Name	CAS Number(s)	Max. allowable concentration (ppm)	Restriction Notes	Restriction Source
Allergenic Fragrances		Amylcinnamyl alcohol		101-85-9	Non-use		9/48/EC
		Benzyl alcohol		100-51-6	Non-use		9/48/EC
		Benzyl cyanide	**BnCn**	140-29-4	Non-use		9/48/EC
		Benzyl salicylate		118-58-1	Non-use		9/48/EC
		Chenopodium oil		8006-99-3	Non-use		9/48/EC
		Cinnamal		104-55-2	Non-use		9/48/EC
		Cinnamyl alcohol		104-54-1	Non-use		9/48/EC
		Citral		5392-40-5	Non-use		9/48/EC
		Costus root oil (Saussurea lappa Clarke)		8023-88-9	Non-use		9/48/EC
		Coumarin		91-64-5	Non-use		9/48/EC
		Cyclamen alcohol		4756-19-8	Non-use		9/48/EC
		Diethyl maleate		0141-05-09	Non-use		9/48/EC
		Dihydrocoumarin		119-84-6	Non-use		9/48/EC
		Dimethyl citraconate		617-54-9	Non-use		9/48/EC
		Diphenylamine		122-39-4	Non-use		9/48/EC
		Ethyl acrylate		140-88-5	Non-use		9/48/EC, Prop 65
		Eugenol		97-53-0	Non-use		9/48/EC
		Fig leaf, fresh and preparations		68916-52-9	Non-use		9/48/EC
		Hexahydrocoumarin		700-82-3	Non-use		9/48/EC
		Hydroabietyl alcohol		13393-93-6	Non-use		9/48/EC
		Hydroxy-citronellal		107-75-5	Non-use		9/48/EC
		Hydroxy-methylpentylcyclohexenecarboxaldehyde		31906-04-04	Non-use		9/48/EC
		Isoeugenol		97-54-1	Non-use		9/48/EC
		Methyl trans-2-butenoate		623-43-8	Non-use		9/48/EC

	Sub-Grouping	Chemical(s) Name	Acronym or Trade Name	CAS Number(s)	Max. allowable concentration (ppm)	Restriction Notes	Restriction Source
Allergenic Fragrances		4-*tert*-Butyl-3-methoxy-2,6-dinitrotoluene	**Musk ambrette**	83-66-9	Non-use		9/48/EC
		Oakmoss extracts		90028-68-5	Non-use		9/48/EC
		Peru balsam, crude (Exudation of Myroxylon pereirae (Royle) Klotzsch)		8007-00-9	Non-use		9/48/EC
		trans-2-Heptenal		18829-55-5	Non-use		9/48/EC
		trans-2-Hexenal diethyl acetal		67746-30-9	Non-use		9/48/EC
		trans-2-Hexenal dimethyl acetal		18318-83-7	Non-use		9/48/EC
		Treemoss extracts		90028-67-4	Non-use		9/48/EC
		Verbena oil (Lippia citriodora Kunth)		8024-12-2	Non-use		9/48/EC

7. Additional Restrictions for **Formulated Consumer Products**

	Sub-Grouping	Chemical(s) Name	Acronym or Trade Name	CAS Number(s)	Max. allowable concentration (ppm)	Restriction Notes	Restriction Source
CMRs	**Category 1 & 2**	Substances classified as carcinogenic, mutagenic or toxic for reproduction category 1 or 2 under Regulation (EC) No 1272/2008 (CLP) and listed in Appendices 1-6 of REACH		several	1,000*	*Limit is 200 ppm for gaseous preparations, where specific limits are noted for a substance in Appendices 1-6 of REACH, those take precedence. The full list of chemicals with CASRNs can be found in Appendices 1-6 of REACH: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2006R1907:20130701:EN:PDF#page=254. A single, fully searchable list is available through Pharos (http://www.pharosproject.net/hazard/list/show/306). Note: REACH Appendices 1-6 contain a subset of the substances classified as CMRs under CLP, but all CLP CMRs will be added to the REACH Appendices eventually.	REACH 28-30, Prop 65
Organohalogens		Chloroform		67-66-3	1,000		REACH 32, Prop 65
		1,1,2-Trichloroethane	**1,1,3=TCA**	79-00-5	1,000		REACH 34, Prop 65
		1,1,2,2-Tetrachloroethane	**R-130**	79-34-5	1,000		REACH 35, Prop 65
		1,1,1,2-Tetrachloroethane	**R-130a**	630-20-6	1,000		REACH 36, Prop 65
		Pentachloroethane		76-01-7	1,000		REACH 37
		1,1-Dichloroethene	**DCE**	75-35-4	1,000		REACH 38, Prop 65
		Dichloromethane	**DCM**	75-09-2	1,000		REACH 59, Prop 65
Diisocyanates		4,4'-Diphenylmethane diisocyanate	**MDI**	101-68-8	1,000		REACH 56a
		2,4'- Diphenylmethane diisocyanate	**2,4'-MDI**	5873-54-1	1,000		REACH 56b
		2,2'- Diphenylmethane diisocyanate	**2,2'-MDI**	219-799-4	1,000		REACH 56c
Other	**Organic Substances**	Acrylamide		79-06-1	1,000		REACH 60, Prop 65
		Toluene		108-88-3	1,000		REACH 48, Prop 65
		2-(2-methoxyethoxy)ethanol	**DEGME**	111-77-3	1,000		REACH 54
		2-(2-butoxyethoxy)ethanol	**DEGBE**	112-34-5	30,000	Restricted as a constituent of spray paints or spray cleaners in aerosol dispensers	REACH 55
		Cyclohexane		110-82-7	1,000		REACH 57

	Sub-Grouping	Chemical(s) Name	Acronym or Trade Name	CAS Number(s)	Max. allowable concentration (ppm)	Restriction Notes	Restriction Source
Other	**Organic Substances**	N-methyl-2-pyrrolidone; 1- methyl-2-pyrrolidone	**NMP**	872-50-4	3,000		REACH 71, Prop 65
		Octamethylcyclotetrasiloxane	**D4**	556-67-2	1,000	Restricted as a constituent of cosmetic products that under normal conditions of use, are washed off with water after application	REACH 70
		Decamethylcyclopentasiloxane	**D5**	541-02-6	1,000	Restricted as a constituent of cosmetic products that under normal conditions of use, are washed off with water after application	REACH 70
		Methanol		67-56-1	6,000	Restricted as a constituent of windscreen washing or defrosting fluids	REACH 69, Prop 65

8. Additional Restrictions for **Textile Materials**

	Sub-Grouping	Chemical(s) Name	Acronym or Trade Name	CAS Number(s)	Max. allowable concentration (ppm)	Restriction Notes	Restriction Source
Aromatics	**Aromatic Amines (Anilines)**	2-naphthylamine		91-59-8	30	This restriction applies to the concentration of aromatic amines in the finished product. While not intentionally added, these aromatic amines can be present in textile materials as a breakdown product formed through reductive cleavage from certain azocolourants. Compliance with this restriction is most effectively evaluated by determining whether any azocolourants capable of producing any of these aromatic amines through reductive cleavage were used in the dying of a fabric. Alternatively, the analytical tests methods set forth in Appendix 10 of REACH (http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2006R1907:20130701:EN:PDF#page=517) may be used to verify compliance with this set of restrictions.	REACH 43, Prop 65
		2,4,5-trimethylaniline		137-17-7	30		REACH 43, Prop 65
		3,3'-dichlorobenzidine		91-94-1	30		REACH 43, Prop 65
		o-dianisidine		119-90-4	30		REACH 43, Prop 65
		3,3'-dimethylbenzidine		119-93-7	30		REACH 43, Prop 65
		4-Aminoazobenzene		60-09-3	30		REACH 43, Prop 65
		4-chloro-*o*-toluidine	**4-COT**	95-69-2	30		REACH 43, Prop 65
		4-chloroaniline		106-47-8	30		REACH 43, Prop 65
		4-methoxy-*m*-phenylenediamine		615-05-4	30		REACH 43, Prop 65
		4-methyl-*m*-phenylenediamine		95-80-7	30		REACH 43, Prop 65
		4,4'-methylene-bis-(2-chloro-aniline	**MOCA, MBOCA**	101-14-4	30		REACH 43, Prop 65
		4,4'-methylenedi-*o*-toluidine		838-88-0	30		REACH 43, Prop 65
		4,4'-diaminodiphenylmethane	**MDA**	101-77-9	30		REACH 43, Prop 65
		4,4'-oxydianiline		101-80-4	30		REACH 43, Prop 65
		4,4'-thiodianiline	**TDA**	139-65-1	30		REACH 43, Prop 65
		5-nitro-o-toluidine		99-55-8	30		REACH 43
		6-methoxy-*m*-toluidine	***p*-Cresidine**	120-71-8	30		REACH 43, Prop 65
		1,1'-biphenyl-4,4'-diamine and its salts	**Benzidine**	92-87-5	30		REACH 43, Prop 65
		4-aminobiphenyl xenylamine		92-67-1	30		REACH 43, Prop 65
		o-aminoazotoluene		97-56-3	30		REACH 43, Prop 65
		o-anisidine		90-04-0	30		REACH 43, Prop 65
		o-toluidine		95-53-4	30		REACH 43, Prop 65

	Sub-Grouping	Chemical(s) Name	Acronym or Trade Name	CAS Number(s)	Maximum threshold (ppm)	Restriction Notes	Restriction Source
Aromatics	**Azo Dye**	Chromate(2-), [1-[(5-chloro-2-hydroxyphenyl) azo]-2-naphthalenolato(2-)][4-hydroxy-3-[(2-hydroxy -3,5-dinitrophenyl)azo]-7-[(4-methoxypheny l)amino]-2-naphthalenesulfonato(3-)]-, disodium		118685-33-9	1,000		REACH 43
	Phenol Derivatives	Nonylphenol ethoxylates		several	100		REACH 46a
Flame Retardant		Tris(2,3-dibromopropyl) phosphate	**TDPP, Tris**	126-72-7	1,000*	*Shall not be used in textile articles, such as garments, undergarments and linen, intended to come into contact with the skin.	REACH 4, Prop 65
		Tris(aziridinyl)phosphinoxide		545-55-1	*	*Shall not be used in textile articles, such as garments, undergarments and linen, intended to come into contact with the skin. If present as an unintentional trace contaminant the substance must be below detection with a detection limit of 5 ppm [limit based on AFIRM's Restricted Substances List v5.0].	REACH 7
Organohalogens	**Fluorinated Compounds**	Perfluorooctane sulfonic acid	**PFOS, C-8**	1763-23-1	*	*1 ug/m^2	POPs
		Perfluorooctane sulfonates	**PFOS, C-8 salts**	several	*	*1 ug/m^2	POPs
		Perfluorooctanesulfonyl flouride	**PFOSF, C-8**	307-35-7	*	*1 ug/m^2	POPs

9. Additional Restrictions for **Footwear, Apparel & Jewelry Products**

	Sub-Grouping	Chemical(s) Name	Acronym or Trade Name	CAS Number(s)	Maximum threshold (ppm)	Restriction Notes	Restriction Source
Inorganics	**Metals & Metalloids**	Nickel compounds	Ni	several	500*	This restriction applies to metallic materials intended to come into direct and prolonged contact with the skin, in particular jewelry and metallic parts of garments and apparel products such as rivet buttons, tighteners, rivets, zippers, and metal marks. It also applies to any other product containing metallic materials intended to come into direct and prolonged contact with the skin such as mobile phones and cases, glasses and sun-glasses, wrist-watch cases, watch straps, tighteners, etc. *Alternatively, compliance with this restriction for alloys containing more than 500 ppm nickel, may be demonstrated by having an accredited laboratory conduct leaching tests on the material in accordance with the standards adopted by the European Committee for Standardization. In this case, the test must show that nickel release rates are below 0.5 ug/cm2/week or below 0.2 ug/cm2/week for parts of products inserted into pierced ears and other pierced parts of the human body. As of the time of writing the applicable test methods are EN 1811 and if nickel-containing alloy is coated additionally EN 12472. EN 16128 is to be used for glasses. Any future applicable test methods that may be released by the European Committee for Standardization for nickel leaching tests are also to be used.	REACH 27, Prop 65
		Lead compounds	Pb	several	200	This threshold applies to Pb in jewelry or apparel applications (buttons, zippers, bracelets, etc.) instead of the 1,000 ppm threshold on the general Banned List	REACH 43, Prop 65
Polycyclic Aromatic Hydrocarbons (PAHs)		Benzo[a]anthracene	**BaA**	56-55-3	1		REACH 72, Prop 65
		Benzo[b]fluoranthene	**BbFA**	205-99-2	1		REACH 72, Prop 65
		Benzo[a]pyrene	**BaP**	50-32-8	1		REACH 72, Prop 65
		Benzo[e]pyrene	**BeP**	192-97-2	1		REACH 72
		Benzo[j]fluoranthene	**BjFA**	205-82-3	1		REACH 72, Prop 65
		Benzo[k]fluoranthene	**BkFA**	207-08-9	1		REACH 72, Prop 65
		Chrysene	**CHR**	218-01-9	1		REACH 72, Prob 65
		Dibenzo[a,h]anthracene	**DBAhA**	53-70-3	1		REACH 72, Prop 65

	Sub-Grouping	Chemical(s) Name	Acronym or Trade Name	CAS Number(s)	Maximum threshold (ppm)	Restriction Notes	Restriction Source
Dyes and Dye Precursors		1,4,5,8-tetraaminoanthraquinone	**C.I. Disperse Blue 1**	2475-45-8	50		REACH 72, Prop 65
		Benzenamine, 4,4'-(4-iminocyclohexa-2,5-dienylidenemethylene)dianiline hydrochloride	**C.I. Basic Red 9**	569-61-9	50		REACH 72, Prop 65
		[4-[4,4'-bis(dimethylamino)benzhydrylidene] cyclohexa-2,5-dien1-ylidene]dimethylammonium chloride	**C.I. Basic Violet 3 with ≥ 0,1 % of Michler's ketone**	548-62-9	50		REACH 72, Prop 65
		4-chloro-o-toluidinium chloride		3165-93-3	30		REACH 72
		2-Naphthylammoniumacetate		553-00-4	30		REACH 72
		4-methoxy-m-phenylene diammonium sulphate; 2,4-diaminoanisole sulphate		39156-41-7	30		REACH 72, Prop 65
		2,4,5-trimethylaniline hydrochloride		21436-97-5	30		REACH 72
		Quinoline		91-22-5	50		REACH 72
Phthalates		1,2-benzenedicarboxylic acid; diC 6-8-branched alkylesters, C 7- rich		71888-89-6	1,000*	Threshold applies individually or in combination with other phthalates on this RSL.	REACH 72
		Bis(2-methoxyethyl) phthalate		117-82-8	1,000*		REACH 72
		Diisopentylphthalate		605-50-5	1,000*		REACH 72
		Di-n-hexyl phthalate	**DnHP**	84-75-3	1,000*		REACH 72, Prop 65
Other	**Organic Substances**	α,α,α,4-tetrachlorotoluene; p-chlorobenzotrichloride		5216-25-1	1		REACH 72, Prop 65
		α,α,α-trichlorotoluene; benzotrichloride		98-07-7	1		REACH 72, Prop 65
		α-chlorotoluene; benzyl chloride		100-44-7	1		REACH 72, Prop 65
		Formaldehyde		50-00-0	75		REACH 72, Prop 65
		N-methyl-2-pyrrolidone; 1- methyl-2-pyrrolidone	**NMP**	872-50-4	3,000		REACH 72, Prop 65
		N,N-dimethylacetamide	**DMAC**	127-19-5	3,000		REACH 72, Prop 65

	Sub-Grouping	Chemical(s) Name	Acronym or Trade Name	CAS Number(s)	Maximum threshold (ppm)	Restriction Notes	Restriction Source
Other	**Organic Substances**	N,N-dimethylformamide; dimethyl formamide	**DMF**	68-12-2	3,000		REACH 72, Prop 65