Chemical Guideline and Restricted Substances List

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FENIX OUTDOOR Chemical Guideline and Restricted Substances List (RSL)

1. General Considerations 5
1.1 2024 Updates to Fenix Chemicals guideline 5
1.2 Future and coming legal changes, a European perspective: 6
2. Purpose 7
3. Scope of Application 7
4. Additional Valid Instructions and Reference Documents 8
5. Definition of Terms 10
6. Duties and Responsibilities 13
7. Content – The Chemicals List 15
7.1 Process related Chemicals 15
7.1.1 Alkylphenol ethoxylates (APEO) and derivatives 15
7.1.2 Aliphatic organic solvents 16
7.1.3 Aromatic organic solvents 17
7.1.4 Bisphenols 17
7.1.5 C,C'-azodi(formamide) (ADCA) 18
7.1.6 Chlorinated organic solvents. 19
7.1.7 Chromium VI (Cr + 6) 21
7.1.8 Cobalt (Co) and its compounds 22
7.1.9 Ethylenethiourea 24
7.1.10 Formamide 25
7.1.11 Glucols 25
7.1.12 Dimethylfumarate (DMFu) 26
7.1.13 Hydrazine 26
7.1.14 Other organic solvents 27
7.1.15 PAH - Polycyclic aromatic hydrocarbons 31
7.1.16 Quinoline 34
7.1.17 Isocyanates 34
7.1.18 Trichlorobenzenes 35
7.1.19 Cyclohexane 35
7.1.20 Solvents miscellaneous (in conjunction with Section 7.1.2 and Section 7.1.3) 36
7.1.21 6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol (DBMC) 36
7.1.22 Oligomerisation and alkylation reaction products of 2-phenylpropene and phenol, Phenol, methylstyrenated 37
7.1.23 S-(tricyclo(5.2.1.0'2,6)deca-3-en-8(or 9)-yl O-(isopropyl or isobutyl or 2-ethylhexyl) O-(isopropyl or isobutyl or 2-ethylhexyl) phosphorodithioate 37
7.1.24 Tin organic compounds (Organostannic compounds) 38
7.1.25 Imidazoles 39
7.1.26 2-benzyl-2-dimethylamino-4'-morpholinobutyrophenone 40
7.1.27 2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one 41
7.1.28 2-(dimethylamino)-2-[(4-methylphenyl)methyl]-1-[4-(morpholin-4-yl)phenyl]butan-1-one 41
7.1.29 Bis(2-(2-methoxyethoxy)ethyl)ether 41
7.1.30 Tris(2-methoxyethoxy)vinylsilane 42
7.2 Product-related Chemicals 43
7.2.1 Allergenic dyes 43
7.2.2 Azo dyes, degradable to carcinogenic arylamines 44
7.2.3 Benzotriazols 46
7.2.4 Boric acid, borate compounds 47
7.2.5 Cadmium (Cd) and cadmium salts 48
7.2.6 CMR, Carcinogenic, Mutagenic, Reproductive toxic dyestuffs 49
7.2.7 Chloroparaffins 51
7.2.8 Chromium VI (Cr + 6) 52
7.2.9 Formaldehyde 53
7.2.10 Glutaral (Glutaraldehyde) 56
7.2.11 Melamine 57
7.2.12 2,2-bis(bromomethyl)propane1,3-diol (BMP) 57

7.2.13 2,2-dimethylpropan-1-ol, tribromo derivative/3-bromo-2,2-bis(bromomethyl)-1-propanol (TBNPA) 58
7.2.14 2,3-dibromo-1-propanol (2,3-DBPA) 58
7.2.15 Hexabromocyclododecan (HBCDD) 59
7.2.16 Lead (Pb) and lead salts 60
7.2.17 Mercury and its compounds 62
7.2.18 Nickel (Ni), in accessories 63
7.2.19 Arsenic Compounds 64
7.2.20 Other heavy metals 65
7.2.21 Phthalate esters (ortho phthalates) 65
7.2.22 Polybrominated biphenyls (PBB) and Polybrominated diphenyl ethers (PBDE) 68
7.2.23 2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol also called A-TBBPA 69
7.2.24 bis(2-ethylhexyl) tetrabromophthalate covering any of the individual isomers and/or combinations thereof Bis(2-ethylhexyl) tetrabromophthalate 70
7.2.25 1,1'-[ethane-1,2-diylbisoxy]bis[2,4,6-tribromobenzene] 70
7.2.26 PVC and PVCD 71
7.2.27 Siloxanes 71
7.2.28 Halogenated aryl phosphates – TCEP, TRIS, BDBPP 71
7.2.29 Non halogenated arylphosphates - Tri phenyl phosphate 72
7.2.30 Non halogenated arylphosphates - Tri (*nx*) cresyl phosphate (TCP) 73
7.2.31 Non halogenated aryl phosphates - Tri xylyl phosphate, Tris (1-aziridinyl)phosphine oxide 73
7.2.32 Per and polyfluorinated alkyl substances (PFAS) 74
7.2.33 Cu-HDO (Bis-(N-cyclohexyldiazeniumdioxy)-copper) 78
7.2.34 Dimethylfumarate (DMFu) 78
7.2.35 Guanidine, N,N'''-1,6-hexanediylbis(N'-cyano-),polymer with 1,6-heanediamine, hydrochloride (PHMB 1600; 1.8) 79
7.2.36 Pentachlorophenol (PCP) and all isomers of Tetrachlorophenols (TeCP) 79
7.2.37 Permethrin 80
7.2.38 Silver and its compounds (Ag +) 81
7.2.39 Tributyltin oxide and other trialkyltin compounds 81
7.2.40 Triclosan and Triclocarban 82
7.2.41 DTTB (4,6-dichloro-7-(2,4,5-trichlorophenoxy)-2-trifluoromethylbenzimidazole) and Dieldrin 82
7.2.42 Carbendazim 83
7.2.43 Bronopol 83
7.2.44 Thiram 84
7.2.45 Metam-sodium ((sodium N-methyldithiocarbamate) 84
7.2.46 Polyhexamethylene biguanide hydrochloride with a mean number-average molecular weight (Mn) of 1415 and a mean polydispersity (PDI) of 4.7 (PHMB(1415;4.7)) 85
7.2.47 Orto phenyl-phenols (OPP) also called biphenyls or 2-phenylphenols 85
7.2.48 Sodium p-chloro-m-cresolate 86
7.2.49 Parabenes 87
7.3 Miscellaneous - Microparticles (microplastics) intentionally added. 87
8. Documentation 88
9. Liability 89
9.1 Chemicals 90
9.1.1 Forbidden Chemicals in products 90
9.1.2 Chemicals requiring permission at the European Chemical Agency (ECHA) 90
9.1.3 Stockholm Convention on Persistent Organic Pollutants (POPs) 90
9.1.4 Biocidal Product Regulation 90
9.1.5 Chemicals classified as dangerous 90
9.1.6 Sanctions 91
10. Chemical Restrictions Compliance Commitment 92
11. Final Provisions 93
11.1 Appendix 1. Pesticides, insecticieds and fungicides 94
11.2 Appendix 2 additional list of banned Chlorinated organic solvents 96

11.3 Appendix 3 additional list of banned Chlorinated phenols 97
11.4 Appendix 4 – Overview Table on chemicals in various use applications (Excel) 98
11.5 Appendix 5 Structure 99
11.6 Appendix 6: Recommendations and Instructions for our Business Partners 100
11.6.1 Sample, customizable letter to suppliers requesting chemical information 101
11.6.2 Sample, Customizable Material Information Form.....102
11.7 Appendix 7 – EU Declaration of Conformity for Ceramic and enamel Food Contact Materials 107
11.8 Appendix 8 – EU Declaration of Conformity for Plastic Food Contact Materials 107
11.9 Appendix 9 – EU Declaration of Conformity for Rubber Food Contact Materials 108
11.10 Appendix 10 Recommended Test Matrix for Fenix Outdoor Int. entities (Excel) 109

Note: All business partners, suppliers and traders need to sign Section 10.

1. General Considerations

This guideline is developed to provide producers and suppliers to any Fenix Outdoor International AG entity with information on how to deliver on the individual buying terms regarding the chemical content of specific substances or substance groups in textiles, clothing, hardware, leather goods, metal goods, food packaging and accessories. These procedures and requirements shall ensure that all legal demands are fulfilled, the environment is protected in both the supplying and importing countries and that the import of goods and free trade, in particular with developing countries and the European Union (EU) is promoted.

The distinguishing properties of the chemicals and the processes in which they are used are described.

The stipulated test equipment is commonly occurring, and the detection limits are generally accepted.

We acknowledge that due to general contaminations even unwanted or prohibited substances may be detected in products and components. However, we do not accept this as an excuse for improper handling of chemicals or non-compliant behavior.

Recommended substitutes are in general less harmful or generally better while providing the desired effect or similar functional property.

This Guideline builds Chemical guidance from European chemicals expert groups.

1.1 2024 Updates to Fenix Chemicals guideline

To simplify the signature of the Fenix outdoor Chemicals guideline for reoccurring signatories and partners, this chapters covers the main changes and additions to the 2024 verison of the Chemicals guideline.

The following substances have been added:

Chapter	Substance	CAS	page
7.2.3 Benzotriazoles	2-(2H-benzotriazol-2-yl)-4-(1,1,3,3-tetramethylbutyl)phenol (UV-329)	3147-75-9	46
7.1.29 2-(dimethylamino)-2-[(4-methylphenyl)methyl]-1-[4-(morpholin-4-yl)phenyl]butan-1-one	2-(dimethylamino)-2-[(4-methylphenyl)methyl]-1-[4-(morpholin-4-yl)phenyl]butan-1-one	119344-86-4	41
7.2.3 Benzotriazoles	Bumetrizole (UV-326)	3896-11-05	46
7.1.22 Oligomerisation and alkylation reaction products of 2-phenylpropene and phenol, Phenol, methylstyrenated.	Oligomerisation and alkylation reaction products of 2-phenylpropene and phenol, Phenol, methylstyrenated.	68512-30-1	37
7.3 Miscellaneous - Microparticles (intended use)	Microparticles (intended use)	N/A	87

Changes in test methods

Chapter/Substance	Test method	page
7.2.9 Formaldehyde	EN ISO 14184-3:2023 (Free and hydrolysed	53

	extracted formaldehyde in textiles using HPLC)	
7.2.18 Nickel	EN 1811:2023	63
7.2.32 Per and Polyfluorinated alkyl substances (PFAS)	EN ISO 23702-1:2023 (leather)	74
7.3 Miscellaneous - Microparticles (intended use)	EN ISO 4484-1:2023 (textiles)	87

Other additions:

Chapter 6. Duties and Responsibilities:

Prescribed lab: SGS Hong Kong for all PFAS tests, If using other lab the lab must be approved by Fenix Outdoor Chemicals specialist prior to testing.

Updated text regarding Californian Proposition 65 regulation

Chapter: 7.2.13 Per and Polyfluorinated alkyl substances (PFAS)

PFAS analysis sequence as below:

Start with EN 14582:2016, (Total fluorine) analysis.

followed by below targeted PFAS analyses (means the analysis of specific PFAS substances) regardless of the obtained total fluorine test result. Select the appropriate method below depending on whether the sample is textile or leather.

EN 17681-1:2022, (non-volatile, PFAS, textiles)
EN 17681-2:2022, (volatile PFAS, textile)

EN ISO 23702-1:2023 (leather)

All PFAS tests should be done at SGS HK if nothing else agreed with Fenix Outdoor CSR.

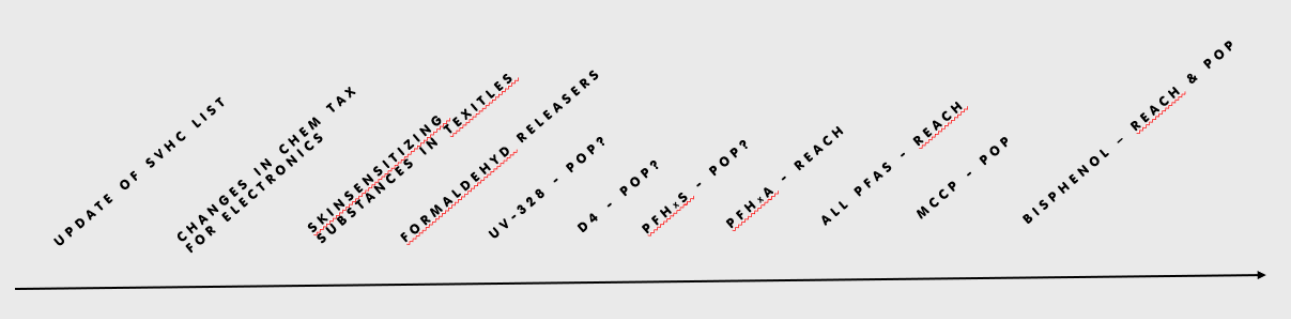
1.2 Future and coming legal changes, a European perspective:

As a European group we see as a big change in European chemicals legislation, it is going faster and faster. The biggest new policy initiative in Europe is The European Green Deal which is a package of policies, which aims to set the EU on the path to a green transition, with the ultimate goal of reaching climate neutrality by 2050. It supports the transformation of the EU into a fair and prosperous society with a modern and competitive economy. This includes naturally also chemical policy's that can be summarized in the following five points:

- Protection against the most harmful chemicals (Substances of Concern, SoC)
- Legal implementation of the concept of "essential uses"

- More groupings of SoC such as hormone-disrupting substances, e.g. bisphenols, will be regulated
- New legal requirements regarding combination effects of chemical mixtures ("chemical mixtures")
- Broad ban of non-essential uses of fluorochemicals (PFAS)

The five points above can be broken down to the Fenix Outdoor focus areas visualized in the timeline below, most of the policies are already covered by the previous and current version of Fenix Outdoor Chemicals guideline.



2. Purpose

There are numerous local, national, and international laws and regulations that dictate how retailers, brands and suppliers should manage chemicals used in processing and in final products; and these laws are constantly changing.

Every retailer, brand and supplier need a reliable system for tracking these regulations and for determining how their chemical management programs need to respond to these requirements.

The purpose of the group-wide Chemical Guideline and Restricted Substances List is to ensure compliance of all apparel, hardware and footwear products produced by or in the name of any Fenix Outdoor International AG entity with statutory (legal) requirements and self-imposed regulations and restrictions. This Guideline is governed by the precautionary principle and includes long-term views in light of legislative changes in various regions of the world. Our group-wide aim is to not use any hazardous chemicals that threaten human health or the environment. It is our utmost wish to reduce any negative impacts throughout the supply chain of our products. Hence, our restrictions go beyond legal compliance, and we encourage our business partners to be proactive and search for new, less harmful alternatives even before a legal demand is formulated.

3. Scope of Application

This corporate guideline applies to all Fenix Outdoor apparel, hardware and footwear companies and their suppliers including but not limited to materials suppliers, dye houses, chemical companies, mills, tanneries, cleaning, washing and pressing facilities and all those suppliers selling or treating materials and components that are used in or for our products. As applicable, the guide or any specified annex also applies to our technical brands and their suppliers as specified before.

Our aim is to present this Guideline as a comprehensive chemicals guidance document of substances for authorization and a Restricted Substances List (RSL) including restrictions for substances which are used in production processes and/or in products and related categories.

However, additional specific requirements maybe imposed by individual entities of Fenix Outdoor Group and those are valid *beyond* this Guideline.

4. Additional Valid Instructions and Reference Documents

- Fenix Way
- REACh l regulation (EU Regulation 1907/2006) and related amendments
- EU POP regulation (EU Regulation 850/2004 and 519/2012) and related amendments
- Biocide Product regulation (EU Regulation 528/2012) and related amendments
- EU directive concerning packaging materials (94/62/EC) and related amendments
- EU regulations concerning materials intended for contact with foodstuff (EU Regulation 1935/2004) and related amendments
- California Proposition 65 (as applicable)
- Fenix Supplier Code of Conduct
- Anti-Corruption Guideline
- Relevant Group Policies

Explanatory - Current legal international and national framework and requirements.

UN global treaties on certain hazardous chemicals such as POPs
Stockholm Convention on Persistent Organic Pollutants is an international environmental treaty, signed in 2001 and effective from May 2004, that aims to eliminate or restrict the production and use of persistent organic pollutants (POPs).

The Rotterdam Convention (formally, the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade) is a multilateral treaty to promote shared responsibilities in relation to importation of hazardous chemicals.

The Minamata Convention on Mercury is a global treaty to protect human health and the environment from the adverse effects of mercury.

Restrictions are regulatory measures to protect human health and the environment from unacceptable risks posed by chemicals. Restrictions may limit or ban the manufacture, placing on the market or use of a substance. A restriction can apply to any substance on its own, in a mixture or in an article, including those that do not require registration. Restrictions setting out conditions for the placing on the market of substances apply to both domestic production and imports.

Packaging material restrictions and obligations: Defined according to Directive (EC) No 94/62/EC of 20 December 1994 on packaging and packaging waste. The directive regulates substances in packaging material; meaning all products made of any materials of any nature to be used for the containment, protection, handling, delivery and presentation of goods, from raw materials to processed goods, from the producer to the user or the consumer.

Requirements of the General Product Safety Directive (2001/95/EC) (GPSD) imposes general safety requirements for any **product** put on the market for consumers or for any product that is likely to be used by them. This also includes all products that provide a servce.

Substances of Very High Concern (SVHC) are listed on Candidate List for authorization of the Regulation (EC) No 1907/2006 (REACH). All professional actors have an obligation to inform their consumers about the content of SVHC (as a minimum the name of the substance(s)) exceeding 0.1 % weight by weight (= 1000 mg/kg) in individual parts of an article, that are defined as articles. If the consumers are professional actors, there is an immediate information duty, but within 45 days for private consumers.

SCIP[1] (Substances of Concern In articles, as such or in complex objects (Products)

Background
When articles become waste, the presence of hazardous substances can make the waste unsuitable for recycling. Within the EU, there is a goal of non-toxic material cycles. To promote such a development, the European Chemicals Agency, ECHA, has been commissioned to create the SCIP database where suppliers of articles must report the presence of **S**ubstances of **V**ery **H**igh **C**oncern (SVHC). This information of SVHC will then be available during the entire life cycle of the article, including in the waste phase. This rule is new and is found in the Waste Directive 2008/98/EC.

Enforcement from 5 January 2021
Every manufacturer, importer or distributor of an article, which is placed on the market in the EU / EEA that contains a SVHC on the candidate list in REACH in a content of more than 0.1% by weight must provide information to the SCIP database at ECHA. It applied from 5 January 2021.

This does not apply to

- Retailers, who are not EU-importers or EU-producers, that only sell articles directly to private consumers, such as stores.
- companies that import articles for their own use.

Provision of data to SCIP
The manufacturer, importer or distributor of an article that contains more than 0.1 percent of a SVHC that is on the candidate list must send the following information to ECHA:

- information on the identity of the article
- the SVHC chemical name, concentration range and where in the article the SVHC is found
- other information on how to handle the product safely.

Food contact

All Food Contact products must in addition to Fenix Outdoor Chemicals guideline also comply with EU Framework Regulation concerning Food Contact Products no 1935/2004 and all regulations, directives, and amendments under this framework regulation. All Food Contact products must comply with Good Manufacturing Practice, Regulation 2023/2006.

Certain materials expected to come into foodstuff contact must fulfill specific requirements such as plastic materials, Ceramic materials to mention some non-exhaustive examples:

- All plastic materials intended to come in contact with foodstuffs must in addition to comply to above mentioned general regulation also comply with EU 10/2011 (plastic materials intended to come in contact with food stuffs) and all amendments.
- All ceramic or enamel materials intended to come in contact with foodstuffs must in addition to comply to above mentioned general regulation also comply with Council Directive 84/500/EEC and all amendments.
-
- All rubber materials intended to come in contact with foodstuffs must in addition to comply to above mentioned general regulation also comply with Commission Directive 93/11/EEC – On the release of N-nitrosamines and N-nitrosatable substances from elastomer or rubber teats and soothers and all its amendments.

United States (USA)

[1] https://echa.europa.eu/sv/scip

The Toxic Substances Control Act (TSCA) of 1976 is a US Federal law that provides US EPA with authority to require reporting, record-keeping and testing requirements, and restrictions relating to chemical substances and/or mixtures. Certain substances are generally excluded from TSCA, including, among others, food, drugs, cosmetics and pesticides.

The official text of TSCA as amended by the Frank R. Lautenberg Chemical Safety Act of the 21st Century is available in the United States Code, from the U.S. Government Printing Office.

TSCA addresses the production, import, use, and disposal of specific chemicals including polychlorinated biphenyls (PCBs), asbestos, radon and lead-based paint.

California Proposition 65, officially known as the Safe Drinking Water and Toxic Enforcement Act of 1986, was enacted as a ballot initiative in November 1986. The proposition protects the state's drinking water sources from being contaminated with chemicals known to cause cancer, birth defects or other reproductive harm, and requires businesses to provide warnings to Californians about exposures to such chemicals.

Proposition 65 requires the state of California to maintain and update a list, called the Safe harbor list, of chemicals known to the state to cause cancer or reproductive toxicity. Products or materials containing substances listed on this roster require a California Proposition 65 warning. The list is updated several times per year. More information about Proposition 65, including the list of regulated substances, can be found on the California Office of Environmental Health Hazard Assessment's website at: http://oehha.ca.gov/prop65.html

5. Definition of Terms

The following definitions of abbreviations and terms shall apply.

CAS No. Chemical abstract services registration number. CAS Number is given for a specific and defined substance.

CCO is an abbreviation for Chief Compliance Officer. The CCO controls the compliance activities on Group level and ensures they are implemented at Fenix.

Compliance: Stands for consistency of corporate conduct with statutory and internal corporate regulations and behavior, embodied by the conduct of senior management and employees of Fenix.

Detection limit: Limit of detection (LOD). Lowest concentration the test equipment is able to detect. This can vary between different test laboratories and the age and quality of their equipment. Please note that the detection limit is not always relevant as required/allowed -> limit values for certain chemicals can be notably higher than those. In some instances, detection limits are even below background concentrations (e.g., air or water pollution levels) which will virtually always in the detection of a substance, even when not deliberately used.

Limit of quantification (LOQ). The lowest concentration of an analyte that can be reliably measured by an analytical procedure. Indicative quantification limits (LOQ) are mentioned, but it is always important to ask those laboratories used by the company, since LOQ are laboratory specific.

Limit value: Limit value is the allowed maximum concentration of a chemical in a finished product. (Fenix defined or legally fixed). Where stated: *"not to be used",* a use of the chemical in any production step is not permitted. Note that the limit value is measured in products. Weight percent shall be calculated from the weight of the stand-alone component (e.g., a zipper, a lining etc.) if not defined otherwise. This demand is a consequence from the REACh Court ruling in 2015

pH: In chemistry, pH (/piːˈeɪtʃ/) is a numeric scale used to specify the acidity or basicity (alkalinity) of an aqueous solution. It is roughly the negative of the logarithm to base 10 of the molar concentration, measured in units of moles per liter, of hydrogen ions. Solutions with a pH less than 7 are acidic and solutions with a pH greater than 7 are basic. Pure water is neutral (pH 7), being neither an acid nor a base.

Properties: Describes the Human toxicological and Eco toxicological and environmental impact properties of a substance.

Test method: Describes the prescribed (standardized) test method to clarify and evidence that the limit value is not exceeded[2]. It also prescribes test equipment if no standardized test method exists. Abbreviations of recommended test equipment are explained below (test equipment abbreviations).

Skin contact:

Direct skin contact
Articles or parts of articles that come into direct contact with human skin during short time intervals of up to a few minutes, where the surfaces of the article (or parts of article) are touched or are in touch with the skin under normal foreseeable uses.

Prolonged skin contact
Articles or parts of articles that come into prolonged direct contact with human skin for longer time intervals of at least several minutes up to hours and days, where the surfaces of the article (or parts of article) are touched or are in touch with the skin under normal foreseeable uses.

Normal conditions of use mean the conditions associated with the main function of an article". It is explicitly not a "normal condition of use" if the user of an article uses an article in a situation or manner that the supplier of the article has clearly recommended to avoid, e.g., in the instructions or on the label of the article.

Reasonably foreseeable conditions of use mean conditions of use that can be anticipated as likely to occur because of the function and appearance of the article (even though they are not normal conditions of use). That would cover use by children to the extent that the use can be considered likely to occur because of the function and appearance of the article. For example, when a small child does not know the function of an article but uses it for any purpose he associates with it, such as biting or licking it.

Please note even if a product or parts thereof are not intended for skin contact, it may occur during normal use that they may have direct skin contact, e.g., shoulder pads and straps of backpacks.

[2] Detailed information of standardized test methods are described in „appendix 8 Fenix outdoor"

Food contact Materials	Food contact materials are all materials and articles intended to come into contact with food or beverages (hot and cold), such as packaging and containers, kitchen equipment, cutlery and dishes. These can be made from a variety of materials including plastics, rubber, paper and metal. European legislation for food contact materials also covers materials that contact water intended for human consumption, e.g. bottles.
Substances of Concern (SoC)	Substances also addressed as SoC are defined as persistent, bioaccumulative and toxic (PBT), very persistent and very bioaccumulative (vPvB), carcinogenic, mutagenic and toxic for reproduction (CMR), endocrine disruptors (ED) or equivalent concern shall not be present in a product.
Microparticles (microplastics)	A microparticle is a particle which is between approximately 1 and 1000 micrometres in size that can consist of various materials. A subgroup to microparticles are microplastics. Microplastics are tiny plastic particles that result from both commercial product development and the breakdown of larger plastics. As a pollutant, microplastics can be harmful to the environment and animal health.
Biocides	Biocides (latin: bios = life, cidus = death) are chemical or biological products intended to prevent or deter animals, plants or micro-organisms from causing damage to human health or property. Due to these properties, biocides may cause harm to health and the environment. Biocides should therefore be avoided unless the use is judged to be critical for the product's most essential properties that benefit the user's life and health.
Nano particles	An insoluble or bio-persistent and intentionally manufactured material with one or more external dimensions, or an internal structure, on the scale from 1 to 100 nm (EU/EEA).

GENERAL NOTE: In the line "*Alternatives*" we present additional information on known alternatives for and recommendations on how to avoid unwanted chemicals.

Test equipment abbreviations

ANALYSES OF ORGANIC COMPOUNDS

- **Gas chromatography : GC**
  Detectors used together with GC:
  - o MS: Mass selective detector: GC-MS
  - o DAD: Diode array detector: GC-DAD
  - o ECD: Electron capture detector: GC-ECD

- **Liquid chromatography: LC**

Note: Sometimes the abbreviation HPLC is used. It stands for High Performance Liquid Chromatography.

Detectors used together with LC:
- o MS: Mass selective detector: LC.MS
- o DAD: Diode array detector: LC-DAD
- o ECD: Electron capture detector: LC-ECD
- o UV/VIS: Ultraviolet/visible spectral-photometric detector: LC-UV/VIS

ANALYSES OF METALS

- **Inductively Coupled Plasma Spectrometry: ICP**
  Detectors together with ICP:

o OES: Optical emission spectrometer: ICP-OES
o MS: Mass selective detector: ICP-MS

- **Atomic absorption spectrophotometer: AAS**

SCREENING ANALYSES OF ELEMENTS

- **X-ray fluorescence: XRF**

Units used in the Guideline (and their relationship)

1000 mg/kg	**equals**	1000	ppm (parts per million)
1000 mg/kg	**equals**	1000000	µg/kg (micrograms per kilogram)
1000 mg/kg	**equals**	1	g/kg (gram per kilogram)
1000 mg/kg	**equals**	0,1	% (by weight)
1000 mg/kg	**equals**	x	µg/m^2 (micrograms per square meter while x depends on the thickness of the material (kg/m^2))
1000 mg/kg	**equals**	x	µg/cm^2/week (cm = centimeters) x is the amount released of a substance from a surface, and is partially dependent on the concentration of the substance in a given substrate

pH

Limit value textiles: 4.0 – 7.5.
Limit value leather: 3.5 – 7.0.

Properties: A pH higher than 10 or lower than 3 can cause skin irritation.
Comment: The pH value in **textiles** can easily be corrected by washing.

Test method textiles: EN ISO 3071:2020.
Test equipment: pH meter. Accuracy: 0.2 pH units

Test method leather: SS-EN ISO 4045:2018.
Test equipment: pH meter. Accuracy: 0.2 pH units

6. Duties and Responsibilities

Fenix Outdoor assumes the responsibility regarding safety and legal compliance of all its products vis-à-vis legislators and our customers. However, we can only assume responsibility if all our direct and indirect suppliers have been working as partners and been in compliance with legal and self-imposed rules and observed our defined requirements. Hence, violations and ignorance of this Guideline can result in damage claims and compensation in loss of sales. Subsequently: all suppliers in our supply chain – direct or indirect - shall follow our chemical specifications and inform us immediately, latest within 24 hours, should – for what reason ever – a violation of this guideline become known.

We expect all our partners to test frequently a number of materials and raw input materials for the risk chemicals listed below, setting clear priorities based on exposure risks. The tests shall only be conducted in accredited laboratories – either as prescribed below or if the laboratory can show an ISO/IEC 17025 accreditation.

Test results have to be reported to the respective Fenix Outdoor entity irrespective of the outcome without delay. In case, a problem arises, the Fenix entity and the responsible supplier will discuss the best way forward to achieve compliance.

Prescribed testing laboratory: SGS Hong Kong, If using other lab the lab must be approved by Fenix Outdoor Chemicals specialist in written prior to testing.

Biocides
All usage of biocidal treatments or materials with biocidal properties must be approved by Fenix CSR and Compliance team, non-exhaustive list of pesticides, insecticides and fungicides can be found in APPENDIX 1

Substances of Concern (SoC) that have harmonized hazard classifications, as below, must not occur in Fenix Outdoor products. All intentionally used SoC must be reported to Fenix Outdoor.

Environmental (PBT, PMT)
- Persistent (P)
- Bioaccumulative (B)
- Mobile (M, only applicable on PFAS)
- Toxic (H400, H411, H420) but also CMR or EDC
  - H400 Very toxic to aquatic life
  - H410 Very toxic to aquatic life with long lasting effects
  - H411 Toxic to aquatic life with long lasting effects.
  - H420 Harms public health and the environment by destroying ozone in the upper atmosphere.

Health (CMR, EDC and skin sensitizers)
- H317 May cause an allergic skin reaction (skin sensitizers)
- CMR:
  - **Category 1A**: Known human carcinogen (H340), mutagen (H350) or reproductive toxicant (H360) based on human evidence;
  - **Category 1B**: Presumed human carcinogen (H340), mutagen (H350) or reproductive toxicant (H360) based on animal studies;
  - **Category 2**: Suspected carcinogen (H341), mutagen (H351) or reproductive toxicant (H361) based on limited evidence from animal studies or/and human.
- Substances which are defined as endocrine disrupting substances (EDC)

Harmonized hazard classification*: For hazards of highest concern (carcinogenicity, mutagenicity, reproductive toxicity (CMR) and respiratory sensitisers) and for other substances on a case-by-case basis, classification and labelling should be harmonised throughout the EU to ensure an adequate risk management. This is done through harmonised classification and labelling (CLH). Harmonised classifications are listed in Annex VI to the CLP Regulation and should be applied by all manufacturers, importers, or downstream users of such substances and of mixtures containing such substances.*

Microparticles (microplastics)
It must be reported to Fenix Outdoor CSR team, if microparticles (microplastics) are intentionally occurring in the product. Complete list must be shared with Fenix Outdoor CSR team.

Ozone Depleting Substances
Ozone depleting substances (CFCs) class I and class 2 are banned for direct use in manufacturing of articles or products for Fenix Outdoor. Regulation (EC) No 1005/2009 for a complete list of single substances

Food contact
All Food Contact products must comply with EU Framework Regulation concerning Food Contact Products no 1935/2004 and all regulations, directives, and amendments under this framework regulation. All Food Contact products must comply with Good Manufacturing Practice, Regulation 2023/2006**. All suppliers of Food contact products are obligated to share a relevant declaration of compliance document for the concerned products with Fenix Outdoor pls use the suitable appendix (appendix 8 for ceramics and enamel, Appendix 9 for plastics and appendix 10 for rubber materials).**

California Proposition 65
We expect all suppliers to ensure that all products, materials or parts thereof supplied to Fenix Outdoor comply with California Proposition 65. The list of California Proposition 65 substances can be found at http://oehha.ca.gov/prop65.html. The list is updated regularly, and the supplier is responsible for monitoring the list and any and all updates. The supplier is required to disclose any substance subject to California Proposition 65 that is present in any product, material or parts thereof. Furthermore, if products, materials or parts thereof necessitate a California Proposition 65 warning, the supplier must furnish Fenix Outdoor with the accurate labelling information for all sales channels.

7. Content – The Chemicals List

Not all chemicals find application in all materials, products or purposes. Hence, we have identified the most common use-options. However, should a chemical, restricted, or banned according to this guideline also be used in other applications, please immediately inform your Fenix Outdoor contact for instructions. In case no substitute is available, a possible temporary approval of the questionable, banned, or hazardous chemical can only be granted in writing by a Fenix Outdoor responsible employee. Failing to do so will lead to damage claims and possible other financial compensation demands. We expect our suppliers to have proper safety data sheets for all chemicals used in the process. They should be presentable upon request and need to be followed at any time.

7.1 Process related Chemicals

7.1.1 Alkylphenol ethoxylates (APEO) and derivatives

The most common APEOs are Nonylphenol ethoxylates (NPEO) and Octylphenol ethoxylates (OPEO).

Material categories concerned: Textile, Leather

Limit value:	Not to be used in processes. Max allowed occurrence in product: 25 mg /kg. Production should be free from contaminations.
Properties:	Irritating to skin. The metabolites affect the respiratory system, have endocrine disruptive effect (hormones) and are dangerous for the environment. Nonylphenol ethoxylates are rapidly degraded to 4-nonylphenol, which is even more dangerous for the environment. A similar environmental danger is the degradation of octylphenol ethoxylate into 4-octylphenol.
Use:	Dispersing and emulsifying agents in textile chemicals as well as impregnation agents in printing pastes. Occurs in leather lubricants. Manufacturing of coatings.
Alternatives:	The main alternatives for NPEs also include alcohol ethoxylates, both linear and branched, and glucose-based carbohydrate derivatives such as alkylpolyglucoside, glucamides, and glucamine oxides
Legal background:	Restrictions: Legal limit: 0.1% by weight for nonylphenol ethoxylate as a substance or constituent of preparations (closed systems exempted). NPEOs shall not be placed on the market after 3 February 2021 in textile articles, which can reasonably be expected to be washed in water during their normal lifecycle, in concentrations equal to or greater than 0,01 % by weight of that textile article or of each part of the textile article (= 100 mg/kg). Annex

XVII of Regulation (EC) No 1907/2006 of the European Parliament and of the Council (REACH).

Norway restricts manufacture, import, export, sale and use of octylphenol and octylphenol ethoxylates, and mixtures containing these substances, FOR 2004-06-01-922.

Candidate List of Substances of Very High Concern (SVHC):
APEO/AP are listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).
Overview of regulated APEO/AP

Substances	**CAS RN**	**Legal status**
4-(1,1,3,3-tetramethylbutyl)phenol (4-tert-OP)	140-66-9	SVHC
4-(1,1,3,3-tetramethylbutyl)phenol, ethoxylated (4-tert-OPnEO)	Several	SVHC
4-(1,1,3,3-tetramethylbutyl)phenol, ethoxylated (4-tert-OPnEO, UVCB substance)	Several	SVHC
4-Nonylphenol, branched and linear (4-NP)	Several	SVHC
4-Nonylphenol, branched and linear, ethoxylated (4-NPnEO)	Several	SVHC and Restricted
4-tert-butylphenol	98-54-4	SVHC
Phenol, alkylation products (mainly in para position) with C12-rich branched alkyl chains from oligomerisation, covering any individual isomers and/ or combinations thereof (PDDP)	Several	SVHC
tris(4-nonylphenyl, branched and linear) phosphite (TNPP)	Several	SVHC
Phenol, alkylation products (mainly in para position) with C12-rich branched alkyl chains from oligomerisation, covering any individual isomers and/ or combinations thereof (PDDP)	Several	SVHC

Test method: EN ISO 18254-1:2016, 2:2019 (textile), (APEO)
EN ISO 21084:2019 (textile), (AP)
EN ISO 18218-1:2015 (APEO direct method, leather)
EN ISO 18218-2:2019 (APEO indirect method, leather)

Detection limit: 10 mg/kg

7.1.2 Aliphatic organic solvents

Material categories concerned: Textile, Leather

Limit value: No odor.

Properties: Liquids or gases. Inhalation can affect the nervous system and cause headache, fatigue and nausea. Cause irritation on skin, eyes, and mucous membranes.

Use: Solvents for dyeing and printing. Solvents that have been used for cleaning of spinning oils from textiles are often found in amounts of 10-20 mg/kg. The limit for humans to sense a smell lies around 100 mg/kg for most substances.

Alternatives: Aliphatic organic solvents are volatile organic compounds (VOC). There are statutory hygienic limit values for employees in many countries.

Legal background: Manufacturers are required to follow the “VOC Directive”, 1999/13/EC.

Test method: SNV 195 651, screening method. Panel-odor-test.
Detection limit: No odor.

7.1.3 Aromatic organic solvents

Material categories concerned: Textile, Leather, Packaging

Limit value: Not allowed to be present in products.

Properties: Liquids or gases. Inhalation can affect the nervous system and cause headache, fatigue and nausea. Cause irritation on skin, eyes and mucous membranes. Kerosene and diesel odor in finished products. Some aromatic organic compounds are carcinogenic.

Use: Solvents for dyeing and printing textile and leather. Stain removal. Coatings, binders and adhesives.

Alternatives: Aromatic organic solvents are volatile organic compounds (VOC). Use solvents of higher quality with lower levels of aromatic hydrocarbons or synthetic thickeners based on polycarboxylic acids.

Replace simple aromatic hydrocarbons (petrol) with low-molecular-weight aliphatic hydrocarbons. To avoid problems with organic solvents, switching to water-based dyeing and printing processes is recommended.

There are statutory hygienic limit values for employees in many countries.

Legal background: Manufacturers are required to follow the “VOC Directive”, 1999/13/EC.

Test method: SNV 195 651, screening method. Panel-odor-test.

Detection limit: No odor.

7.1.4 Bisphenols

Material categories concerned: Various accessories including plastic bottles, buckles or pots Also applied in textile dyeing and leather finishing processes.

Limit value: Forbidden to be used in processes or present in products.

Overview of regulated bisphenols

Substances	CAS RN	Legal status
(4,4’-isopropylidenediphenol (BPA)	80-05-7	SVHC and restricted

2,2-bis(4'-hydroxyphenyl)-4-methylpentane	6807-17-6	SVHC
4,4'-(1-methylpropylidene)bisphenol (BPB)	77-40-7	SVHC
4,4'-sulphonyldiphenol	80-09-1	SVHC

Properties: Toxic for reproduction

Use: Mainly used in manufacture of polycarbonate epoxy resins and chemicals, hardener in epoxy resins and in thermal prints.

Alternatives: Substance is often left as residues in polycarbonate and epoxy and can be found in products with material based on plastic and paper. BPA is part of a large family of chemicals called bisphenols.

Legal background:

Restrictions:
BPA Bisphenol A (BPA) contained in thermal paper (0,02v%) is restricted from January 2020 (entry 66, annex XVII REACH).

Candidate List of Substances of Very High Concern (SVHC)
BPA is listed on the Candidate List of Substances of Very High Concern (SVHC) for authorization of the Regulation (EC) No 1907/2006 of the European Parliament and of the Council (REACH).

Test method: CEN/TS 13130-13:2005 (food contact materials)
EN ISO 11936:2023 (leather)

Test equipment: LC-MS, GC-MS.

Detection limit: There is no standard international detection limit yet.

7.1.5 C,C'-azodi(formamide) (ADCA)

Materials concerned: Various accessories such as bottoms for tents.

Limit value: Forbidden to be used in processes or present in products.

Properties: Respiratory sensitizer

CAS No 123-77-3

Use: Mainly as blowing agent in the rubber and plastics industry. Foaming agent in especially EVA and PVC.

Alternatives: Can leave residues of formamide in the material. ADCA may decompose into semicarbazide a suspected carcinogen.

Legal background: Candidate List of Substances of Very High Concern (SVHC)
ADCA is listed on the Candidate List of Substances of Very High Concern (SVHC) for authorization of the Regulation (EC) No 1907/2006 of the European Parliament and of the Council (REACH).

Test method: No standardised test method available for textiles.
Test equipment: GC-MS

7.1.6 Chlorinated organic solvents.

Material categories concerned: Textile, Leather

Limit value: Forbidden to be used in processes or present in products.

Properties: Liquid or gas. Affect the nervous system. Irritating to skin and mucous membranes.

Use: Many chlorinated organic solvents are dangerous for the environment. Solvent used in the manufacture of rubber, metal paint and fur industry used for grease and oil, e.g. in stain removers. Also used in cleaning agents and detergents. Solvents in lubricating oils. Solvents in dyeing of synthetic fibers (carriers). Solvents in printing for textile and leather. Finishing agents. Fabric softeners. Also used as moth-proofing agent in textiles and for the manufacture of silk and pearls. Additional list of prohibited chlorinates organic solvents can be found in appendix 2

Legal background:

Solvent	CAS No	Legal framework	Legal requirement
Restrictions:			
Chloroform	67-66-3	REACH, Annex XVII	Shall not be placed on the market, or used as substances, as constituents of other substances or in mixtures in concentrations equal to or greater than 0.1% by weight
1,1,2 Trichloroethane	79-00-5	REACH, Annex XVII	
1,1,2,2 Tetrachloroethane	79-34-5	REACH, Annex XVII	
1,1,1,2 Tetrachloroethane	630-20-6	REACH, Annex XVII	
Pentachloroethane	76-01-7	REACH, Annex XVII	
1,1 Dichloroethylene	75-35-4	REACH, Annex XVII	
1,4-dichlorobenzene	106-46-7	REACH, Annex XVII	
Carbon tetrachloride	56-23-5	Regulation (EC) No 2037/2000 of the European Parliament and of the Council of 29 June 2000 on substances that deplete the ozone layer	Shall not be produced, placed on the market, or used
1,1,1 Trichloroethane	71-55-6		

α,α,α,4-tetrachlorotoluene; p-chlorobenzotrichloride	5216-25-1	Annex XVII of Regulation (EC) No 1907/2006 of the European Parliament and of the Council (REACH).	1 mg/kg in textiles (CMR fast track, entry 72)
α,α,α-trichlorotoluene; benzotrichloride	98-07-7		
α-chlorotoluene; benzyl chloride	100-44-7		
Candidate List of Substances of Very High Concern (SVHC)			
Trichloroethylene	79-01-6	Candidate List of Substances of Very High Concern for authorization and annex XIV in Regulation (EC) No 1907/2006 of the European Parliament and of the Council (REACH)	0.1% by weight in articles for information duty.
1,2,3-trichloropropane	96-18-4	Candidate List of Substances of Very High Concern for authorization in Regulation (EC) No 1907/2006 of the European Parliament and of the Council (REACH)	0.1% by weight in articles for information duty.
1,2-Dichloroethane	107-06-2	Prop 65.	
Methylene chloride	75-09-2	Prop 65.	
Manufacturers in EU are required to follow the “IED”, 2010/75/EU.			

Test method: EN 17137:2018 (textile).

Test equipment: GC-MS, GC-ECD.

Detection limit: There is no standard international detection limit as of yet.

For GC-MS it is 0.1 mg/kg.

7.1.7 Chromium VI (Cr + 6)

Material categories concerned: Textile, Leather, Packaging

Limit value: Not allowed to occur in processes or present in products.

Chromium VI (Cr +6): CAS No.: 18540-29-9.

Properties: Dangerous for the environment. Carcinogenic. Allergenic. Toxic.

Use for textiles: Oxidation agent. Fixing chemical. Used for finishing of direct dyes to improve their wash fastness. Potassium dichromate is used for oxidation of vat and sulfur dyes. Chromium salts are used for preparation and finishing of acid dyes on silk and wool.

Use for leather: Tanning with basic chromium salts is the most widely used method where chromium VI (6 +) may occur as an impurity. Etching of artificial leather and rubber.

Alternatives: Chrome (III) is an alternative as fixing agent in mordant dyeing. Use direct dyes or acid dyes with high colorfastness to avoid use of chromium salts for dyeing of polyamide, silk, wool and leather. Use hydrogen peroxide and other per-salts to avoid the use of chromium VI (6 +) based salts. Vegetable tanning agents are alternatives for leather. Tanning with titanium is an emerging technology.

Legal background: Restrictions:
Legal limit: 0.0003% by weight (3 mg/kg) for leather in direct skin contact. Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 47.

From 1 November 2020, chromium VI compounds have a restriction limit of 1 mg/kg (extractable chromium VI content) in clothing, related accessories, textiles other than clothing in skin contact, or footwear (CMR fast track) according to Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 72. The CMR fast track restriction does not apply to clothing, related accessories, textiles other than clothing, or footwear within the scope of Regulation (EU) 2016/425 (PPE).

The German Commodities Ordinance (Bedarfsgegenständeverordnung), Appendix 422 regulates that: chromium (VI) may not be detected in products made of leather, which is designed not only to temporarily come into contact with the human body, especially clothing, watchbands, handbags, backpacks, chair covers, etc.

Note that the EU ban on hexavalent chromium in leather articles with skin contact is regulated in REACH Annex 17 and entered into force on 1 May 2015.

The sum of concentration levels of lead, cadmium, mercury and chromium VI present in packaging or packaging components shall not exceed 100 ppm by weight according to Directive (EC) No 94/62/EC of 20 December 1994 on packaging and packaging waste.

Candidate list of Substances of Very High Concern (SVHC)
Several chromium VI compounds listed on the Candidate list of Substances of Very High Concern (SVHC) for the authorization of the Regulation (EC) No 1907/2006 of the European Parliament of the Council (REACH). Several

Chromium VI compounds are also included in REACH Annex XIV, see table below.

Overview of regulated chromium VI compounds

Substance	CAS RN	Legal status
Ammonium dichromate	7789-09-5	SVHC
Potassium chromate	7789-00-6	SVHC
Potassium dichromate	7778-50-9	SVHC
Sodium chromate	7775-11-3	SVHC
Sodium dichromate dehydrate	7789-12-0, 10588-01-9	SVHC
Strontium chromate	7789-06-2	SVHC
Chromium trioxide	1333-82-0	SVHC
Chromic acid	7738-94-5	SVHC
Dichromic acid	13530-68-2	SVHC
Lead chromate	7758-97-6	SVHC
Lead sulfochromate	1344-37-2	SVHC
Lead chromate molybdate sulphate	12656-85-8	SVHC
Dichromium tris(chromate)	24613-89-6	SVHC
Potassium hydroxyoctaoxodizincatedichromate	11103-86-9	SVHC
Pentazinc chromate octahydroxide	49663-84-5	SVHC

Prop 65: Chromium VI is known to the State of California to cause cancer and birth defects or other reproductive harm. Safe Harbor Limit: NSRL 0.001 µg/day (inhalation), MADL 8.2 µg/day (oral). No information on settlements.

Test method: EN ISO 17075-1,-2:2017 (leather).
No standardized test method available for textiles.
Test equipment: UV-VIS Spectrophotometer; ICP-MS

Detection limit: 3 mg/kg for leather

7.1.8 Cobalt (Co) and its compounds

Material categories concerned: Material categories concerned: silica gel packs or moisture absorbents in packaging and auxiliary objects made of rubbers and plastic and objects such as Li batteries

Required limit value: Avoid using cobalt and its salts as much as possible with retained functionality and cost efficiency of the product.

CAS RN: 10124-43-3, Cobalt sulphate
10141-05-6, Cobalt dinitrate
71-48-7, Cobalt di(acetate)
513-79-1, Cobalt carbonate
7646-79-9, Cobalt dichloride

Properties:

May cause cancer by inhalation, may damage fertility, is very toxic to aquatic life, is very toxic to aquatic life with long lasting effects, is harmful if swallowed, is suspected of causing genetic defects, may cause an allergic skin reaction and may cause allergy or asthma symptoms or breathing difficulties if inhaled.

Use:

Cobalt dichloride: Absorber for gases, humidity indicator (e.g., silica gels) where it turns pink on exposure to air and moisture.
, to produce vitamin B12, dye mordant for glass industry, solid lubricant, catalyst, invisible inks, drying agent, production of non-ferrous metals, electroplating, additive in rubber production.

Cobalt sulphate: Mainly used in the production of other chemicals. Further applications may include manufacture of catalysts and driers, surface treatments (such as electroplating), corrosion prevention, production of pigments, decolorizing (in glass, pottery), batteries, animal food supplements, soil fertilizers, and others.

Cobalt carbonate: Mainly used in the manufacture of catalysts. Minor uses may include feed additive, production of other chemicals, production of pigments, and adhesion (in ground coat frit).

Cobalt di(acetate): Mainly used in the manufacture of catalysts. Minor uses may include production of other chemicals, surface treatment, alloys, and production of pigments, dyes, rubber adhesion,

Cobalt dinitrate: Mainly used in the production of other chemicals and the manufacture of catalysts. Further applications may include surface treatment and batteries.

Alternatives:

Avoid using cobalt and its salts as much as possible with retained functionality and cost efficiency of the product.

Legal background:

Restrictions (EU/EEA)
Annex XVII of Regulation (EC) No 1907/2006 (REACH).
Shall not be manufactured, placed on the market or used as substances on their own or in mixtures in a concentration equal to or above 0.01% by weight (100 mg/kg), unless safety measures have been taken to limit exposure of any of the cobalt salts to below 0.01% by weight (100 mg/kg) to demonstrate safe use and production.

Duty to inform your customer on substances for authorisation (EU/EEA)
These five cobalt salts are listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH)

Overview of regulated Cobalt (Co) and its compounds

Substances	**CAS RN**	**Legal status**
Cobalt Metal Powder	7440-48-4	Prop 65
Cobalt sulphate	10124-43-3	SVHC and restricted, Prop 65

Cobalt dinitrate	10141-05-6	SVHC and restricted
Cobalt di(acetate)	71-48-7	SVHC and restricted
Cobalt carbonate	513-79-1	SVHC and restricted
Cobalt dichloride	7646-79-9	SVHC and restricted

Prop 65:
Cobalt sulphate is known to the State of California to cause cancer.

Test method: EN 16711-1, -2:2015 (textile)
EN ISO 17072-1:2019 (leather)
EN ISO 17072-2:2022 (leather)

Detection limit 10 mg/kg
Ethylenediamine (EDA)

Material categories concerned: Textiles and textile accessories components

Limit value: Do not use: Not to be present in products. CAS No. 107-15-3

Properties: Respiratory and skin sensitizer

Use: Used in the production of many industrial chemicals. Used in the production of polyurethane fibres.

Legal background: Candidate list of Substances of Very High Concern (SVHC)
Ethylenediamine is listed on the Candidate list of Substances of Very High Concern (SVHC) for the authorization of the Regulation (EC) No 1907/2006 of the European Parliament of the Council (REACH).

Test method: No standardised test method available.

7.1.9 Ethylenethiourea

Material categories concerned: Rubber soles and other rubber accessory components

Limit value: Should not be present in products. Use only in controlled production systems. Imidazolidine-2-thione (2-imidazoline-2-thiol) also called ethylenethiourea: CAS No. 96-45-7

Properties: Toxic for reproduction.

Use: Used primarily as an accelerator for vulcanizing rubber

Legal background: Candidate list of Substances of Very High Concern (SVHC)
Ethylenethiourea is listed on the Candidate list of Substances of Very High Concern (SVHC) for the authorization of the Regulation (EC) No 1907/2006 of the European Parliament of the Council (REACH).

Prop 65: Ethylenethiourea is known to the State of California to cause cancer and birth defects or other reproductive harm Safe Harbor Limit: NSRL 20 µg/day. None for reproductive harm. No information on settlements.

Test method: No standardized test method available.
Test equipment: LC-MS

7.1.10 Formamide

Material categories concerned: eventually textiles; synthetic leather and accessories

Limit value: Forbidden to be present in products.

Properties: Toxic for reproduction.
CAS No 75-12-7

Use: Formamide is used as solvent for example in the production of synthetic leather and inks. Furthermore, formamide is used as a solvent and plasticizer in consumer products. It can be an ingredient as softener for paper, water soluble glues and wood stains. During processing of foam, formamide is formed as a by-product at higher temperatures. Especially tosylsemicarbazide and azodicarbonamide (see headline ADCA above) are responsible for the presence of formamide in EVA-consumer products.

Alternatives: For the application as solvent, formamide might be replaced by other solvents like dipropylene glycol.
Potential alternatives as N,N-dimethylformamide, N-methylformamide or ethylene glycol ethers are not considered to be adequate substitutes due their similar toxicity to reproduction.

Legal background: Restrictions:
Formamide is restricted in puzzle mats in Belgium and France and will be included in the Toy Safety Directive in 2017 (limit value 200 mg/kg).

Candidate List of Substances of Very High Concern (SVHC)
Formamide is listed on the Candidate List of Substances of Very High Concern (SVHC) for authorization of the Regulation (EC) No 1907/2006 of the European Parliament and of the Council (REACH).

Test method: Solvent extraction. Test equipment: GC-MS or LC-MS

7.1.11 Glucols

Useful solvents in paints and surface coatings, stains, lacquers, inks, and dyes

Required limit value: Should not be used in processes and present in products.

Overview of regulated glucols

Substances	CAS RN	Legal status
2-Ethoxyethanol	110-80-5	SVHC

2-Ethoxyethyl acetate	111-15-9	SVHC
2-Methoxyethyl acetate	110-49-6	SVHC
2-Methoxypropyl acetate	111-96-6	SVHC

Properties: Toxic for reproduction.

Use: The listed glucols are widely used as industrial solvents and production intermediate. The glycol ethers are miscible in polar and nonpolar solutions, which make them useful solvents in paints and surface coatings, stains, lacquers, inks, and dyes

Legal background: Duty to inform your customer on substances for authorisation (EU/EEA)
2-Ethoxyethanol, 2-Ethoxyethyl acetate, 2-Methoxyethyl acetate, 2-Methoxypropyl acetate are listed on the Candidate list of Substances of Very High Concern (SVHC) for the authorization of the Regulation (EC) No 1907/2006 of the European Parliament of the Council (REACH).

Prop 65: 2-Ethoxyethanol is known to the State of California to cause cancer and birth defects or other reproductive harm

Test method: No standardised test method available. Indicative LOQ: 200 mg/kg

7.1.12 Dimethylfumarate (DMFu)

Material categories concerned: products, Accessories, Leather, Packaging.

Limit value: Not allowed in Fenix Outdoor products or packaging
Dimethylfumarate: CAS No. 624-49-7

Properties: Allergic sensitizer, toxic even in low concentrations

Use: Fungicide to prevent mold

Legal background: Restrictions:
Legal limit: 0.00001 % by weight (0.1 mg/kg) in articles or any parts thereof.
Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 61.

Test method: EN ISO 16186:2021 (footwear)
EN 17130:2019 (textiles)

Detection limit: 0.1 mg/kg

7.1.13 Hydrazine

Material categories concerned: Accessories, Packaging

Limit value: Not to be used in processes or present in products.
Hydrazine: CAS Nos.302-01-2,7803-57-8

Properties: Carcinogenic, allergenic, toxic.

Use:	Mainly used as a foaming agent in preparing polymer foams
Legal background:	Candidate list of Substances of Very High Concern (SVHC) Hydrazine is listed on the Candidate list of Substances of Very High Concern (SVHC) for the authorization of the Regulation (EC) No 1907/2006 of the European Parliament of the Council (REACH). Prop 65: Hydrazine is known to the State of California to cause cancer. Safe Harbor Limit: NSRL 0.04 µg/day. No information on settlements.
Test method:	No standardized test method available for textiles. EN 13999-3:2007+A1:2009 (adhesives) Test equipment: GC-MS
Detection limit:	There is no standard international detection limit as yet.

7.1.14 Other organic solvents

DMFa (N,N-dimethylformamide)

Material categories concerned: Textile, Leather, Accessories, Packaging

Limit value:	Forbidden to use in processes or present in products. N,N-dimethylformamide (DMFa): CAS No 68-12-2
Properties:	Toxic to reproduction.
Use:	Used as solvent and in production of leather imitation (PU). An intermediate for paper finishing. It may have a faint amine odor in finished products. Use “water-based” PU which does not contain DMFa.
Legal background:	Restrictions: From 1 November 2020, DMFa has a restriction limit of 3000 mg/kg in clothing, related accessories, textiles other than clothing in skin contact, or footwear (CMR fast track) according to Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 72. The CMR fast track restriction does not apply to clothing, related accessories, textiles other than clothing, or footwear within the scope of Regulation (EU) 2016/425 (PPE). From 12 December 2024 in relation to placing on the market for use, or use, as a solvent in direct or transfer polyurethane coating processes of textiles and paper material or the production of polyurethane membranes, and from 12 December 2025 in relation to placing on the market for use, or use, as a solvent in the dry and wet spinning processes of synthetic fibres. Restricted in polyurethane-coated work gloves work gloves in Germany. The maximum DMFa content must be less than 10 mg/kg glove material (TRGS 401). Candidate list of Substances of Very High Concern (SVHC) DMFa is listed on the Candidate list of Substances of Very High Concern (SVHC) for the authorization of the Regulation (EC) No 1907/2006 of the European Parliament of the Council (REACH). Prop 65: DMFa is known to the State of California to cause cancer. Safe Harbor Limit: None. No information on settlements.

Test method: EN 17131:2019 (textile)
CEN ISO/TR 16178:2021 (footwear)
CEN ISO/TS 16189:2021 (footwear)
EN 16778:2016 (gloves)

Detection limit: 10 mg/kg

N, N-dimethylacetamide (DMAC)

Material categories concerned: Textile, Leather, Accessories, Packaging

Limit value: Forbidden to use in processes or present in products.
N, N-dimethylacetamide (DMAC): CAS-No 127-19-5

Properties: Toxic to reproduction, irritating.

Use: Used as solvent and in industrial coatings, polyimide films, paint strippers and ink removers

Legal background: Restrictions:
From 1 November 2020, DMAC has a restriction limit of 3000 mg/kg in clothing, related accessories, textiles other than clothing in skin contact, or footwear (CMR fast track) according to Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 72. The CMR fast track restriction does not apply to clothing, related accessories, textiles other than clothing, or footwear within the scope of Regulation (EU) 2016/425 (PPE).

Candidate list of Substances of Very High Concern (SVHC)
DMAC is listed on the Candidate list of Substances of Very High Concern (SVHC) for the authorization of the Regulation (EC) No 1907/2006 of the European Parliament of the Council (REACH).

Prop 65: DMAC is known to the State of California to cause birth effects or other reproductive harm. Safe Harbor Limit: None. No information on settlements

Test method: No standardized test method available for textiles.

Test equipment: GC-MS, LC-MS

Detection limit: 10 mg/kg

N-Ethyl-2-pyrrolidone (NEP)
Material categories concerned: Textile, Leather, Accessories, Packaging

Limit value: Not to be used in processes or present in products.
CAS No 2687-91-4

Properties: Carcinogenic, reproduction toxicity, skin irritation, respiratory toxicity.
Use: Mainly used as a solvent in glue formulas

Legal background: Note that NEP (1-ethylpyrrolidin-2-one), CAS 2687-91-4 is a CMR substance and on-going regulation of a limit value for working environment. It is therefore required to follow the “VOC Directive”, 1999/13/EC.

Test method: No standardized test method available for textiles and leather.
Test equipment: GC-MS, LC-MS

Detection limit: 10 mg/kg

N-methyl-2-pyrrolidone (NMP)

Material categories concerned: Textile, Leather, Accessories, Packaging

Limit value: Not be used in processes or present in products.
N-methyl-2-pyrrolidone (NMP): CAS No 872-50-4

Properties: Toxic to reproduction, irritating.

Use: Good solvency properties for polymers. Solvent for glues. Surface treatment of textiles, resins and metal coated plastics or as a paint stripper. Intermediates for textile auxiliaries, plasticizers, stabilizers and specialty inks. Note that NEP (1-ethylpyrrolidin-2-one), CAS No 2687-91-4 is not a suitable alternative to NMP since it is Repr. Tox. 1B.

Polyamide precursor. SBR (styrene-butadiene) latex production.

Legal background: Restrictions:
From 1 November 2020, NMP has a restriction limit of 3000 mg/kg in clothing, related accessories, textiles other than clothing in skin contact, or footwear (CMR fast track) according to Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 72. The CMR fast track restriction does not apply to clothing, related accessories, textiles other than clothing, or footwear within the scope of Regulation (EU) 2016/425 (PPE). NMP has also a limit value for working environment under Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 71.

Candidate list of Substances of Very High Concern (SVHC)
NMP is listed on the Candidate list of Substances of Very High Concern (SVHC) for the authorization of the Regulation (EC) No 1907/2006 of the European Parliament of the Council (REACH).

Prop 65: NMP is known to the State of California to cause birth defects or other reproductive harm. Safe Harbor Limit: MADL 3200 µg/day (inhalation), 17000 µg/day (dermal). No information on settlements.

Test method: No standardized test method available for textiles.
Test equipment: GC-MS, LC-MS
EN ISO 19070:2016 (leather)

Detection limit: 25 mg/kg

1,4 dioxane

Material categories concerned: Textile, Leather, Accessories, Packaging

Required limit value: Should not be used in processes and present in products

CAS RN:	123-91-1
Properties:	Carcinogenic and harmful to the environment.
Use:	1,4-dioxane is used as a stabilizer for chlorinated solvents such as trichloroethane and trichloroethylene. 1 It can also be an unintended contaminant of chemical ingredients used in adhesives, foaming agents and antifreeze. It has also been used as a wetting and dispersing agent in textile processing.
Alternatives:	Use low toxic and easily degradable chemicals as wetting and dispersing agents.
Legal background:	Duty to inform your customer on substances for authorisation (EU/EEA) 1,4 dioxane is listed on the Candidate list of Substances of Very High Concern (SVHC) for the authorization of the Regulation (EC) No 1907/2006 of the European Parliament of the Council (REACH). Prop 65: 1,4 dioxane is known to the State of California to cause cancer.
Test method:	No standardised test method available.
Detection limit:	100 mg/kg

2-methoxyethyl acetate

Material categories concerned: Textile, Accessories

Required limit value:	Should not be present in products.
CAS RN:	110-49-6
Properties:	Toxic for reproduction.
Use:	Solvent for nitrocellulose, cellulose acetate, various gums, resins, waxes, oils; textile printing; photographic film; lacquers; dopes. Used in screen print inks and as an industrial solvent.
Legal background:	Candidate list of Substances of Very High Concern (SVHC): 2-methoxyethyl acetate is listed on the Candidate list of Substances of Very High Concern (SVHC) for the authorization of the Regulation (EC) No 1907/2006 of the European Parliament of the Council (REACH).
Test method:	No standardised test method available. Solvent extraction. Test equipment: GC-MS or LC-MS
Detection limit:	100 mg/kg

N-(hydroxymethyl)acrylamide

Material categories concerned: Textile, Accessories, Packaging

Required limit value:	Should not be used in processes and present in products

CAS RN:	924-42-5
Properties:	May cause genetic defects, may cause cancer and causes damage to organs through prolonged or repeated exposure.
Use:	As a monomer in fluoroalkyl acrylate copolymers, adhesives, binders in papermaking and textiles to a variety of surface coatings and resins for varnishes, paints, films and sizing agents
Alternatives:	Refrain from using monomers with CMR, hormone disturbing and/or PBT properties.
Legal background:	Duty to inform your customer on substances for authorisation (EU/EEA) N-(hydroxymethyl)acrylamide is listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).
Test method:	No standardised test method available.
Detection limit:	100 mg/kg

7.1.15 PAH - Polycyclic aromatic hydrocarbons

Material categories concerned: Accessories (black pigmented rubber and plastics), Leather, Wood

Limit value: Forbidden to use in processes or present in products.

Restricted under REACH
Benzo(a)anthracene, CAS No 56-55-3
Benzo(a)phenanthrene (chrysene), CAS No 218-01-9
Benzo(a)pyrene, CAS No 50-32-8
Benzo(b)fluoranthene, CAS No 205-99-2
Benzo(j)fluoranthene, CAS No 205-82-3
Benzo(k)fluoranthene, CAS No 207-08-9
Dibenzo(a,h)anthracene, CAS No 53-70-3
Benzo[e]pyrene, CAS No 192-97-2
Benzo[ghi]perylene CAS No 191-24-2
Anthracene oil destillation fractions, see SVHC table below

Restricted under German laws and several US regulations:

Indeno(1,2,3-cd)pyrene, CAS No 193-39-5

Benzo(j,k)fluorene (fluoranthene), CAS No 206-44-0

Naphthaline, CAS No 91-20-3

Anthracen, CAS No 120-12-7

Pyren, CAS No 129-00-0

Benzo[g,h,i]perylen, CAS No 191-24-2

Phenanthren, CAS No 85-1-8

Benzo(r,s,t)pentaphene, CAS No 189-55-9

Dibenzo(a,h)pyrene, CAS No 189-64-0

Dibenzo(a,l)pyrene, CAS No 191-30-0

Dibenzo(a,e)pyrene, CAS No 192-65-4

7H-Dibenzo(c,g)carbazole, CAS No 194-59-2

Dibenz(a,j)acridine, CAS No 224-42-0
Dibenz(a,h)acridine, CAS No 226-36-8
5-Methylchrysene, CAS No 3697-24-3
Dibenzo(a,e)fluoranthene, CAS No 5385-75-1
1-Nitropyrene, CAS No 5522-43-0
3-Methylcholanthrene, CAS No 56-49-5
7,12-Dimethylbenz(a)anthracene, CAS No 57-97-6

Properties: Carcinogenic, allergenic, toxic.

Use: PAHs are not synthesized chemically for industrial purposes.
The major source of PAHs is the incomplete combustion of organic material such as coal, oil and wood. Some are used as intermediaries in pharmaceuticals, agricultural products, photographic products, thermosetting plastics, lubricating materials, and other chemical industries. May be found as impurities in rubber materials and leather

Legal background: Restrictions:
Materials in toys or childcare articles that come into direct contact with the human skin shall not include of any of the listed PAHs in amounts more than 0,5 mg/kg
For materials in other product categories the limit value is 1 mg/kg

The above-mentioned PAHs are listed in annex XVII of the Regulation (EC) No 1907/2006 of the European Parliament and of the Council (REACH) from 27 December 2015.

The voluntary German GS standard has requirements for the sum of 16 PAH (the 16 U.S. EPA listed compounds) and also specifically, benzo [a] pyrene, that most products in the German market follows.

For products or parts of products, which may come into contact, the sum of all PAH 10 mg/kg of material and specifically benzo [a] pyrene not to exceed 1mg/kg.

For products that are expected to have only a short-term skin contact is for 200 mg PAH/kg and 20 mg benzo [a] pyrene/kg. The sum of all PAHs consists of the 16 U.S. EPA listed compounds. The limits are thus different for different product groups and can be as low as 0.2 mg/kg.

From 1 November 2020, the following PAHs have a restriction limit of 1 mg/kg in clothing, related accessories, textiles other than clothing in skin contact, or footwear (CMR fast track) according to Annex XVII, entry 72, of Regulation (EC) No 1907/2006 (REACH):
Benzo(a)anthracene,
Benzo(a)phenanthrene (chrysene),
Benzo(a)pyrene,
Benzo(b)fluoranthene (benz(e)acephenanthrylene)
Benzo(j)fluoranthene,
Benzo(k)fluoranthene,
Dibenzo(a,h)anthracene,
Benzo[e]pyrene

Candidate list of Substances of Very High Concern (SVHC):
Several PAHs are included in the Candidate list of Substances of Very High Concern (SVHC) for the authorization of the Regulation (EC) No 1907/2006 of the European Parliament of the Council (REACH), see table below.

Overview of regulated PAHs

Substances	**CAS RN**	**Legal status**
Benzo(a)anthracene	56-55-3	SVHC and restricted
Benzo(a)phenanthrene (chrysene)	218-01-9	SVHC and restricted
Benzo(a)pyrene	50-32-8	SVHC and restricted
Benzo(b)fluoranthene	205-99-2	SVHC and restricted
Benzo(j)fluoranthene	205-82-3	SVHC and restricted
Benzo(k)fluoranthene	207-08-9	SVHC and restricted
Dibenzo(a,h)anthracene	53-70-3	SVHC and restricted
Benzo[e]pyrene	192-97-2	SVHC and restricted
Benzo[ghi]perylene	191-24-2	SVHC
Anthracene	120-12-7	SVHC
Fluoranthene	206-44-0	SVHC
Phenanthrene	85-01-8	SVHC
Pyrene	129-00-0	SVHC
Anthracene oil	90640-80-5	SVHC
Anthracene oil fraction (a complex combination of the distillation of Anthracene)	91995-17-4	SVHC
Anthracene oil, Athracene paste, Anthracene fraction	91995-15-2	SVHC
Anthracene oil, Anthracene-low	90640-82-7	SVHC
Anthracene oil, Anthracene paste	90640-81-6	SVHC

Prop 65: Several PAH are known to the State of California to cause cancer. Safe Harbor Limit: NSRL 0.033-0.35 µg/day. No information on settlements.

Japanese Law:
Prohibition of levels above 3 ppm of Dibenzo (a, h) anthracene (CAS No.53-70-3), Benzo (a) anthracene (CAS No. 56-55-3) and Benzo (a) pyrene (CAS No. 50 - 32-8) in wood products for consumers.

Test method: EN 17132:2019 (accessories)
EN ISO 16190:2021 (footwear)

AfPS GS 2019:01 PAK (German method)

Detection limit: 0.2 mg/kg

7.1.16 Quinoline

Material categories concerned: Textiles, Leather.

Limit value: Not to be used in processes or present in products.
CAS No. 91-22-5

Properties: Carcinogenic and mutagenic.

Use: Quinoline is used mainly as an intermediate in the manufacture of other products. Quinoline is also used as a catalyst, a corrosion inhibitor, in metallurgical processes, in the manufacture of dyes, in polymers, and as a solvent for resins and terpenes.

Legal background: Restrictions:
From 1 November 2020, quinoline has a restriction limit of 50 mg/kg in clothing, related accessories, textiles other than clothing in skin contact, or footwear (CMR fast track) according to Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 72. The CMR fast track restriction does not apply to clothing, related accessories, textiles other than clothing, or footwear within the scope of Regulation (EU) 2016/425 (PPE).

Prop 65: Quinoline is known to the State of California to cause cancer. Safe Harbor Limit: None. No information on settlements.

Test method: No standardised test method available for textiles and leather.
Test equipment: GC-MS, LC-MS.

7.1.17 Isocyanates

Material categories concerned: Polyurethane, Polyamide, other plastics (textiles, coated leather, accessories, packaging)

Limit value: The following isocyanates are forbidden to be present in finished product

Substances	CAS RN	Legal status
2,2'-Methylenediphenyl diisocyanate (MDI)	2536-05-2	Restricted
2,4'-Methylenediphenyl diisocyanate (MDI)	5873-54-1	Restricted
4,4'-Methylenediphenyl diisocyanate (MDI)	101-68-8	Restricted
Methylenediphenyl diisocyanate (MDI)	26447-40-5	Restricted
2,4-Toluene diisocyanate (2,4 TDI)	584-84-9	Restricted
m-tolylidene diisocyanate (TDI)	26471-62-5	Restricted
Hexane, 1,6-diisocyanato (HDI)	822-06-0	Restricted
Isophorone diisocyanate (IPDI)	4098-71-9	Restricted
Tetramethylxylene diisocyanate (TMXDI)	2778-42-9	Restricted

Substances	CAS RN	Legal status
Benzene, 1,3-diisocyanato-2-methyl	91-08-7	Restricted

Properties: Carcinogenic; other properties under review

Use: Input material for various plastics, including PU and acrylamide; possible residue in Elastane / Spandex

Legal background: Restrictions:
Isocyanates listed in the table above are restricted in Annex XVII of Regulation (EC) No 1907/2006 (REACH), as constituent of mixtures in concentrations equal to or greater than 0,1 % by weight.

Test method: EN 13130-8:2004.
Test equipment: LC-MS

Detection Limit: 1,0 mg/kg

7.1.18 Trichlorobenzenes

Material categories concerned: products and packaging; substance is used in colors, solvents and process reactants.

Limit value: Not to be used in process and not be present in products
1,2,3-Trichlorobenzene CAS No.: 87-61-6
1,2,4-Trichlorobenzene CAS No. : 120-82-1
1,3,5-Trichlorobenzene CAS No. : 108-70-3

Properties: Very toxic to aquatic life, very toxic to aquatic life with long lasting effects, harmful if swallowed, causes skin irritation

Use: solvent and reactant or intermediary product in processes, coloring and polyester production; certain processes substitute trichlorobenzene with naphthalene (CAS No.: 91-20-3), often used in mothballs (specific odor). Since naphthalene is banned within Fenix Outdoor as well, this substitution is not an option.

Legal background: Restrictions:
1,2,4-Trichlorobenzene is restricted in annex XVII, entry 49, of the Regulation (EC) No 1907/2006 of the European Parliament and of the Council (REACH).

Test method: EN 17137:2018

7.1.19 Cyclohexane

Material categories concerned: Cleaning solvent for textiles, leather and hardware.

Limit value: Not to be used
Cyclohexane CAS No.: 110-82-7

Properties: highly flammable, respiratory allergen, skin sensitizer

Use: often used as spot-remover in final quality control of fabrics, textiles, shoes and hardware

Legal background: Restrictions:

Cyclohexane is restricted in annex XVII, entry 57, of the Regulation (EC) No 1907/2006 as a constituent of neoprene-based contact adhesives in concentrations equal to or greater than 0,1 % by weight.

Test method: No standardised test method available.
Test equipment: GC-MS, semi-quant.; headspace 30 min/110°C

Detection limit: 0.1 mg/kg

7.1.20 Solvents miscellaneous (in conjunction with Section 7.1.2 and Section 7.1.3)

Material categories concerned: Textile, Leather, Accessories, Packaging

Limit value: The following solvents must have specific statements on the label of the product they are part of:
(1) diethylene glycol,
(2) ethylene glycol,
(3) benzene, toluene, xylene, petroleum distillates,
(4) Methyl alcohol (methanol),
(5) turpentine
There are exceptions for smaller containers shoe waxes, furniture polish, etc. products at low volatility of the solvent.

Legal background: Restrictions:
From 1 November 2020, benzene (CAS RN 71-43-2) has a restriction limit of 5 mg/kg in clothing, related accessories, textiles other than clothing in skin contact, or footwear (CMR fast track) according to Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 72. The CMR fast track restriction does not apply to clothing, related accessories, textiles other than clothing, or footwear within the scope of Regulation (EU) 2016/425 (PPE).

Manufacturers in the EU are required to follow the Industry Emissions Directive (IED), 2010/75/EU.

Regulated in the (USA) Federal Hazardous Substances Act (FHSA) -16 CFR 1500.14 –Products. Requiring special labeling of the product under section 3 (b) of the act.

Prop 65: Benzene is known to the State of California to cause cancer and birth defects or other reproductive harm. Safe Harbor Limit: NSRL 6.4 µg/day (oral), 13 µg/day (inhalation). MADL: 24 µg/day (oral), 49 µg/day (inhalation). No information on settlements.

7.1.21 6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol (DBMC)

Material categories concerned: Accessories.

Required limit value: Should not be used in processes or present in products.

CAS RN: 119-47-1

Properties: Toxic for reproduction

Use:	Uses in hydraulic fluids, lubricants and greases, metal working fluids, adhesives and sealants, fuels and polymers. This substance is used for the manufacture of rubber products and plastic products.
Legal background:	Duty to inform your customer on substances for authorisation (EU/EEA) 6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol is listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).
Test method:	No standardised test method available.
Limit value:	200 mg/kg

7.1.22 Oligomerisation and alkylation reaction products of 2-phenylpropene and phenol, Phenol, methylstyrenated

Required limit value:	Should not be used in processes or present in products.
CAS RN:	68512-30-1
Properties:	vPvB
Use:	Used in adhesives and sealants, coating products, fillers, putties, plasters, modelling clay, inks, toners and polymers.
Legal background:	Duty to inform your customer on substances for authorisation (EU/EEA) Oligomerisation and alkylation reaction products of 2-phenylpropene and phenol, Phenol, methylstyrenated is listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).
Test method:	No standardised test method available. Indicative LOQ: 200 mg/kg

7.1.23 S-(tricyclo(5.2.1.0'2,6)deca-3-en-8(or 9)-yl O-(isopropyl or isobutyl or 2-ethylhexyl) O-(isopropyl or isobutyl or 2-ethylhexyl) phosphorodithioate

Material categories concerned: Accessories, Hardware

Required limit value:	Should not be present in products. CAS No: 255881-94-8
Properties:	Persistent, Bioaccumulative and Toxic (PBT)
Use:	Used in lubricants and greases.
Legal background:	Candidate List of Substances of Very High Concern (SVHC) 7.1.22 S-(tricyclo(5.2.1.0'2,6)deca-3-en-8(or 9)-yl O-(isopropyl or isobutyl or 2-ethylhexyl) O-(isopropyl or isobutyl or 2-ethylhexyl) phosphorodithioate is listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH)
Test method:	No standardised test method available. Test equipment: LC-MS, GC-MS
Detection limit:	100 mg/kg

7.1.24 Tin organic compounds (Organostannic compounds)

Material categories concerned: Textile, Leather, Accessories, Packaging

Limit value: Forbidden to be present in products. Various compounds are even banned to be detected. Do not use in production!

Properties: Dialkyl tin compounds represents a large family of substances.
that consist of several constituents, see list of a non-exhaustive list DBTs below.

Constituent	CAS No	No of carbons
R = oxide (DBTO)	818-08-6	0
R = acetate	1067-33-0	2
R = butoxide	3349-36-8	4
R = metylmaleate	15546-11-9	5
R = octanoate	4731-77-5	8
R = isoocanoate	85702-74-5	8
R = (monobutyl)maleate	15546-16-4	8
R = 2-etylhexanoate	2781-10-4	8
R = laurate	77-58-7	12
R = palmitate	13323-63-2	16
R = stearate	5847-55-2	18
R = oleate	13323-62-1	18
R = linoleate	85391-79-3	18
R = linolenate	95873-60-2	18

Trialkyltin compounds are biocides, see also the section regarding biocidal agent. Tributyltin (TBT), dibutyltin and dioctyltin compounds are different chemical substances that are toxic and dangerous for the environment. They are bio-accumulative and persistent.

Use: Dibutyltin compounds (DBT) and dioctyltin compounds (DOT) are used in consumer products as stabilizers (mainly PVC) or as catalysts (PU and PVC). Organo-tin catalysts are used in a wide variety of polyurethane applications,

aiding formation of the urethane bond and generally functioning as Lewis acid catalysts.

Alternatives: Alternative stabilizers are barium/zinc, potassium/zinc, calcium, or calcium/zinc organic stabilizers or methyltin stabilizers. Alternative catalysts can be organo-titanate or zirconate compounds (e.g. titanium 2-ethylhexanoate) or amines such as and triethylenediamine (TEDA) along with organo-metallic compounds such as potassium acetate.

Legal background: Restrictions:
Legal Limit: 0.1% by weight of Dioctyltin (DOT), dibutyltin (DBT) compounds and tri-substituted organostannic compounds such as tributyltin (TBT) shall not be used in articles. Annex XVII of the Regulation (EC) No 1907/2006 (REACH), entry 20.

Candidate List of Substances of Very High Concern (SVHC):
Several tin organic compounds, see table below, are listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH), see table below.

Substance	**CAS RN (EC No)**	**Legal status**
Tributyltin oxide (TBTO)	**56-35-9**	SVHC
Dibutyltin dichloride (DBTC),	683-18-1	SVHC
2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (DOTE),	15571-58-1	SVHC
Reaction mass of DOTE and MOTE [3] and Dibutylbis(pentane-2,4-dionato-O,O')tin,	22673-19-4	SVHC
dioctyltin dilaurate; stannane, dioctyl-, bis(coco acyloxy) derivs.	(799-973-9)	SVHC
Stannane, dioctyl-, bis(coco acyloxy) derivs.	91648-39-4	SVHC
Dioctyltin dilaurate	3648-18-8	SVHC

Japan Law:
Triphenyltin (TPT) and tributyltin (TBT) compounds are banned in detectable levels in textiles and other consumer products by Japan Law 112 for the Control of Household Products Containing Harmful Substances (10/01/1974).

Test method: No standardized test method for textile available.
EN ISO 22744-1,-2:2020 (textile)
EN ISO17353:2005 (water and sediment)
CEN ISO/TS 16179:2012 (footwear)
Test equipment: GC-MS.

Detection limit: 0,02 mg/kg.

7.1.25 Imidazoles	
Material categories concerned: Textile, Leather, Accessories, Packaging	

[3] reaction mass of 2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate and 2-ethylhexyl 10-ethyl-4-[[2-[(2-ethylhexyl)oxy]-2-oxoethyl]thio]-4-octyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate

Required limit value:	Should not be used in processes or present in products.
	1-vinylimidazole CAS 1072-63-5 2-methylimidazole CAS 693-98-1 4-methylimidazole CAS 822-36-6
Properties:	Toxic for reproduction
Use:	Mainly used in formulations and as a monomer in the production of polymers. As a catalyst in the production of coating products. It can be used as the curing agent of adhesives, epoxy resin and dye auxiliaries of textile fibres, as well as additives for the preparation of foam plastics.
Legal background:	Candidate list of Substances of Very High Concern (SVHC) 1-vinylimidazole (CAS 1072-63-5) and 2-methylimidazole (CAS 693-98-1) are listed in the Candidate list of Substances of Very High Concern (SVHC) for the authorization of the Regulation (EC) No 1907/2006 (REACH). Prop 65: 2-methylimidazole is known to the State of California to cause cancer. Safe Harbor Limit: None. No information on settlements.
Test method: **Detection limit:**	No standardised test method available for textiles. Test equipment: GC-MS. 200 mg/kg

7.1.26 2-benzyl-2-dimethylamino-4'-morpholinobutyrophenone

Material categories concerned: Textile, Leather, Accessories, Packaging

Required limit value: Should not be present in products.

CAS No:119313-12-1

Properties: Toxic to reproduction

Use: Used as a photo initiator added to UV curable inks, adhesives, resins, paints and other coatings. It may also be used in fillers and adhesives.

Legal background: Candidate List of Substances of Very High Concern (SVHC)
2-benzyl-2-dimethylamino-4'-morpholinobutyrophenone is listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH)

Test method: No standardised test method available.

Test equipment: LC-MS, GC-MS

Detection limit: 100 mg/kg

7.1.27 2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one

Material categories concerned: Textile, Leather, Accessories, Packaging

Required limit value:	Should not be present in products. CAS No:71868-10-5
Properties:	Toxic to reproduction
Use:	Used as a photo initiator added to UV curable inks, adhesives, resins, paints and other coatings. It may also be used in fillers and adhesives.
Legal background:	Candidate List of Substances of Very High Concern (SVHC) 2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one is listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH)
Test method:	No standardised test method available. Test equipment: LC-MS, GC-MS
Detection limit:	100 mg/kg

7.1.28 2-(dimethylamino)-2-[(4-methylphenyl)methyl]-1-[4-(morpholin-4-yl)phenyl]butan-1-one

Required limit value:	Should not be present in products.
CAS RN:	119344-86-4
Properties:	Toxic to reproduction
Use:	Used in inks and toners and coating products.
Legal background:	Duty to inform your customer on substances for authorisation (EU/EEA) 2-(dimethylamino)-2-[(4-methylphenyl)methyl]-1-[4-(morpholin-4-yl)phenyl]butan-1-one is listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH)
Test method:	No standardised test method available. Indicative LOQ: 100 mg/kg

7.1.29 Bis(2-(2-methoxyethoxy)ethyl)ether

Material categories concerned: Textiles

Limit value:	Do not use: Not to be present in products. CAS No. 143-24-8

Properties:	Reproductive toxic
Use:	Textiles used for clothing or furniture upholstery, processes related to textiles (e.g. softeners, antiwrinkle agents)
Legal background:	Candidate list of Substances of Very High Concern (SVHC) Bis(2-(2-methoxyethoxy)ethyl)ether is listed on the Candidate list of Substances of Very High Concern (SVHC) for the authorization of the Regulation (EC) No 1907/2006 of the European Parliament of the Council (REACH).
Test method:	No standardised test method available.
Detection limit:	Ask your laboratory

7.1.30 Tris(2-methoxyethoxy)vinylsilane

Material categories concerned: Accessories.

Required limit value:	Should not be used in processes or present in products.
CAS RN:	1067-53-4
Properties:	Toxic for reproduction
Use:	An adhesion promoter for various mineral-filled polymers, improving mechanical and electrical properties especially after exposure to moisture. A co-monomer for the preparation of different polymers such as polyethylene or acrylics. Plating agent and surface treating agent
Legal background:	Duty to inform your customer on substances for authorisation (EU/EEA) Tris(2-methoxyethoxy)vinylsilane is listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).
Test method:	No standardised test method available.
Detection limit:	200 mg/kg

7.2 Product-related Chemicals

7.2.1 Allergenic dyes

Material categories concerned: Textiles (such as polyester and possibly polyamide and textile accessories)

Limit value: Forbidden to be present in textiles or leather imitation.

Properties: Highly allergenic (strong sensitizers). They may also have other hazardous properties.

Use: Dyeing of textile and synthetic leather goods
.

Alternatives: Alternatives: Use other dyes that do not cause allergies.

Legal background: Restrictions:
Legal limit: 0.1% by weight for Navy Blue, EC# 405-665-4 in chemical preparations used for coloring textile and leather articles in Annex XVII (entry 43) of Regulation (EC) No 1907/2006 of the European Parliament and of the Council (REACH).

Eight disperse dyestuffs are banned in Germany, see below.

Overview of allergenic dye stuffs where some are regulated, and some are considered for regulation

Substances	CAS RN (EC No)	Legal status
C.I. Disperse Yellow 1	119-15-3	
C.I. Disperse Blue 35	12222-75-2	Restricted in EU
C.I. Disperse Blue 102	12222-97-8	
C.I. Disperse Blue 106	12223-01-7, 68516-81-4	Restricted in Germany
C.I. Disperse Yellow 39	12236-29-2	
C.I. Disperse Orange 37/59/76	13301-61-6	Restricted in Germany
C.I. Disperse Brown 1	23355-64-8	
C.I. Disperse Blue 3	2475-46-9	
C.I. Disperse Orange 1	2581-69-3	
C.I. Disperse Yellow 3	2832-40-8	Restricted in Germany
C.I. Disperse Red 11	2872-48-2	
C.I. Disperse Red 1	2872-52-8	Restricted in Germany
C.I. Disperse Red 17	3179-89-3	
C.I. Disperse Blue 7	3179-90-6	

C.I. Disperse Blue 26	3860-63-7,	
C.I. Disperse Yellow 49	54824-37-2,	
C.I. Disperse Blue 124	61951-51-7	Restricted in EU
C.I. Disperse Yellow 9	6373-73-5	
C.I. Disperse Orange 3	730-40-5	Restricted in Germany
Navy Blue	(405-665-4)	Restricted in EU
C.I Disperse Blue 1	2475-45-8	Restricted in EU
Disperse Yellow 64	10319-14-9	
Disperse Violet 93	122463-28-9	
CI Disperse Yellow 23	6250-23-3	
CI Disperse Violet 1	128-95-0	
CI Disperse Blue 291	56548-64-2	
CI Disperse Orange 149	85136-74-9	
CI Disperse Orange 37/59/76 [3]	51811-42-8	

Test method: DIN 54231:2005[4] (qualitative solely for disperse dyestuff identification). Extractable dyestuffs will be tested by EN ISO 16373-2:2014

Detection limit: 50 mg/kg (per substance)

7.2.2 Azo dyes, degradable to carcinogenic arylamines

Material categories concerned: Textile, Leather, Accessories, Packaging

Limit value: Azo dyes that are degradable to carcinogenic arylamines should not be present in products. It is strongly recommended to use more environmentally suitable alternatives.

Properties: Carcinogenic. Some are allergenic. Arylamines can form part of the molecular structure of a dye. Certain azo dyes can form the 26 restricted arylamines and additionally 2,4 xylidine (CAS 95-68-1) and 2,6 xylidine (CAS 87-62-7), that are only listed in voluntary schemes.

Use: Constituent of dyes. Dyeing and printing.

Alternatives: Dyes that can release any of the 28 aromatic amines may not be used. See table for a description and listing of regulated arylamines.
This regulation applies to azo colorants which also covers azo based dye stuffs and azo based pigments.

Legal background: Restrictions:
Legal limit in textile and leather articles: 0.003 % by weight (30 mg/kg) per each of the arylamine breakdown products in the dyed parts of the article, which may come into direct and prolonged contact with the human skin or oral cavity. Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 43.

[4] Under revision by DIN, the German Standardization Organisation

From 1 November 2020, 4-chloro-o-toluidinium chloride, 2-Naphthylammoniumacetate, 4-methoxy-m-phenylene diammonium sulphate, 2,4-diaminoanisole sulphate and 2,4,5-trimethylaniline hydrochloride have a restriction limit of 30 mg/kg in clothing, related accessories, textiles other than clothing in skin contact, or footwear (CMR fast track) according to Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 72. The CMR fast track restriction does not apply to clothing, related accessories, textiles other than clothing, or footwear within the scope of Regulation (EU) 2016/425 (PPE).

Candidate List of Substances of Very High Concern (SVHC): Several arylamines are listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH.

Overview of regulated arylamines (derived from certain azodyes)

Substances	**CAS RN**	**Legal status**
4,4-Methylene-bis[2-chloro-aniline]	101-14-4	SVHC and restricted
4,4-Methylenedianiline	101-77-9	SVHC and restricted
4,4'-oxydianiline	101-80-4	SVHC and restricted
4-chloroaniline	106-47-8	Restricted
o-Dianisidine	119-90-4	Restricted
4,4'-bi-o-toluidine	119-93-7	Restricted
p-Cresidine	120-71-8	Restricted
2,4,5-trimethylaniline	137-17-7	Restricted
4,4'-thiodianiline	139-65-1	Restricted
4-Aminoazobenzene	60-09-3	SVHC and restricted
4-methoxy-m-phenylenediamine	615-05-4	Restricted
4,4-Methylenedi-o-toluidine	838-88-0	SVHC and restricted
2,6-xylidine	87-62-7	Only in voluntary schemes
o-Anisidine	90-04-0	Restricted
Anisidine (o-, p-isomers)	29191-52-4	Restricted
2-Naphthylamine	91-59-8	Restricted
3,3-Dichlorobenzidine	91-94-1	Restricted
Biphenyl-4-ylamine	92-67-1	Restricted
Benzidine	92-87-5	Restricted
o-Toluidine	95-53-4	Restricted
m-Toluidine	108-44-1	Only in voluntary schemes
p-Toluidine	106-49-0	Only in voluntary schemes
2,4-xylidine	95-68-1	Only in voluntary schemes
4-Chloro-o-toluidine	95-69-2	Restricted
4-methyl-m-phenylenediamine	95-80-7	Restricted
o-Aminoazotoluene	97-56-3	Restricted

5-Nitro-o-toluidine	99-55-8	Restricted
4-chloro-o-toluidinium chloride	3165-93-3	Restricted
2-Naphthylammoniumacetate	553-00-4	Restricted
4-methoxy-m-phenylene diammonium sulphate; 2,4-diaminoanisole sulphate	39156-41-7	Restricted
2,4,5-trimethylaniline hydrochloride	21436-97-5	Restricted
Leucomalachite green	129-73-7	
Malachite green	10309-95-2	
Malachite green chloride	569-64-2	
Malachite green oxalate	2437-29-8	

Prop 65: Several arylamines are known to the State of California to cause cancer. Safe Harbor Limit: NSRL 0.001-110 µg/day. No information on settlements.

Chinese regulatory standard GB/T 17592.1 requires a legal limit textile: 0.002 % by weight (20 mg/kg) per each of the arylamine breakdown products.

Test method: EN ISO 14362-1, -3:2017 (textile).
EN ISO 17234-1:2020
EN ISO 17234-2:2011 (leather).

Detection limit: 20 mg/kg (per each of the arylamine breakdown products)

7.2.3 Benzotriazols

Material categories concerned: Textile, Leather, Accessories

Limit value: Forbidden to be present in products.

2-benzotriazol-2-yl-4,6-di-tert-butylphenol (UV-320), CAS No 3846-71-7
Bumetrizole (UV-326), CAS No 3896-11-5
2,4-di-tert-butyl-6-(5-chlorobenzotriazol-2-yl)phenol (UV-327), CAS No 3864-99-1
2-(2H-benzotriazol-2-yl)-4,6-ditertpentylphenol (UV-328), CAS No 25973-55-1
2-(2H-benzotriazol-2-yl)-4-(1,1,3,3-tetramethylbutyl)phenol (UV-329), CAS No 3147-75-9
2-(2H-benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl)phenol (UV-350), CAS No 36437-37-3

Properties:	Persistent, Bioaccumulative and Toxic (PBT); Very Persistent and very Bioaccumulative (vPvB)
Use:	UV-stabilizer for plastics, polyurethanes and rubber and constituent in formulations used for coating of surfaces, e.g. cars or special industrial wood coatings. Also used in dishwasher detergents, dry cleaning equipment, and de-icing/anti-icing fluids
Legal background:	Candidate List of Substances of Very High Concern (SVHC) UV-320, , UV-326, UV-327, UV-328, UV-329 and UV-350 are listed in the Candidate List of Substances of Very High Concern (SVHC) for authorization of the Regulation (EC) No 1907/2006 of the European Parliament and of the Council (REACH).
Test method:	ISO 24040:2022 (textiles) Test equipment: GC-MS, LC-MS, GC-ECD
Detection limit:	50 mg/kg

7.2.4 Boric acid, borate compounds

Material categories concerned: Packaging

Limit value:	Not to be present in products. Boric acid, CAS No.10043-35-3 and 11113-50-1 Disodium tetraborate anhydrous, CAS No. 1303-96-4, 12179-04-3 and 1330-43-4, Disodium octaborate, CAS No. 12008-41-2 Tetraboron disodium heptaoxid, hydrate, CAS No. 12267-73-1 Sodium perborate; perboric acid, sodium salt, CAS No. 234-390-0 Sodium peroxometaborate, CAS No. 7632-04-04
Properties:	Toxic. May impair fertility and cause harm to unborn child.
Use:	Wood veneers/pressed wooden panels and boards. Boric acid and other boron compounds may be used as flame retardant in cellulosic materials, mainly wood and biocide in boards. Borate compounds may be used as bleaching agents in chemical preparations.
Legal limit:	Candidate List of Substances of Very High Concern (SVHC) Several boric/borate compounds are listed on the Candidate List of Substances of Very High Concern (SVHC) for authorization of the Regulation (EC) No 1907/2006 of the European Parliament and of the Council (REACH), see table below.

Substances	**CAS RN (EC No)**	**Legal status**
Boric acid;	10043-35-3 and 11113-50-1	SVHC
Disodium tetraborate anhydrous;	1303-96-4, 12179-04-3 and 1330-43-4	SVHC
Tetraboron disodium heptaoxid, hydrate;	12267-73-1	SVHC
Sodium perborate; perboric acid, sodium salt,	(234-390-0)	SVHC
Sodium peroxometaborate,	7632-04-04	SVHC
Disodium octaborate,	12008-41-2	SVHC

Orthoboric acid, sodium salt	13840-56-7	SVHC
Barium diboron tetraoxide	13701-59-2	SVHC

Test method: Test equipment: 1) AAS. 2) ICP-MS and ICP-OES

Detection limit: 1) 1000 µg/kg as Boron. 2) 100 µg/kg as Boron.

7.2.5 Cadmium (Cd) and cadmium salts

Material categories concerned: Textile, Leather, Accessories, Packaging

Limit value: Forbidden to be present in products. Occurrence in materials below 0.5 mg/kg is regarded as contaminations, which cannot be controlled.
Cadmium (metal), CAS No. 7440-43-9

Properties: Heavy metal that occurs naturally in small quantities in nature. Toxic to aquatic organisms. Non-biodegradable. Dangerous for the environment. Can cause kidney damage.

Use (textile/leather): Can occur in pigmented plastisol prints.

Use: (accessories/ packaging) Surface treatment. Pigment in coloring agent. Also, in plastics as stabilizers and pigment. Cadmium based stabilizers are used to increase the endurance of the material. For recycled packaging cadmium may have had a different original use.

Alternatives: Alternatives are available, such as calcium-zinc based stabilizers. Order cadmium-free processes and materials.

Legal background: Restrictions:
Legal limit: 0.01 % by weight (100 mg/kg) in articles produced from plastic material and in the paint of painted articles. Shall not be used in brazing fillers or in jewelry. Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 23.

The sum of concentration levels of lead, cadmium, mercury and hexavalent chromium present in packaging or packaging components shall not exceed 100 ppm by weight according to Directive (EC) No 94/62/EC of 20 December 1994 on packaging and packaging waste.

From 1 November 2020, cadmium and its compounds have a restriction limit of 1 mg/kg (extractable content) in clothing, related accessories, textiles other than clothing in skin contact, or footwear (CMR fast track) according to Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 72. The CMR fast track restriction does not apply to clothing, related accessories, textiles other than clothing, or footwear within the scope of Regulation (EU) 2016/425 (PPE).

Cadmium is restricted in Denmark. Danish legal limits: 75 mg/kg. (Bekendgørelse nr. 858 af 5. September 2009 om forbud mod import salg og fremstilling af cadmiumholdige varer)

Candidate List of Substances of Very High Concern (SVHC)

Cadmium and several cadmium compounds are listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH), see table below.

Substance	CAS RN	Legal status
Cadmium	7440-43-9	SVHC
Cadmium oxide	1306-19-0	SVHC
Cadmium sulphide	1306-23-6	SVHC
Cadmium chloride	10108-64-2	SVHC
Cadmium fluoride	7790-79-6	SVHC
Cadmium sulphate,	10124-36-4, 31119-53-6	SVHC
Cadmium nitrate	10325-94-7	SVHC
Cadmium carbonate	513-78-0	SVHC
Cadmium hydroxide	21041-95-2	SVHC

Prop 65: Cadmium and cadmium compounds are known to the State of California to cause cancer and birth defects or other reproductive harm Safe Harbor Limit: MADL cadmium 4.1 µg/day (oral). None for cancer effects. No information on settlements.

Test method: EN 16711-1:2015 (total content in textiles).
EN 16711-2:2015 (extractable content in textiles)
EN ISO 17072-1:2019 (extractable content in leather)
EN ISO 17072-2:2022 (total content in leather)

Detection limit: 10 mg/kg (total content), (0.1 mg/kg (extractable content).

7.2.6 CMR, Carcinogenic, Mutagenic, Reproductive toxic dyestuffs

Material categories concerned: Textile, Leather, Accessories, Packaging

Limit value: Forbidden to be present in products.

Properties: Carcinogenic Mutagenic, Reproductive toxic. Characteristics: Dyestuffs that are classified as carcinogens, mutagenic, reproductive toxic according to CLP including class 2 (only 1A and 1B are CMR)

Use: Dyeing of textile and leather goods.

Alternatives: Alternatives: Use other dyestuff than the substances in table below.

Legal background: Restrictions:
Restrictions for use of substances, harmonised classified as carcinogens, mutagenic, reproductive toxic according to CLP including class 2 (only 1A and 1B are CMR), as substances, as constituents of other substances or in mixtures. These are found in REACH annex XVII, entry 28-30.

From 1 November 2020, C.I. Disperse Blue 1, C.I. Basic Red 9 and C.I. Basic Violet 3 with ≥ 0,1 % of Michler's ketone have a restriction limit of 50

mg/kg in clothing, related accessories, textiles other than clothing in skin contact, or footwear (CMR fast track) according to Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 72. The CMR fast track restriction does not apply to clothing, related accessories, textiles other than clothing, or footwear within the scope of Regulation (EU) 2016/425 (PPE).

Candidate List of Substances of Very High Concern (SVHC)
Several CMR dyestuffs are listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).

Prop 65: Several dyestuffs are known to the State of California to cause cancer. Safe Harbor Limit: NSRL 0.09-300 µg/day. No information on settlements.

Overview of regulated CMR dyestuffs

Substances	**CAS RN**	**Legal status**
C.I. Direct Brown 95	16071-86-6	Prop 65
C.I. Direct Black 38	1937-37-7	SVHC
C.I. Disperse Blue 1	2475-45-8	Restricted Prop 65
C.I. Direct Blue 6	2602-46-2	
C.I. Acid Red 26	3761-53-3	
C.I. Basic Red 9	569-61-9	
C.I. Direct Red 28	573-58-0	SVHC
C.I. Basic Violet 14	632-99-5	
C.I. Disperse Orange 11	82-28-0	
C.I. Disperse Orange 149	85136-74-9	
C.I. Solvent Blue 4	6786-83-0	SVHC
C.I. Basic Blue 26,	2580-56-5	SVHC
C.I. Basic Violet 3	548-62-9	SVHC and restricted
Michler's base	101-61-1	SVHC
Michler's ketone	90-94-8	SVHC Prop 65
C.I. Disperse Yellow 3	2832-40-8	
Acid red 114	6459-94-5	Prop 65
Direct blue 15	2429-74-5	Prop 65
4,4'-bis(dimethylamino)-4''-(methylamino)trityl alcohol	561-41-1	SVHC
Direct Blue 218	28407-37-6	CMR
oxidophenylazo)-1-naphtholato)(1-(5-chloro-2-oxidophenylazo)-2-naphtholato)chromate(1-) 118685-33-9	118685-33-9	CMR
CI basic violet 1	8004-87-3	
Basic Violet 3 [1]	548-62-9	
Basic Violet 3 [2]	603-48-5	
Solvent Yellow 14	842-07-9	

Solvent Yellow 2	60-11-7	

Test method: Extractable dyestuffs will be tested by EN ISO 16373-2:2014

Detection limit: 10 mg/kg (total content), (0.1 mg/kg (extractable content).

7.2.7 Chloroparaffins

Material categories concerned: Textile, Leather, Accessories, Packaging

Limit value: Forbidden to be present in products.
Short-chain chloroparaffins (C10-C13, SCCP), CAS No.85535-84-8
Medium-chain chloroparaffins (C14-C17, MCCP), CAS No. 85535-85-9
Long-chain chloroparaffins (C18-, LCCP), CAS No. 85535-86-0

Properties: Dangerous for the environment. Allergenic. Toxic.

Use in textile: Plasticizers and flame retardant in plastic material.

Use in leather: Plasticizers in coated synthetic or “fake”-leather. Fat liquoring agent in leather production.

Use in accessories and packaging: Plasticizers and flame retardant in plastic material and rubber.

Alternatives: Replace chloro-organic chemical flame retardants with phosphorus- and/or nitrogen-based organic chemical flame retardants or non-chemical barrier technologies.
Alternative plasticizers are available but must be evaluated.

Legal background: Restrictions
Short chain chloroparaffins are listed as POP in the Stockholm Convention on Persistent Organic Pollutants (POPs) and banned by Regulation (EC) No 2019/1021. Residues below 0.15 % SCCP by weight in articles can be placed on the market and used, as this is the amount of SCCP that may be present as an impurity in an article produced with MCCP.

Candidate list of Substances of Very High Concern (SVHC) Short-chain chloroparaffins (C10-C13, SCCP) and Medium-chain chloroparaffins (C14-C17, MCCP), CAS No. 85535-85-9
are listed on the Candidate list of Substances of Very High Concern (SVHC) for the authorization of the Regulation (EC) No 1907/2006 (REACH).

Prop 65: Chloroparaffins are known to the State of California to cause cancer. Safe Harbor Limit: NSRL 8 µg/day. No information on settlements.

Test method: EN ISO 22818:2021 (textile).
ISO 18219-1,-2:2021 (leather)
Test equipment: GC-MS, LC-MS

Detection limit: 100 mg/kg

7.2.8 Chromium VI (Cr + 6)

Material categories concerned: Leather, Accessories, Packaging

Limit value: Forbidden to be present in products.
Chromium VI (Cr+6), CAS No.18540-29-9.

Properties: Dangerous for the environment. Carcinogenic. Allergenic. Toxic.

Use: Chromated metal parts. Chromic acid is used as wood preservative: chromium tanning of leather may produce Cr + 6 as unwanted by-product.

Alternatives: Chrome (III) is an alternative in surface treatment of metal.

Legal background: Restrictions
Legal limit: 0.0003% by weight (3 mg/kg) for leather in direct skin contact. Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 47.

From 1 November 2020, chromium VI compounds have a restriction limit of 1 mg/kg (extractable chromium VI content) in clothing, related accessories, textiles other than clothing in skin contact, or footwear (CMR fast track) according to Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 72. The CMR fast track restriction does not apply to clothing, related accessories, textiles other than clothing, or footwear within the scope of Regulation (EU) 2016/425 (PPE).

The sum of concentration levels of lead, cadmium, mercury and chromium VI present in packaging or packaging components shall not exceed 100 ppm by weight.

Directive (EC) No 94/62/EC of 20 December 1994 on packaging and packaging waste.

Candidate list of Substances of Very High Concern (SVHC)
Chromium VI compounds listed on the Candidate list of Substances of Very High Concern (SVHC) for the authorization of the Regulation (EC) No 1907/2006 of the European Parliament of the Council (REACH) are listed in the table below. Several Chromium VI compounds are also included in REACH Annex XIV.

Overview of regulated chromium VI compounds

Substance	CAS RN	Legal status
Ammonium dichromate	7789-09-5	SVHC
Potassium chromate	7789-00-6	SVHC
Potassium dichromate	7778-50-9	SVHC
Sodium chromate	7775-11-3	SVHC
Sodium dichromate dehydrate	7789-12-0, 10588-01-9	SVHC
Strontium chromate	7789-06-2	SVHC
Chromium trioxide	1333-82-0	SVHC
Chromic acid	7738-94-5	SVHC
Dichromic acid	13530-68-2	SVHC
Lead chromate	7758-97-6	SVHC
Lead sulfochromate	1344-37-2	SVHC
Lead chromate molybdate sulphate	12656-85-8	SVHC
Dichromium tris(chromate)	24613-89-6	SVHC

Potassium hydroxyoctaoxodizincatedichromate	11103-86-9	SVHC
Pentazinc chromate octahydroxide	49663-84-5	SVHC

Prop 65: Chromium VI is known to the State of California to cause cancer and birth defects or other reproductive harm. Safe Harbor Limit: NSRL 0.001 µg/day (inhalation), MADL 8.2 µg/day (oral). No information on settlements.

Test method:

EN ISO 17075-1,-2:2017 (leather)
EN ISO 10195:2021 (ageing of leather)
Test equipment: XRF screening for metal chromium

No standardized test method available for textiles.
Test equipment: UV-VIS Spectrometer

Detection limit: 3 mg/kg /(leather)

7.2.9 Formaldehyde

Material categories concerned: Textile, Leather, Accessories (wood)

Limit value:

Should be less than 16 ppm unless decided otherwise.

Japanese law 112 requires under detection limit for products for infants (less than 5 absorbance units).

Formaldehyde, CAS No. 50-00-0

Properties: Volatile colorless gas. Occurs naturally in small quantities in the atmosphere and in nature. Formaldehyde is a human carcinogen that can also cause skin irritation and allergy.

Use: Shrinkage-resistant treatment. Wrinkle-resistant treatment. Dirt-repellent treatment. Dye fixing agent. Preservative. Also used as bonding agent and glue-component.

Alternatives: Use products without formaldehyde in textiles and shoes or with very low concentrations of formaldehyde in accessories. Due to its volatility, formaldehyde is “contagious”. If a garment containing formaldehyde is placed on top of a garment without formaldehyde, the latter garment will be “infected”. Fabric samples for testing must be packed in air dense plastic bags (polyethylene, PE, or polypropylene, PP).

Legal background:

Restrictions
From 1 November 2020, formaldehyde has a restriction limit of 75 mg/kg in clothing, related accessories, textiles other than clothing in skin contact, or footwear (CMR fast track) according to Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 72. The CMR fast track restriction does not apply to clothing, related accessories, textiles other than clothing, or footwear within the scope of Regulation (EU) 2016/425 (PPE).

NOTE: During a transition period, jackets, coats or upholstery will have a restriction limit of 300 mg/kg[5].

The EU countries' national legislations for textile in skin contact will be withdrawn when the CMR fast track enters into force. For other products, they will continue to be valid.

Shall not be placed on the market in articles, after 6 August 2026, if, under Chamber method test conditions[6], the concentration of formaldehyde released from those articles exceeds:

- 0,062 mg/m3 for furniture and wood-based articles.
- 0,080 mg/m3 for articles other than furniture and wood-based articles.

Shall not apply to:

- articles in which formaldehyde or formaldehyde releasing substances are exclusively naturally present in the materials from which the articles are produced
- articles that are exclusively for outdoor use under foreseeable conditions
- articles exclusively for industrial or professional use unless formaldehyde released from them leads to exposure of the general public under foreseeable conditions of use
- articles for which the restriction laid down in entry 72 (CMR fast track) applies
- articles that are biocidal products within the scope of Regulation (EU) No 528/2012 of the European Parliament and of the Council (*)
- devices within the scope of Regulation (EU) 2017/745 (medical devices)
- personal protective equipment within the scope of Regulation (EU) 2016/425
- articles intended to come into contact directly or indirectly with food within the scope of Regulation (EC) No 1935/2004
- second-hand articles.

German law (Bedarfsgegenständeverordnung and Chemikalien-Verbotsverordnung); Products with formaldehyde content shall be labelled. Wooden products shall not release formaldehyde. Cleaning and finishing agents shall not contain formaldehyde above 0.2%.

Prop 65: Formaldehyde (gas) is known to the State of California to cause cancer. Safe Harbor Limit: NSRL 40 µg/day. No information on settlements.

For several national legislations worldwide, see below.

[5] The transition period is until 2023

[6] Chamber method as described in Appendix 14, paragraph 1

Country	Regulations / Requirements	Objection limit / Limit
China	Limits of Formaldehyde Contents in Textiles GB18401-2001	Textiles for infants and babies: ≤ 20ppm Textiles in direct skin contact: ≤75ppm Textiles not in direct skin contact: ≤ 300ppm
Japan	Japanese Law 112	Textiles for infants: not detectable (16ppm) Textiles in direct skin contact: 75ppm
Vietnam	Circular no 23/2016/TT-BCT	Textiles for babies under 36 months: 30 mg/kg. Textiles in direct skin contact: 75 mg/kg. Textiles not in direct skin contact: 300 mg/kg
South Korea	The Korean Act on Registration and Evaluation, etc of Chemical Substances (also known as K-REACH)	Formaldehyde (CAS 50-00-0] and any mixture containing not less than 1%; Manufacturing, import, sales, keeping/storage, transportation and use for veneers for furniture, textiles, baby products for babies under 3 years old, glue for wall paper, and softeners for leather processing are prohibited.
USA	Federal Hazardous Substances Act (FHSA	The Federal Hazardous Substances Act (FHSA) is a chemicals legislation that does not focus on products but regulates certain hazardous substances in products, such as lead in candle wicks and solvents in shoe waxes. Consumer products containing more than 1% formaldehyde must be labeled with a warning. The following states have restrictions of formaldehyde: California (cleaning products, cosmetics, wood products), Illinois, Iowa, Louisiana, Massachusetts (children's products, jewelry, toys), New Hampshire (children's products, toys), New York (electronics equipment), South Carolina and Vermont (chemical products).
Eurasian Customs Union (Armenia, Belarus,	Eurasian Customs Union (Armenia, Belarus, Kazakhstan, Kyrgyzstan and	Mass fraction of free Formaldehyde babies up to 36 months: 20 mcg/g for 1st and

Kazakhstan, Kyrgyzstan and Russia)	Russia) Technical Regulation on the, TP TC 007/2011 On "Safety of Products intended for children and adolescents", enacted in 2011 and its amendment "Decision Nº 51 (28 April 2017)", enacted in 2017. "TP TC 017/2011 On Safety of Light Industry Products enacted in 2011 and its amendment "Decision Nº 60 (9 August 2016)" enacted in 2016.GOST 30386-95 (Textiles. Maximum permissible concentrations of free formaldehyde) GOST 50729-95 (Textiles. Limit permissible concentration of free formaldehyde)	2nd layer of products and 300 mcg/g for 3rd layer Mass fraction of free Formaldehyde for children and adolescents: 75 mcg/g for 1st and 2nd layer of products and 300 mcg/g for 3rd layer Apply less than 20 mg free formaldehyde/kg as a customs requirement.

Test method:

EN ISO 14184-1:2011(Free and hydrolysed water extracted formaldehyde in textiles)
EN ISO 14184-2:2011 (formaldehyde emissions from textiles)
EN ISO 14184-3:2023 (Free and hydrolysed extracted formaldehyde in textiles using HPLC)
EN ISO 17226-1:2021(leather using HPLC)
EN ISO 17226-2:2019 (leather, using colorimetric analysis)
EN ISO 17226-3:2011 (formaldehyde emissions from leather)

Test method specified in Japan law 112, JIS L1041:2011.
China: GB/T 2912.1

Detection limit:

Children wear in Japan: 0.05 absorbance units; < 16 mg/kg

7.2.10 Glutaral (Glutaraldehyde)

Material categories concerned: Leather.

Required limit value: Should not be used in processes or present in products.

CAS RN: 111-30-8

Properties: Toxic for reproduction.

Use: Also called glutaraldehyde and used as a disinfectant, preservative, and fixative and can occur in vegetable tanning of leather (chrome free tanning). Also used in cosmetics.

Legal background:	Candidate list of Substances of Very High Concern Glutaral is listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).
Test method:	No standardised test method available.
Detection limit:	200 mg/kg

7.2.11 Melamine

Material categories concerned: Textile, Leather, Accessories

Required limit value:	Should not be used in processes or present in products.
CAS RN:	108-78-1
Properties:	Toxic for reproduction.
Use:	Melamine is used to make electrical components, household goods, laminates, military applications, kitchenware, floor tiles, and fire-resistant and other finished textiles and leather.
Legal background:	Duty to inform your customer on substances for authorisation (EU/EEA) Melamine is listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).
Test method:	No standardised test method available. Test equipment: LC-MS
Detection limit:	200 mg/kg

7.2.12 2,2-bis(bromomethyl)propane1,3-diol (BMP)

Material categories concerned: Accessories

Required limit value:	Should not be present in products.
CAS RN:	3296-90-0
Properties:	Carcinogenic and mutagenic toxic.
Use:	2,2-Bis(bromomethyl)propane-1,3-diol is a reactive flame retardant that is used primarily in unsaturated polyester resins for moulded products and in rigid polyurethane foams.
Legal background:	Duty to inform your customer on substances for authorisation (EU/EEA)

	2,2-Bis(bromomethyl)propane-1,3-diol is listed in the Candidate List of Substances of Very High Concern for authorization of Regulation (EC) No 1907/2006 (REACH). Prop 65: 2,2-Bis(bromomethyl)propane-1,3-diol is known to the State of California to cause cancer.
Test method:	EN ISO 17881-1:2016 (textile)
Detection limit:	100 mg/kg

7.2.13 2,2-dimethylpropan-1-ol, tribromo derivative/3-bromo-2,2-bis(bromomethyl)-1-propanol (TBNPA)

Material categories concerned: Accessories

Required limit value:	Should not be present in products.
CAS RN:	36483-57-5 and 1522-92-5
Properties:	Carcinogenic.
Use:	TBNPA is used for polymer production manufacture of plastics products, such as foam seating and bedding products, including compounding and conversion and as an intermediate.
Legal background:	Duty to inform your customer on substances for authorisation (EU/EEA) TBNPA is listed in the Candidate List of Substances of Very High Concern for authorization of Regulation (EC) No 1907/2006 (REACH).
Test method:	EN ISO 17881-1:2016 (textile)
Detection limit:	100 mg/kg

7.2.14 2,3-dibromo-1-propanol (2,3-DBPA)

Material categories concerned: Textile

Required limit value:	Should not be present in products.
CAS RN:	96-13-9
Properties:	Carcinogenic and suspected to be toxic to reproduction.
Use:	2,3-DBPA is registered in EU/EEA as an intermediate in the preparation of flame retardants, insecticides, and pharmaceuticals. Main use is in the production of tris (1,2,3-dibromopropyl) phosphate, commonly abbreviated TRIS, a banned flame retardant used in textiles.

Legal background:	Duty to inform your customer on substances for authorisation (EU/EEA) 2,3-DBPA is listed in the Candidate List of Substances of Very High Concern for authorization of Regulation (EC) No 1907/2006 (REACH).
Test method:	EN ISO 17881-1:2016 (textile)
Detection limit:	100 mg/kg

7.2.15 Hexabromocyclododecan (HBCDD)

Material categories concerned: Textile, Packaging

Limit value:	Forbidden to be present in products. Hexabromocyclododecane (HBCDD), CAS No. 25637-99-4, 3194-55-6, 134237-50-6,134237-51-7 and 134237-52-8
Properties:	Persistant, bioaccumulative and toxic. Halogenated organic additives in polymers may leach-out and have a negative impact on health and environment. Halogen containing polymers may form highly corrosive substances and an undefined range of halogenated substances that may be PBT or CMR when incinerated.
Use:	Flame-retardant treatment of products, (e.g upholstery and interior textiles), where fire protection is required. Also occuring in packaging flakes made of recycled polystyrene (PS).
Alternatives:	Avoid this form of treatment. Replace bromo-organic chemical flame retardants with less problematic alternatives, e.g., phosphorus- and/or nitrogen-based organic chemical flame retardants or non-chemical barrier-technologies such as blends of natural and synthetic fibers used in furniture and mattresses and high-performance synthetic materials used in firefighter uniforms and other protective clothing. Textile goods for private use are basically never flame-retardant-treated. The only case when textile goods are treated with flame retardant is if the end customer orders this property. Usually, it is done to satisfy regulatory requirements of fire protection.
Legal background:	Restrictions Legal limit: 100 ppm. Hexabromocyclododecane (HBCDD, CAS 25637-99-4 and 3194-55-6) are listed in the Stockholm Convention on Persistent Organic Pollutants (POPs) and banned by Regulation (EC) No 2019/1021. Candidate List of Substances of Very High Concern (SVHC) Hexabromocyclododecane (HBCDD) and all major isomers are listed in both annex XIV and in the Candidate List of Substances of Very High Concern for authorization of Regulation (EC) No 1907/2006 (REACH).
Test method:	EN ISO 17881-1:2016 (textiles). Test equipment: GC-MS, LC-MS, GC-ECD

Detection limit: 20 mg/kg

7.2.16 Lead (Pb) and lead salts

Material categories concerned: Textile, Leather, Accessories, Packaging, Hardware

Limit value:

Not to be present in products. In case it is part of the construction it should not leach or get into the atmosphere (smelt) or in contact with human skin/ mucosal membranes or foodstuff.

Lead (metal), CAS No 7439-92-1

Properties:

Lead exposure can give rise to several negative health effects, including damage to liver, nervous system and fetuses. Lead is mainly accumulated in bone tissue. It has a very long half-life. Use of lead in plastics has not been deemed to cause any significant environmental or health effects in the short term, but in the long term such use increases lead concentrations in the environment.

Use:

Lead salts are additives in plastics as stabilizers to increase the service of life of the material. May be used in paint and in colored plastic material. Metallic surface coating of buttons and accessories. For recycled packaging material lead may have had a different original use. Lead metal can also be used to increase ductility of other metals.

Alternatives:

Alternative stabilizers are barium/zinc, potassium/zinc, calcium, calcium/zinc organic or methyltin stabilizers. Alternative catalysts can be organo-titanate or zirconate compounds (e.g titanium 2-ethylhexanoate) or amines such as bis- (dimethylaminoethyl) ether (BDMAEE) and triethylenediamine (TEDA) along with organo-metallic compounds such as potassium acetate.

Legal background:

Restrictions
The sum of concentration levels of lead, cadmium, mercury and hexavalent chromium present in packaging or packaging components shall not exceed 100 ppm by weight. Directive (EC) No 94/62/EC of 20 December 1994 on packaging and packaging waste.

Lead salts are restricted in paint products (no restriction on painted articles) within the EU, entry 16 (lead carbonates) and 17 (lead sulphates). Lead and its compounds are restricted in jewelry articles and hair accessories within EU with a legal limit: 500 mg/kg (0.05%), entry 63. Lead and its compounds are restricted in articles that may be placed in the mouth by children if migrated amount of lead exceed 0.05 µg/cm^2 and hour, entry 63. Annex XVII of Regulation (EC) No 1907/2006 (REACH).

From 1 November 2020, lead and its compounds have a restriction limit of 1 mg/kg (extractable content) in clothing, related accessories, textiles other than clothing in skin contact, or footwear (CMR fast track) according to Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 72. The CMR fast track restriction does not apply to clothing, related accessories, textiles other than clothing, or footwear within the scope of Regulation (EU) 2016/425 (PPE).

Lead is restricted in Denmark. Danish legal limits: 100 mg/kg. (Bekendgørelse nr. 856 af 5. September 2009 om forbud mod import og salg af produkter, der indeholder bly).

Candidate List of Substances of Very High Concern (SVHC)
Lead and lead salts are listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH). SVHC lead compounds are listed in the table below.

Overview of regulated lead and lead compounds

Name	**CAS RN**	**Legal status**
Lead and its compounds	Several	Restricted and SVHC. TSCA Prop 65
Lead (metal)	7439-92-1	Restricted and SVHC
Lead chromate	7758-97-6	SVHC
Lead sulfochromate	1344-37-2	SVHC
Lead chromate molybdate sulphate	12656-85-8	SVHC
Lead dipicrate	6477-64-1	SVHC
Lead styphnate	15245-44-0	SVHC
Lead diazide	13424-46-9	SVHC
Lead hydrogen arsenate	7784-40-9	SVHC
Lead monoxide (Lead oxide)	1317-36-8	SVHC
Orange lead (Lead tetroxide)	1314-41-6	SVHC
Lead bis(tetrafluoroborate)	13814-96-5	SVHC
Trilead bis(carbonate)dihydroxide	1319-46-6	SVHC
Lead titanium trioxide	12060-00-3	SVHC
Lead titanium zirconium oxide	12626-81-2	SVHC
Lead(II) bis(methanesulfonate)	17570-76-2	SVHC
Silicic acid, lead salt	11120-22-2	SVHC
Silicic acid ($H_2Si_2O_5$), barium salt (1:1), lead-doped	68784-75-8	SVHC
Acetic acid, lead salt, basic	51404-69-4	SVHC
Lead oxide sulfate	12036-76-9	SVHC
[Phthalato(2-)]dioxotrilead	69011-06-9	SVHC
Dioxobis(stearato)trilead	12578-12-0	SVHC
Fatty acids, C16-18, lead salts	91031-62-8	SVHC
Lead cynamidate	20837-86-9	SVHC
Lead dinitrate	10099-74-8	SVHC
Pentalead tetraoxide sulphate	12065-90-6	SVHC
Pyrochlore, antimony lead yellow	8012-00-8	SVHC
Sulfurous acid, lead salt, dibasic	62229-08-7	SVHC
Tetraethyllead	78-00-2	SVHC
Tetralead trioxide sulphate	12202-17-4	SVHC
Trilead dioxide phosphonate	12141-20-7	SVHC
Lead di(acetate)	301-04-2	SVHC

	Prop 65: Lead and lead compounds are known to the State of California to cause cancer and birth defects or other reproductive harm. Safe Harbor Limit: NRSL lead acetate 23 µg/day (oral), lead 15 µg/day (oral), lead phosphate 58 µg/day (oral), lead subacetate 41 µg/day (oral), MADL lead 0.5 µg/day. Settlements agreed at 50, 90 or 100 ppm for various products.
Test method:	EN 16711-1:2015 (total content, textiles). EN 16711-2:2015 (extractable content, textile) EN 16711-3:2019 (migrated content, textile) ISO 17072-1:2019 (extractable content in leather) ISO 17072-2:2022 (total content in leather)
Detection limit:	10 mg/kg (total content), 0.1 mg/kg (extractable content).

7.2.17 Mercury and its compounds

Material categories concerned: Packaging, Textiles, Accessories

Limit value:	Forbidden to be present in products. Constructive use only if in a closed system. Mercury (metal), CAS No. 7439-97-6 Phenylmercury neodecanoat, CAS No 26545-49-3 Phenylmercury octanoate, CAS No 13864-38-5 Phenylmercury 2-ethylhexanoate, CAS No 13302-00-6 Phenylmercury propionate, CAS No 103-27-5 Phenylmercury acetate, CAS No 62-38-4
Properties:	Heavy metal that occurs naturally in small quantities in nature. Toxic to aquatic organisms and non-biodegradable. Dangerous for the environment. Can cause kidney damage.
Use:	Phenylmercury compound are used as catalysts in the production of polyurethane coatings, adhesives, sealants and elastomers. For recycled packaging mercury may have had a different original use as, e.g., pesticide in woods.
Legal background:	Restrictions Mercury compounds are restricted in impregnation of heavy-duty industrial textiles and yarn intended for their manufacture in Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 18. Phenyl mercury compounds are also restricted in entry 62 with a restriction limit of 0.01% (100 mg/kg) Article 1 of the European Parliament and Council Regulation (EC) No 1102/2008 of 22 October 2008 ban the exports of metallic mercury and certain mercury compounds and mixtures. Products containing mercury shall not be placed on the Swedish market. Norway prohibits the manufacture, import, export and sale of articles that contain mercury or mercury compounds (0.001% (10 ppm). Denmark prohibits the import, export and sale of articles and part of articles that contain mercury or mercury compounds (0.01% (100 ppm).

The sum of concentration levels of lead, cadmium, mercury and hexavalent chromium present in packaging or packaging components shall not exceed 100 ppm by weight.
Directive (EC) No 94/62/EC of 20 December 1994 on packaging and packaging waste.

Mercury and its compounds are listed in the global UN Rotterdam convention.

Mercury is under restriction globally through the global UN Minamata Convention.

Prop 65: Mercury is known to the State of California to cause birth defects or other reproductive harm. No Safe Harbor Limit. No information on settlements.

Japan law: Prohibition of detectable levels (above 1 ppm) of organic mercury compounds in textiles and other consumer products. by Japan Law 112 for the Control of Household Products Containing Harmful Substances (10/01/1974)

Test method:

EN 16711-1:2015 (total content, textiles)
EN 16711-2:2015 (extractable content, textiles)
EN ISO 17072-1:2019 (extractable content, leather)
EN ISO 17072-2:2022 (total content, leather)

Test equipment: 1) XRF. 2) AAS. 3) ICP-MS and ICP-OES

Detection limit:

1) 50 mg/kg. 2)100 µg/kg. 3) 10 µg/kg

7.2.18 Nickel (Ni), in accessories

Material categories concerned: Accessories

Limit value:

0.5 µg per cm^2 and week for products intended to come into direct and prolonged contact with the skin. 0.2 µg per cm^2 and week for piercing items.
Nickel (metal), CAS No. 7440-02-0

Properties:

Nickel is one of the most common substances that cause contact dermatitis. Highly allergenic (strong sensitizer).

Use:

Nickel is often used to improve alloys used in clothing accessories such as zippers, buttons, and rivets.

Alternatives:

Refrain from using nickel-treated metals or nickel-containing metal coatings.

Legal background:

Restrictions
0.5 µg per cm^2 and week for products intended to come into direct and prolonged contact with the skin.
0.2 µg per cm^2 and week for piercing items.
Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 27.

Prop 65: Metallic nickel is known to the State of California to cause cancer. Safe Harbor Limit: None. No information on settlements.

Test method:	Test method I: EN 12472:2020 and EN 1811:2023 (for coated and non coated items)
Detection limit I:	0.02 µg/cm²/week
Detection limit II:	Test method II: Screening test for nickel emission. Swedish pharmacies sell a test kit. Qualitative indication only = no occurrence. (This screening method can also give a reading for other metals than Ni.)

7.2.19 Arsenic Compounds

Material categories concerned: Textiles, Accessories, Packaging

Limit value: Forbidden in Fenix Outdoor products.

Properties: May cause cancer. Toxic by inhalation and toxic if swallowed. Persistant, bioaccumulative and toxic (PBT).

Use: In glass, in metal alloy, preservative.

Alternatives: Apply arsenic free compounds.

Legal limit:

Restrictions
As wood preservatives regulated in Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 19 (limit level; no intentionally added content).

From 1 November 2020, arsenic and its compounds have a restriction limit of 1 mg/kg (extractable content) in clothing, related accessories, textiles other than clothing in skin contact, or footwear (CMR fast track) according to Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 72. The CMR fast track restriction does not apply to clothing, related accessories, textiles other than clothing, or footwear within the scope of Regulation (EU) 2016/425 (PPE).

Candidate List of Substances of Very High Concern (SVHC)
Several arsenic compounds are listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).

Overview of regulated arsenic compounds

Substance	CAS RN	Legal status
Arsenic acid	7778-39-4	SVHC and restricted
Calcium arsenate	7778-44-1	SVHC and restricted
Diarsenic Pentoxide	1303-28-2	SVHC and restricted
Diarsenic Trioxide	1327-53-3	SVHC and restricted
Triethyl arsenate	15606-95-8	SVHC and restricted

Prop 65: Inorganic arsenic compounds are known to the State of California to cause cancer. Safe Harbor Limit: NSRL 0.06 µg/day (inhalation), 10 µg/day (except inhalation). No information on settlements. Inorganic arsenic oxides are known to the State of California to cause birth defects or other reproductive harm. Safe Harbor Limit: None. No information on settlements.

Test method: EN16711-1:2015(total content, textiles).
EN 16711-2:2015 (extractable content, textiles)
EN ISO 17072-1:2019 (extractable content, leather)
EN ISO 17072-2:2022 (total content, leather)

7.2.20 Other heavy metals

Material categories concerned: Accessories, Textiles, Leather, Packaging

Metals:	Antimony	CAS No.: 7440-36-0
	Barium	CAS No.: 7440-39-3

Limit value: Forbidden in product: Shall not be detected

Properties: Toxic when ingested and inhaled, skin irritation, sensitizer Can be extracted by sweat and water and cause skin irritation. Toxicity risks during production.

Use: Various uses (catalysts and stabilizers)

Test methods: EN 16711-1:2015 (total content, textiles)
EN 16711-2:2015 (extractable content, textiles)
EN ISO 17072-1:2019 (extractable content, leather)
EN ISO 17072-2:2022 (total content, leather)

Detection limit: not to be detected (max 0.1 mg/kg)

7.2.21 Phthalate esters (ortho phthalates)

Material categories concerned: Textile, Leather, Accessories, Packaging

Limit value: Forbidden in product: Shall not be detected

Use: Phthalates may be used as plasticizers in polymers. Additives in adhesives, paints, lacquers, varnishes and solvents.

Alternatives: Alternative plasticizers include citrates, sebacates, adipates, and phosphates etc. The terephthalate, DEHT and the cyclohexane DINCH are example of commercially available alternatives with low human and environmental toxicity. There are also plastics that do not require phthalates. However, each application needs to be individually assessed for each best specific technical performance.

Legal background: Restrictions
Annex XVII of Regulation (EC) No 1907/2006 (REACH) addresses the following legal limits:

0.1% by weight of the plasticized material in toys and childcare articles for the sum of DEHP, DBP and BBP, entry 51.

From 7 July 2020, 0.1% by weight of the plasticized material in all articles for the sum of DEHP, DBP, BBP and DIBP.

0.1% by weight of the plasticized material in toys and childcare articles which can be placed in the mouth for DEHP, DBP, BBP, DINP, DIDP and DNOP, entry 52.

From 1 November 2020, DIHP, DMEP, DIPP, DPP and DnHP have a restriction limit of 1000 mg/kg in clothing, related accessories, textiles other than clothing in skin contact, or footwear (CMR fast track) according to Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 72. This limit applies to each substance individually or in combination with other phthalates that are classifies as CMR substances. The CMR fast track restriction does not apply to clothing, related accessories, textiles other than clothing, or footwear within the scope of Regulation (EU) 2016/425 (PPE).

All phthalates in toys and childcare articles for children aged 0-3 years are restricted (0.05%) in Denmark (BEK nr 855).

Candidate List of Substances of Very High Concern (SVHC)
DEHP, DBP, BBP and DIBP, DIHP, DHNUP, DMEP, 1,2-Benzenedicarboxylic acid, dipentylester, branched and linear, DIPP, N-pentyl-isopentylphthalate and DPP are listed in both annex XIV and in the Candidate List of Substances of Very High Concern for authorization of Regulation (EC) No 1907/2006 (REACH).
Dihexyl phthalate, 1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear, 1,2-benzenedicarboxylic acid, di-C6-10-alkyl esters with $\geqslant$ 0.3% of dihexyl phthalate (84-75-3): 68515-51-5, 1,2-benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters with $\geqslant$ 0.3% of dihexyl phthalate (84-75-3): 68648-93-1, DCHP and Diisohexyl phthalate are listed in the Candidate List of Substances of Very High Concern for authorisation of the Regulation (EC) No 1907/2006 (REACH).

Prop 65: BBP and DINP are known to the State of California to cause cancer. Safe Harbor Limit: NSRL BBP 1200 µg/day (oral), DINP 146 µg/day. DEHP is known to the State of California to cause cancer and birth defects or other reproductive harm. Safe Harbor Limit: NSRL 310 µg/day (oral). None for reproductive harm. DBP, DnHP and DIDP are known to the State of California to cause birth defects or other reproductive harm. Safe Harbor Limit: MADL DBP 8.7 µg/day, DnHP 2200 µg/day (oral), DIDP 2200 µg/day.
Settlements agreed at 1000 ppm for various products for DBP, DEHP, DIDP, DINP and DnHP.

Overview of regulated ortho-phthalates

Substance	**Abbr.**	**CAS RN**	**Legal status**
Bis(2-ethylhexyl) phthalate	DEHP	117-81-7	SVHC and restricted
Dibutyl phthalate	DBP	84-74-2	SVHC and

			restricted Prop 65
Benzyl butyl phthalate	BBP	85-68-7	SVHC and restricted Prop 65
Diisononyl phthalate	DINP	28553-12-0 and 68515-48-0	SVHC Prop 65
Diisodecyl phthalate	DIDP	26761-40-0 and 68515-49-1	SVHC Prop 65
Di-n-octyl phthalate	DNOP	117-84-0	SVHC
Diisobutyl phthalate	DIBP	84-69-5	SVHC and restricted
1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich	DIHP	71888-89-6	SVHC and restricted
1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters	DHNUP	68515-42-4	SVHC
Bis(2-methoxyethyl) phthalate	DMEP	117-82-8	SVHC and restricted
1,2-Benzenedicarboxylic acid, dipentylester, branched and linear		84777-06-0	SVHC
Diisopentyl phthalate	DIPP	605-50-5	SVHC and restricted
N-pentyl-isopentylphthalate	PIPP	776297-69-9	SVHC
Dipentyl phthalate	DPP	131-18-0	SVHC
Dihexyl phthalate	DnHP	84-75-3	SVHC and restricted Prop 65
1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear		68515-50-4	SVHC
1,2-benzenedicarboxylic acid, di-C6-10-alkyl esters with $\geqslant$ 0.3% of dihexyl phthalate (CAS 84-75-3)		68515-51-5	SVHC
1,2-benzenedicarboxylic acid, mixed decyl and		68648-93-1	SVHC

hexyl and octyl diesters with ⩾ 0.3% of dihexyl phthalate (CAS 84-75-3)			
Dicyclohexyl phthalate	DCHP	84-61-7	SVHC
Diisohexylphthalate	DIHXP	71850-09-4	SVHC
Di-iso-octyl phthalate		27554-26-3	SVHC

Test method: EN ISO 14389:2022 (textile)
EN ISO 16181-1, -2:2021 (footwear)
Test equipment: GC-MS, LC-MS

Detection limit: 100 mg/kg

7.2.22 Polybrominated biphenyls (PBB) and Polybrominated diphenyl ethers (PBDE)

Material categories concerned: Textile,, Accessories, Packaging

Limit value: Forbidden to be present in products.
Polybrominated biphenyls, CAS No 59536-65-1(mix)
Hexabromobiphenyl, CAS No 36355-01-8
Penta bromo diphenyl ether (PentaBDE), CAS No 32534-81-9, 60348-60-9
Octa bromo diphenyl ether (OctaBDE), CAS No 32536-52-0
Deca bromo diphenyl ether (DecaBDE), CAS No 1163-19-5
Tetrabromodiphenyl ether (TetraBDE), CAS No 5436-43-1
Heptabromodiphenyl ether (HeptaBDE), CAS No 207122-16-5, 446255-22-7
Hexabromodiphenyl ether (HexaBDE), CAS No 68631-49-2, 207122-15-4

Properties: Persistant, bioaccumulative and toxic. Halogenated organic additives in polymers may leach-out and have a negative impact on health and environment.
Halogen containing polymers may form highly corrosive substances and undefined range of halogenated substances that may be PBT or CMR when incinerated.

Use: Flame-retardant treatment of products where fire protection is required.

Alternatives: Avoid use. Replace bromo-organic chemical flame retardants with more environmentally sound alternatives, e.g., phosphorus- and/or nitrogen-based organic chemical flame retardants or non-chemical barrier-technologies such as blends of natural and synthetic fibers used in furniture and mattresses and high-performance synthetic materials used in fire fighter uniforms and other protective clothing. Textile goods for private use are basically never flame-retardant-treated. The only case when textile goods are treated with flame retardant is if the end customer orders this property. Usually, it is done to satisfy regulatory requirements of fire protection.

Legal background: Restrictions
10 mg/kg as substances for several PBDEs as POPs. Commercial TetraBDE, PentaBDE, HexaBDE, HeptaBDE, DecaBDE (sum 500 ppm in mixtures and articles) and Hexabromobiphenyl (ban) are listed in the Stockholm Convention on Persistent Organic Pollutants (POPs) and banned by Regulation (EC) No 2019/1021.

Commercial OctaBDE (0.1 % by weight), entry 45 and Polybrominated biphenyls (PBBs), entry 8, are banned in Annex XVII of Regulation (EC) No 1907/2006 (REACH). The legal limit for PBBs in textile articles with skin contact is detection limit. Commercial OctaBDE is listed as a POP in Annex A of the Stockholm Convention.

Decabromo diphenyl ether (DecaBDE, CAS1163-19-5), is banned in Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 67. This regulation will be removed as DecaBDE is banned under the Stockholm Convention.

Polybrominated biphenyls (PBBs) (CAS 59536-65-1), are banned in Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 8.

PBBs are listed in the Rotterdam Convention

Candidate List of Substances of Very High Concern (SVHC)
DecaBDE is listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).

Prop 65: Pentabromodiphenyl ether mixture [DE-71 (technical grade)] is known to the State of California to cause cancer. Safe Harbor Limit: None. No information on settlements.
Polybrominated and polychlorinated biphenyls are known to the State of California to cause cancer and birth defects or other reproductive harm Safe Harbor Limit: NSRL PBB 0.02 µg/day, PCB 0.09 µg/day. None for reproductive harm. No information on settlements.

Test method: EN ISO 17881-1:2016 (textiles).
Test equipment: GC-MS, LC-MS, GC-ECD

Detection limit: 10 mg/kg

7.2.23 2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol also called A-TBBPA

Material categories concerned: Textile, Accessories, Packaging

Required limit value: Should not be used in processes or present in products.

CAS RN: 79-94-7

Properties: Carcinogenic (CMR)

Use: Primarily used as a reactive flame retardant in epoxy resin circuit boards but also used in polycarbonate and ether polyester resins. TBBPA is also used as a flame retardant in plastics, paper, and textiles, and as a plasticizer in adhesives and coatings.

Legal background: Duty to inform your customer on substances for authorisation (EU/EEA)
A-TBBPA is listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).

Prop 65: TBBPA is known to the State of California to cause cancer. Safe Harbor Limit: None.

Test method:	EN ISO 17881-1:2016 (textile)
Detection limit:	100 mg/kg

7.2.24 bis(2-ethylhexyl) tetrabromophthalate covering any of the individual isomers and/or combinations thereof Bis(2-ethylhexyl) tetrabromophthalate

Material categories concerned: Accessories

Required limit value:	Should not be used in processes or present in products.
CAS RN:	Several
Properties:	Persistent, Bioaccumulative and Toxic (PBT).
Use:	Flame-retardant plasticizer mainly in PVC
Legal background:	Duty to inform your customer on substances for authorisation (EU/EEA) bis(2-ethylhexyl) tetrabromophthalate covering any of the individual isomers and/or combinations thereof Bis(2-ethylhexyl) tetrabromophthalate is listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).
Test method:	EN ISO 17881-1:2016 (textile)
Detection limit:	100 mg/kg

7.2.25 1,1'-[ethane-1,2-diylbisoxy]bis[2,4,6-tribromobenzene]

Material categories concerned: Accessories

Required limit value:	Should not be used in processes or present in products.
CAS RN:	37853-59-1
Properties:	Carcinogenic (CMR)
Use:	One of the major "novel" brominated flame retardants (NBFRs) from various polymer materials.
Legal background:	Duty to inform your customer on substances for authorisation (EU/EEA) 1,1'-[ethane-1,2-diylbisoxy]bis[2,4,6-tribromobenzene] is listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).
Test method:	EN ISO 17881-1:2016 (textile)
Detection limit:	100 mg/kg

7.2.26 PVC and PVCD

Material categories concerned: Textile, Leather, Accessories, Packaging

Limit value:	Not allowed: Phase-out if used. Forbidden to be present in products. Polyvinyl Chloride, CAS No 9002-86-2 Polyvinylidene Chloride, CAS No 9002-85-1
Properties:	Thermoplastic polymer, constructed of repeating vinyl groups having one hydrogen replaced by chloride
Use:	Widely used in clothing industry: fabric, fake leather, trims and packaging, etc.
Test method:	Beilstein and/or FTIR. (qualitative)

7.2.27 Siloxanes

Material categories concerned: Textiles, Leather, Accessories, Packaging

Limit value:	0,05% (500 mg/kg) CAS No: 556-67-2 Octamethylcyclotetrasiloxane (D4) 541-02-6 Decamethylcyclopentasiloxane (D5) 540-97-6 Dodecamethylcyclohexasiloxane (D6)
Properties:	Suspected of damaging fertility. Toxic to aquatic life with long lasting effects.
Use:	Used in washing and cleaning products, polishes and waxes, cosmetics and personal care products, textile treatment products and dyes, Paper and cardboard products. Precursors in the production of silicone-based polymers.
Legal background:	Candidate List of Substances of Very High Concern (SVHC) D4, D5 and D6 are listed in the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 of the European Parliament and of the Council (REACH).
Test method:	No standardised test methods Test equipment: GC-MS
Detection limit:	100 mg/kg

7.2.28 Halogenated aryl phosphates – TCEP, TRIS, BDBPP

Material categories concerned: Textile, Leather (lubricant), Accessories, Packaging

Limit value:	Forbidden to be present in products. Tris(2-chlorethyl) phosphate (TCEP), CAS No 115-96-8 Tris (2,3 dibromo propyl) phosphate (TRIS), CAS No 126-72-7 Bis (2,3-dibromopropyl) phosphate (BDBPP), CAS No 5412-25-9

Tris-(2-chloro-1-methylethyl) phosphate, CAS.: 13674-84-5
Tris-[2-chloro-1-(chloromethyl)ethyl] phosphate CAS.: 13674-87-8

Properties: Persistant, bioaccumulative and toxic (PBT). Halogenated organic additives in polymers may leach-out and have a negative impact on health and environment.
Halogen containing polymers may form highly corrosive substances and undefined range of halogenated substances that may be PBT or CMR when incinerated.

Use: Flame-retardant treatment of products (i.e. coated textiles) where fire protection is required. Plasticizers.

Alternatives: Avoid. Replace chloro-organic chemical flame retardants with more environmentally sound alternatives, e.g., phosphorus- and/or nitrogen-based organic chemical flame retardants or non-chemical barrier-technologies such as blends of natural and synthetic fibers used in furniture and mattresses and high-performance synthetic materials used in fire fighter uniforms and other protective clothing.

Textile goods for private use are basically never flame-retardant-treated. The only case when textile goods are treated with flame retardant is if the end customer orders this property. Usually it is done to satisfy regulatory requirements of fire protection.

Legal background:

Restrictions:
TRIS shall not be used in textile articles, such as garments, undergarments, and linen, intended to come into contact with the skin. Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 4.

Candidate List of Substances of Very High Concern (SVHC)
Tris(2-chlorethyl) phosphate (TCEP), CAS No 115-96-8 is listed in the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 of the European Parliament and of the Council (REACH).

Prop 65: TCEP and TBPP are known to the State of California to cause cancer. Safe Harbor Limit: None. Settlements agreed at 25 ppm TCEP for PVC rainwear.

Japan Law 112:
Tris (1-aziridinyl)-phosphine oxide (TEPA / APO)
Tris (2,3-dibromopropyl) phosphate (TRIS / TDBPP)
and Bis (2,3-dibromopropyl) phosphate (BDBPP)
are prohibited in detectable levels in textiles for consumers by Japan Law 112 for the Control of Household Products Containing Harmful Substances (10/01/1974)

Test method: EN ISO 17881-2:2016
Test equipment: GC-MS, LC-MS, GC-ECD

Detection limit: There is no standard international detection limit as yet.
For LC-MS 5.0 mg/kg can be expected.

7.2.29 Non halogenated arylphosphates - Tri phenyl phosphate

Material categories concerned: Textiles, Leather, Accessories.

Limit Value:	Forbidden to be present in products. Legally required use needs prior approval by CSO Tri phenyl phosphate CAS No.: 115-86-6 Tris(methylphenyl) phosphate CAS No.: 1330-78-5
Properties:	Reproductive and developmental toxicity
Use:	Plasticizer, flame-retardant
Legal background:	Under legal assessment as potential endocrine disruptor (hormone disturbing substance)
Test method:	EN ISO 17881-2:2016
Detection limit:	0.03 mg/l

7.2.30 Non halogenated arylphosphates - Tri (*nx*) cresyl phosphate (TCP)

Material categories concerned: Textiles, Leather

Limit value:	Not to be present in products Tri (m) cresyl phosphate CAS No.: 563-04-2 Tri (o) cresyl phosphate CAS No.: 78-30-8 Tri (p) cresyl phosphate CAS No.: 78-32-0 Trimethyl phosphate CAS No.: 512-56-1
Properties:	Reproductive and developmental toxicity
Use:	Plasticizer
Legal background:	Under legal assessment as potential CMR substances
Test method:	EN ISO 17881-2:2016,
Detection limit:	0.03 mg/l

7.2.31 Non halogenated aryl phosphates - Tri xylyl phosphate, Tris (1-aziridinyl)phosphine oxide

Material categories concerned: Textile, Leather (lubricant), Accessories, Packaging

Limit value:	Forbidden to be present in products. Trixylyl phosphate, CAS No 25155-23-1 Tris (1-aziridinyl)phosphine oxide (TEPA), CAS No 5455-55-1
Properties:	Toxic for reproduction
Use:	Mainly used as functional fluid. Plasticizer of vinylite (a copolymer of vinyl chloride and vinyl acetate), cellulosic resins and natural and synthetic rubber. Plasticizer and flame retardant of PVC and PU.
Legal background:	Candidate List of Substances of Very High Concern (SVHC)

	Trixylyl phosphate (CAS No 25155-23-1) and Tris (1-aziridinyl)phosphine oxide (TEPA) (CAS No 5455-55-1) are listed in the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 of the European Parliament and of the Council (REACH).
Test method:	EN ISO 17881-2:2016 (textiles) Test equipment: GC-MS, LC-MS, GC-ECD
Detection Limit:	5 mg/kg.

7.2.32 Per and polyfluorinated alkyl substances (PFAS)

Material categories concerned: Textile, Leather, Accessories

Required limit value:	Should not be used in products and processes.
CAS RN:	Several
Properties:	Perfluorinated acids, PFCAs and PFSAs, such as PFOA and PFOS are persistent, bioaccumulative and toxic (PBT) substances. Due to their extreme stability these chemicals will not degrade but will accumulate due to their persistency in the environment. They are water soluble and can contaminate drinking water. As a result of their long-range transport potential and mobility they can be found even in remote regions (e.g. the Artic). Several known PFASs can cause cancer (testicular and kidney cancer), liver damage and changes in immune- and endocrine system (e.g. cholesterol levels). Exposure to some known PFASs effects the foetus development during pregnancy and has adverse effects on breastfed infants (e.g., low birth weight). They can be as present as pure substances in products or as precursor chemicals (e.g. polymers) that form PFOA and other PFCAs due to transformation processes. Highly fluorinated ethers (PFPEs) such as HFPO-DA (2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propionic acid) were developed as replacements for PFAO and PFOS. They are water-soluble and mobile surfactants that are under suspicion to be equally persistent as other PFASs. While the bioaccumulation potential of HFPO-DA is still uncertain, this substance has showed adverse effects on kidney, immune- and haematological system, as well as effects on foetus development in animal studies. Other PFPEs are likely to be equally stable and mobile. Fenix Outdoor follows the OECD definition of per and polyfluorinated alkyl substances (PFAS)
Use:	PFCA and PFSA-related substances (e.g. side-chain fluorinated polymers) are used in water oil repellent textile finishes as well as impregnation agents in leather. PFOA and other PFCAs are still used as an emulsifier in the production of fluoropolymers such as polytetrafluoroethylene (PTFE) etc.

PFPEs are used as emulsifiers in the production of fluoropolymers such as polytetrafluoroethylene (PTFE).

Alternatives:

May only be used in applications where oil and stain repellent properties are scientifically assessed as essential, such as protective occupational textiles, when no other feasible alternatives are available.

Where oil repellent properties are not essential and just water repellence is required, non-fluorinated chemistries such as waxes and paraffins but not silicones are recommended, since silicones contain toxic and regulated cyclic siloxanes such as D4, D5 and D6, see section 7.2.27.

Legal background:

Restrictions (EU/EEA)

From 4 July 2020, PFOA and its related substances are restricted in articles and mixtures in a concentration equal to or above 25 ppb of PFOA including its salts, or 1 000 ppb of one or a combination of PFOA-related substances. From 4 July 2023 the restriction applies to textiles for the protection of workers from risks to their health and safety.

Legal limit for PFOS is 1 µg/m^2 that applies to fluoro coated textiles and leather products and 0.1% by weight applies to semi-finished articles or parts of articles.

PFOS, PFHxS and PFOA and their related substances are listed in the Stockholm Convention on Persistent Organic Pollutants (POPs) and restricted by Regulation (EC) No 2019/1021[7].

PFNA (C9), PFDA (C10), PFTrDA (C11), PFDoA (C12) , PFUnA (C13) and PFTA (C14) including their related substances are restricted in Regulation (EC) No 1907/2006 (REACH), entry 68. Shall not be manufactured or placed on the market if the concentration in the article is above 25 ppb per substance, for the sum of C9-C14 PFCAs and their salts is 250 ppb as well for the sum of C9-C14 PFCA-related substances. This restriction is in effect from 25 February 2023.

Declaration duty in Sweden from 1 January 2019 to the Swedish Chemicals Agency for PFAS in chemical products that are deliberately added. Composition needs not to be specified but the information duty applies without any concentration limit.

Duty to inform your customer on substances for authorisation (EU/EEA)

Several PFASs including their salts and precursors are listed as a group in the Candidate List of Substances of Very High Concern for authorization of Regulation (EC) No 1907/2006 (REACH).

Overview of regulated PFASs and ongoing regulation of PFASs

PFAS substances, their salts and related substances	CAS	Abbr	SVHC	REACH annex XVII	EU POP regulation	Stockholm Convention
Perfluorobutane sulfonate	375-73-5	PFBS	Yes			
Perfluorohexane sulfonate	355-46-4	PFHxS	Yes		Yes	Yes
Perfluorohexanoic acid	307-24-4	PFHxA	Yes	Ongoing		
Perfluorooctane sulfonate	307-34-6	PFOS			Yes	Yes
Perfluorononanoic acid and its sodium ammonium salts,	375-95-1 21049-39-8, 4149-60-4	PFNA	Yes	Yes		Ongoing
Perfluorodecanoic acid its sodium and ammonium salts,	335-76-2 3108-42-7 3830-45-3	PFDA	Yes	Yes		Ongoing
Pentacosafluorotridecanoic acid	72629-94-8	PFTrDA	Yes	Yes		Ongoing
Tricosafluorododecanoic acid	307-55-1	PFDoA	Yes	Yes		Ongoing
Henicosafluoroundecanoic acid	2058-94-8	PFUnA	Yes	Yes		Ongoing
Heptacosafluoro tetradecanoic acid	376-06-7	PFTA	Yes	Yes		Ongoing
PFAS, C15 - C21	Several					Ongoing

Perfluoroctane acid Ammonium pentadecafluoro octanoate	335-67-1 3825-26-1	PFOA APFO	Yes		Yes	Yes
2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propionic acid, its salts and its acyl halides (covering any of their individual isomers and combinations thereof)	Several	HPFO-DA.	Yes			
reaction mass of 2,2,3,3,5,5,6,6-octafluoro-4-(1,1,1,2,3,3,3-heptafluoropropan-2-yl)morpholine and 2,2,3,3,5,5,6,6-octafluoro-4-(heptafluoropropyl)morpholine	Several		Yes			
Broader PFAS regulation	Suggested to cover all compounds that include one or more perfluorinated moieties.			Ongoing		

Prop 65: PFOA and PFOS are known to the State of California to cause birth defects or other reproductive harm. Safe Harbor Limit: None. No information on settlements. PFPEs are not listed under Prop. 65.

Test method: EN 17681-1:2022 (non volatile PFAS, textiles)
EN 17681-2:2022 (volatile PFAS, textile)

EN ISO 23702-1:2023 (leather)

EN 14582:2016 (Total fluorine)

Detection limit: Indicative limits:
10 ppm for EN 14582:2016
2,5 µg/kg for all PFAS except PFOS and its related substances
0.1 µg/m^2 for PFOS and its related substances

PFAS analysis should follow sequence as below:

Start with EN 14582:2016, (Total fluorine) analysis.

followed by below targeted PFAS analyses (means the analysis of specific PFAS substances) regardless of the obtained total fluorine test result. Select the appropriate method below depending on whether the sample is textile or leather.

EN 17681-1:2022, (non-volatile, PFAS, textiles)
EN 17681-2:2022, (volatile PFAS, textile)

EN ISO 23702-1:2023 (leather)

All tests shall be done at SGS HK unless other is agreed in written with Fenix Outdoor Chemicals specialist

Biocidal Agents

Biocidal agents are both used as ***process chemicals*** to prohibit growth of microbes and ***product related chemicals*** to render biocidal property to the article. For hygienic reasons, we recommend, that biocidal agents, that include antibacterial, antifungal and insecticide agents shall not be used in textile and leather products.

7.2.33 Cu-HDO (Bis-(N-cyclohexyldiazeniumdioxy)-copper)

Material categories concerned: Textiles, Shoes, Fungicide for transport (may be used instead of silica gel)

Limit value: Forbidden.
CAS No 312600-89-8

Properties: Fungicide. Cu-HDO is classified as very toxic to aquatic organisms.

Use: Fungicide.

Alternatives: The alternative to biocidal agents during storage and transport is a cool and dry environment.

Legal background: Restrictions:
Cu-HDO is banned within PT9 (product type 9) that includes textiles, polymers and leather, according to the Biocidal Product Regulation (EU 528/2012).

Test method: No standardised test method available.
Test equipment: ICP-AES

7.2.34 Dimethylfumarate (DMFu)

Material categories concerned: Textile, Leather, Packaging, Accessories

Limit value: Avoid use. Not to be present in products.
DMFu, CAS No 624-49-7

Properties:	Fungicide. DMFu is harmful to skin and a strongly allergenic substance.
Use:	To counteract fungus growth in clothes, shoes and other leather items. DMFu can e.g., be found in silica gel bags, but is also applied on the product both as a powder and in tablet form.
Alternatives:	The alternative to biocidal agents during storage and transport is a cool and dry environment. If use of biocidal agents is vital, folpet, chlorocresol, propiconazol, azoxystrobin and fludioxonil are approved for PT9 according to the Biocidal Product Regulation (EU 528/2012).
Legal background:	Restrictions: Legal limit: 0.00001 % by weight (0.1 mg/kg) in articles or any parts thereof. Annex XVII of Regulation (EC) No 1907/2006 (REACH), entry 61
Test method:	EN 17130:2019 (textile) EN ISO 16186:2021 (footwear) (footwear) Test equipment: GC-MS, LC-MS.
Detection limit:	0.1 mg/kg.

7.2.35 Guanidine, N,N'''-1,6-hexanediylbis(N'-cyano-),polymer with 1,6-heanediamine, hydrochloride (PHMB 1600; 1.8)

Material categories concerned: Textiles, Leather, Accessories

Limit value:	Forbidden to be present in products. CAS Nos 27083-27-8; 32289-58-0
Properties:	PHMB is very toxic to aquatic life, is suspected of causing cancer and may cause an allergic skin reaction.
Use:	Biocide.
Alternatives:	The alternative to biocidal agents during storage and transport is a cool and dry environment.
Legal background:	PHMB 1600; 1.8 is banned within PT9 (product type 9) that includes textiles, polymers and leather, according to the Biocidal Product Regulation (EU 528/2012)
Test method:	No standardized test method available.
Detection limit:	Ask your laboratory.

7.2.36 Pentachlorophenol (PCP) and all isomers of Tetrachlorophenols (TeCP)

Material categories concerned: Textile, Leather; Packaging, Accessories

Limit value:	Do not use. Not be present in products. CAS No 87-86-5, 131-52-2 (PCP)
Properties:	Organic compounds. Toxic and dangerous for the environment.

	On combustion, PCP emits dioxins, which are extremely toxic to humans. Additional list of banned Chlorophenols can be found in appendix 3
Use:	Fungicide for preservative treatment of goods prior to storage and transport. Preservative in sizing agents and adhesives. Component in printing pastes (thickener).
Alternatives:	The alternative to biocidal agents during storage and transport is a cool and dry environment.
Legal background:	Restrictions PCP and its salts and esters are listed in Annex I to Regulation 2019/1021 (EU POP Regulation) Pentachlorophenol (and its salts and esters) is banned in Norway in textiles and leather. Legal limit 5 ppm, (FOR-2004-06-01-922). Danish ban (BEK No. 854) on the import, export, sale and use of products containing 5 ppm or more of PCP and its salts and esters. Pentachlorophenol and its salts and esters in articles, are banned in Germany (Chemikalien-Verbotsverordnung section 15), Denmark (BEK nr 854) and Austria (477.ChemVerbotsV 2003). Legal limit 5 ppm. Pentachlorophenol (PCP) and its salts and esters are listed in the Stockholm and Rotterdam convention. Prop 65: PCP is known to the State of California to cause cancer. Safe Harbor Limit: NRSL 40 µg/day. No information on settlements.
Test method:	EN ISO 17070:2015 (leather) XP G 08-015 (French standard method for PCP in textiles) CEN/TR 14823:2003 (wood) EN ISO 15320:2011 (pulp, paper and board)
Detection limit:	0.1 mg/kg (for individual chlorophenols); wood: 25 mg/kg.

7.2.37 Permethrin

Material categories concerned: Textile, Leather, Accessories

Limit value:	Forbidden in Fenix products. Should not be present in products. Exception: UN or NATO demands in specific products; formulas approved by EU/CAN/US/CAL (e.g., InsectShield® and HeiQ); always written approval from CSO needed. Permethrin, CAS No 52645-53-1
Properties:	Insecticide. Permethrin is like all synthetic pyrethroids a neurotoxin. It is considered more acutely toxic to children than to adults.
Use:	Permethrin is a biocide in textiles. It is used for home pest control, forestry, and in public health programs, including head lice control. It is also used for anti-mosquito/anti-tick treatment.
Legal background:	Restrictions:

	Permethrin is not on the list (and therefore banned) of biocides within PT9 (product type 9) that includes textiles, polymers and leather, according to the Biocidal Product Regulation (EU 528/2012).
Test method:	No standardised test method available. Test equipment: GC-MS, LC-MS.
Detection limit:	0.1 mg/kg.

7.2.38 Silver and its compounds (Ag +)

Material categories concerned: Textile, Leather; Accessories

Limit value:	Not to be present in products. Silver (metal): CAS 7440-22-4
Properties:	Bactericide. Slight skin and eye irritant. Disturb denitrification processes in nature that is essential for provision of nutrition to plants. Dissolved (free) silver ions are very toxic to aquatic organisms.
Use:	Silver particle complexes in nano-size (< 100nm) are antibiotic additives in plastics and fibres.
Alternatives:	The alternative to antibacterial agents during use is satisfactory washing.
Legal background:	Legal limit: No legal limits for silver compounds exist in textiles and leather. Some silver compounds are on the list of temporarily permitted existing biocides within PT9 (product type 9) that includes textiles, polymers, and leather, according to the Biocidal Product Regulation (EU 528/2012). Silver as such is not allowed as a biocidal active substance. Some silver products are registered in USA and the EU as biocidal products.
Test method:	No standardized test method available. Test equipment: ICP-MS, ICP-OES or AAS
Detection limit:	10 mg/kg

7.2.39 Tributyltin oxide and other trialkyltin compounds

Material categories concerned: Textile, Leather

Limit value:	Not be present in products. Tributyltin oxide (TBTO), CAS No 56-35-9 Tributyltin chloride, CAS No 1461-22-9 Tributyltin fluoride, CAS No 1983-10-4 Tributyltin methacrylate, CAS No 2155-70-6 Tributyltin benzoate, CAS No 4342-36-3 Tributyltin linoleate, CAS No 24124-25-2 Tributyltin naphthenate, CAS No 85409-17-2
Properties:	Antibacterial agent. Tributyltin compounds are different chemical substances that are toxic and dangerous for the environment. Bioaccumulative and persistent.
Use:	To counteract noxious odors in clothes and shoes. Preservative, fungicide and antifouling agent.

Alternatives:	The alternative to antibacterial agents during use is satisfactory washing.
Legal background:	Restrictions Legal Limit: 0.1% by weight of the treated part of the article, all tri-substituted organostannic compounds such as tributyltin (TBT) are restricted in articles in annex XVII of the Regulation (EC) No 1907/2006 (REACH), entry 20. The seven TBT compounds listed above are also included in the Rotterdam convention. Candidate List of Substances of Very High Concern (SVHC) Tributyltin oxide (TBTO), 56-35-9 and Dibutyltin dichloride (DBTC), 683-18-1 are listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH)
Test method:	EN ISO 22744-1,-2:2020 (textile) CEN ISO/TS 16179:2012 (footwear) EN ISO 17353 (water and sediment)
Detection limit:	0.2 mg/kg.

7.2.40 Triclosan and Triclocarban

Material categories concerned: Textile, Leather; Accessories

Limit value:	Forbidden to be present in products. Triclosan, CAS No 3380-34-5 Triclocarban: CAS No: 101-20-2
Properties:	Antibacterial agents. Triclosan is classified as a probable human carcinogen and bio accumulative. Triclocarban is classified as very toxic to aquatic life with long lasting effects and is very toxic to aquatic life
Use:	Anti-bacterial agent in clothes and other commodities.
Alternatives:	The alternative to antibacterial agents during use is satisfactory washing.
Legal background:	Restrictions Triclosan is banned within PT9 (product type 9) that includes textiles, polymers, and leather, according to the Biocidal Product Regulation 528/2012). Triclocarban is not on the active substance list for PT9 according to the Biocidal Product Regulation 528/2012) and thus not allowed to use in textiles, polymers, and leather.
Test method:	EN 17134-1:2024 (textile)
Detection limit:	0.01 mg/kg for both leather and textiles.

7.2.41 DTTB (4,6-dichloro-7-(2,4,5-trichlorophenoxy)-2-trifluoromethylbenzimidazole) and Dieldrin

Material categories concerned: Textile

Limit value:	Do not use. 30 ppm in textiles for consumers DTTB, CAS No 63405-99-2, Dieldrin, CAS No 60-57-1
Properties:	Biocide.
Legal background:	Restrictions Dieldrin is listed and banned in the Stockholm Convention Japan Law 112 for the Control of Household Products Containing Harmful Substances (10/01/1974)

7.2.42 Carbendazim

Material categories concerned: Textile, Leather, Accessories

Required limit value:	Should not be present in products. CAS No:10605-21-7
Properties:	Fungicide. Reproduction toxic, mutagenic and toxic to aquatic life with long lasting effects and processes.
Use in textile and leather:	To counteract fungus growth in clothes, shoes, and other leather items.
Alternatives:	The alternative to biocidal agents during storage and transport is cool and dry environment. The alternative to antibacterial agents during use is satisfactory washing
Legal background:	Restrictions Carbendazim is banned within PT9 (product type 9) that includes textiles, polymers, and leather, according to the Biocidal Product Regulation (EU 528/2012)
Test method:	No standardised test method available. Test equipment: GC-MS, LC-MS.
Detection limit:	Ask your laboratory

7.2.43 Bronopol

Material categories concerned: Textile, Leather; Accessories

Limit value:	Should not be used in processes or present in products.
CAS RN:	52-51-7
Properties:	Harmful to the environment.
Use:	Bronopol is used as a microbiocide/microbiostat in oil field systems, air washer systems, air conditioning/humidifying systems, cooling water systems, papermills, absorbent clays, metal working fluids, printing inks, paints, adhesives and consumer/institutional products.

Legal background:	Restrictions (EU/EEA) Bronopol is banned within PT9 (product type 9) that includes textiles, polymers, and leather, according to the Biocidal Product Regulation 528/2012).
Test method:	No standardised test method available for textiles or leather.
Detection limit:	Ask your laboratory

7.2.44 Thiram

Material categories concerned: Textile, Leather

Required limit value:	Should not be used in processes or present in products.
CAS RN:	137-26-8
Properties:	Skin sensitizer. Harmful to the environment.
Use:	Thiram is a non-systemic fungicide used to prevent crop damage in the field and to protect from deterioration in storage or transport.
Legal background:	Restrictions (EU/EEA) Thiram is banned within PT9 (product type 9) that includes textiles, polymers, and leather, according to the Biocidal Product Regulation 528/2012).
Test method:	No standardised test method available for textiles or leather. Use checklist for lab, annex 2.
Detection limit:	Ask your laboratory

7.2.45 Metam-sodium ((sodium N-methyldithiocarbamate)

Material categories concerned: Textile, Leather

Required limit value:	Should not be used in processes or present in products.
CAS RN:	137-42-8
Properties:	Skin sensitizer. Harmful to the environment.
Use:	Metam sodium (sodium N-methyldithiocarbamate) is a fumigant used primarily in agriculture as a preplant treatment to kill soil fungi, nematodes, weed seeds and soil insects.
Legal background:	Restrictions (EU/EEA)

	Metam-sodium (sodium N-methyldithiocarbamate) is banned within PT9 (product type 9) that includes textiles, polymers, and leather, according to the Biocidal Product Regulation 528/2012). Prop 65: Metam-sodium known to the State of California to cause cancer.
Test method:	No standardised test method available for textiles or leather.
Detection limit:	Ask your laboratory

7.2.46 Polyhexamethylene biguanide hydrochloride with a mean number-average molecular weight (Mn) of 1415 and a mean polydispersity (PDI) of 4.7 (PHMB(1415;4.7))

Material categories concerned: Textile, Leather, Accessories

Required limit value:	Should not be present in products.
CAS RN:	1802181-67-4
Properties:	Bactericide. PHMB is very toxic to aquatic life, is suspected of causing cancer and may cause an allergic skin reaction.
Use:	Biocide, bactericide. Polyhexamethylene biguanide (PHMB) is an antiseptic with antiviral and antibacterial properties used in a variety of products including wound care dressings, contact lens cleaning solutions, perioperative cleansing products, and swimming pool cleaners.
Alternatives:	The alternative to biocidal agents during storage and transport is a cool and dry environment and satisfactory washing during use. If use of biocidal agents is essential, only approved biocidal agents for PT9 according to the Biocidal Product Regulation (EU 528/2012) should be applied.
Legal background:	Restrictions (EU/EEA) PHMB(1415;4.7 is banned within PT9 (product type 9) that includes textiles, polymers and leather, according to the Biocidal Product Regulation (EU 528/2012)
Test method:	No standardised test method available for textiles or leather.
Detection limit:	Ask your laboratory

7.2.47 Orto phenyl-phenols (OPP) also called biphenyls or 2-phenylphenols

Material categories concerned: Textile, Leather

Required limit value:	Should not be present in products.
CAS RN:	13707-65-8 (potassium salt), 132-27-4 (sodium salt)

Properties:	Preservatives. Very toxic to aquatic life, causes severe skin burns and eye damage.
Use:	Biocide, preservative. OPP is used as an auxiliary to protect leather through various production stages, from hide to finished good. OPP may be used in textile material production as a dye carrier, especially for synthetic fibres.
Alternatives:	The alternative to biocidal agents during storage and transport is a cool and dry environment and satisfactory washing during use. If use of biocidal agents is essential, only approved biocidal agents for PT9 according to the Biocidal Product Regulation (EU 528/2012) should be applied.
Legal background:	Restrictions (EU/EEA) The potassium and sodium salts of biphenyls are banned within PT9 (product type 9) that includes textiles, polymers and leather, according to the Biocidal Product Regulation (EU 528/2012)
Test method:	EN 17134-1:2024 (2-phenylphenol (OPP) and triclosan in textile materials) EN ISO 13365-1,-2:2020 (TCMTB, PCMC, OPP, OIT, content in leather)
Detection limit:	10 mg/kg

7.2.48 Sodium p-chloro-m-cresolate

Material categories concerned: Textile, Leather, Accessories

Required limit value:	Should not be present in products.
CAS RN:	15733-22-9
Properties:	Bactericide. Very toxic to aquatic life, causes severe skin burns and eye damage.
Use:	Biocide, bactericide used in a variety of products.
Alternatives:	The alternative to biocidal agents during storage and transport is a cool and dry environment and satisfactory washing during use. If use of biocidal agents is essential, only approved biocidal agents for PT9 according to the Biocidal Product Regulation (EU 528/2012) should be applied.
Legal background:	Restrictions (EU/EEA) Sodium p-chloro-m-cresolate is banned within PT9 (product type 9) that includes textiles, polymers and leather, according to the Biocidal Product Regulation (EU 528/2012)

Test method:	No standardised test method available for textiles or leather. .
Detection limit:	Ask your laboratory

7.2.49 Parabenes

Material categories concerned: Textile, Accessories.

Required limit value:	Should not be used in processes or present in products.
CAS RN:	Several
Properties:	Toxic for reproduction.
Use:	Bactericides. Used in cosmetic products and detergents, in coating products, fillers, putties, plasters, modelling clay, adhesives, inks and toners.
Legal background:	Restrictions (EU/EEA) Butyl 4-hydroxybenzoate (Butylparaben, CAS no.: 94-26-8) is an allowed preservative under the Regulation (EC) No 1223/2009 (cosmetic products) Duty to inform your customer on substances for authorisation (EU/EEA) Butyl 4-hydroxybenzoate (Butylparaben, CAS no.: 94-26-8) and Isobutyl 4-hydroxybenzoate (isobutylparabene , CAS no: 4247-02-3) are listed on the Candidate List of Substances of Very High Concern for authorization of the Regulation (EC) No 1907/2006 (REACH).
Test method:	No standardised test method available.
Detection limit:	100 mg/kg

7.3 Miscellaneous - Microparticles (microplastics) intentionally added.

Required limit value:	Should not be present in products.
CAS RN:	--------

Properties:	Polymers that are solid and which fulfil both of the following conditions:
	• are contained in particles and constitute at least 1 % by weight of those particles; or build a continuous surface coating on particles.
	• at least 1 % by weight of the particles referred to in point (a) fulfil either of the following conditions:
	  ○ all dimensions of the particles are equal to or less than 5 mm.
	  ○ the length of the particles is equal to or less than 15 mm and their length to diameter ratio is greater than 3.

The following polymers are excluded from this restriction:

- polymers that are the result of a polymerisation process that has taken place in nature, independently of the process through which they have been extracted, which are not chemically modified substances.
- polymers that are proved to be degradable.
- polymers that have a solubility greater than 2 g/L
- polymers that do not contain carbon atoms in their chemical structure.

Use: Glitter, fillers, abrasion particles, microencapsulation, carriers etc.

Alternatives: Products that don't contain intentionally added man-made microparticles made of synthetic polymers.

Legal background:

Restrictions (EU/EEA)
Shall not be placed on the market as substances on their own or, where the synthetic polymer microparticles are present to confer a sought-after characteristic, in mixtures in a concentration equal to or greater than 0,01 % by weight.

Where the concentration of synthetic polymer microparticles covered by this entry cannot be determined by available analytical methods or accompanying documentation, to verify the compliance with the concentration limit referred to in the restriction text above, only the particles of at least the following size shall be considered:

- 0,1 µm for any dimension, for particles where all dimensions are equal to or smaller than 5 mm.
- 0,3 µm in length, for particles that have a length that is equal to or smaller than 15 mm and a length to diameter ratio greater than 3.

Link to Entry 78, Annex XVII of Regulation (EC) No 1907/2006 (REACH) with detailed information of various microparticle uses and their years/dates for enforcement:
https://echa.europa.eu/documents/10162/a5eaa862-fa4d-2e18-f5a5-3bda98e09ee7

Test method: No standardised test method available to determine intentionally added microparticles only.

EN ISO 4484-1:2023 (textiles)
(Determination of material loss from fabrics during washing)

EN ISO 4484-3:2023 (textiles)
(Measurement of collected material mass released from textile end products by domestic washing method.)

8. Documentation♣

For replicability of specifications and in light of the REACH Regulation, the following documentation requirements apply:

♣ Additional resources may be required to implement the documentary requirements

Records	Author	Archived At	Minimum Retention Period
Initial Specifications	Purchase & Prod. Dept.	Product Resp.	Statutory (evtl. centrally archived)
Approval documents	Head of Production	Head of Production	Statutory
Test Reports	Test Lab	1 Copy at Facility; 1 Copy Head of Production	5 years
Cross-testing Reports	Test Lab	Head CSR/Prod.	Statutory
REACH Requests	Var.	Sales Entity/ Head CSR/Prod.	Statutory
Product and Material Samples	Production	Production/QA Team	Archive
Internal relevant documents	Product Resp.	Head Office	Statutory
Complaints	Var.	Head CSR/Prod.	Statutory
Internal Complaints Handling Reports	Var.	Head CSR/ QA	Statutory
Inspection reports	Inspection team	Head CSR/Prod.	Archive
Compliance Reports	Compliance Office	CCO	5 years

List of Abbreviation
CCO = Chief Compliance Officer's Office
CSR = Corporate Social Responsibility
Dept. = Department
Lab = Laboratory
Prod. = Product(ion)
QA = Quality Assurance Team
Resp. = Responsible
Var. = various authors/actors
NOTE: In some entities specific roles mentioned are not assigned. In that case the given alternative or most plausible solution should be sought.

9. Liability

The supplier is required to follow – in all incidences – the laws and regulations of the European Union and their member states. We request to pay special attention to the following points:

9.1 Chemicals

9.1.1 Forbidden Chemicals in products

The requirements applies to all products that defines as merchandise according to the European Parliament and the Councils ordinance 1907/2006 (REACH), article 3.3. It also applied to the definition of “product” as rules by the European Supreme Court in April 2015.

The supplier is responsible that all deliveries to any Fenix Outdoor entity do not contain any products with chemicals which use is limited according to the European parliament and the councils ordinance 1907/2006 (REACH), Appendix XVII.

This includes any component of the product supplied by any local supplier/subcontractor.

9.1.2 Chemicals requiring permission at the European Chemical Agency (ECHA)

The requirements apply to all products that are defined as merchandise in accordance the European Parliament and the Councils ordinance 1907/2006 (REACH), article 3.3.
The supplier is liable according to law to inform the respective Fenix Outdoor entity about the presence of chemicals which are listed in the *Candidate List of Substances of Very High Concern for Authorization,* which is to be found on the website of the European Chemicals Agency, (http://echa.europa.eu/), together with chemicals that can be used for different intended uses and over chemicals listed in the European parliament and the council ordinance 1907/2006 (REACH), Appendix XIV whose intended use requires the permission of ECHA.

Every partner ensures that all deliveries do not contain products with chemicals listed in the *Candidate List of Substances of Very High Concern for Authorization* and in the European parliament and the councils ordinance 1907/2006 (REACH), Appendix XIV.

9.1.3 Stockholm Convention on Persistent Organic Pollutants (POPs)

The Stockholm Convention on Persistent Organic Pollutants is an international environmental treaty, signed in 2001 and effective from May 2004, that aims to eliminate or restrict the production and use of persistent organic pollutants (POPs), addressed as the
Stockholm Convention, Regulation (EC) 850/2004 and EU Regulation No 519/2012 in EU.

9.1.4 Biocidal Product Regulation

The Biocidal Product Regulation (BPR, Regulation (EU) 528/2012) concerns the placing on the market and use of biocidal products, which are used to protect humans, animals, materials or articles against harmful organisms, like pests or bacteria, by the action of the active substances contained in the biocidal product.

The Biocidal Products Regulation (BPR) also sets rules for the use of articles treated with, or intentionally incorporating, one or more biocidal products.

9.1.5 Chemicals classified as dangerous

The supplier ensures that chemicals classified as dangerous in accordance to the European parliament and the councils ordinance 1272/2008 (*CLP regulations for classification, labeling and packaging of substances)*, are not used in process of production or added as an additive in products. This requirement applies only if the chemicals not classified as dangerous is available on the market and whose technical usability is equal or better than the chemicals classified as dangerous is used.

Chemicals classified as CMR-chemicals, i.e. carcinogenic, mutagenic, toxic to reproduction, endocrine toxic (endocrine disruption), allergenic or classified as PBT or/and vPvB- chemicals, i.e. persistent, bio accumulative and eco toxic according to definitions in the European Parliament and the Councils ordinance 1907/2006 (REACH), article 57.

If chemicals classified as dangerous are used in production process or as an additive in products the supplier shall in the quotation apply relative safety sheet in accordance to the European Parliament and the Councils ordinance 1907/2006 (REACH), Appendix II.

The supplier is obliged to inform about all chemical substances used in the production process or as an additive in the product as a separate appendix to the quotation. In case of a substance used in process or present in product of a forbidden quantity orders will not be signed.

In case, products are intended to be sold in the US markets, the supplier provides Fenix Outdoor with the appropriate and necessary labelling required by California Proposition 65.

The supplier performs tests and analyses on his own expense to ensure that specifications and chemical laws and restrictions are fulfilled and that all products delivered to the respective Fenix Outdoor entity are in accordance with the specifications, order and quotation agreements.

Fenix Outdoor reserves the right to perform unannounced test to cross-test delivered products in order to ensure, all requirements are met.

If needed and from time-to-time, Fenix Outdoor or any of its entities may conduct random checks of suppliers at any time during the contract period performed by own staff or through a 3rd party – announced or unannounced.

9.1.6 Sanctions

In case that tests, on-site visits, cross-test and controls or audits performed by us or a 3rd party show forbidden or too high concentrations of restricted substances according to

a. Appendix XIV to REACH (SVHC-substances subject to authorization) and associated candidate list

b. Appendix XVII to REACH (Restrictions) OR/AND

c. Fenix Outdoor International's Chemical Guideline or the specific Guideline of any Fenix Outdoor entity

OR

Does violate legal labelling and information disclosure requirements,

We reserve the right to hold payment fully or partly until the delivered goods have been corrected, removed or taken-back by the supplier and goods, fulfilling our specifications and which have been approved are delivered.

In case of the violation of any of the above mentioned elements of our guideline, we reserve the full right to take other sanctions arising from the contract / or under other contractual and legal frameworks and agreements. This entails, *inter alia*, the right to receive compensation in the form of claimed damages equivalent to the so-called positive contractual interest for both the direct and the indirect damages, losses of sales, penalties by clients for non- or delayed deliveries and claims by authorities, fees, fines and other arising from third party demands as a result of the delivery of forbidden, unauthorized or harmful products or substances therein.

10. Chemical Restrictions Compliance Commitment

Every business partner confirms as follows:

We hereby confirm that we have taken note of and fully understand Fenix Outdoor's "Chemicals Guideline" and its appendices 1, 2, 3, and 4. We confirm that we will comply with the restrictions and provisions mapped out in this document and will enter into a dialogue should we deem the fulfillment difficult or impossible. We will ensure that our suppliers and partners will adhere to the requirements and we will inform them about Fenix Outdoor group's chemical policies. We are also taking note of the legislative changes or prospective changes and will discuss with our Fenix Outdoor partners possible developments and alternatives.

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Date Company Name

Signature

Name of Undersigning Company Stamp

11. Final Provisions

The provisions of this Guideline are binding for all business partners. I case of a dispute on test results or in case of findings that would constitute a violation of this Guideline, be it by third parties, authorities or internal investigations, both parties will strive to resolve the issue in the spirit of partnership and cooperation. This holds also true in case of publications issued by authorities, consumer groups or special-interest groups.

This Chemical Guideline was last revised on January 2023. The next review is scheduled for January 2024 or on an ad hoc basis should legal changes require us to do so.

11.1 Appendix 1. Pesticides, insecticieds and fungicides

Non exhaustive list

Aldrin	309-00-2
Azinphos ethyl	2642-71-9
Azinphos methyl	86-50-0
Bromophos-ethyl	4824-78-6
Captafol	2425-06-1
Carbaryl	63-25-2
Chlordane	57-74-9
Chlordecone	143-50-0
Chlordimeform	6164-98-3
Chlorfenvinphos	470-90-6
Chlorobenzilate	510-15-6
Clothianidin	210880-92-5
Coumaphos	56-72-4
Cyfluthrin	68359-37-5
Cyhalothrin, lambda	91465-08-6
Cypermethrin	52315-07-8
Deltamethrin	52918-63-5
Diazinon	333-41-5
Dichlorprop	120-36-5
Dicrotophos	141-66-2
Dieldrine	60-57-1
Dimethoate	60-51-5
Dinotefuran	165252-70-0
Endosulfan, alpha	959-98-8
Endosulfan, beta	33213-65-9
Endrin	72-20-8
Esfenvalerate	66230-04-4
Ethyl parathion	56-38-2
Fenvalerate	51630-58-1
Heptachlor	76-44-8
Heptachlor epoxide	1024-57-3
Imidacloprid (ISO)	105827-78-9 : 138261-41-3
Isodrin	465-73-6
Kelevan	4234-79-1
Lindane (ISO)	58-89-9
Malathion	121-75-5
MCPA	94-74-6
MCPB	94-81-5
Mecoprop	93-65-2
Methamidophos	10265-92-6
Methoxychlor	72-43-5
Methyl parathion	298-00-0
Mevinophos	7786-34-7
Mirex	2385-85-5
Monocrotophos	6923-22-4
o,p'-Dichlorodiphenyl-dichloroethane	53-19-0
o,p'-Dichlorodiphenyl-dichloroethylene	3424-82-6
o,p'-Dichlorodiphenyl-trichloroethane and its isomers - preparations containing DDT and its isomers	789-02-6
p,p'-Dichlorodiphenyldichloroethane	72-54-8
p,p'-Dichlorodiphenyl-dichloroethylene	72-55-9

p,p'-Dichlorodiphenyl-trichloroethane and its isomers - preparations containing DDT and its isomers	50-29-3
Perthane	72-56-0
Phosphamidon	13171-21-6
Profenophos	41198-08-7
Propetamphos	31218-83-4
Quinalphos	13593-03-8
Strobane	8001-50-1
Telodrin	297-78-9
Thiamethoxam	153719-23-4
Tiacloprid	111988-49-9
Toxaphene	8001-35-2
Tribufos (DEF)	78-48-8
Trifluralin - containing < 0.5 ppm NPDA	1582-09-8
Hexachlorocyclohexane, all isomers	608-73-1
Acetamipirid, its salts, esters and compounds	Several
Acetamipirid (ISO)	135410-20-7
Acetamipirid [2]	160430-64-8
Dinoseb, its salts, esters and acetate	Several
Dinoseb	88-85-7
2,4-Dichlorophenoxyacetic acid, salts, esters and compounds	Several
2,4-Dichlorophenoxy acetic acid	94-75-7
Nitenpyram, its salts, esters and compounds	Several
Nitenpyram [1]	150824-47-8
Nitenpyram [2]	120738-89-8
2,4,5-Trichlorophenoxyacetic acid, its salts, esters and compounds	Several
2,4,5-Trichlorophenoxy acetic acid	93-76-5

11.2 Appendix 2 additional list of banned Chlorinated organic solvents

Chlorinated Benzenes

Substance	CAS
Hexachlorobenzene	118-74-1
Monochlorobenzene	108-90-7
Pentachlorobenzene	608-93-5
Tetrachlorobenzenes, all isomers	Several
1,2,3,4-Tetrachlorobenzene	634-66-2
1,2,4,5-Tetrachlorobenzene	95-94-3
1,2,3,5-Tetrachlorobenzene	634-90-2
Trichlorobenzenes, all isomers	Several
1,2,3-Trichlorobenzene	87-61-6
1,2,4-Trichlorobenzene	120-82-1
1,3,5-Trichlorobenzene	108-70-3
Dichlorobenzenes, all isomers	Several
1,2-Dichlorobenzene	95-50-1
1,3-Dichlorobenzene	541-73-1
1,4-Dichlorobenzene	106-46-7

Chlorinated Toluenes

Chlorotoluene, unspecific mixture	25168-05-2
Pentachlorotoluene	877-11-2
Trichlorotoluenes, all isomers	Several
2,3,4-Trichlorotoluene	7359-72-0
2,3,6-Trichlorotoluene	2077-46-5
2,4,5-Trichlorotoluene	6639-30-1
2,4,6-Trichlorotoluene	23749-65-7
3,4,5-Trichlorotoluene	21472-86-6
a,a,a-Trichlorotoluene	98-07-7
Dichlorotoluenes, all isomers	Several
2,3-Dichlorotoluene	32768-54-0
2,4-Dichlorotoluene	95-73-8
2,5-Dichlorotoluene	19398-61-9
2,6-Dichlorotoluene	118-69-4
3,4-Dichlorotoluene	95-75-0
3,5-Dichlorotoluene	25186-47-4
Monochlorotoluenes, all isomers	Several
2-Chlorotoluene	95-49-8
3-Chlorotoluene	108-41-8
4-Chlorotoluene	106-43-4
Tetrachlorotoluenes, all isomers	Several
2,3,4,5-Tetrachlorotoluene	1006-32-2
2,3,4,6-Tetrachlorotoluene	875-40-1
2,3,5,6-Tetrachlorotoluene	1006-31-1
a,a,a,2-Tetrachlorotoluene	2136-89-2
a,a,a,4-Tetrachlorotoluene	5216-25-1

11.3 Appendix 3 additional list of banned Chlorinated phenols

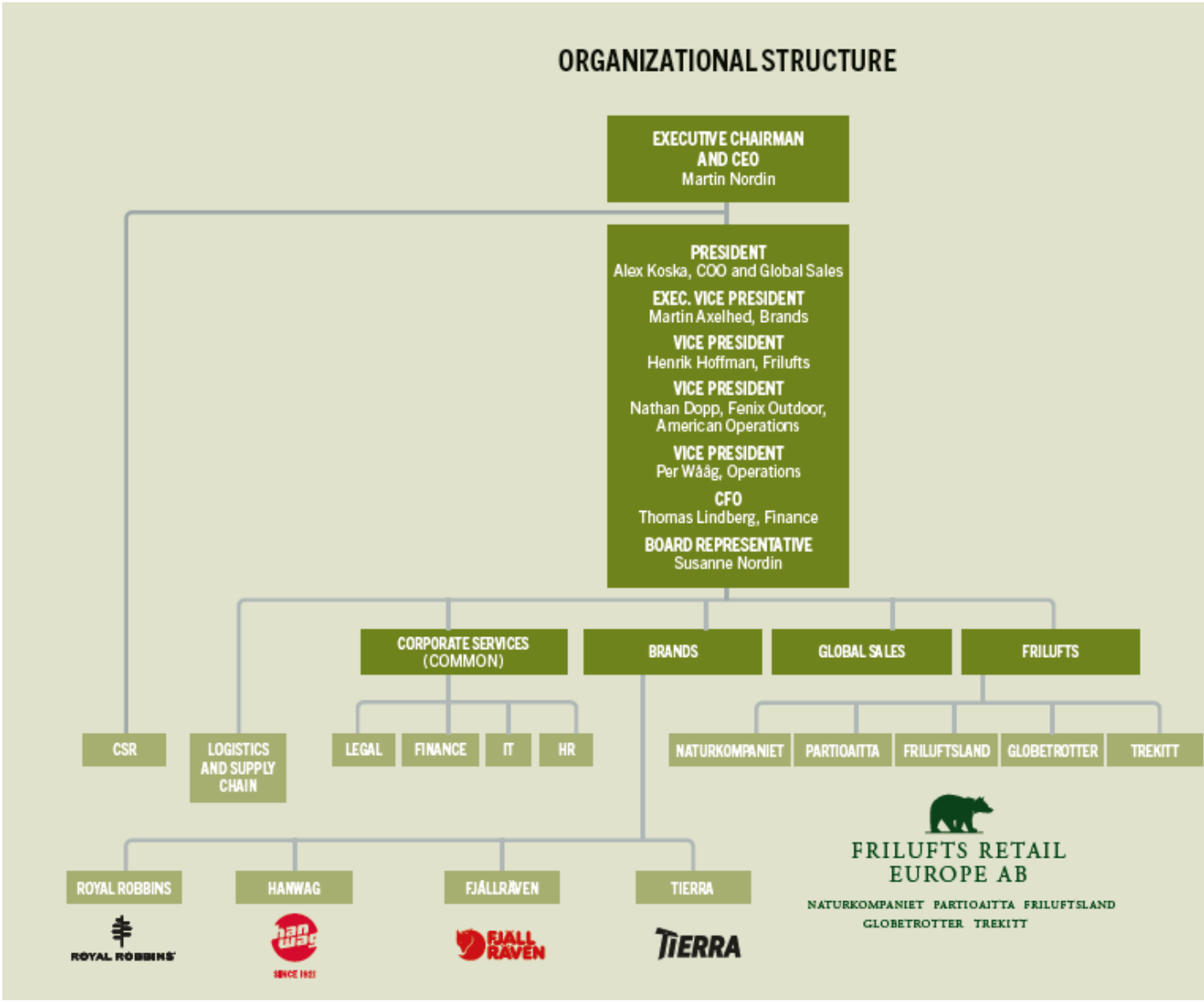
Substance	CAS
Tetrachlorophenol, its salts and compounds	25167-83-3
2,3,4,5-Tetrachlorophenol	4901-51-3
2,3,4,6-Tetrachlorophenol	58-90-2
2,3,5,6-Tetrachlorophenol	935-95-5
Trichlorophenol, all isomers	25167-82-2
2,3,4-Trichlorophenol	15950-66-0
2,3,5-Trichlorophenol	933-78-8
2,3,6-Trichlorophenol	933-75-5
2,4,5-Trichlorophenol	95-95-4
2,4,6-Trichlorophenol	88-06-2
3,4,5-Trichlorophenol	609-19-8
Pentachlorophenol, its salts, esters and compounds	Several
Pentachlorophenol	87-86-5
Mono- and Dichlorophenols	Several
Dichlorophenols, all isomers	25167-81-1
2,3-Dichlorophenol	576-24-9
2,4-Dichlorophenol	120-83-2
2,5-Dichlorophenol	583-78-8
2,6-Dichlorophenol	87-65-0
3,4-Dichlorophenol	95-77-2
3,5-Dichlorophenol	591-35-5
Monochlorophenols, all isomers	25167-80-0
2-Chlorophenol	95-57-8
3-Chlorophenol	108-43-0
4-Chlorophenol	106-48-9

11.4 Appendix 4 – Overview Table on chemicals in various use applications (Excel)

Group of substances	Substances	CAS No etc (reference to sections in the F	Typical occurence	Legal status	International test method	Limit of quantification (LOQ) in mg/kg	Comments
							General comment: Always ask a qualified and accredited laboratory of their analytical procedure and LOQ
Process related chemicals	Alkylphenol ethoxylates (APEO) and derivatives	7.1.1	Dispersant	REACH	ISO 18218-1,-2:2015 (APEO), EN ISO 21084:2019 (textile, AP)	10	
Process related chemicals	Aliphatic organic solvents	7.1.2	Solvent	VOC Directive, 1999/13/EC	panel method: SNV 195 651	no odor	
Process related chemicals	Aromatic organic solvents	7.1.3	Solvent	REACH :benzene, VOC directive 1999/13/EC	panel method: SNV 195 651	no odor	Benzene needs to be quantitatively analysed by GCMS since this substance is regulated in REACH
Process related chemicals	Chlorinated organic solvents	7.1.6	Solvent	REACH, Regulation (EC) No 2037/2000 ozone depleting	Not yet available	0,1	
Process related chemicals	Chromium VI (Cr + 6)	7.1.7	Mordant	REACH	Not yet available	preliminary 0,5	
Process related chemicals	Dimethylfumarate	7.1.12	Biocide	REACH	EN 17130:2019	preliminary 0,1	
Process related chemicals	DMFa (N,N-dimethylformamide)	7.1.14	Solvent	REACH	EN 17131:2019	see general comment	
Process related chemicals	N, N-dimethylacetamide (DMAC)	7.1.14	Solvent	REACH	Not yet available	preliminary 1,0	
Process related chemicals	N-Ethyl-2-pyrrolidone (NEP)	7.1.14	Solvent	REACH	Not yet available	preliminary 1,0	
Process related chemicals	N-methyl-2-pyrrolidone (NMP)	7.1.14	Solvent	REACH	Not yet available	preliminary 1,0	
Process related chemicals	2-methoxyethyl acetate	7.1.14	Solvent	REACH	Not yet available	preliminary 50	
Process related chemicals	Quinoline	7.1.16	Dyestuff precursor	REACH	Not yet available	see general comment	
Process related chemicals	Methylenediphenyl diisocyanate (MDI)	7.1.17	Precursor	REACH	EN 13130-8:2004	see general comment	May occur in elastane
Process related chemicals	Trichlorobenzenes	7.1.18	Solvent	REACH	EN 17137:2018	see general comment	
Process related chemicals	Cyclohexane	7.1.19	Solvent	REACH	Not yet available	preliminary 1000	
Process related chemicals	Solvents miscellaneous	7.1.20	Solvent	REACH	Not yet available	see general comment	
Process related chemicals	Tin organic compounds (Organostannic compounds)	7.1.21	Stabilizer, biocide	REACH	Not yet available	0,015	
Product-related chemicals	Allergenic disperse dyes	7.2.1	Dyestuff	REACH restriction proposal skin sensitizers	EN ISO 16373-1.2015,-2,-3:2014	preliminary 50	
Product-related chemicals	Azo dyes, degradable to carcinogenic arylamines	7.2.2	Dyestuff	REACH	EN ISO 14362-1, 2:2017	20	
Product-related chemicals	Other relevant dye stuff	7.2.2.1	Dyestuff	REACH, Toys directive 2009/48/EC	EN ISO 16373-1.2015,-2,-3:2014	50	
Product-related chemicals	Benzotriazols (UV-320, UV-327, UV-328 and UV-350)	7.2.3	Stabilizer	REACH	Not yet available	see general comment	
Product-related chemicals	Cadmium (Cd) and cadmium salts	7.2.5	Print	REACH	EN 16711-1,-2:2015	10 mg/kg (total content), (0.1 mg/kg (extractable content).	
Product-related chemicals	CMR, Carcinogenic, Mutagenic, Reproductive toxic dyestuffs	7.2.6	Dyestuff	REACH	EN ISO 16373-1.2015,-2,-3:2014	50	
Product-related chemicals	Chloroparaffins	7.2.7	Plastiziser, flame retardant	REACH, EU POP Regulation	Not yet available	100	
Product-related chemicals	Formaldehyde	7.2.10	Finishing	REACH	EN ISO 14184-1,-2:2011	16	
Product-related chemicals	Hexabromocyclododecan (HBCDD)	7.2.11	Flame retardant	EU POP Regulation	EN ISO 17881-1:2016	preliminary 1	
Product-related chemicals	Lead (Pb) and lead salts	7.2.12	Stabilizer	REACH	EN 16711-1,-2-3:2015	10 mg/kg (total content), 0.1 mg/kg (extractable content).	
Product-related chemicals	Mercury	7.2.13	Catalyst	REACH	EN 16711-1,-2:2015	10 mg/kg (total content), 0.02 mg/kg (extractable content).	
Product-related chemicals	Arsenic Compounds	7.2.15	Biocide (preservative)	REACH	EN 16711-1,-2:2015	see general comment	
Product-related chemicals	Other heavy metals	7.2.16	Catalyst	Toys directive 2009/48/EC, Food contact Regulation (EC) No 1935/2004	EN 16711-1,-2:2015	see general comment	
Product-related chemicals	Phthalate esters	7.2.17	Plasticiser	REACH	EN ISO 14389:2014	100	
Product-related chemicals	Polybrominated biphenyls (PBB) and Polybrominated diphenyl ethers (PBDE)	7.2.18	Flame retardant	REACH, EU POP Regulation	EN ISO 17881-1:2016	see general comment	
Product-related chemicals	Siloxane	7.2.20	DWR, softeners	REACH	Not yet available	see general comment	
Product-related chemicals	Tris(2-chlorethyl)phosphate (TCEP)	7.2.21	Plastiziser, flame retardant	REACH	EN ISO 17881-2:2016	5	
Product-related chemicals	Tri phenyl phosphates	7.2.23	Plastizier	REACH proposal	EN ISO 17881-2:2016	see general comment	
Product-related chemicals	Tri xylyl phosphate	7.2.24	Plastiziser, flame retardant	REACH	EN ISO 17881-2:2016	5	
Product-related chemicals	Perfluorooctane carboxylic acid (PFOA) and related substances	7.2.25	DWR	REACH	Not yet available	see general comment	
Product-related chemicals	Perfluorooctane sulfonate (PFOS and related substances)	7.2.26	DWR	EU POP Regulation	CEN/TS 15968:2010	0.1 µg/m2	
Product-related chemicals	Flourochemicals (PFCs)	7.2.27	DWR, membrane, impurity	REACH	Not yet available	see general comment	
Product-related chemicals	Cu-HDO (Bis-(N-cyclohexyldiazeniumdioxy)-copper)	7.2.28	Biocide	Biocide Regulation	Not yet available	see general comment	
Product-related chemicals	Guanidine, N,N'''-1,6-hexanediylbis(N'-cyano-),polymer with 1,6-heanediamine, hydrochloride (PHMB 1600; 1.8)	7.2.30	Biocide	Biocide Regulation	Not yet available		
Product-related chemicals	Pentachlorophenol (PCP) and all isomers of Tetrachlorophenols (TeCP)	7.2.31	Biocide	REACH	XP G 08-015	0,05	
Product-related chemicals	Permethrin	7.2.32	Biocide	Biocide Regulation	Not yet available	see general comment	
Product-related chemicals	Silver complexes in nano size (Ag +)	7.2.33	Biocide	Biocide Regulation	Not yet available	see general comment	
Product-related chemicals	Triclosan	7.2.35	Biocide	Biocide Regulation	EN 17134:2019	see general comment	

Please refer to separate file

11.5 Appendix 5 Structure



11.6 Appendix 6: Recommendations and Instructions for our Business Partners

The first major step toward better access to chemicals data is to know and document the company name and geographic location of your chemical suppliers, i.e., the companies that should have access to the chemical data that must be passed up the supply chain from the chemical supplier himself via the original “Tier 4” partner, to users of chemicals in the manufacture of product, to brands and ultimately also to the retailers.

Retailers and brands should maintain an inventory or map of the companies from which they purchase the final product, in order to establish a source of chemical data related to that product. In the case of a retailer this is a brand. In the case of a brand this is likely a garment cut/sew/finish facility or other intermediary.

Suppliers to brands should maintain an inventory for chemical suppliers for all chemicals purchased.

The second major step is to obtain chemical data. When communicating, be clear in specifying the types of information needed, how that information should be provided, how the information will be used, and consequences of not providing that information. Fenix Outdoor has mapped its expectations in the Chemical Guideline/RSL and expects business partners to adhere to these principles therein.

For chemical products that you are purchasing from your suppliers, use a Material Safety Data Sheet (MSDS) or SDS as a starting point to get an initial view of chemical ingredient information. If the ingredients listed on the MSDS do not total 100%, ask your supplier to provide complete ingredient information. You can use the template suggested in this document.

1. When selecting a raw materials supplier /chemical/ production process: ensure that it meets international standards. How can I know that those standards are met? Look for certifications (ISO 17095, ISO 14000, ISO 9000, bluesign).
2. When using a chemical: get a reconfirmation that the chemical does not contain any of the substances listed in the Chemical Guideline and that they did not play part in the production of the chemical. Should they have been part in any step of the production, get confirmation that the prescribed limits and thresholds are met.
3. Cross-test chemicals and YOUR product, delivered to the respective Fenix Outdoor entity for potential traces of chemicals, listed in the RSL. Select those chemicals you know (a) were/are part of a formulation or (b) were/are present in the product or (c) are used in any of your production places but for a different customer.
4. Ensure that cross-contamination and infection during your production cannot take place
5. Clean your machines and production line regularly.
6. Do not mix formulations, fabrics or production lines for Fenix Outdoor with those for any other given customer present at the same location at the same time.
7. Develop operational manuals and work instructions accordingly.
8. When testing materials – send reports to the respective Fenix entity, irrespective of the results immediately.
9. Produce regular reports (at least once half a year) on water usage/wastewater treatment and present test results on the wastewater samples. Do not “cheat” by diluting the waste water or sludge – look for a viable solution to get better results by actually being better.
10. Continue to develop a partnership with Fenix Outdoor by using open dialogue and engagement. If there is a problem, we will find a solution for that – together. Speak to us. Frequently.

11.6.1 Sample, customizable letter to suppliers requesting chemical information

Date

Name
Company
Address

Dear :

I am writing to request information on the following chemicals/materials/components/products that you are supplying to us/we are interested in purchasing from you:

Product 1
Product 2

This information is needed by Company (choose one or more of the following)

to help us comply with regulations that restrict the use of certain chemicals in our products

to help us comply with regulations that require disclosure of chemical content in our products

to support our company's program that restricts the use of certain chemicals in our products

to evaluate environmental, health and safety characteristics of chemicals prior to selection for use in our products

to ensure that all the chemical ingredients in our products meet our standards for safety

to support our participation in a green certification program, called *name of program*

to help us comply with a retailer customer's requirements to disclose chemical ingredients in our products

to support our company's voluntary program to disclose chemical ingredients to our customers

Please fill out the form below, sign and return to us.

If you have questions, need additional guidance, or would like to set up a non-disclosure agreement (NDA) or other mechanism to protect trade secret information, please contact _____ at _____

Sincerely,
_____

11.6.2 Sample, Customizable Material Information Form

Material Information Form

Material Name (INCI format, if possible):
CAS No:
Trade Name:
Producing Company:
Location of Manufacture:

For each product supplied, we request the information indicated below. Please check each item that is being provided, attach documents requested and sign at the bottom.

___ **Material Safety Data Sheet (MSDS)/Safety Data Sheet (SDS) - attach**

___ **Technical data sheet - attach**

___ **Certificate of analysis (COA) (if available) – attach**
___ **Chemical composition information – fill in information below**

Please copy and complete the table for each product that we are requesting information on. Target weights should total to 100%

List all intentionally-added[8] constituents in part 1 of the table below and impurities in part 2

Part 1. Intentionally-added constituents - if supplied material is the product of chemical synthesis, list feedstock materials and solvents			
Constituent name (INCI or equivalent)	**CAS number[9]/*EINECS or ELINCS*[10] /EC No[11]/ C.I.[12]**	**Weight % (minimum/ maximum/ target)**	**Constituent Function in Product***

[8] *Intentionally added* means anything deliberately utilized in the formulation of a material, part or product where its use in the formulation or continued presence in the finished article is desired to provide a specific characteristic, appearance or quality or where it is added in manufacturing and where some or all remains in the final product (e.g., a catalyst or solvent carrier). Intentionally added substances and materials can be introduced at any point in the supply chain -- a sub-tier supplier may add a material or substance to a material or part that a tier 1 supplier sells to a customer.
If supplied material is the product of chemical synthesis, feedstock materials and solvents should be listed.
[9] *CAS* (Chemical Abstract Service) registry number are unique numerical identifiers for chemical compounds, polymers, biological sequences, mixtures and alloys.
[10] The EINECS number is a registry number given to each chemical substance commercially available in the EU between January 1, 1971 and September 18, 1981. The inventory was created by Directive 67/548/EEC. As of September 19, 1981, the inventory has been replaced by the ELINCS. All new substances brought in to the European market are allocated an ELINCS number after their notification to the European Commission.
[11] EC-No, or European Commission number, is the seven-digit code that is assigned to chemical substances that are commercially available within the European Union.
[12] Colorants (dyes and pigments) are listed according to Colour Index Generic Names and Colour Index Constitution Numbers

*Constituent function can be: raw material/feedstock, preservative/anti-oxidant, solvent, catalyst, coating, finishing chemical, fragrance, UV filter, or other categories.

Part 2. Impurities – list impurities regardless of amount, including residues, catalysts, reaction by-products, residual solvent carriers, unreacted raw materials (e.g., monomers).			
Constituent name	**CAS number/*EINECS or ELINCS*/EC No/ C.I.**	**Maximum level in weight %, ppm or ppb**	**Alternatives (including explanation of why impurity is in the product)**

If composition is not completely listed, please indicate reason below

___ **Human Safety information**

If your company has conducted toxicological testing of chemicals/materials/components/products that you are supplying/that we are evaluating, **please attach robust summaries of the tests performed.**

Please provide test summary information for chemical/material/component/product as supplied in the table below.

Test	**Test Protocol**	**Date**	**Result**	**No information available[13]**
carcinogenicity				
mutagenicity				
reproductive toxicity				
developmental toxicity				
endocrine disruption potential				
acute toxicity				
chronic toxicity				
irritation potential				
sensitization potential				
other				
other				
other				
General Alternatives/Notes:				

[13] List reason for lack of information.

___ **Ecotoxicological information**

If your company has conducted ecotoxicological testing of chemicals/materials/components/products that you are supplying/that we are evaluating, *please attach robust summaries of the tests performed.*

Please provide test summary information for chemicals/materials/components/products as supplied in the table below.

Test	**Test Protocol**	**Date**	**Result**	**No information available[14]**
fish toxicity				
algae toxicity				
daphnia toxicity				
biodegradability				
bioaccumulation potential				
organohalogen content	**Yes, as follows:**		__ **No organohalogen content**	
metal content	**Yes, as follows:**		__ **No metal content**	
other				
other				
other				
General Alternatives/Notes:				

___ **Potential for human or environmental exposure to chemicals of concern**

Please provide the following information related to potential for human or environmental exposure.

In what form is the product shipped? (e.g., powder, liquid, gas, etc.)

In what form is the product used by the factory (e.g., dust form, liquid emulsion form, …)

How should excess product be disposed of?

Are there any special wastewater treatment requirements for this material?

[14] List reason for lack of information.

"As an authorized representative of the company, I verify that all responses provided above are correct, based upon our currently available data."

Name	Title
Location	
Date	Signature

11.7 Appendix 7 – EU Declaration of Conformity for Ceramic and enamel Food Contact Materials

Product name:

Product article no:

Product description:

Color(s):

☐ The product(s) supplied to Fenix Outdoor listed above are manufactured according to good manufacturing practice – Commission Directive EC 2023/2006

☐ The product(s) supplied to Fenix Outdoor listed above complies with EC 1935/2004 (materials intended to come into contact with foodstuffs)

☐ The product(s) supplied to Fenix Outdoor listed above complies with Council Directive 84/500/EEC

- Information about the compliance of substances subject to Purity Criteria:

-Information about the use of Dual-Use additives[1] in the material:

Pls refer to separate document

11.8 Appendix 8 – EU Declaration of Conformity for Plastic Food Contact Materials

Product name:

Product article no:

Product description:

Color(s):

☐ The product(s) supplied to Fenix Outdoor listed above are manufactured according to good manufacturing practice – Commission Directive EC 2023/2006

☐ The product(s) supplied to Fenix Outdoor listed above complies with EC 1935/2004 (materials intended to come into contact with foodstuffs)

☐ The product(s) supplied to Fenix Outdoor listed above complies with EU 10/2011 (Plastic materials intended to come in contact with foodstuffs)

Information about the compliance of substances used that are subject to restrictions:

(Substances used for which restrictions and/or specifications are set out in Annexes I and II of regulation 10/2011 and further amendments)

Individual Substance	Specific migration Limits (SMLs)	Test results (or estimated level of migration from calculation)

- Information about the compliance of substances subject to Purity Criteria:

Pls refer to separate document

11.9 Appendix 9 – EU Declaration of Conformity for Rubber Food Contact Materials

Product name:

Product article no:

Product description:

Color(s):

☐ The product(s) supplied to Fenix Outdoor listed above are manufactured according to good manufacturing practice – Commission Directive EC 2023/2006

☐ The product(s) supplied to Fenix Outdoor listed above complies with EC 1935/2004 (materials intended to come into contact with foodstuffs)

☐ The product(s) supplied to Fenix Outdoor listed above complies with Commission Directive 93/11/EEC (On the release of N-nitrosamines and N-nitrosatable substances from elastomer or rubber teats and soothers)

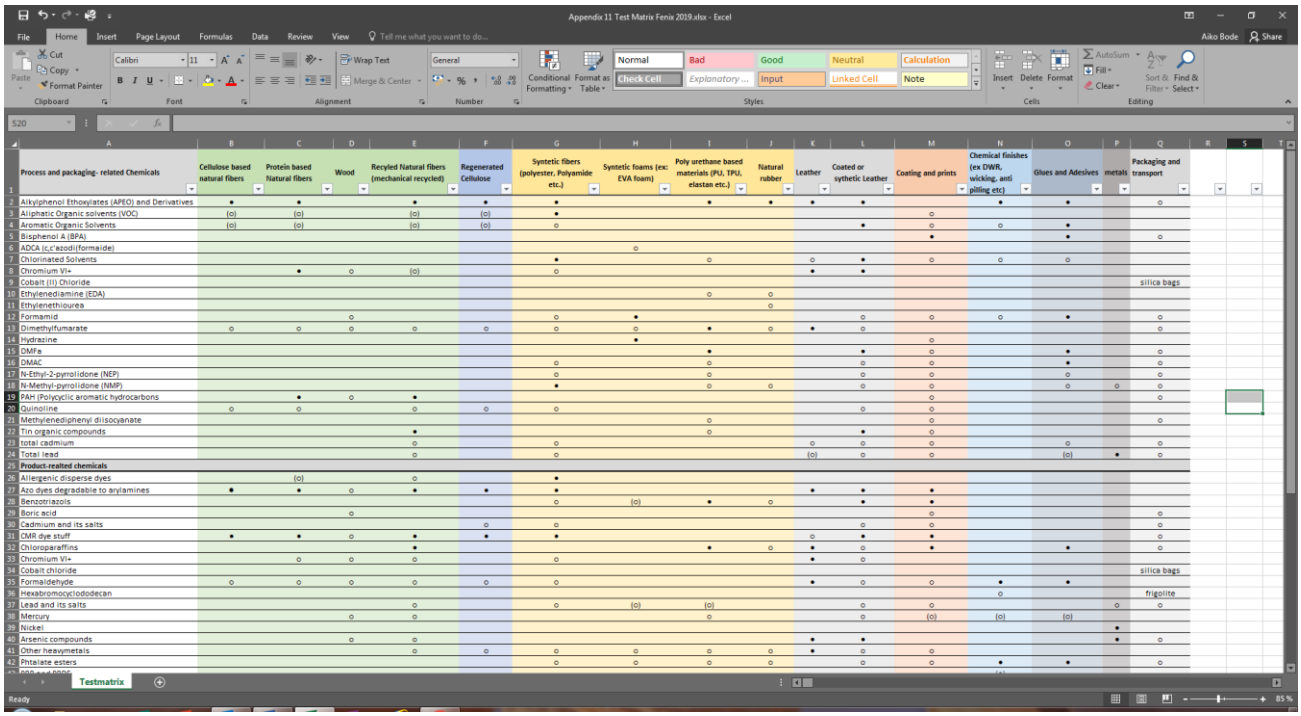
- Information about the compliance of substances subject to Purity Criteria:

-Information about the use of Dual-Use additives[1] in the material:

-Information about the use of functional Barrier:

Pls refer to separate document

11.10 Appendix 10 Recommended Test Matrix for Fenix Outdoor Int. entities (Excel)



Please refer to separate file