CHEMICALS RESTRICTION LIST FOR THE SHOE INDUSTRY

MARCH 2019

No	Substance	Occurrence	Properties	Analytical method	Legislation	Limit value (SSEI)
1	**Hexavalent chromium Cr6**	Cr6 may be present in chrome-tanned leather. It is not used but may be formed during certain process conditions and during ageing of the leather.	Allergenic and suspected to be carcinogenic.	ISO 17075 (Leather) EN 14362 (Textile)	EG 1907/2006 REACH Annex XVII (REACH Restricted Substance List) Also included in the Candidate List (REACH).	< 3 mg/kg
2	**Azo dyes**	Dyeing of textile, PU and leather.	Certain azo dyes can release carcinogenic arylamines. The limit values (SSEI) only applies to these azo dyes.	ISO 17234 EN 14362	EG 1907/2006 REACH Annex XVII (REACH Restricted Substance List). Also included in the Candidate List (REACH).	< 30 mg/kg
3	**Phtalates**	Used as softener in plastics.	Phthalates is a group of substances with similar properties. May be toxic for reproduction. Easily taken up by the body.	ISO/TS 16181 EN ISO 14389 (Only textile.)	EG 1907/2006 REACH Candidate List (REACH).	< 0.005%

4	**Formaldehyde**	May be present in leather, textile and PU. May be used in connection with dyeing.	Toxic, allergenic and carcinogenic. Working environment problems due to irritating odour.	ISO 17226 (leather) ISO 14184 (textile)	EG 1907/2006 REACH Candidate List (REACH).	< 75mg/kg
5	**PVC**	PVC may be used in soles and as upper material in shoes. Sport shoes may for instance contain PVC.	During incineration chlorinated carbohydrates may be formed. Stabilizers and softeners such as phthalates may be released from PVC.	FTIR		Below detection limit.
6	**Highly fluorinated substances (PFOS and PFOA)**	Highly fluorinated substances are used for impregnation of textiles and leather. Highly fluorinated substances are used to create smooth surfaces resistant to water and dirt for in particular textiles. Examples of products are shoes and water-resistant clothes.	PFOS (perfluoroctane sulfonate) is a PBT-substance which is persistent, bio-accumulative and toxic. PFOS does not degrade in nature but is accumulated in nature. PFOS is toxic, is highly toxic and accumulates in living organisms, PFOA (perfluorooctanoic acid) is also persistent in nature and do not biodegrade. PFOA is also reproductive dysfunctional and suspected carcinogenic for humans.	CEN 15968 (PFOA) alt. LC/MS	EG 1907/2006 REACH Annex XVII Candidate list (REACH) Also in POPS-Regulation.	< 1µg/m2

7	**Brominated flame retardants**	Flame retardants are used to slow or prevent the start of fire in a material. Textile and furniture in public areas, safety clothing, building insulation and electronic products are examples of products that may contain flame retard-ants.	Some flame retardants are toxic both to health and environment but also suspected to be mutagenic. Flame retardants may be re-leased during manufacturing or when products are dismissed. Flame retardants is resistant in nature and are accumulated in organisms and are toxic. They may be transported long distances in air.	GC-MS	EG 1907/2006 REACH annex XVII Candidate List. Also in POPS Regulation.	Below detection limit.
8	**Metals (total)**	**Cadmium** is a metal which can be found in batteries, pigments, electronic. old plastic and as pollutant in food, tobacco, manure and fuel.	Cadmium is very toxic for the environment and may give osteoporosis. kidney problems and cancer.	EN 1122 (Cadmium) EN 16711		Cadmium < 75 mg/kg

8	**Metals (total)**	**Lead** is used in car batteries, weights for fishing, ammunition and in electronic. Lead can also be mixed with other metals to facilitate the manufacturing of parts where the format is important such as keys. In plastic, addition of lead can be used to make the material more durable and add some colour.	Lead is a very toxic chemical which is not allowed to use in some goods. Lead may affect the development of the brain and the nervous system. Children and foetus are in particular vulnerable. The use of Lead is forbidden in petrol, paint, toys. electrical products and jewellery.			Lead < 60 mg/kg
8	**Metals (total)**	**Nickel** is a metal used in tools and jewellery. There are rules how much nickel that is allowed to be released from different products. Piercings, earrings, necklaces, bracelets, zippers, snap buttons, belt buckles, keys and metals in clothing are products that may contain nickel.	Nickel: The public is exposed to Nickel by air, food and direct contact with material containing Nickel. Allergic contact dermatitis is common and more frequent for women than men. Symptoms for nickel-allergy is skin rash and itching. For some working groups, long exposure to nickel may cause sneezing, asthma or cancer in sinuses or lungs.			Nickel (extractable.) < 4mg/kg

8	**Metals (total)**	**Antimony** is a silvery, lustrous metal with low electrical and thermal conductivity. These properties make Antimony suitable for a number of applications. The most important use is as flame retardant. Antimony is also used in mascara and batteries, plastics, rubber, glass, paper and paint.	Antimony Long-time exposure can cause problems with irritation in eyes, lung problems, heart and vomiting, loss of hair, headache, depression, diarrhoea and stomach problems. Long-term exposure may cause cancer.			Antimony < 500mg/kg
8	**Metals (total)**	**Mercury** is used in laboratory equipment such as thermometers and diffusion pumps. Mercury can also be used in mercury lamps given a special blue-white light. Other uses are as pesticides, dental amalgam, batteries and as catalysts.	Mercury and all their com-pounds are very toxic. Poisoning can result from mercury vapor inhalation, mercury ingestion or absorption through the skin. Mercury can be accumulated in the body. Poisonous levels can easily be formed in air and it is therefore important that Mercury is stored in securely sealed containers. Unfortunately, many lakes and watercourses are contaminated by methylmercury.			Mercury < 0.5 mg/kg

9	**Short-chained chloro-paraffines (SCCP)**	Used as flame retardant and softener in plastic and rubber. May be present as additives in paints, jointing compounds, plastics and rubber.	Short-chained paraffins are very toxic to aquatic organisms. They are stable and persistent compounds that bioaccumulate in the environment.	GC-MS LC-MS	Forbidden according to Regulation (EG) 850/2004 and Regulation (EU 2015/2030). Also included in the Candidate List (REACH) and POPS- Regulation.	Below detection limit.
10	**Phenoletoxylates (APEO, NPEO)**	Used as detergent in dyes and lack. May be present in textiles, PU and leather with water-repellent properties.	Oestrogenic effects (may induce changes in the reproductive organs).	EN ISO 18254	EG 1907/2006 REACH annex XVII) Also included in the Candidate List (REACH).	The total sum of PHENOL ETHOXYLATES may not exceed 100mg/kg.
11	**Chlorphenols (PCP, TeCP, TriCP etc.)**	Chlorophenols are commonly used as pesticides, herbicides and disinfectants. Can be used as preservative in latex, wood and leather.	Short term exposure of high doses may cause damage to the liver, kidneys, blood, lungs and the immune system. Long term exposure of low doses may cause damage on the liver, kidneys, blood and immune system.	CEN/TR 14823 (Wood) alt. ISO 17070 (Leather).	EG 1907/2006 REACH annex XVII (Restricted Substance List). Also included in the Candidate List (REACH).	Below detection limit.

12	**DMFU (Dimethylfumarate)**	Dimethylfumarate may be used as biocide.	Low concentrations of DMFU may cause eczema and also allergy.	ISO 16186	EU Decision 2009/251/EG REACH annex XVII (REACH Restricted Substance List. Also included in the Candidate List (REACH).	< 0.1 mg/kg (per product)
13	**PAH (Polyaromatic hydrocarbons)**	PAH may be detected as pollutants in rubber and flexible plastics.	Polyaromatic hydrocarbons are hydrocarbons composed of multiple aromatic rings. PAH are carcinogenic compounds.	GC-MS LC-MS HPLC-DAD	1907/2006/REACH annex XVII (Restricted Substance List). Also in the Candidate List (REACH).	Each separate PAH < 1 MG/KG. Sum of PAH < 10 mg/kg.
14	**Organotins (organic tincompounds)**	Organic tin-compounds are used as preservatives and stabilizors. Textile products that contain polymers may therefore contain organic tin compounds.	Triorganic compound have dangerous health and environmental properties. They may affect the immune system on repeated exposure. In addition, they may be toxic to reproduction or mutagenic.	CEN ISO/TS 16179	EG 1907/2006 REACH bilaga XVII (Restricted Substance List). Also included in the Candidate List (REACH).	Tributyltin (TBT) < 0.025 mg/kg Monobutyltin (MBT) < 1.0 mg/kg Dibutyltin (DBT) < 1.0 mg/kg Dioctyltin (DOT) < 1.0 mg/kg

15	**DMFA (Dimethylfor-mamide)**	DMFA is a solvent and used in the production of acrylic fibres and plastic. DMFA may also be used during the production of synthetic leather, fibres and sur-face coatings.	DMFA is toxic for humans and therefore all skin contact and inhalation should be avoided. DMFA is suspected to be cancerogenic and also suspected to have reproductive effects. Exposure to DMFA may give liver damage.	GC-MS & SNV1956	EG 1907/2006 DMF se REACH annex XVII (Restriction Substance List). DMFA is also included in the Candidate List (REACH).	< 300 mg/kg