

MANGO

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Product Health & Safety Standard

Manual of hazardous substances
on garments and accessories

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Mango standard on harmful substances (p-rsl)

PARAMETERS	APPLIED LIMITS	AREA OF APPLICATION	INTENDED LIMITS (*)	TESTING METHOD
Alkylphenols (1)	100 ppm	In textiles and leather	0.2 ppm	Solvent Extraction, GC-MS (AP) & LC-MS (APEO) analysis.
Antimony	30 ppm	In polyester textiles	1.0 ppm	ISO 105-E04 acid perspiration extraction & ICP analysis.
Arsenic	No detection (0.2 ppm)	All products	0.2 ppm	ISO 105-E04/ acid perspiration extraction & ICP analysis. (Extractable)
Azo dyes (Arylamines) (2)	20 ppm	All products	0.1 ppm	EN 14362-1:2012. ISO 17234-1:2010; ISO 17234-2:2011 -> Leather. EN 14362-3-GB/T 17592- GB/T 23344 (4-aminobenzene)
Benzenes and toluene (3)	1.0 ppm	In polyester, silk and wool textiles	0.1 ppm	Solvent Extraction & GC-MS analysis.
Biocides (4)	No detection (1.0 ppm)	In natural fiber textiles	1.0 ppm	Extraction/ Derivation followed by GC-MS analysis.

Mango standard on harmful substances (p-rsl)

PARAMETERS	APPLIED LIMITS	AREA OF APPLICATION	INTENDED LIMITS (*)	TESTING METHOD
Cadmium	5 ppm	In textile products excluding synthetic leather	1.0 ppm	EN 1122-2001/ Acid Digestion followed by ICP analysis. (Total)
	75 ppm	In synthetic and natural leather and metal products		
Chrome (VI)	3 ppm	In leather products	1.0 ppm	DIN 53314-1996 UNE EN 17075:2017
Dimethyl Fumerate (DMFU)	No detection (0.1 ppm)	In textile and leather	0.1 ppm	Solvent Extraction & GC-MS analysis.
Disperse dye allergens (5)	50 ppm	In synthetic fiber textiles	1.0 ppm	DIN 54231
Formaldehyde	16 ppm	In all textile products and leather for babies	5 ppm	Textiles: JIS L1041: 2000/ EN ISO 14184-1:2011 Leather: ISO 17226-1
	75 ppm	In all textile products and leather in direct skin contact		
	300 ppm	In all textile products and leather not direct skin contact		
Lead	5 ppm	In textile products excluding synthetic leather	1.0 ppm	EN 1122-2001/ Acid Digestion followed by ICP analysis. (Total)
	90 ppm	In synthetic and natural leather and metal products		
Mercury	No detection (0.006 ppm)	All products	0.006 ppm	ISO 105-E04 acid perspiration extraction & ICP analysis. (Extractable)

Mango standard on harmful substances (p-rsl)

PARAMETERS	APPLIED LIMITS	AREA OF APPLICATION	INTENDED LIMITS (*)	TESTING METHOD
Nickel	No detection (0.2 µg/cm ² /week)	IMetal pierced into human body	0.2 µg/cm ² /week	UNE-EN 12472:2006 + A1: 2010 UNE-EN 1811:2011 + A1 :2015 UNE-EN 16128:2011
	0.5 µg/cm ² /week	For other metal products		
Organic tin compounds (TBT, DBT, TPhT, DOT)	No detection (0.5 ppm)	In textile products	0.5 ppm	Extraction/Derivation followed by GC-MS analysis.
Pesticides (6)	No detection (0.05 ppm)	In natural fiber textiles and leather	0.05 ppm	Extraction/ Derivation followed by GC-MSMS and HPLC-MSMS analysis.
PFCs (Perfluorocarbons)	1 µg/m ² PFOS	In textile products	0.001 ppm	Solvent Extraction & HPLC-MSMS and GM-MS-Cl analysis.
	Others:(7) 0.1 ppm			
Phenolic compounds (PCP, TeCP)	0.05 ppm	Textile and leather for babies	0.02 ppm	Solvent Extraction & GC-MS analysis.
	0.5 ppm	Textile and leather > 3 years old		
Phthalates (8)	One: 500 ppm Sum ≤ 1000 ppm	PVC items, flexible plastic and plastisol printing	0.3 ppm	CEN-ISO-TS 16181, TS 16181 EN 14372UNE-EN ISO 14389:2014 Solvent Extraction & GC-MS analysis.

Mango standard on harmful substances (p-rsl)

PARAMETERS	APPLIED LIMITS	AREA OF APPLICATION	INTENDED LIMITS (*)	TESTING METHOD
Polycyclic Aromatic Hydrocarbons (9)	1 ppm	Synthetic fiber, Plastic and coated materials in direct skin contact	0.5	Solvent Extraction & GC-MSMS analysis.
	0.5 ppm	Synthetic fiber, Plastic and coated materials for babies in direct skin contact		
Short chain chlorinated paraffin	No detection (100 ppm)	In textile and leather	0.3 ppm	Solvent Extraction & GC-MSMS analy.
Solvent residues	Bencene: 5 ppm Others(10): 3000 ppm	In textile and leather	Bencene: 5 ppm Others: 3000 ppm	Solvent Extraction & GC-MS analysis.
Soluble heavy metals	Sb: 30 ppm As: 0.2 ppm Hg: 0.02 ppm Ba: 1000 ppm Se: 500 ppm Cr: 60 ppm Cd: 1 ppm Pb: 1 ppm	In textile, leather, plastics and coatings	0.001 ppmSb: 30 ppm As: 0.2 ppm Hg: 0.02 ppm Ba: 1000 ppm Se: 500 ppm Cr: 60 ppm Cd: 1 ppm Pb: 1 ppm	UNE-EN 16711-2:2016

Mango standard on harmful substances (p-rsl)

- (1) OP, NP, OP(EO)1-2, NP(EO)2-18.
- (2) 4-Aminobiphenyl, Benzidine, 4-Chlor-o-toluidine, 2-Naphthylamine, o-Aminoazotoluene, 2-Amino-4-nitrotoluene, p-Chloraniline, 2,4-Diaminoanisole, o-Anisidine, 3,3'-Dichlorobenzidine, 2,4,5-Trimethylaniline, 3,3'-Dimethoxybenzidine, 2,4-Toluylenediamine, 3,3'-Dimethylbenzidine, 3,3'-Dimethyl-4,4'-diaminodiphenylmethane, p-Cresidine, 4,4'-Methylene-bis-2-chloraniline, 4,4'-Oxydianiline, 4,4'-Thiodianiline, o-Toluidine, 2,4-Xilidine, 2,6-Xilidine, 4,4'-Diaminodiphenylmethane, 4-Aminoazobenzene, 4-Chloro-o-toluidinium chloride, 2-Naphthylammoniumacetate, 2,4-diaminoanisole sulphate, 2,4,5-trimethylaniline hydrochloride.
- (3) Dichlorobenzenes, Trichlorobenzenes, Tetrachlorobenzenes, Pentachlorobenzenes, Hexachlorobenzenes, Chlorotoluenes, Dichlorotoluenes, Trichlorotoluenes, Tetrachlorotoluenes, Pentachlorotoluenes.
- (4) According to list, includes: triclosan, BIT, Kathon, IPBC, DTTB.
- (5) Disperse: Blue1, Blue3, Blue7, Blue26, Blue35, Blue102, Blue106, Blue124, Brown1, Orange1, Orange3, Orange37, Orange76, Red1, Red11, Red17, Yellow1, Yellow3, Yellow9, Yellow39, Yellow49. Basic: Red 9, Violet 3. Quinoline.
- (6) According to list, includes: 2,4,5-T, 2,4-D, Azinophosmethyl, Azinophosethyl, Aldrine, Bromophos-ethyl, Captafol, Carbaryl, Chlordane, Chlordimeform, Chlorfenvinphos, Coumaphos, Cyfluthrin, Cyhalothrin, Cypermethrin, DEF, Deltamethrin, DDD, DDE, DDT, Diazinon, Dichlorprop, Dicrotophos, Dieldrine, Dimethoate, Dinoseb and salts, Endosulfan, Endrine, Esfenvalerate, Fenvalerate, Heptachlor, Heptachloroepoxide, Hexachlorobenzene, Hexachlorocyclohexane, Lindane, Malathion, MCPA, MCPB, Mecoprop, Metamidophos, Methoxychlor, Mirex, Monocrotophos, Parathion, Parathion-methyl, Phosdrin/Mevinphos, Propethamphos, Profenophos, Quinalphos, Toxaphene, Trifluralin.
- (7) PFOA, PFNA, PFBS, 4:2 FTOH, 6:2 FTOH, 8:2 FTOH, 10:2 FTOH, POSF, FOSA, PFHxS, PFHxA.
- (8) DEHP, BBP, DBP, DIBP, DNOP, DINP, DNHP, DIHP, DMEP, DIPP, DPP, DHP.
- (9) Benzo[a]pyrene, Benzo[e]pyrene, Benzo[a]anthracene, Crysene, Benzo[b]fluoranthene, Benzo[j]fluoranthene, Benzo[k]fluoranthene, Dibenzo[a,h]
- (10) N-methyl-2-pyrrolidone (NMP, N,N-dimethylacetamide (DMAC), N,N-dimethylformamide (DMF) anthracene.

Brominated and chlorinated flame retardants and Chlorinated solvents cannot be used during the production process

CHROME (VI)

Was banned in the European Union in May 2015 under the REACH regulation (3ppm).

PHthalates

Are subject to authorization only European Union under the REACH regulation but from February 2015 they are forbidden unless there is a specific authorization previously granted (DEHP, BBP, DBP, DIBP).

(*) Applied limits/Intended limits:

Applied limits are the limits of presence allowed by Mango and Intended limits are the ones that we want to get progressively since our commitment is the elimination of all hazardous chemicals on the final product and also in the whole supply chain. For this reason, it is very important that you inform your own suppliers about the standard and limits. For your information, these limits are based on the results obtained after so many years testing so they will be easy to achieve always on the basis of a mutual cooperation between you and us.

00. Definitions

Accessories	Intended limit	P-RSL
<p>Bags, belts, footwear, wallets, textile hats/caps, socks, sleepwear, gloves, foulards, scarves, etc.</p>	<p>The lowest limit we want to get progressively to achieve the elimination of all hazardous chemicals on the final product and also in the whole supply chain.</p>	<p>Product-Restricted Substances List.</p>
Applied limit	Leather	Synthetic fibers
<p>The maximum limits of presence allowed by Mango.</p>	<p>This only includes natural leather for any kind of product.</p>	<p>Polyester, acetate, triacetate, acrylic, polyamide, polyurethane, polyvinylchloride and polyethylene.</p>
Babies	Metal Products	Synthetic leather
<p>Aged less than 3 years old.</p>	<p>Include imitation jewelry (bracelets, earrings, necklaces, etc.) and metal fittings (zippers, snaps, buttons, etc.).</p>	<p>Artificial leather, mainly polyurethane (PU) and polyvinylchloride (PVC), and sometimes polyethylene (PE).</p>
Children	Natural fibers	Textiles
<p>Aged less than 12 years old.</p>	<p>Cotton, wool, silk, linen, jute, ramie, etc.</p>	<p>Include natural and synthetic fibers and artificial leather, on any kind of product (garments, footwear, handbags, bracelet, etc.).</p>
Hair accessories	Products	Underwear
<p>Metallic and non-metallic hair accessories for example hairband, hairclips, hairgrip, hair tie.</p>	<p>All kind of articles (garments and accessories).</p>	<p>Panties, body suits, socks, briefs, swimsuit, pyjamas, etc.</p>

01. Alkylphenols

1.1. What are they?

This group of chemicals includes substances such as: propylphenol, butylphenol, amilphenol, heptylphenol, octylphenol, nonylphenol, dodecylphenol etc. Alkylphenols are used as emulsifiers, wetting agents, detergent auxiliaries in scouring and bleaching processes. Some derivatives have been used as additives in plastics (e.g. in PVC or modified polystyrene).

1.2. Toxicology

These compounds degrade in the environment in order to produce alkylphenols, which are persistent and bioaccumulative toxic substances that may have harmful effects on estrogenic activity and represent a risk factor to lymphocytes, complications in the placenta and in the umbilical cord. Furthermore, they may be toxic in aquatic organisms and upset the sexual development in other types of organisms.

1.3. Legislation

COUNTRY

European Union

Switzerland

REGULATION

REACH: Regulation No.1907/2006 Annex XVII

REACH: European Commission- 14 January, 2016- Regulation in the Official Journal of the EU amending Annex XVII to Regulation (EC) No. 1907/2006 (REACH)

Chemical Risk Reduction Ordinance, ORRChem 18 May 2005

MAXIMUM LIMIT ON THE FINAL PRODUCT

1000 ppm (in textiles and leather products)

After 3 Feb. 2021: 100 ppm in textile and leather products

1000 ppm (in textiles and leather products)

01. Alkylphenols

1.4. Mango limits and application area

Mango does not allow the presence of alkylphenols in any kind of textile and leather product over 100 ppm. [Intended limit: 0.2 ppm]

1.5. Test method

Own method based on extraction with methanol, solvent and detection quantification concentration by HPLC chromatography.

1.6. Substances analyzed

NAME	CAS NUMBER	ACRONYM
Nonylphenol ethoxilate, Octylphenol ethoxilate	Various	NPEO (2-18), OPEO (2-18)
Nonylphenol ethoxilate, Octylphenol ethoxilate	Various	NPEO (1-2), OPEO (1-2)
Nonylphenol, Octylphenol	Various	NP, OP

02. Azo dyes (Arylamines)

2.1. What are they?

These are chemical substances which may form part of the structure of certain dyes - azo dyes - and which, under certain conditions, may be released and absorbed by the human body through perspiration and saliva. The Azo dyes commonly used as colorants for textile and leather dyeing.

2.2. Toxicology

The azo group is susceptible to reducing giving rise to the formation of aromatic rings (arylamines), some of which are proven to be potentially carcinogenic.

2.3. Legislation

COUNTRY	REGULATION	MAXIMUM LIMIT ON THE FINAL PRODUCT
Austria	Ordinance Chemikalien - Verbotverordnung 2003; and later amendments.	30 ppm (leather and textiles)
China	GB 18401-2010 and GB 20400-2006 (Leather and skins)	30 ppm (leather) 20 ppm (textiles)
Egypt	E.S.S. 7266-4/2011	30 ppm (leather and accessories) 20 ppm (textile and shoes)
European Union	REACH: Regulation No. 1907/2006 Annex XVII and Annex XIV	30 ppm (leather and textiles)

02. Azo dyes (Arylamines)

2.3. Legislation

COUNTRY	REGULATION	MAXIMUM LIMIT ON THE FINAL PRODUCT
Finland	“Decree on Maximum Amounts of Formaldehyde in Certain Textile Products (210/1988)”	30 ppm (textiles for babies < 2 years)
Indonesia	Decree of Minister of Industry No. 07/M-IND/PER/2/2014 for the compulsory implementation of Indonesian National Standard (SIN) 7617:2013	20 ppm (all products)
Lithuania	“Hygiene Norm HN 96:2000 (Hygiene Standards and Regulations)”	20 ppm (in textiles for babies < 2 years old)
Poland	“ROZPORZĄDZENIE RADY MINISTRÓW z dnia 19 października 2001 r. w sprawie bezpieczeństwa i znakowania produktów w_ ókiennicznych. (Dz. U. z dnia 17 grudnia 2001 r.) (Regulation on Safety and Textile Marking)”	20 ppm (textiles for babies)
Serbia	Rules on bans and restrictions of production, placing on the market of chemicals that pose an unacceptable risk to human health and the environment. (“Sl. glasnik RS”, br. 89/2010, 71/2011, 90/2011 i 56/2012)	30 ppm (others) 20 ppm (leather and textiles)
South Korea	Safety Quality Mark Act (KC Mark)	30 ppm (textiles)
Spain	Order 2277/2003, modification of Royal Decree 1406/1989	30 ppm (leather and textiles)

02. Azo dyes (Arylamines)

2.3. Legislation

COUNTRY	REGULATION	MAXIMUM LIMIT ON THE FINAL PRODUCT
Taiwan	CNS 15503 General requirements for safety of children's products; CNS 15290 Safety of textiles (General requirements)	30 ppm (textiles)
Turkey	Decree Turkey. "Communique on Audit of Certain Textile and Clothing Products"	30 ppm (textiles)
Vietnam	Circular No. 32/2009-TT-BTC Ministry of Industry and Trade	30 ppm (textiles)
Japan	Ministerial Ordinance (No. 124) July 2015	30 ppm (textil and leather products)
Saudi Arabia	Certificate of Conformity for Exports to Saudi Arabia (SASO CoC)	30 ppm (textil and leather products)
Switzerland	Chemical Risk Reduction Ordinance, ORRChem 18 May 2005	30 ppm (leather and textiles)

02. Azo dyes (Arylamines)

2.4. Mango limits and application area

Mango does not allow concentrations higher than 20 ppm in any kind of product.
[Intended limit: 0.1 ppm]

Mango does not allow concentrations higher than 20 ppm in any kind of product.
[Intended limit: 0.1 ppm]

2.5. Test method

- EN 14362-1:2012 -> Textile
- ISO 17234-1:2011 -> Leather
- ISO 17234 (4-aminoazobenzene) -> Leather
- EN 14362-1 and 2 (4-aminoazobenzene) -> Textile

- EN 14362-1:2012 -> Textile
- ISO 17234-1:2011 -> Leather
- ISO 17234 (4-aminoazobenzene) -> Leather
- EN 14362-1 and 2 (4-aminoazobenzene) -> Textile

2.6. Substances analyzed

NAME

CAS NUMBER

4 – Aminobiphenyl

92-67-1

Benzidine

92-87-5

4 – Chloro – o – Toluidine

95-69-2

2 – Naphthylamine

91-59-8

o – Aminoazotoluene

97-56-3

2 – Amino – 4 – Nitrotoluene

99-55-8

02. Azo dyes (Arylamines)

2.6. Substances analyzed

NAME	CAS NUMBER
p – Chloraniline	106-47-8
2-4 Diaminoanisole	615-05-4
4,4' – Diaminodiphenylmethane	101-77-9
3,3' – Dichlorobenzidine	91-94-1
3,3' – Dimethoxybenzidine	119-90-4
3,3' – Dimethylbenzidine	119-93-7
3,3' – Dimethyl –4,4'Diaminodiphenylmethane	838-88-0
p – Cresidine	120-71-8
4,4' – Methylene – Bis – (2-Chloroaniline)	101-14-4
4,4' – Oxydianiline	101-80-4

02. Azo dyes (Arylamines)

2.6. Substances analyzed

NAME	CAS NUMBER
4,4' - Thiodianiline	139-65-1
o - Toluidine	95-53-4
2,4 - Toluyldiamine	95-80-7
2,4,5- Trimethylaniline	137-17-7
2.4 - Dimethylaniline (=2.4 - Xylidine)	95-68-1
2.6 - Dimethylaniline (=2.6 - Xylidine)	87-62-7
2 - Methoxyaniline	90-04-0
4 - Aminoazobenzene	60-09-3
4,4' - Methylene - Bis - (2-Chloroaniline)	101-14-4

03. Benzenes and toluenes

3.1. What are they?

These are chemical substances formed by chlorine atoms and are generally of low environmental biodegradability. They may also be used in the dyeing processes of fibers as a transporter vehicle in order to ensure good penetration of the dye molecules in the fiber. They are basically found in certain polyester, wool and/or silk items.

3.2. Toxicology

Some of these compounds are potentially carcinogenic and endocrine disruptors.

3.3. Legislation

COUNTRY	REGULATION	MAXIMUM LIMIT ON THE FINAL PRODUCT
European Union	REACH: Regulation No. 1907/2006 Annex XVII	1000 ppm (all products)
Germany	ChemVerbotsV (only 1,2,4-Trichlorobenzene)	1000 ppm (all products)
Switzerland	Chemical Risk Reduction Ordinance, ORRChem 18 May 2005	1000 ppm (all products)

03. Benzenes and toluenes

3.4. Mango limits and application area

Mango does not accept over 1 ppm of benzenes and toluenes in polyester, silk and wool textiles.
[Intended limit: 0.1 ppm]

3.5. Test method

Own method based on extraction with acetone concentration with solvent and detection quantification by gas chromatography with mass (GC-MS) detector.

3.6. Substances analyzed

FAMILIES

Dichlorobenzenes

Trichlorobenzenes

SUBSTANCES

1,2-Dichlorobenzene

1,3- Dichlorobenzene

1,4- Dichlorobenzene

1,2,3- Trichlorobenzene

1,2,4- Trichlorobenzene

1.2.5- Trichlorobenzene

CAS NUMBER

95-50-1

541-73-1

106-46-7

87-61-6

120-82-1

120-82-1

03. Benzenes and toluenes

3.6. Substances analyzed

FAMILIES	SUBSTANCES	CAS NUMBER
Trichlorobenzenes	1,3,4- Trichlorobenzene	120-82-1
	1,3,5- Trichlorobenzene	108-70-3
Tetrachlorobenzenes	1,2,3,4- Tetrachlorobenzene	634-66-2
	1,2,3,5- Tetrachlorobenzene	634-90-2
	1,2,4,5- Tetrachlorobenzene	95-94-3
Pentachlorobenzene	Pentachlorobenzene	608-93-5
Hexachlorobenzene	Hexachlorobenzene	118-74-1
Chlorotoluenes	2- Chlorotoluene	95-49-8
	3- Chlorotoluen	108-41-8
	4- Chlorotoluene	106-43-4
	α- Chlorotoluene	100-44-7

03. Benzenes and toluenes

3.6. Substances analyzed

FAMILIES	SUBSTANCES	CAS NUMBER
Dichlorotoluenes	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
	a,a- Dichlorotoluene	98-87-3
Trichlorotoluenes	2,3,4- Trichlorotoluene	7359-72-0
	2,3,5- Trichlorotoluene	56961-86-5
	2,3,6- Trichlorotoluene	2077-46-5
	2,4,5- Trichlorotoluene	6639-30-1
	a,a,a- Trichlorotoluene	98-07-7

03. Benzenes and toluenes

3.6. Substances analyzed

FAMILIES	SUBSTANCES	CAS NUMBER
Trichlorotoluenes	α ,2,4- Trichlorotoluene	94-99-5
	α ,2,6- Trichlorotoluene	2014-83-7
	α ,3,4- Trichlorotoluene	102-47-6
Tetrachlorotoluenes	α , α , α ,2- Tetrachlorotoluene	2136-89-2
	α , α , α ,4- Tetrachlorotoluene	5216-25-1
Pentachlorotoluenes	2,3,4,5,6- Pentachlorotoluene	877-11-2

04. Biocides

4.1. What are they?

These are chemical substances characterized by their anti-bacterial and anti-fungicidal properties (microbial reproduction is inhibited). They are mainly found in textiles made from natural fibers.

4.2. Toxicology

Its adverse effects include corrosivity, acute toxicity, etc., in addition to its impact on the environment.

4.3. Legislation

COUNTRY	REGULATION	MAXIMUM LIMIT ON THE FINAL PRODUCT
European Union	Directive 98/8/EC of the European Parliament and of the Council of 16 February 1998 concerning the placing of biocidal products on the market (the establishment at Community level of a list of active substances which may be used in biocidal products)	1 ppm (in natural fibers)
Japan	Guide to the Law for the Control of Household Products containing Harmful Substances (3/1999)	1 ppm (in natural fibers)

04. Biocides

4.4. Mango limits and application area

No detection (1 ppm) in textile products manufactured with natural fibers.
[Intended limit: 1.0 ppm]

4.5. Test method

Own method based on extraction with methanol/acetone, a subsequent acetylation and detection quantification by gas chromatography with mass (GC/MS) detector.

4.6. Substances analyzed

NAME	CAS NUMBER	ACRONYM
Phenol, 5 - chloro - 2 - (2, 4 - dichlorophenoxy)	3380-34-5	Triclosan
1, 2 - benzisothiazol - 3 (2H) - one	2634-33-5	BIT
2 - octyl - 2H - isothiazol - 3 - one	26530-20-1	Kathon 893
3 - iodo - 2 - propynyl butylcarbamate	55406-53-6	IPBC
Timiperone	57648-21-2	DTTB

05. Chrome (VI)

5.1. What are they?

Chrome (VI) is a heavy metal that can be present in dyes and chemicals auxiliaries used in the leather industries. These chemicals auxiliaries are used in leather tanning.

5.2. Toxicology

Inhaling high levels of chrome (VI) may cause irritation to the nose, runny nose, ulcers and perforations in the nasal bone. Ingesting large quantities of chrome (VI) may produce stomach upsets and ulcers, convulsions, liver and kidney failure and even death. Skin contact with certain chrome (VI) compounds may cause skin ulceration. Some people are extremely sensitive to chrome (VI) and chrome (III). Allergic reactions consistent with reddening or serious swelling of the skin have been described.

5.3. Legislation

COUNTRY	REGULATION	MAXIMUM LIMIT ON THE FINAL PRODUCT
Egypt	E.S.S 6535/2008 and 7322/2011 (Leather), E.S.S 3571/2006 and 7322/2011(Leather in footwear), E.S.S 3572 and 7322/2011 (Leather in sports footwear)	Forbidden (detection limit 3 ppm) in all leather products
European Union	COMMISSION REGULATION (EU) No 301/2014 of 25 March 2014	Forbidden (detection limit 3 ppm) in all leather products in contact with the skin.
Germany	German Law: “§30 of the Food and Commodities Law (LMBG) (1/1/96)” - 1996	Forbidden (detection limit 3 ppm) in all leather products

05. Chrome (VI)

5.3. Legislation

COUNTRY	REGULATION	MAXIMUM LIMIT ON THE FINAL PRODUCT
Turkey	Turkish Ministry of Economy. Official Gazette 29236. Ministry of Economy, Product Safety and Surveillance Audit Department on June 29, 2017	Footwear: 3 ppm in all accessible leather parts
South Korea	Safety Quality Mark Act (KC Mark) Annex 1 (Household Textile Products) and Annex 3 (Leather Products)	3 ppm (leather products) 0,5 ppm (Infants leather products < 36 months)
Arabia Saudi	Certificate of Conformity for Exports to Saudi Arabia (SASO CoC)	3 ppm (leather products)
Switzerland	Chemical Risk Reduction Ordinance, ORRChem 18 May 2005	3 ppm (leather products)

05. Chrome (VI)

5.4. Mango limits and application area

The presence of chromium (VI) in leather products is prohibited over 3 ppm.
[Intended limit: 1.0 ppm]

5.5. Test method

DIN 53314-1996
UNE EN 17075:2008
ISO 17075:2017

5.6. Substances analyzed

NAME	CAS NUMBER
Chrome (VI)	7440-43-3

Remark: CHROME (VI) was banned in the European Union in May 2015 under the REACH regulation (3ppm).

06. Dimethyl fumarate (DMFU)

6.1. What are they?

Dimethyl Fumarate is a chemical substance traditionally used in the agriculture industry and, nowadays, in the textile industry as well as a biocide to prevent the formation of mold in wood and leather products, during storage and/or transport in humid climates. Dimethyl Fumarate can be found in textiles made from natural fibers and in leather and imitation leather products.

6.2. Toxicology

This substance is a potent skin sensitizer which may cause serious skin problems.

6.3. Legislation

COUNTRY	REGULATION	MAXIMUM LIMIT ON THE FINAL PRODUCT
European Union	Directive European 2009 / 251 / CE. Regulation 1907/2006 (REACH) Annex XVII	0.1 ppm (textile and leather products)
Serbia	Rules on bans and restrictions of production, placing on the market of chemicals that pose an unacceptable risk to human health and the environment. ("Sl. glasnik RS", br. 89/2010, 71/2011, 90/2011 i 56/2012)	0.1 ppm (textile and leather products)
South Korea	Safety Quality Mark Act (KC Mark) Annex 1 (Household Textile Products) and Annex 3 (Leather Products)	0.1 ppm (Baby and children < 13 years)
Switzerland	Chemical Risk Reduction Ordinance, ORRChem 18 May 2005	0.1 ppm (textile and leather products)

06. Dimethyl fumarate (DMFU)

6.4. Mango limits and application area

No detection (0.1 ppm) in all textile products and leather.
[Intended limit: 0.1 ppm]

6.5. Test method

ISO/PRF TS 16186. Method Extraction with acetone and quantification with gas chromatography and mass detector.

6.6. Substances analyzed

NAME

Dimethyl Fumarate

CAS NUMBER

624-49-7

07. Disperse dyes allergens

7.1. What are they?

They are a type of dye not ionic and insoluble in water used in the textile industry in dyeing and printing processes, basically in products made of acetate, polyester and polyamide.

7.2. Toxicology

When they come into direct contact with the skin, these dyes may produce allergic reactions.

7.3. Legislation

COUNTRY	REGULATION	MAXIMUM LIMIT ON THE FINAL PRODUCT
Germany	Germany -§ 30 of the German Food and Commodities Law (Disperse dyes) (LMBG) (1/1/96)	Forbidden (detection limit 50 ppm in synthetic fibers)
South Korea	Safety Quality Mark Act (KC Mark)	Forbidden (detection limit 50 ppm in synthetic fibers)

07. Disperse dyes allergens

7.4. Mango limits and application area

Mango does not accept this substance over 50 ppm in synthetic fibers: polyester, acetate, triacetate, acrylic, polyamide, PU, PE, etc.
[Intended limit: 0.1 ppm]

7.5. Test method

DIN 54231:2005 – Textiles – Detection of Disperse Dyestuffs.

7.6. Substances analyzed

DYES	CAS NUMBER
DISPERSE BLUE 1	2475-45-8
DISPERSE BLUE 3	2475-46-9
DISPERSE BLUE 7	3179-90-6
DISPERSE BLUE 26	3860-63-7
DISPERSE BLUE 35	12222-75-2
DISPERSE BLUE 102	12222-97-8
DISPERSE BLUE 106	12223-01-7

07. Disperse dyes allergens

7.6. Substances analyzed

DYES**CAS NUMBER**

DISPERSE BLUE 124

61951-51-7

DISPERSE BROWN 1

23355-64-8

DISPERSE ORANGE 1

2581-69-3

DISPERSE ORANGE

730-40-5

DISPERSE ORANGE 37

13301-61-6

DISPERSE ORANGE 76

13301-61-6 (51811-42-8)

DISPERSE RED 1

2872-52-8

DISPERSE RED 11

2872-48-2

DISPERSE RED 17

3179-89-3

DISPERSE YELLOW 1

119-15-3

DISPERSE YELLOW 3

2832-40-8

07. Disperse dyes allergens

7.6. Substances analyzed

DYES	CAS NUMBER
DISPERSE YELLOW 9	6373-73-5
DISPERSE YELLOW 39	12236-29-2
DISPERSE YELLOW 49	54824-37-2

08. Formaldehyde

8.1. What are they?

Formaldehyde is a volatile chemical widely used in the textile and leather industries as preservative for vegetable and animal raw materials, anti-wrinkling and anti-shrinking agent for cotton products, dyeing and printing fixative and leather tanning agent.

8.2. Toxicology

This substance is strongly allergenic through contact (skin, eyes), inhalation and digestion. Furthermore, it is potentially a human carcinogenic agent and is also associated with allergic asthma. This chemical substance can be found in leather goods and textiles acting as:

- Biocide for the preservation of textile materials.
- Colour fixer and printer.
- Component in urea, melamine and phenolic resins (anti-crease and anti-shrinkage).
- Cross-linking agent in printing pastes for the fixing of certain dyes.

8.3. Legislation

COUNTRY	REGULATION	MAXIMUM LIMIT ON THE FINAL PRODUCT
Austria	BGB I 1990/194: Formaldehyd verordnung, §2, 12/2/1990 If detected 1500 ppm by mass, have to be labeled as follows: "Contains formaldehyde. Washing this garment is recommended prior to first time use in order to avoid irritation of the skin"	1500 ppm (Textile in direct skin contact)
China	GB 18401-2010 and GB 20400-2006	20 ppm (textiles and leather for babies < 2 years) 75 ppm (articles in direct skin contact) 300 ppm (articles not direct skin contact and leather)

08. Formaldehyde

8.3. Legislation

COUNTRY	REGULATION	MAXIMUM LIMIT ON THE FINAL PRODUCT
Egypt	Egyptian Standard Specification. E.S.S. 7266-4/2011	20 ppm (for children clothes) 75 ppm (articles in direct skin contact) 300 ppm (articles not direct skin contact)
European Union	Regulation 1907/2006 (REACH) Annex XVII	0.1% by weight (in all products)
Finland	Finland - Decree on maximum amounts of formaldehyde in certain textile products (Decree 210/1988)	30 ppm (textiles for babies < 2 years) 100 ppm (articles in direct skin contact) 300 ppm (articles not direct skin contact)
Indonesia	Decree of Minister of Industry No. 07/M-IND/PER/2/2014 for the compulsory implementation of Indonesian National Standard (SIN) 7617:2013	Forbidden (16 ppm textiles for babies)
Japan	"Guide to the Law for the Control of Household Products Containing Harmful Substances"	Forbidden (16 ppm) (textiles for babies < 2 years) 75ppm (textiles in direct skin contact) 300 ppm (articles not direct skin contact)
Lithuania	Lithuanian Hygiene Norm HN 96:2000	20 ppm (textiles for babies < 2 years) 75 ppm (articles in direct skin contact) 300 ppm (articles not direct skin contact)
Netherlands	07/2000, Commodities Act- Regulation on formaldehyde in Textiles. Textiles in direct skin contact must be labeled "Wash before first use" if they contain more than 120 ppm formaldehyde and the product must not contain more than 120 ppm after wash	120 ppm (Textiles in direct skin contact)

08. Formaldehyde

8.3. Legislation

COUNTRY	REGULATION	MAXIMUM LIMIT ON THE FINAL PRODUCT
New Zealand	Product Safety Policy Statement	100 ppm (articles in direct skin contact) 300 ppm (articles not direct skin contact)
Norway	“Regulations Relating to Restrictions on the Manufacture, Import, Export, Sale and Use of Chemicals and Other Products Hazardous to Health and the Environment (Product Regulations)” 2004	30 ppm (textiles for babies < 2 years) 100 ppm (articles in direct skin contact) 300 ppm (articles not direct skin contact)
Poland	“ROZPORZĄDZENIE RADY MINISTRÓW z dnia 19 października 2001 r. w sprawie bezpieczeństwa i znakowania produktów wókienniczych. (Dz. U. z dnia 17 grudnia 2001 r.) (Regulation on Safety and Textile Marking)”	20 ppm (textiles for babies) 150 ppm (articles in direct skin contact) 300 ppm (articles not direct skin contact)
Russia	GOST R 50729-95 “Textile - Maximum Allowable Concentrations of Free Formaldehyde”	Forbidden (16 ppm) (textiles for babies < 1 year) 75 ppm (for underwear and bed linen) 300 ppm (articles in direct skin contact) 1000 ppm (articles not direct skin contact)
South Korea	Quality Management and Safety Control of Industrial Products Act	20 ppm (textiles for babies) 75 ppm (textiles in direct skin contact) 300 ppm (articles not direct skin contact)
Thailand	TIS 2231-2548 (2005)	75 ppm (articles in direct skin contact) 300 ppm (articles not direct skin contact) 120 ppm (Textiles in direct skin contact)

08. Formaldehyde

8.3. Legislation

COUNTRY	REGULATION	MAXIMUM LIMIT ON THE FINAL PRODUCT
Vietnam	Circular 32/2009/TT BCT	Forbidden (16 ppm) (textiles for babies) 75 ppm (articles in direct skin contact) 300 ppm (articles not direct skin contact)
Saudi Arabia	Certificate of Conformity for Exports to Saudi Arabia (SASO CoC)	Forbidden (16 ppm) (textiles for babies) 75 ppm (articles in direct skin contact) 300 ppm (articles not direct skin contact)
Switzerland	Chemical Risk Reduction Ordinance, ORRChem 18 May 2005	0.1% by weight (in all products)

08. Formaldehyde

8.4. Mango limits and application area

Mango does not allow the presence in textile products (including printings and plastisol) and leather over the following concentrations: 16 ppm for babies 75 ppm in direct skin contact 300 ppm with no direct skin contact.
[Intended limit: 5 ppm]

8.5. Test method

- EN ISO 14184-1:2011-> Textile
- EN ISO 17226-1/2:2008 -> Leather
- Japan Law 112(JIS 1041:2011) -> Textile
- Chinese GB/T 2912 -> Textile

8.6. Substances analyzed

NAME	CAS NUMBER
Formaldehyde	50-00-00

09. Heavy metals

What are they?

All heavy metals can be absorbed by the natural fibers through the soil.

9.1. Antimony

Heavy metal with CAS number 7440-36-0 which can be found in some finishing processes as a fire retardant and other polyester and polyurethane catalysts.

9.1.1. Toxicology

Heavy metal with CAS number 7440-36-0 which can be found in some finishing processes as a fire retardant and other polyester and polyurethane catalysts.

9.1.2. Legislation

COUNTRY

Egypt

Taiwan

REGULATION

“Egyptian Standard Specification. E.S.S. 7322/2011” children less than 36 months footwear, size 26 and less

CNS 15503 (children products up to age 3 years)

MAXIMUM LIMIT ON THE FINAL PRODUCT

60 ppm (polyester footwear)

60 ppm (polyester footwear)

09. Heavy metals

9.1.3. Mango limits and application area

Mango does not accept over 5 ppm of antimony in polyester textiles.
[Intended limit: 1.0 ppm]

9.1.4. Test method

Test method of extractable metals in textile: sweat acid extraction and subsequent detection-quantification by ICP-MS.

9.2. Arsenic

Heavy metal with CAS number 7440-38-2 which can be found in natural fibers due to the use of biocides and pesticides. It can be also found in metal accessories.

9.2.1. Toxicology

Acute exposure to arsenic may cause fever, anorexia, liver enlargement or even death. Chronic exposure may cause poisoning of the nervous system, liver failure and peripheral vascular illness, which may cause gangrene in the lower limbs. It can be applied as a pesticide action on textiles.

09. Heavy metals

9.2.2. Legislation

COUNTRY	REGULATION	MAXIMUM LIMIT ON THE FINAL PRODUCT
Egypt	"Egyptian Standard Specification. E.S.S. 7322/2011" children less than 36 months footwear, size 26 and less	25 ppm (Babies products)
European Union	Regulation (CE) No 1907/2006 (REACH) and updates. Annex XIV	Forbidden (Used with authorization)
Finland	"Government Decree on persistent organic substances (735/2002)"	Forbidden (0.06 ppm in all products)
Japan	"Law for the Control of Household Products containing Harmful Substances" (underwear)	30 ppm (underwear)
Poland	ROZPORZĄDZENIE RADY MINISTRÓW z dnia 19 października 2001 r. w sprawie bezpieczeństwa i znakowania produktów wókienniczych. Dz. U. z dnia 17 grudnia 2001 r.) (Regulation on safety and textile marking)	Forbidden (0.06 ppm in textiles in direct skin contact)
Switzerland	Chemical Risk Reduction Ordinance, ORRChem 18 May 2005	Forbidden (0.06 ppm in all products)
Taiwan	CNS 15503 General requirements for safety of children's products	25 ppm (children < 14 years in all products)

09. Heavy metals

9.2.3. Mango limits and application area

The maximum limit is not detection (0.06 ppm) in any kind of product. [Intended limit: 0.06 ppm]

9.2.4. Test method

Test method of extractable metals in textile: sweat acid extraction and subsequent detection-quantification by ICP-MS.

9.3. Cadmium

Heavy metal with number CAS 7440-43-9, can be found in plastic materials (PVC, polyurethane, polyethylene, etc.) and in the cadmium plating of metal accessories and painted metals.

9.3.1. Toxicology

Poisonous if ingested, inhaled or injected. Can be carcinogenic and may cause tumours. It may have a harmful effect on reproduction. At high temperatures may give off toxic gases. This substance when accumulates in the bones with pathological effects such as osteoporosis and rickets, among others. Finally, it is linked to hypertension and heart disease.

9.3.2. Legislation

COUNTRY

Austria

Egypt

REGULATION

Ordinance of February 18th, 1994 on Bans and Restrictions of Cadmium and its Compounds, Including White Lead, Federal Law Gazette No 855/1993

"Egyptian Standard Specification. E.S.S. 7266-4/2011" children less than 36 months footwear, size 26 and less

MAXIMUM LIMIT ON THE FINAL PRODUCT

100 ppm (all textile products)
250 ppm (metals used in Cadmium plating)

Forbidden (5 ppm footwear for babies)

09. Heavy metals

9.3.2. Legislation

COUNTRY	REGULATION	MAXIMUM LIMIT ON THE FINAL PRODUCT
European Union	Regulation (CE) No 1907/2006 (REACH) and updates. Annex XVII	100 ppm (jewelry and hair accessories)
China	GB 21550-2008 (artificial leather) GB/T 33271-2016 (Infants wear)	75 ppm (artificial leather) 100 ppm (fabrics)
Denmark	Statutory Order No.1199 of December 23th, 1992 on the Prohibition of Sale, Import and Manufacture of Cadmium Containing Products	75 ppm (all products)
Netherland	Cadmium Decree 1999 (Chemical Substances Act)	100 ppm (all products)
Poland	ROZPORZĄDZENIE RADY MINISTRÓW z dnia 19 października 2001 r. w sprawie bezpieczeństwa i znakowania produktów wókienniczych. (Dz. U. z dnia 17 grudnia 2001 r.) (Regulation on safety and textile marking)' and "The Ordinance of the Council for Ministers on Safety and Labelling of Textile Products of 19 October 2001"	Forbidden (5 ppm in direct contact) 100 ppm (plastic products, PVC and accessories)
Serbia	Rules on bans and restrictions of production, placing on the market of chemicals that pose an unacceptable risk to human health and the environment. ("Sl. glasnik RS", br. 89/2010, 71/2011, 90/2011 i 56/2012)	100 ppm (jewelry and hair accessories)

09. Heavy metals

9.3.3. Mango limits and application area

Mango limits are:
 - 5 ppm in textile products excluding synthetic leather
 - 75 ppm for synthetic and natural leather and metal products
 [Intended limit: 1.0 ppm]

9.3.4. Test method

Test method of extractable metals in textile: sweat acid extraction and subsequent detection-quantification by ICP-MS.

9.4. Lead

Heavy metal with number CAS 7439-92-1 can be found in certain pigments.

9.4.1. Toxicology

Lead compounds can be absorbed by inhalation and ingestion. Metallic lead can also be absorbed through the skin although in very small quantities. The health effects of lead are irrespective in the different ways of entry: inhalation or ingestion. The main target of lead toxicity is the nervous system, and it can also produce weakness in the fingers and wrists, anemia and, with high levels of exposure, damage to the brain, kidneys and sperm producing organs.

9.4.2. Legislation

COUNTRY

California

REGULATION

“The Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65)”

MAXIMUM LIMIT ON THE FINAL PRODUCT

30 ppm (all textiles with PVC)
 200 ppm (zippers, drawstrings, snaps, buttons)
 90 ppm (all accessories with PVC and leather)
 300 ppm (other accessories except Zirconia, glass or rhinestone)

09. Heavy metals

9.3.2. Legislation

COUNTRY	REGULATION	MAXIMUM LIMIT ON THE FINAL PRODUCT
Sweden	Section 3 of the Ordinance (1998:944) on Prohibitions Etc. in Connection with Handling, Importing and Exporting Chemical Products	Forbidden (5 ppm in all textile products)
Taiwan	CNS 15290 for all textile products and textile accessories	Forbidden (5 ppm in all textile products)
Brasil	Official Journal of the Federal Government of Brazil, Ordinance No. 43 of 22 January, 2016	After 26 January 2019- Jewellery 100 ppm
Saudi Arabia	Certificate of Conformity for Exports to Saudi Arabia (SASO CoC)	100 ppm on plastic, metal and coatings

09. Heavy metals

9.4.2. Legislation

COUNTRY	REGULATION	MAXIMUM LIMIT ON THE FINAL PRODUCT
Denmark	Danish statutory ordinance, "Statutory Order No. 1012 of November 13, 2000 on prohibition of import and marketing of products containing lead"	100 ppm (in all products)
Egypt	"Egyptian Standard Specification. E.S.S. 7266-4/2011"	100 ppm (textiles for children)
European Union	Regulation (CE) No 1907/2006 (REACH) and updates. Regulation (EU) 2015/628. Annex XVII	500 ppm (jewelry and hair accessories) 500 ppm on all articles that may be placed on the mouth of children
Poland	The Ordinance of the Council for Ministers on Safety and Labelling of Textile Products of October 19th 2001	Forbidden (5 ppm for products in direct contact with the skin)
South Korea	Korea Certification Mark (KC Mark, for more information review Appendix II, Annex 1 and Annex 3)	90 ppm (textiles for children) 300 ppm (metal, rubber or plastic)
Switzerland	Ordinance on the Reduction of the Risks linked to the Use of Particularly Dangerous Substances, Preparations and Objects (Ordinance on the Reduction of Risks linked to Chemical Products (ORRChim) Draft for consultation of The Swiss Federal Council)	100 ppm (all products)
USA	'Consumer Product Safety Improvement Act (CPSIA)', enacted in 2008 modified by H.R. 2715	90 ppm (since August 14th 2009) for Lead in paints and surface coatings 90 ppm children articles < 12 years

09. Heavy metals

9.4.2. Legislation

COUNTRY	REGULATION	MAXIMUM LIMIT ON THE FINAL PRODUCT
China	GB/T 33271-2016	90 ppm on Infants wear
Brasil	Official Journal of the Federal Government of Brazil, Ordinance No. 43 of 22 January, 2016	After 26 January 2019: Jewellery 300 ppm
Saudi Arabia	Certificate of Conformity for Exports to Saudi Arabia (SASO CoC)	90 ppm (Children jewelry)

09. Heavy metals

9.4.3. Mango limits and application area

Mango limits are:
 - 5 ppm in textile products excluding synthetic leather
 - 75 ppm for synthetic and natural leather and metal products
 [Intended limit: 1.0 ppm]

9.4.4. Test method

Test method of extractable metals in textile: sweat acid extraction and subsequent detection-quantification by ICP-MS.

9.5. Arsenic

Heavy metal with number CAS 7439-97-6 is used as a preservative for textiles.

9.5.1. Toxicology

The immediate effects that may occur on inhalation are: stinging throat pain, headache, nausea, loss of appetite and muscle weakness. Through eye and skin contact: reddening and irritation. Through ingestion: vomiting, diarrhea, loss of appetite and muscle weakness. Prolonged or repeated exposure may cause damage to the kidneys, brain and nervous system.

9.5.2. Legislation

COUNTRY

European Union

REGULATION

Regulation (CE) No 1907/2006 (REACH) and updates. Annex XVII

MAXIMUM LIMIT ON THE FINAL PRODUCT

Forbidden (0.006 ppm in coated of textiles)

09. Heavy metals

9.5.2. Legislation

COUNTRY	REGULATION	MAXIMUM LIMIT ON THE FINAL PRODUCT
Japan	Japanese Law 112, "Law for the Control of Household Products Containing Harmful Substances (1973)" and "The Guide to Law for the Control of Household Products Containing Harmful Substances (3/1999)"	1 ppm (textile products in direct skin contact)
Poland	ROZPORZĄDZENIE RADY MINISTRÓW z dnia 19 października 2001 r. w sprawie bezpieczeństwa i znakowania produktów wókienniczych. (Dz. U. z dnia 17 grudnia 2001 r.) (Regulation on safety and textile marking)	Forbidden (0.006 ppm in textiles in direct contact with the skin)
Switzerland	Ordinance on Risk Reduction related to Chemical Products (ORRChim) of May 18th 2005 as amended', beyond the EU Restrictions of the Directive 76/769/EEC, 89/101/EC	Forbidden (0.006 ppm in all products)

09. Heavy metals

9.5.3. Mango limits and application area

Not detection (0.006 ppm) in all products.
[Intended limit: 0.006 ppm]

9.5.4. Test method

Test method of extractable metals in textile: sweat acid extraction and subsequent detection-quantification by ICP-MS

10. Nickel

10.1. What are they?

Nickel (CAS No.: 7440-02-0) is a silver metallic element which is malleable and has excellent resistance to corrosion and which, among other things, possesses properties that allow it to be used frequently in combination with other metals, in particular iron, copper, chrome and zinc, in order to produce mixtures known as “alloys”.

Nickel can be found in the plating of clothing accessories such as buckles, snap fasteners, automatic buttons, zips and jean buttons among others.

10.2. Toxicology

Allergic reactions are one of the most common and principal toxic effects of nickel on human health. The most common reaction is skin reddening in the area of contact with the metal, although in some people dermatitis occurs in areas away from the area of contact, often producing eczema on the hands.

10.3. Legislation

COUNTRY	REGULATION	MAXIMUM LIMIT ON THE FINAL PRODUCT
Egypt	ESS 7266-4/2011 concerning the safety and Health criteria and labeling for textile products (clothes)	0.5 µg/cm ² /week (textile products and metallic parts)
European Union	Regulation (CE) no 1907/2006 (REACH) and updates. Annex XVII	0.5 µg/cm ² /week (metal products) 0.2 µg/cm ² /week (pierced parts of the human body)

10. Nickel

10.3. Legislation

COUNTRY	REGULATION	MAXIMUM LIMIT ON THE FINAL PRODUCT
Norway	"The Regulations No. 922 of June 1th 2004, as amended"	0.5 µg/cm ² /week (textile products and metallic parts)
Serbia	Rules on bans and restrictions of production, placing on the market of chemicals that pose an unacceptable risk to human health and the environment. ("Sl. glasnik RS", br. 89/2010, 71/2011, 90/2011 i 56/2012)	0.5 µg/cm ² /week (metal products) 0.2 µg/cm ² /week (pierced parts of the human body)
South Korea	fety Quality Mark Act (KC Mark) Annex 1 (Household Textile Products) and Annex 3 (Leather Products)	0.5 µg/cm ² /week (baby and children metal products)
Saudi Arabia	Certificate of Conformity for Exports to Saudi Arabia (SASO CoC)	0.5 µg/cm ² /week (metal products) 0.2 µg/cm ² /week (pierced parts of the human body)
Switzerland	Chemical Risk Reduction Ordinance, ORRChem 18 May 2005	0.5 µg/cm ² /week (metal products) 0.2 µg/cm ² /week (pierced parts of the human body)

10. Nickel

10.4. Mango limits and application area

Maximum of nickel release requirement is:
- No detection: 0.2 µg/cm²/week metal pierced into the human body
- 0.5 µg/cm²/week for other metal products
[Intended limit: 0.2 µg/cm²/week for all metal products]

10.5. Test method

- Nickel free: EN 1811:2011+A1:2015
- Wear and corrosion: EN 12472:2006+A1:2010
- For glasses and sun glasses (only metallic frame):
UNE-EN 16128:2011

II. Organo tin compounds

II.1. What are they?

Organic tin compounds are classified according to the number of carbonated substitutes bonded to the tin atom. They are used as catalysers in the production of polyurethane foam and silicones and as general and agricultural biocides. They can be also used as anti-foam agents, fungicides and in PVC as stabilisers and plasticisers.

II.2. Toxicology

The toxicology derived from the effects of organic tin compounds can be classified into two large families:

- Local effects: certain disubstituted tin compounds may cause skin irritation (often periods of skin contact of 1-8 hours) and eye irritation. Tin triphenyl acetate causes irritation to the skin and the mucous membranes in the respiratory system.
- Systematic effects: these have only been observed for cases of skin exposure or inhalation of tin triphenyl acetate, in which symptoms such as general sickness, nausea, gastric pains, buccal dryness and sight problems have been detected. Transitory liver failure has also been detected in certain cases.

II.3. Legislation

COUNTRY	REGULATION	MAXIMUM LIMIT ON THE FINAL PRODUCT
Canada	Regulations Amending Schedule 2 of Canada Consumer Product Safety Act (CCPSA)	0.5 (for children in all textile products) 1 ppm (TBT and TPhT)
European Union	ACH- Directive European 276/2010/CE (01/03/2010)	1000 ppm (TBT, TphT, DBT y DOT: per each, in textiles and footwear with direct skin contact) 0.5 ppm (TPhT for babies in all textile products)

11. Organo tin compounds

11.3. Legislation

COUNTRY	REGULATION	MAXIMUM LIMIT ON THE FINAL PRODUCT
Japan	Guide to the Law for the Control of Household Products containing Harmful Substances	Forbidden (0.5 ppm of TBT and TPhT in textiles in direct skin contact)
South Korea	Safety Quality Mark Act (KC Mark) Annex 4, Annex 1 and Annex 3.	1 ppm (underwear and bed linen for babies < 2 years for TBT) 1 ppm DBT, 0,5 ppm TBT (Infants < 36 months) 1 ppm TBT (Children < 13 years)
Taiwan	NIEA T504.30B	Forbidden (0.5 ppm for children in all textile products) 1 ppm (other textile products for TBT and TPhT)
Turkey	Turkish Ministry of Economy. Official Gazette 29236. Ministry of Economy, Product Safety and Surveillance Audit Department on June 29, 2017	1000 ppm of DOT (Footwear or parts of footwear intended to come into contact with skin)
Switzerland	Chemical Risk Reduction Ordinance, ORRChem 18 May 2005	1000 ppm of DBT and DOT

11. Organo tin compounds

11.4. Mango limits and application area

Mango's limit is not detection (0.5 ppm) for all textile products.
[Intended limit: 0.5 ppm]

11.5. Test method

ISO 17353 Determination of selected organo tin compounds --
Gas chromatographic method

11.6. Substances analyzed

NAME	CAS NUMBER	ACRONYM
Dibutyltin	1002-53-5	DBT
Tributyltin	688-73-3	TBT
Triphenyltin	892-20-6	TPhT
Dioctyltin	94410-05-6	DOT

12. Pesticides

12.1. What are they?

Pesticides are defined as substances used to combat plagues (insecticides). They can be found in natural fibers of vegetable origin (cotton, linen and ramie) and animal origin (wool and silk).

12.2. Toxicology

Among the effects of pesticides, it is worth noting that they promote various carcinogenic pathologies, alteration agents of the hormone system and generate the risk of infertility, in addition to active agents in the development of human malformation during pregnancy. Furthermore, there is medical evidence that these pesticides contribute to the development of chronic illnesses such as diabetes and also increase the risk of suffering other neuro-degenerative illnesses like Alzheimer’s and Parkinson’s disease. They may also have a negative impact on neurological development and child behavior.

12.3. Legislation

COUNTRY	REGULATION	MAXIMUM LIMIT ON THE FINAL PRODUCT
Canada	Prohibition of Certain Toxic Substances Regulations 2012 (SOR/2012-285)	Forbidden (0.05 ppm in all textile products)
Finland	Government Decree on Persistent Organic Substances (735/2002), issued in Helsinki on August 22nd, 2002	Forbidden (0.05 ppm in all textile products)

12. Pesticides

12.3. Legislation

COUNTRY	REGULATION	MAXIMUM LIMIT ON THE FINAL PRODUCT
Germany	ChemVerbotsV only DDT	Forbidden (0.05 ppm in all textile products)
Japan	Law for the Control of Household Products containing Harmful Substances	30 ppm (for Dieldrin in textile products in direct contact with the skin)
Poland	The Ordinance of the Council for Ministers on safety and labeling of textile products of October 19th 2001	Forbidden (0.05 ppm in textile products in direct contact with the skin)
Switzerland	Ordinance on Risk Reduction related to Chemical Products (ORRChim) of May 18th 2005 as amended', beyond the EU Restrictions of the Directive 76/769/EEC, 89/101/EC	Forbidden (0.05 ppm in textile and leather)

12. Pesticides

12.4. Mango limits and application area

No detection (0.05 ppm) in natural fibers and leather.
[Intended limit: 0.05 ppm]

12.5. Test method

Own method based on extraction with methanol/acetone, a subsequent acetylation and detection quantification by gas chromatography with mass (GC/MS) detector.

12.6. Substances analyzed

DYES	CAS NUMBER	DYES	CAS NUMBER
2,4,5-T	93-76-5	Captafol	01/06/2425
2,4-D	94-75-7	Carbaryl	63-25-2
Azinophosmethyl	86-50-0	Chlordane	57-74-9
Azinophosethyl	2642-71-9	Chlordimeform	6164-98-3
Aldrin	309-00-2	Chlorfenvinphos	470-90-6
Bromophos-ethyl	4824-78-6	Coumaphos	56-72-4

12. Pesticides

12.6. Substances analyzed

DYES	CAS NUMBER
Cyfluthrin	68359-37-5
Cyhalothrin	9 1465-08-6
Cypermethrin	52315-07-8
DEF	78-48-8
Deltamethrin	52918-63-5
DDD	53-19-0, 72-54-8
DDE	3424-82-6, 72-55-9
DDT	50-29-3, 789-02-6
Diazinon	333-41-5
Dichlorprop	120-36-2
Dicrotophos	141-66-2

DYES	CAS NUMBER
Dieldrin	60-57-1
Dimethoat	60-51-5
Dinoseb und Salze	88-85-7
Endosulfan, -	959-98-8
Endosulfan, -	33213-65-9
Endrin	72-20-8
Esfenvalerat	66230-04-4
Fenvalerat	51630-58-1
Heptachlor	76-44-8
Heptachlorepid	1024-57-3
Hexachlorbenzol	118-74-1

12. Pesticides

12.6. Substances analyzed

DYES	CAS NUMBER
Hexachlorcyclohexan, α -	319-84-6
Hexachlorcyclohexan, β -	319-85-7
Hexachlorcyclohexan, δ -	319-86-8
Isodrin	465-73-6
Kelevan	4234-79-1
Kepon	143-50-0
Lindan	58-89-9
Malathion	121-75-5
MCPA	94-74-6
MCPB	94-81-5
Mecoprop	93-65-2

DYES	CAS NUMBER
Metamidophos	10265-92-6
Methoxychlor	72-43-5
Mirex	2385-85-5
Monocrotophos	6923-22-4
Parathion	56-38-2
Parathion-methyl	298-00-0
Phosdrin/Mevinphos	7786-34-7
Perthan	72-56-0
Propethamphos	31218-83-4
Profenophos	41198-08-7
Quinalphos	13593-03-8

12. Pesticides

12.6. Substances analyzed

DYES	CAS NUMBER
Stroban	8001-50-1
Telodrin	297-78-9
Toxaphene (Camphechlor)	8001-35-2
Trifluralin	1582-09-8

13. PFCS (Perfluorocarbons)

13.1. What are they?

The PFCs are repellent to water and oils. They may appear in waterproof textiles with antistain treatments.

13.2. Toxicology

The PFCs are persistent and poorly biodegradable organic compounds.

13.3. Legislation

COUNTRY	REGULATION	MAXIMUM LIMIT ON THE FINAL PRODUCT
European Union	REACH 1907/2006 (EC) and Directive European 552/2009/CE (22/06/2009) and SVHC (Reach) Reach 2017/1000 amending Annex XVII to Regulation (EC) No 1907/2006	1 µg/m ² (PFOS in textile products and accessories with coating) 1000 ppm (PFOA) After 4 July 2020: 0,025 ppm PFOA and its salts or 1ppm of one or a combination of PFOA-related substances
Norway	Regulations n. 922 of 1 June 2004: regulations relating to restrictions on the manufacture, import, export, sale and use of chemicals and other products hazardous to human health	1 µg/m ² (PFOS for all textile products with coating)
Switzerland	Chemical Risk Reduction Ordinance, ORRChem 18 May 2005	1 µg/m ² (PFOS for all textile or other coated materials)

13. PFCS (Perfluorocarbons)

13.4. Mango limits and application area

Mango limits are:
 1 µg/m² for PFOS and 0.1 ppm for other compounds (PFOA, PFNA, PFBS, 4:2 FTOH, 6:2 FTOH, 8:2 FTOH, 10:2 FTOH, POSF, FOSA, PFHxS, PFHxA), in textile products with some type of waterproof coating. [Intended limit: 0.001 ppm]

13.5. Test method

It's extraction method with solvents and chromatographic analysis.

13.6. Substances analyzed

NAME	CAS NUMBER	ACRONYM
Perfluorooctanoic acid	335-67-1	PFOA
Perfluorononan - 1 - oic acid	375-95-1	PFNA
1, 1, 2, 2, 3, 3, 4, 4, 4 - Nonafluorobutane - 1 - sulfonic acid	375-73-5 / 59933-66-3	PFBS
perfluorooctanosulfonic acid	1763-23-1	PFOS
3, 3, 4, 4, 5, 5, 6, 6, 6 - Nonafluorohexanol	2043-47-2	4:2 FTOH
3, 3, 4, 4, 5, 5, 6, 6, 7, 7, 8, 8, 8 - Tridecafluorooctan - 1 - ol	647-42-7	6:2 FTOH

13. PFCS (Perfluorocarbons)

13.6. Substances analyzed

NAME	CAS NUMBER	ACRONYM
3, 3, 4, 4, 5, 5, 6, 6, 7, 7, 8, 8, 9, 9, 10, 10, 10 - Heptadecafluorodecan - 1 - ol	678-39-7	8:2 FTOH
1, 1, 2, 2-Tetrahydroperfluoro dodecanol	865-86-1	10:2 FTOH
heptadecafluorooctanosulfonyl Fluoride	307-35-7	POSF
Heptadecafluorooctanosulfonamide	754-91-6	FOSA
Perfluorohexane-1-sulfonic acid	355-46-4	PFHxS
Undecafluorohexanoic acid	307-24-4	PFHxA

14. Phenolic compounds: (PCP, TCPS)

14.1. What are they?

They are substances derived from phenol in which several molecule hydrogen atoms have been replaced by chlorine atoms.

Among them are:

- Pentachlorophenol (PCP)
- Isomers of Tetrachlorophenol (TCPs)

These are chemical substances which are used as pesticides, in industrial and domestic applications. It can be used as a preservative in textiles and leather goods.

14.2. Toxicology

They are highly toxic if ingested or inhaled and highly irritant. They are absorbed thermically.

14.3. Legislation

COUNTRY	REGULATION	MAXIMUM LIMIT ON THE FINAL PRODUCT
Austria	Ordinance of February 7, 1991 on the Prohibition of Pentachlorophenol (PCP), Federal Law Gazette No 58/1991	5 ppm (PCP in all products)
China	China National General Safety Code Textiles and synthetic leather materials GB25038 (rubber shoes) and GB25036 (Children's canvas rubber shoes)	5 ppm (PCP in all products)
Denmark	Statutory Order No. 420 of 21 April 1996 from the Ministry of Environment and Energy on limiting the sale and use of pentachlorophenol (PCP)	5 ppm (PCP in all products)

14. Phenolic compounds: (PCP, TCPS)

14.3. Legislation

COUNTRY	REGULATION	MAXIMUM LIMIT ON THE FINAL PRODUCT
Egypt	E.S.S 6535 (leather), E.S.S 3571 (shoes), E.S.S 3572 (sport shoes)	1 ppm (PCP for all products with natural leather and shoes / sport shoes with textile part) 5 ppm (PCP in other natural materials only in shoes / sport shoes) 30 ppm (for Dieldrin in textile products in direct contact with the skin)
European Union	Reach: Regulation No. 1907/2006 Annex XVII	1000 ppm (PCP for all products)
Germany	Ordinance on Bans and Restrictions on the Placing on the Market of Dangerous Substances and Preparations, and Products pursuant to the Chemicals Act of October 14, 1993. Last amended 25th November 2003	5 ppm (PCP for all products)
Netherlands	Commodity Goods Act on Pentachlorophenol (Warenwet-besluit Pentachloorfenol), 23 September 1997	5 ppm (PCP for all products)
Norway	Regulations relating to restrictions on the manufacture, import, export, sale and use of chemicals and other products hazardous to health and the environment (Product Regulations)	5 ppm (PCP for all products)
Poland	ROZPORZĄDZENIE RADY MINISTRÓW z dnia 19 października 2001 r. w sprawie bezpieczeństwa i znakowania produktów w obojętnych. (Dz. U. z dnia 17 grudnia 2001 r.) (Regulation on safety and textile marking)	Forbidden (0.05 ppm in textiles, footwear, bed linen, articles for babies for PCP)

14. Phenolic compounds: (PCP, TCPS)

14.3. Legislation

COUNTRY	REGULATION	MAXIMUM LIMIT ON THE FINAL PRODUCT
Serbia	Rules on bans and restrictions of production, placing on the market of chemicals that pose an unacceptable risk to human health and the environment. ("Sl. glasnik RS", br. 89/2010, 71/2011, 90/2011 i 56/2012)	1000 ppm (PCP for all products)
Slovakia	Decree 635/2005 (PCP)	0.5 ppm (textiles products) 0.5 ppm (leather products for children) 5 ppm (leather for adults)
South Korea	Safety Confirmation Notice (Notice No. 2007-34) Annex 4	0.05 ppm (PCP and TeCP for babies products) 0.5 ppm (PCP and TeCP for other products)
Spain	Royal Decree 1406/1989 and updates	1000 ppm (PCP for all products with coating)
Switzerland	Ordinance on the reduction of risks linked to chemical products (ORRChem). [Verordnung vom 18. Mai 2005 zur Reduktion von Risiken beim Umgang mit bestimmten besonders gefährlichen Stoffen, Zubereitungen und Gegenständen (Chemikalien-Risikoreduktions-Verordnung, ChemRRV)]	Forbidden (0.05 ppm for TeCP and PCP in textile and leather)

14. Phenolic compounds: (PCP, TCPS)

14.4. Mango limits and application area

The limits of PCP and TeCP in textile products and leather are:
 0.05 ppm in articles for babies
 0.5 ppm over 3 years old
 [Intended limit: 0.02 ppm]

14.5. Test method

Own method based on extraction with methanol/acetone, a subsequent acetylation and detection quantification by gas chromatography with mass (GC/MS) detector.
 - 35 LMBG 82.02.08:2001

14.6. Substances analyzed

NAME	CAS NUMBER	ACRONYM
Tetrachlorophenols	2,3,4,5- Tetrachlorophenol	4901-51-3
	2,3,4,6- Tetrachlorophenol	58-90-2
	2,3,5,6- Tetrachlorophenol	935-95-5
Pentachlorophenol	Pentachlorophenol	87-86-5

15. Phthalates

15.1. What are they?

They are chemical compounds coming from phthalic acids. These have plasticizing properties that is why they are often added to PVC for more flexibility. It has various applications in many industries, particularly in the textile industry may be found in:

- Printed type (“plastisol”)
- Flexible plastics
- Plastic coatings in both textiles and in leather.

15.2. Toxicology

They are agents of endocrine disruptors. The di (2-ethylhexil) phthalate (DEHP) is toxic for the development and reproduction in laboratory animals.

15.3. Legislation

COUNTRY	REGULATION	MAXIMUM LIMIT ON THE FINAL PRODUCT
California	AB1108 Children’s products: phthalates	1000 ppm (DEHP, DBP, BBP in children products)
Egypt	E.S.S 7322/2011	1000 ppm (for all products)
European Union	Regulation (CE) no 1907/2006 (REACH) and updates. Annex XIV and SVHC	DEHP, BBP, DBP, DIBP Banned* DEHP, DBP, BBP 0.1% by weight
Serbia	Rules on bans and restrictions of production, placing on the market of chemicals that pose an unacceptable risk to human health and the environment. (“Sl. glasnik RS”, br. 89/2010, 71/2011, 90/2011 i 56/2012)	0.1% by weight DEHP, BBP, DBP for all products

15. Phthalates

15.3. Legislation

COUNTRY	REGULATION	MAXIMUM LIMIT ON THE FINAL PRODUCT
Spain	Royal Decree 1406/1989, of November 10th, in which limitations are imposed to the commercialization and use of certain dangerous substances and mixtures. BOE 278 of November 20th, modified subsequently by Decree 1114/2006 enacted in 2006.	0.1% by weight DNOP, DEHP, BBP, DBP in coated textiles, rubber and plastics for babies
Taiwan	CNS 15503 General requirements for safety of children's products; CNS 15290 Safety of textiles (General requirements)	1000 ppm (sum DMP and DEP for children products)
Turkey	Turkish Ministry of Economy. Announcement No. 28431 on October 4, 2012	Footwear: 1000 ppm of DINP, DEHP, DNOP, DIDP, BBP, DBP
South Korea	Korea Certification Mark (KC Mark, for more information review Annex 1 and Annex 3)	1000 ppm DEHP, DBP, BBP, DINP, DIDP, DNOP (Infants < 36 months) 1000 ppm DEHP, DBP, BBP (Children < 13 years)
China	GB/T 33271-2016	1000 ppm of DEHP, DBP, BBP, DINP, DIDP, DNOP (Infants wear)
Switzerland	Chemical Risk Reduction Ordinance, ORRChem 18 May 2005	DEHP, BBP, DBP, DIBP Banned DEHP, DBP, BBP 0.1% by weight

15. Phthalates

15.4. Mango limits and application area

The highest concentration of phthalates in PVC items, flexible plastic and plastisol printing must not exceed:
One phthalate: 500 ppm
Sum of more than one phthalate: ≤ 1000 ppm
[Intended limit: 0.3 ppm]

15.5. Test method

Own method based on extraction with organic solvents and subsequent analysis and quantification by gas chromatography and mass-GC/MS spectrophotometer.

15.6. Substances analyzed

NAME	CAS NUMBER	ACRONYM
Di(2-ethylhexyl)phthalate	117-81-7	DEHP
Dibutylphthalate	84-74-2	DBP
Benzyl butyl phthalate	85-68-7	BBP
Diisobutylphthalate	84-69-5	DIBP
in-octyl	117-84-0	DNOP
Diisononylphthalate	28553-12-0 / 68515-48-0	DINP
Diisodecylphthalate	26761-40-0 / 68515-49-1	DIDP

16. Short chain chlorinated paraffins (SCCP)

16.1. What are they?

The (SCCP) short-chain chlorinated paraffins are a group of synthetic compounds mainly used to treat metals and greased leather and in paints and coatings. They can be found in textile and leather.

16.2. Toxicology

Chlorinated paraffins are considered hazardous to the environment because they are very harmful to aquatic organisms and may cause harmful effects to the environment in the long term. Chlorinated paraffins may penetrate the organism by inhalation, ingestion or through contact with the skin, although these substances are not easily absorbed by the human body. No chronic short-term effects have been detected from exposure to such substances, although they may have serious long-term effects on the health. Studies carried out suggest that these substances could be carcinogenic, although no firm information on humans is available.

16.3. Legislation

COUNTRY

European Union

Switzerland

REGULATION

Reach: Regulation No. 1907/2006 SVHC List and [Regulation \(EU\) 2015/2030 November 14, 2015](#)

Ordinance on Risk Reduction related to Chemical Products (ORRRChem) of 18 May 2005

MAXIMUM LIMIT ON THE FINAL PRODUCT

1000 ppm (DEHP, DBP, BBP in children products)

1000 ppm (for all products)

16. Short chain chlorinated paraffins (SCCP)

16.4. Mango limits and application area

Mango does not accept products over 100 ppm of SCCP in textile and leather products.
[Intended limit: 0.3 ppm]

16.5. Test method

Own method based on extraction with organic solvents, subsequent analysis and quantification in gas chromatography with mass GC/MS detector.

15.6. Substances analyzed

NAME	CAS NUMBER	ACRONYM
short-chain chlorinated paraffins	85535-84-8	SCCP

17. Polycyclic aromatic hydrocarbons (PAHS)

17.1. What are they?

Polycyclic aromatic hydrocarbons (PAHs) are a group of over 100 different chemicals that are formed during the incomplete burning of coal, oil and gas, garbage, or other organic substances like tobacco or charbroiled meat. These PAHs can be found in the plastic and rubber parts of a wide range of consumer articles. They are present as impurities in some of the raw materials used in the production of such articles, in particular in extender oils and in carbon black. They are not added intentionally to the articles and do not perform any specific function as constituents of the plastic or rubber parts.

17.2. Toxicology

Studies on individual PAHs in animals, mainly on the PAH benzo[a]pyrene, have shown various toxicological effects, such as haemato-toxicity (effects on the blood), reproductive and developmental toxicity and immunotoxicity. A number of PAHs have shown carcinogenic effects in experimental animals and it has been concluded that benzo[a]pyrene is carcinogenic to humans.

17.3. Legislation

COUNTRY

European Union

Switzerland

REGULATION

COMMISSION REGULATION (EU) No 1272/2013 of 6 December 2013

Chemical Risk Reduction Ordinance, ORRChem 18 May 2005

MAXIMUM LIMIT ON THE FINAL PRODUCT

1 ppm (Rubber or plastic components in direct contact with the skin or the oral cavity)
0.5 ppm (Rubber or plastic components in direct contact with the skin or the oral cavity on childcare articles)

1 ppm (Plastic components in direct contact with the skin)

17. Polycyclic aromatic hydrocarbons (PAHS)

17.4. Mango limits and application area

Mango does not accept products over 0.5 ppm of (PAHs) synthetic fiber, Plastic and coated materials in direct skin contact.
[Intended limit: 0.5 ppm]

17.5. Test method

Extraction with organic solvents, subsequent analysis and quantification in gas chromatography with mass GC/MS detector.

17.6. Substances analyzed

NAME	CAS NUMBER	NAME	CAS NUMBER
Benzo[a]pyrene	50-32-8	Benzo[b]fluoranthene	205-99-2
Benzo[e]pyrene	192-97-2	Benzo[j]fluoranthene	205-82-3
Benzo[a]anthracene	56-55-3	Benzo[k]fluoranthene	207-08-9
Crysene	218-01-9	Dibenzo[a,h]anthracene	6164-98-3

Recommendations and other restringed substances

The following substances cannot be used during the production process for finishing treatments on Mango textiles products.

18. Brominated and chlorinated flame retardants

Retardants are chemicals used in thermoplastics, thermosets, textiles and coatings that inhibit or resist the spread of fire. These substances are carcinogenic and can be cause neurotoxic effects.

NAME	CAS NUMBER	ACRONYM
Hexabromocyclododecane	3194-55-6	HBCDD
Tri-(2,3-dibromopropyl)-phosphate	126-72-7	TRIS
Tris-(aziridiny)-phosphinoxide	545-55-1	TEPA
Tris(2-chloroethyl)phosphate	115-96-8	TCEP
Polybromodiphenylether various	3194-55-6	PBDEs
Polybromobiphenyls; Polybrominatedbiphenyls	various	PBBs

Recommendations and other restricted substances

19. Chlorinated solvents

They are used for a wide variety of commercial and industrial purposes, including degreasers, cleaning solutions, paint thinners, pesticides, resins, glues, and a host of other mixing and thinning solutions.
These substances are very toxic in aquatic organisms.

NAME	CAS NUMBER
Tetrachloromethane	79-34-5
Trichloroethylene	79-01-6
Perchloroethylene	127-18-4
Trichloroethane	71-55-6
Tetrachloroethane	630-20-6
Tetrachlorethylene	127-18-4

Children's garment safety and legally regulated parametersubstances

Good design and manufacturing processes are essential to ensure you meet these technical and legal requirements. The following parameters are legally regulated for children's garment safety.

Safety

Retardants are chemicals used in thermoplastics, thermosets, textiles and coatings that inhibit or resist the spread of fire. These substances are carcinogenic and can be cause neurotoxic effects.

PARAMETER

STANDARD

APPLICATION RANGE

TYPE OF GARMENTS

Cords and drawstrings

UNE-EN 14682

0-14 years

All garments

Tear resistance of small parts

UNE 40902

0-6 month >6 mm 50 N
6-36 month >6 mm 70 N

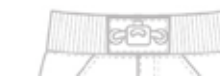
All garments with rigid small parts

Summary part of safety

Standard application examples

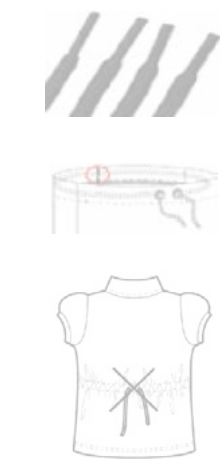
General

Stoppers: only used in drawstrings that they don't have free ends or decorative cords.



Loose ends: The loose ends of the drawstrings, functional cords and belts or sashes tied, should not have three-dimensional ornaments or knots, and shall be protected to prevent fraying. In case of being permitted, the cords must be fastened using a stitch in at least one point equidistant from the exit points.

Children's clothing must be designed in such a way that they do not have drawstrings, decorative or functional cords that protrude from the back part of the garment or that are fastened to the back, except drawstring, decorative or functional cord of a textile material of not less than 30 mm in width that is worn around the waist of a garment or joined by a ribbon.



Belt loops/ribbons: maximum 75 mm of perimeter or in plane.



Zipper pulls: maximum 75 mm measured from the body of the pull and, in addition, must not extend beyond the lowest edge of the clothing designed to end at the ankle.



Hood and neck area in young children's garments (0 – 7 years)

Garments intended for young children shall not be designed, manufactured or supplied with drawstrings or functional cords in the head, neck or upper chest area. Decorative cords shall not be permitted anywhere on the hood or at the back of the neck. Straps are permitted as long as they are made of a continuous material or cords tied in the front and back part of the garment. Decorative cords tied to the straps must not have loose ends that are longer than 75 mm and the fixed loops must not have a circumference larger than 75 mm. Garments with cords around the neck must be designed without loose ends in the hood and neck area.



Summary part of safety

Hood and neck area in clothing or older children and youths (7 – 14 years)

Drawstrings shall not have free ends.

Straps are permitted as long as the loose ends (A) are not over 75 mm, measured from the point in which they are tied and the fixed loops must not have a circumference (B) over 75 mm.

Functional cords and tab fasteners must not have a length over 75 mm on each end.

Functional cords should not be fabricated with elastic cords¹⁰, except straps and cords in the neck area.

Decorative cords shall not be more than 7.5 cm in length including any attachment or three dimensional embellishment



Waist area of the garments

Garments worn from waist down without shoulder straps, braces, or sleeves, such as trousers, shorts, skirts, briefs, bikini bottoms, shall not have:

- Free ends of drawstrings longer than 20cm at each end when the garment is in a relaxed natural state.
- Functional cords longer than 20cm
- Decorative cords longer than 14cm including any embellishment.

Garments such as shirts, coats, dresses, shall not have:

- Functional cords longer than 14cm
- Decorative cords longer than 14cm including any embellishment



Young children (< 7 years): all drawstrings, decorative or functional cord of a textile material of not less than 30 mm, designed to be tied in the back of the garments are permitted, as long as when they are untied they do not exceed 360 mm, measured from the tying point and, in addition, when they are untied they must not hang below the hem of the garment.

Older children and youths (7 - 14 years): all drawstrings, decorative or functional cord (< 30 mm), designed to be tied in the back of the garments are permitted as long as when they are untied they do not exceed 360 mm, measured from the tying point.

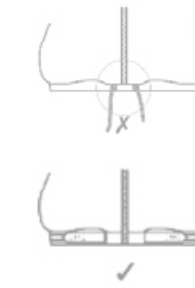
All drawstrings, decorative or functional cord (A), designed to be tied in the front of the garment are permitted as long as when they are untied they do not exceed 360 mm, measured from the tying point (B).



Summary part of safety

Lower edges of the garments that hang below the waist

The drawstrings, decorative or functional cords that may include any piece of wood, plastic, metal or of any other material fastened or placed on a drawstring, functional cord or decorative cord on the lower edge of the garments in which the lower edge is situated below the hips, must not hang below the lower edge of the garment and they must be situated completely within the garment.



Summary part of safety

Flammability

COUNTRY	GENERAL APPAREL	NIGHTWEAR
CANADA	CAN/CGSB 4.2 No 27.5-94 3.5 seconds for general textile products with a flat fibre surface; 4 seconds for general textile products with a raised fibre surface;	Children's sleepwear: Canadian General Standards Board standard CAN/CGSB 4.2 NO. 27.5-94 entitled Textile Test Methods - Flame Resistance - 45° Angle Test - One Second Flame Impingement, as amended from time to time, are prohibited if they have a flame spread time of: • 7 seconds or less (for products with or without a raised fibre surface, and irrespective of a base burn).
European Union	No Requirements	EN 14878 (sizes between 6 months to 14 years)
Netherlands	Netherland Mandatory fire safety requirements, when tested to ASTM D1230 Average time of flame spread (tp) > 4 s.	Netherland Mandatory fire safety requirements, when tested to EN1103: 17 seconds to 520 mm. Surface flash must be less than 520 mm.
Norway	FOR 1984-02-13 nR 427 Forskrifter om forbud mot svaert brannbare tekstiler 13-02- 1984 with the test method ASTM D1230. Average time of flame spread (tp) > 7 s for garments intended for children up to 170 cm. Average time of flame spread (tp) > 5 s for garments intended for adults.	

Summary part of safety

Flammability	COUNTRY	GENERAL APPAREL	NIGHTWEAR
	USA	<p>16 CFR Part 1610 Average flame spread time (tp) > 3.5 s for “plain surface fabrics”. Average flame spread time (tp) > 4 s and no base burn for “raised surface fabrics”.</p> <p>All general apparel with the following exceptions:</p> <p>1) Plain surface fabrics, regardless of fiber content, weighing 88.15 g/m² (2.6 ounces per square yard) or more.</p> <p>2) All fabrics, both plain surface and raised-fiber surface textiles, regardless of weight, made entirely from any of the following fibers or entirely from combination of the following fibers: acrylic, modacrylic, nylon, olefin, polyester, wool.</p>	<p>16 CFR Part 1610 (0 – 9 months) 16 CFR Part 1615 (9 months – 6 years)* 16 CFR Part 1616 (6 years – 14 years)* *Test method of flammability is the same (only it's different of dimensional control)</p> <p>EN 14878 (sizes between 6 months to 14 years)</p>
	Sweden	<p>Guidelines on Fire Properties of Apparel Textile (Flammability), Product Safety Act (SFS1988:1604) with the test method ASTM D1230 Average time of flame spread (tp)> 5 s.</p>	No Requirements
	Switzerland	<p>UNE-EN 1103 Maximum flame spread velocity (vp), 90 mm/s and no surface flash. Maximum flame spread velocity (vp), 120 mm/s for cellulosic fabrics with fabric weight less than 80 g/m².</p>	No Requirements

MANGO