



Pentland Brands Ltd. Restricted Substances List

April 2016 Edition

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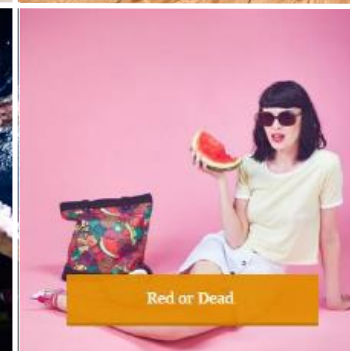
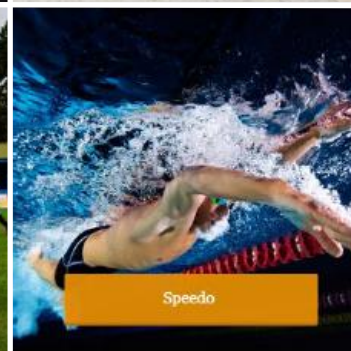
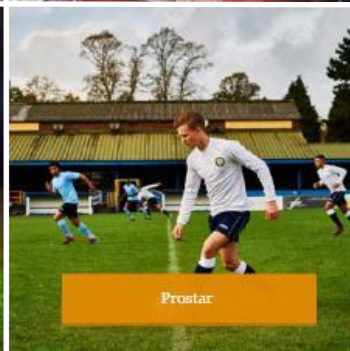
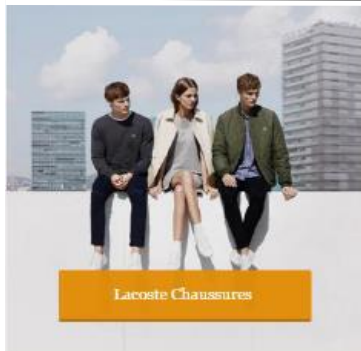
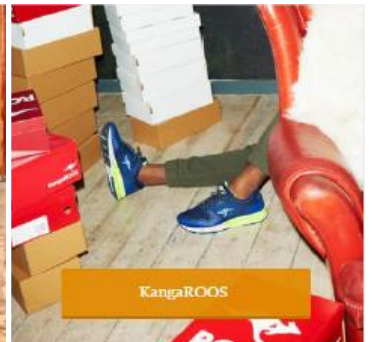
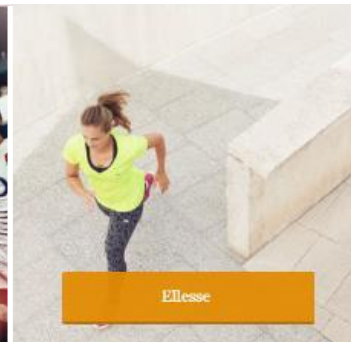
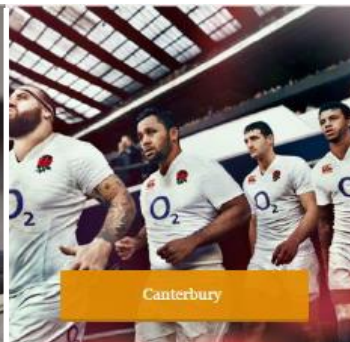
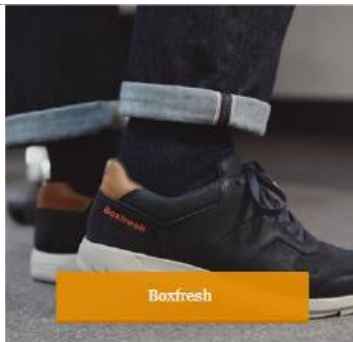
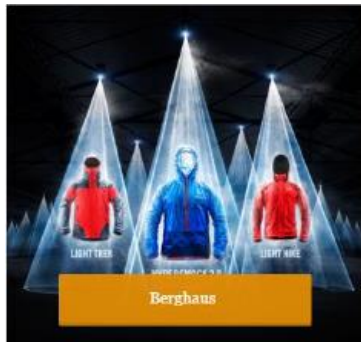
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Pentland Brands Ltd overview

Pentland Brands Ltd is the brand management division of Pentland Group plc.

We own brands including Berghaus, Canterbury of New Zealand, Speedo, Boxfresh, Ellesse, KangaROOS, Mitre, Prostar, and Red or Dead. We are the global licensee for Lacoste Chaussures and Ted Baker footwear, and the UK licensee for Kickers.



Restricted substances management: manufacturers' responsibility

Pentland Brands Ltd requires that its products are manufactured with regard for the safety of consumers and factory workers, and with consideration for the wider environment. This Restricted Substances List (RSL) provides details of chemicals and other potentially harmful substances that are restricted by Pentland, and allowable chemical limits for products placed on the market.

Pentland's RSL applies to all products sold under the name of any of the Pentland family of brands, whether sourced directly or by brands' licensee partners, unless communicated otherwise in writing.

It is the manufacturer's responsibility to comply with this RSL and avoid the use of harmful or illegal chemicals in the making of Pentland brands' products. RSL compliance is included in, or additional to, all legal partnership agreements relating to the manufacture of Pentland brands' product lines.

Pentland's brands reserve the right to request that manufacturers test materials, components or finished products against the RSL at any time. Responsibility for testing and associated costs lies with the supplier.

Brands' additional requirements

Several Pentland brands have additional requirements relating to substances used in manufacturing their products (e.g. Oekotex® or bluesign®). Brands will communicate these requirements to manufacturers and/or licensee partners.

Product testing

Pentland's brands conduct bespoke, risk-based testing programmes. Pentland's brands reserve the right to request that manufacturers test materials, components or finished products against the RSL at any time. Responsibility for testing and associated costs lies with the supplier.

Each Pentland brand will communicate with its manufacturers and/or licensee partners to specify the tests required on products or ranges.

Pentland's brands will assess any failure against the RSL standards individually and take appropriate action.

In the event of a test failure, manufacturers will be required to conduct failure analysis and, where appropriate, provide an action plan to resolve the issue for current and/or future production.

Suppliers may be required to remediate products, remake products or replace affected components at their own cost.

Adopting the AFIRM RSL



We have adopted the AFIRM RSL with some additions and modifications.

Modifications relate to:

- Substances for which Pentland Brands operate a restriction and will phase in the AFIRM standard over a period of time:
 - Acetophenone and 2-Phenyl-2-Propanol
 - OPEOs and NPEOs
 - Dimethylformamide (DMFa)
- Notes regarding slight variations to requirements listed in the AFIRM RSL:
 - Chromium (Cr)
 - Phthalates
 - VOCs
- Substances that Pentland deems to have a higher risk than the rating assigned in the AFIRM RSL:
 - Lead (Pb)
 - Cadmium (Cd)
 - PAHs

Additions are included for substances not listed on the AFIRM RSL that are restricted under the Pentland RSL:

- Isocyanates
- Antimicrobials
- pH
- Substances listed as SVHCs under Reach

Explanatory notes

Definition of ages

Various countries define the terms “babies”, “children” and “adults” differently. Based on legislation, the age ranges listed below satisfy the most restrictive global requirements.

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

Colour key for rate of occurrence

	Historically widely used; high occurrence level
	Mid occurrence level
	Low risk of failures

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Requirements additional to the AFIRM RSL

CAS No.	Substance Rate of Occurrence*	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement
	Isocyanates			
multiple	Diphenylmethane diisocyanate (MDI)	1 ppm free 50 ppm blocked	Isocyanates are the building blocks for polyurethane and under normal circumstances they are fully reacted to leave no residues in PU materials. Isocyanates are present in some adhesive formulations and if the adhesives are not formulated or cured properly then failures can occur.	Free- HPLC Blocked: GC-MS with injector block temperature at 300 °C; confirmation at 180 °C
822-06-0	Hexamethylene diisocyanate (HDI)			
4098-71-9	Isophorone diisocyanate (IPDI)			
2778-42-9	Tetramethylxylene diisocyanate (TMXDI)			
584-84-9 and 91-08-7	Toluene diisocyanate (TDI)			
3173-72-6	Napthylene-1,5,di-isocyanate (1,5-NDI)			
	Antimicrobials			
	The use of anti-microbial finishes or components containing anti-microbials is not permitted unless agreed in writing. The name of the anti-microbial chemical [not just the trade name] must be declared in accordance with the EU Biocidal products Directive			
	pH			
		Textiles 4.5- 9.0 Leather 3.5 - 8	Textiles: BS EN ISO 3071:2006 Leather: BS EN ISO 4045:2008 China: GB/T7573:2009	
	SVHCs under Reach legislation (Substances of Very High Concern)			
	The use of any chemicals listed as an SVHC under Reach legislation is not permitted unless agreed in writing. The list of SVHC's can be found here http://echa.europa.eu/candidate-list-table . Some SVHC's are already restricted by this RSL and by specific pieces of legislation and it must be understood that the list is subject to change in that new chemicals will be added, some SVHC's will become the subject of authorization or more stringent legislation.			

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	Acetophenone and 2-Phenyl-2-Propanol											
98-86-2	Acetophenone	50 ppm each	Potential breakdown products in EVA foam when using dicumyl peroxide as a blowing agent.	Extraction in methanol GC/MS	Pentland modification Pentland will not initially operate a pass/fail limit but will use tests to study prevalence of the chemicals in EVA materials with a view to a phase out. Any results above 50 ppm must be reported							
617-94-7	2-Phenyl-2-propanol											
	Alkylphenol (AP) and AlkylphenolEthoxylates (APEOs), including all isomers											
104-40-5	Nonylphenol (NP), mixed isomers	Total: 100 ppm	APEOs can be used as or found in detergents, scouring agents, spinning oils, wetting agents, softeners, emulsifying/dispersing agents for dyes and prints, impregnating agents, de-gumming for silk production, dyes and pigment preparations, polyester padding and down/feather fillings. APEOs and formulations containing APEOs are prohibited from use throughout supply chain and manufacturing processes. We acknowledge that residual or trace concentrations of APEOs may still be found at levels exceeding 100 ppm and that more time is necessary for the supply chain to phase them out completely. This limit reflects anticipated EU legislation and was set to provide suppliers with advance warning and direction for continuous improvement.	Textile: EN ISO 18254:2014 Leather: EN ISO 18218-1:2015	Pentland modification 500 ppm for OPEOs and NPEOs Pentland will phase in the 100 ppm standard All results over 100 ppm must be reported							
11066-49-2												
25154-52-3												
84852-15-3												
140-66-9	Octylphenol (OP), mixed isomers	Total: 100 ppm										
1806-26-4												
27193-28-8												
9002-93-1	Octylphenoethoxylates (OPEOs)											
9036-19-5												
68987-90-6												
9016-45-9												
26027-38-3	Nonylphenoethoxylates (NPEOs)											
37205-87-1												
68412-54-4												
127087-87-0												

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	Azo-amines			
92-67-1	4-Aminobiphenyl	20 ppm each	Azo dyes and pigments are colourants that incorporate one or several azo groups (-N=N-) bound with aromatic compounds. Thousands of azo dyes exist, but only those which degrade to form the listed cleavable amines are restricted. Azo dyes that release these amines are regulated and should no longer be used for dyeing of textiles.	Textile: (EU): EN 14362-1:2015 Leather: (EU): CEN ISO/TS 17234-1:2015 p-Aminoazobenzene: Textile: EN 14362-3:2015 Leather: 17234-2:2011
92-87-5	Benzidine			
95-69-2	4-Chlor-o-toluidine			
91-59-8	2-Naphthylamine			
97-56-3	o-Aminoazotoluene			
99-55-8	2-Amino-4-nitrotoluene			
106-47-8	p-Chloraniline			
615-05-4	2,4-Diaminoanisole			
101-77-9	4,4'-Diaminodiphenylmethane			
91-94-1	3,3'-Dichlorobenzidine			
119-90-4	3,3'-Dimethoxybenzidine			
119-93-7	3,3'-Dimethylbenzidine			
838-88-0	3,3'-dimethyl-4,4'-diaminodiphenylmethane			
120-71-8	p-Cresidine			
101-14-4	4,4'-Methylen-bis(2-chloraniline)			
101-80-4	4,4'-Oxydianiline			
139-65-1	4,4'-Thiodianiline			
95-53-4	o-Toluidine			
95-80-7	2,4-Toluyldiamine			
137-17-7	2,4,5-Trimethylaniline			
95-68-1	2,4 Xylidine			
87-62-7	2,6 Xylidine			
90-04-0	2-Methoxyaniline (= o-Anisidine)			
60-09-3	p-Aminoazobenzene			

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	Bisphenol-A			
80-05-7	Bisphenol-A (BPA)	1 ppm	Used in the production of epoxy resins, polycarbonate plastics, flame retardants and PVC. Prohibited from use in food and drink containers, and items intended to come into contact with oral cavity.	Sample preparation: Extraction with methanol Measurement: DIN EN ISO 18857-2 (mod)
	Chlorinated Paraffins			
85535-85-8	Short-chain chlorinated Paraffins (SCCP) (C10-C13)	1000 ppm	May be used as flame retardants or as fat liquoring agents in leather production.	ISO 18219:2015
85535-84-9	Medium-chain chlorinated Paraffins (MCCP) (C14-C17)	1000 ppm		
	Chlorophenols			
15950-66-0	2,3,4-Trichlorophenol	0.5 ppm each	Chlorophenols are polychlorinated compounds used as preservatives or pesticides. Pentachlorophenol (PCP) and tetrachlorophenol (TeCP) are sometimes used to prevent mould and kill insects when growing cotton and when storing/transporting fabrics. PCP and TeCP can also be used as preservatives in print pastes.	KOH extraction, 15 hours at 90 degrees C § 64 LFGB B 82.02-08 or DIN EN ISO 17070:2015
933-78-8	2,3,5-Trichlorophenol			
933-75-5	2,3,6-Trichlorophenol			
95-95-4	2,4,5-Trichlorophenol			
88-06-2	2,4,6-Trichlorophenol			
609-19-8	3,4,5-Trichlorophenol			
4901-51-3	2,3,4,5-Tetrachlorophenol (TeCP)			
58-90-2	2,3,4,6-Tetrachlorophenol (TeCP)			
935-95-5	2,3,5,6-Tetrachlorophenol (TeCP)			
87-86-5	Pentachlorophenol (PCP)			

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	Chlororganic Carriers			
95-49-8	2-Chlorotoluene	Total: 1 ppm	Chlorobenzenes and chlorotoluenes (chlorinated aromatic hydrocarbons) can be used as carriers in the dyeing process of polyester or wool/polyester fibres. They can also be used as solvents.	DIN 54232:2010
108-41-8	3-Chlorotoluene			
106-43-4	4-Chlorotoluene			
32768-54-0	2,3-Dichlorotoluene			
95-73-8	2,4-Dichlorotoluene			
19398-61-9	2,5-Dichlorotoluene			
118-69-4	2,6-Dichlorotoluene			
95-75-0	3,4-Dichlorotoluene			
2077-46-5	2,3,6-Trichlorotoluene			
6639-30-1	2,4,5-Trichlorotoluene			
76057-12-0	2,3,4,5-Tetrachlorotoluene			
875-40-1	2,3,5,6-Tetrachlorotoluene			
877-11-2	Pentachlorotoluene			
541-73-1	1,3-Dichlorobenzene			
106-46-7	1,4-Dichlorobenzene			
87-61-6	1,2,3-Trichlorobenzene			
120-82-1	1,2,4-Trichlorobenzene			
108-70-3	1,3,5-Trichlorobenzene			
634-66-2	1,2,3,4-Tetrachlorobenzene			
634-90-2	1,2,3,5-Tetrachlorobenzene			
95-94-3	1,2,4,5-Tetrachlorobenzene			
608-93-5	Pentachlorobenzene			
118-74-1	Hexachlorobenzene			
95-50-1	1,2-Dichlorobenzene	10 ppm		

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	Dimethylformamide				
68-12-2	Dimethylformamide (DMFa)	500 ppm	DMFa is a solvent used in plastics, rubber, and polyurethane (PU) coating. It has a strong smell in finished products. Water-based PU does not contain DMFa and is therefore preferable.	DIN CEN ISO/TS 16189:2013	Pentland modification To enable us to understand the presence of DMFa in our supplychain: <ul style="list-style-type: none"> • All results above 100 ppm in mock leather must be reported • All results above 5 ppm in other end uses must be reported
	Dimethylfumarate				
624-49-7	Dimethylfumarate (DMFu)	0.1 ppm	DMFu is an anti-mold agent used in sachets in packaging to prevent the buildup of mold, especially during shipping.	ISO/TS 16186:2012	

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	Dyes, Forbidden and Disperse				
2475-45-8	C.I. Disperse Blue 1		75 ppm each	<p>Disperse dyes are a class of water-insoluble dyes that penetrate the fibre system of synthetic or manufactured fibres and are held in place by physical forces without forming chemical bonds. Disperse dyes are used in synthetic fibre (e.g., polyester, acetate, polyamide).</p> <p>Restricted disperse dyes are suspected of causing allergic reactions and are prohibited from use for dyeing of textiles.</p>	DIN 54231:2005
2475-46-9	C.I. Disperse Blue 3				
3179-90-6	C.I. Disperse Blue 7				
3860-63-7	C.I. Disperse Blue 26				
12222-75-2	C.I. Disperse Blue 35				
69766-76-6	C.I. Disperse Blue 102				
12223-01-7	C.I. Disperse Blue 106				
61951-51-7	C.I. Disperse Blue 124				
23355-64-8	C.I. Disperse Brown 1				
2581-69-3	C.I. Disperse Orange 1				
730-40-5	C.I. Disperse Orange 3				
82-28-0	C.I. Disperse Orange 11				
12223-33-5	C.I. Disperse Orange 37/76/59				
13301-61-6					
51811-42-8					
85136-74-9	C.I. Disperse Orange 149				
2872-52-8	C.I. Disperse Red 1				
2872-48-2	C.I. Disperse Red 11				
3179-89-3	C.I. Disperse Red 17				
61968-47-6	C.I. Disperse Red 151				
119-15-3	C.I. Disperse Yellow 1				
2832-40-8	C.I. Disperse Yellow 3				
6300-37-4	C.I. Disperse Yellow 7				
6373-73-5	C.I. Disperse Yellow 9				
6250-23-3	C.I. Disperse Yellow 23				
12236-29-2	C.I. Disperse Yellow 39				
54824-37-2	C.I. Disperse Yellow 49				
54077-16-6	C.I. Disperse Yellow 56				

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	Dyes, Forbidden and Disperse continued				
3761-53-3	C.I. Acid Red 26		75 ppm each	Disperse dyes are a class of water-insoluble dyes that penetrate the fibre system of synthetic or manufactured fibres and are held in place by physical forces without forming chemical bonds. Disperse dyes are used in synthetic fibre (e.g., polyester, acetate, polyamide). Restricted disperse dyes are suspected of causing allergic reactions and are prohibited from use for dyeing of textiles.	DIN 54231:2005
569-61-9	C.I. Basic Red 9				
569-64-2	C.I. Basic Green 4				
2437-29-8					
10309-95-2					
548-62-9	C.I. Basic Violet 3				
632-99-5	C.I. Basic Violet 14				
2580-56-5	C.I. Basic Blue 26				
1937-37-7	C.I. Direct Black 38				
2602-46-2	C.I. Direct Blue 6				
573-58-0	C.I. Direct Red 28				
16071-86-6	C.I. Direct Brown 95				
60-11-7	4-Dimethylaminoazobenzene (Solvent Yellow 2)				
6786-83-0	C.I. Solvent Blue 4				
561-41-1	4,4'-bis(dimethylamino)-4''-(methylamino)trityl alcohol				
	Dyes, Navy Blue				
118685-33-9	Component 1: C39H23ClCrN7O12S.2Na		75 ppm each	Navy blue colourants are regulated and are prohibited from use for dyeing of textiles. (Index 611-070-00-2)	DIN 54231:2005
Not allocated	Component 2: C46H30CrN10O20S2.3Na				

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	Flame Retardants			
126-72-7	Tris(2,3,-dibromopropyl) phosphate (TRIS)	Total: 5 ppm	Flame-retardant chemicals are rarely used to meet flammability requirements in children's clothing and adult products. They should no longer be used in apparel and footwear.	Methanol extraction, GC/MS
545-55-1	Tris(1-aziridinyl)phosphine oxide (TEPA)			LC-MS
32534-81-9	Pentabromodiphenyl ether (PentaBDE)			Acetonitril extraction, LC-DAD-MS, and confirmation with GC/MS
32536-52-0	Octabromodiphenyl ether (OctaBDE)			
1163-19-5	Decabromodiphenyl ether (DecaBDE)			
79-94-7	Tetrabromobisphenol A (TBBP A)			Methanol extraction, GC/MS
115-96-8	Tris(2-chloroethyl)phosphate (TCEP)			
59536-65-1	Polybromobiphenyls (PBB)			
5412-25-9	Bis(2,3-dibromopropyl) phosphate (BIS)			
3194-55-6	Hexabromocyclododecane (HBCDD)			
3296-90-0	2,2-bis(bromomethyl)-1,3-propanediol (BBMP)			
13674-87-8	Tris(1,3-dichloro-isopropyl) phosphate (TDCPP)			
25155-23-1	Trixylyl phosphate (TXP)			
	Fluorinated Greenhouse Gases			
Various	See Regulation (EC) No 842/2006 for a complete list.	0.1 ppm each		Sample preparation: Purge and trap — thermal desorption or SPME Measurement: GC/MS
	Formaldehyde			
50-00-0	Formaldehyde	Adults and children: 75 ppm Babies: 16 ppm	Used in textiles as an anti-creasing and anti-shrinking agent. It is also often used in polymeric resins.	Textile: JIS L 1041-1983 A (Japan Law 112) or EN ISO 14184- 1:2011 Leather: ISO 17226- 1:2008

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	Heavy Metals				
7440-36-0	Antimony (Sb)	Extractable: 30 ppm	Found in or used as a catalyst in polymerisation of polyester, flame retardants, fixing agents, pigments and alloys.	Sample preparation: EN ISO 105-E04:2013 Measurement: EN ISO 17294-2:2014	
7440-38-2	Arsenic (As)	Extractable: 0.2 ppm Total: 100 ppm for all materials except plastic	Arsenic and its compounds can be used in preservatives, pesticides and defoliants for cotton, synthetic fibres, paints, inks, trims and plastics.	Sample preparation: Extractable: Textiles: EN ISO 105-E04:2013 Leather: DIN EN ISO 17072-1:2014 Total: Microwave digestion with H2O2/HNO3 Measurement: EN ISO 17294-2:2014	
7440-43-9	Cadmium (Cd)	Extractable: 0.1 ppm Total: Adults: 75 ppm Children and babies: 40 ppm	Cadmium compounds are used as pigments (especially in red, orange, yellow and green); as a stabilizer for PVC; and in fertilizers, biocides and paints. The next update will lower the total limit to 40 ppm for all.	Sample preparation: Extractable: Textiles: EN ISO 105-E04:2013 Leather: DIN EN ISO 17072-1:2014 Total: Microwave digestion with H2O2/HNO3 Measurement: EN ISO 17294-2:2014	Pentland modification High risk of occurrence in some products (Red risk rating)

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	Heavy Metals continued				
7440-47-3	Chromium (Cr)	Extractable for textiles: 1 ppm Leather footwear for babies: 60 ppm	Chromium compounds can be used as dyeing additives, dye-fixing agents, colourfastness after-treatments, dyes for wool, silk and polyamide (especially dark shades) and leather tanning.	Sample preparation: EN ISO 105- E04:2013 Measurement: EN ISO 17294- 2:2014	Pentland modification 60 ppm for all leather
18540-29-9	Chromium VI	Extractable: Adults: 3 ppm Children and babies: 0.5 ppm Knitted textiles, not leather	Though typically associated with leather tanning, Chromium VI also may be used in the dyeing of wool (after the chroming process).	Sample preparation: Textile: EN ISO 105- E04:2013 Leather ageing: Conditions for leather ageing: 24 hours, 80 degrees C, maximum 5% relative humidity, no ventilation; EN 17075-1:2015 Measurement: Textile: EN ISO 17294-2 Leather: EN 17075- 1:2015 Ageing test is used at brand discretion.	Pentland clarification 3 ppm for all leather 0.5 ppm in knitted textiles for children and babies
7440-48-4	Cobalt (Co)	Extractable: 1 ppm	Cobalt and its compounds can be used in alloys, pigments, dyestuff, and the production of plastic buttons.	Sample preparation: EN ISO 105- E04:2013 Measurement: EN ISO 17294-2	
7440-50-8	Copper (Cu)	Extractable: 25 ppm	Copper and its compounds can be found in alloys and pigments, and in textiles as an antimicrobial agent.	Sample preparation: EN ISO 105- E04:2013 Measurement: EN ISO 17294- 2:2014	

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	Heavy Metals continued				
7439-92-1	Lead (Pb)	Extractable: Adults and children: 1 ppm Babies: 0.2 ppm Total: 90 ppm	May be associated with plastics, paints, inks, pigments and surface coatings.	Sample preparation: Extractable: EN ISO 105- E04:2013 Total: Microwave digestion with H2O2/HNO3 Lead in paint and surface coating: CPSIA Section 101 16 CFR 1303 Measurement: EN ISO 17294- 2:2014	Pentland modification High risk of occurrence in some products (Red risk rating)
7439-97-6	Mercury (Hg)	Extractable: 0.02 ppm Total: 0.5 ppm	Mercury compounds can be present in pesticides and as contaminants in caustic soda (NaOH). They may also be used in paints.	Sample preparation: Extractable: EN ISO 105-E04:2013 Total: Microwave digestion with H2O2/HNO3 Measurement: EN ISO 17294- 2:2014	
7440-02-0	Nickel (Ni)	Extractable: 1 ppm Release: Prolonged skin contact: 0.5 µg/cm²/week Pierced part: 0.2 µg/cm²/week	Nickel and its compounds can be used for plating alloys and improving corrosion-resistance and hardness of alloys. They can also occur as impurities in pigments and alloys.	Sample preparation: Textile: EN ISO 105- E04:2013 Metal parts: EN 12472:2005+ A1:2009 Measurement: Textile: EN ISO 17294-2:2014 Metal parts: EN 1811:2015	
7782-49-2	Selenium (Se)	Extractable: 500 ppm	May be found in synthetic fibres, paints, inks, plastics and metal trims.	Sample preparation: EN ISO 105- E04:2013 Measurement: EN ISO 17294-2:2014	

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	N-Nitrosamine				
62-75-9	N-nitrosodimethylamine (NDMA)		0.5 ppm each	Can be formed as by-product in the production of rubber.	GB/T 24153-2009
55-18-5	N-nitrosodiethylamine (NDEA)				
621-64-7	N-nitrosodipropylamine (NDPA)				
924-16-3	N-nitrosodibutylamine (NDBA)				
100-75-4	N-nitrosopiperidine (NPIP)				
930-55-2	N-nitrosopyrrolidine (NPYR)				
59-89-2	N-nitrosomorpholine (NMOR)				
614-00-6	N-nitroso N-methyl N-phenylamine (NMPHA)				
612-64-6	N-nitroso N-ethyl N-phenylamine (NEPhA)				
	Organotin Compounds				
Various	Dibutyltin (DBT)		1 ppm each	Class of chemicals combining tin and organics such as butyl and phenyl groups. Organotins are predominantly found in the environment as antifoulants in marine paints, but they can also be used as biocides (e.g., antibacterials), catalysts in plastic and glue production, and heat stabilizers in plastics/rubber. In textiles and apparel, organotins are associated with plastics/rubber, inks, paints, metallic glitter, polyurethane products and heat transfer material.	CEN/ISO 16179:2012
Various	Dioctyltin (DOT)				
Various	Monobutyltin (MBT)				
Various	Tributyltin (TBT)	0.5 ppm each			
Various	Triphenyltin (TPhT)				
Various	All tri-substituted Organotin compounds		1 ppm each		

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CAS No.	Substance Rate of Occurrence*		Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement
	Ortho-phenylphenol				
90-43-7	Ortho-phenylphenol (OPP)		1000 ppm	OPP can be used for its preservative properties in leather or as a carrier in dyeing processes.	Sample Preparation: §64 BVL B 82.02.08 Measurement: GC-MS, LC-MS for confirmation
	Ozone-depleting Substances				
Various	See Regulation (EC) No 1005/2009 for a complete list.			Ozone-depleting substances are prohibited from use.	KOH extraction, 15 hours at 90 degrees C; § 64 LFGB B 82.02-08 or DIN EN ISO 17070:2015
	Perfluorinated and Polyfluorinated Chemicals (PFCs)				
2795-39-3	PerfluorooctaneSulfonate (PFOS)				
3825-26-1	Perfluorooctanoic Acid (PFOA)		1 µg/m2 each	PFOA and PFOS may be present as unintended byproducts in long-chain commercial water, oil and stain repellent agents. PFOA may also be used in polymers like polytetrafluoroethylene (PTFE)	CEN/TS 15968:2014

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CAS No.	Substance Rate of Occurrence*		Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement	
	Pesticides, Agricultural					
Various	See Appendix A for a complete list.		0.5 ppm	May be found in natural fibres, primarily cotton.	ISO 15913/DIN 38407 F2 or EPA 8081/EPA 8151A or BVL L 00.00-34:2010-09	
	Phthalates					
28553-12-0	Di-Iso-nonylphthalate (DINP)		500 ppm each Total: 1000 ppm	Esters of ortho-phthalic acid (phthalates) are a class of organic compound commonly added to plastics to increase flexibility. They are sometimes used to facilitate the moulding of plastic by decreasing its melting temperature. Phthalates can be found in: Flexible plastic components (e.g., PVC) Print pastes Adhesives Plastic buttons Plastic sleeveings Polymeric coatings The listed phthalates are those most commonly used across industry sectors. Find more information about phthalates restricted by legislation in the REACH SVHC list, which is updated frequently.	Sample preparation: CPSC-CH-C1001-09 Measurement: Textile: GC-MS, EN ISO 14389:2014 Leather: GC-MS	Pentland modification The use of PVC must be approved by Pentland. Any PVC used must be free from the listed phthlates
117-84-0	Di-n-octylphthalate (DNOP)					
117-81-7	Di(2-ethylhexyl)-phthalate (DEHP)					
26761-40-0	Diisodecylphthalate (DIDP)					
85-68-7	Butylbenzylphthalate (BBP)					
84-74-2	Dibutylphthalate (DBP)					
84-69-5	Diisobutylphthalate (DIBP)					
68515-42-4	Di(C7-C11 alkyl) phthalate (DHNUP), linear + branched					
71888-89-6	Di(C6-C8 alkyl) phthalate (DIHP), branched, C7 rich					
117-82-8	Di(2-methoxyethyl) phthalate (DMEP)					
84-75-3	Di-n-hexylphthalate (DnHP)					
84-66-2	Diethylphthalate (DEP)					
605-50-5	Diisopentylphthalate (DIPP)					
776297-69-9	n-Pentylisopentylphthalate (NPIPP)					
131-18-0	Di-n-pentylphthalate (DPP)					
68515-50-4	Dihexylphthalate, branched + linear					
131-11-3	Dimethylphthalate (DMP)					
84777-06-0	1,2-Benzenedicarboxylic acid, dipentylester, branched + linear					

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CAS No.	Substance Rate of Occurrence*		Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement		
	Polycyclic Aromatic Hydrocarbons (PAHs)						
83-32-9	Acenaphthene		No individual restriction	Total: 10 ppm	PAHs are natural components of crude oil and are common residues from oil refining. PAHs have a characteristic smell similar to that of car tires or asphalt. Oil residues containing PAHs are added to rubber and plastics as a softener or extender and maybe found in rubber, plastics, lacquers and coatings. PAHs are often found in the outsoles of footwear and in printing pastes for screen prints. PAHs can be present as impurities in Carbon Black. They also maybe formed from thermal decomposition of recycled materials during reprocessing	AFPS GS 2014	Pentland modification High risk of occurrence in some products (Red risk rating)
208-96-8	Acenaphthylene						
120-12-7	Anthracene						
191-24-2	Benzo(g,h,i)perylene						
86-73-7	Fluorene						
206-44-0	Fluoranthene						
193-39-5	Indeno(1,2,3-α)pyrene						
91-20-3	Naphthalene**						
85-01-8	Phenanthrene						
129-00-0	Pyrene						
56-55-3	Benzo(a)anthracene		1 ppm each Child care articles: 0.5 ppm each	**Naphthalene: Dispersing agents for textile dyes may contain high residual naphthalene concentrations due to the use of low-quality naphthalene derivatives (e.g., poor-quality naphthalene sulphonate formaldehyde condensation products).			
50-32-8	Benzo(a)pyrene						
205-99-2	Benzo(b)fluoranthene						
192-97-2	Benzo[e]pyrene						
205-82-3	Benzo[j]fluoranthene						
207-08-9	Benzo(k)fluoranthene						
218-01-9	Chrysene						
53-70-3	Dibenzo(a,h)anthracene						

Pentland Brands Restricted Substances List (RSL)

CAS No.	Substance Rate of Occurrence*		Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement	
	Volatile Organic Compounds (VOCs)					
71-43-2	Benzene		5 ppm	These VOCs should not be used in textile auxiliary chemical preparations. They are also associated with solvent-based processes such as solvent-based polyurethane coatings and glues/adhesives. They should not be used for any kind of facility cleaning or spot cleaning.	120 degrees C for one hour headspace solvent extraction GC-MS; Methanol extraction at 60 degrees	Pentland modification All results above 5 ppm must be reported so that Pentland can map solvent usage in the supplybase
56-23-5	Carbon tetrachloride		1000 ppm each			
67-66-3	Chloroform					
107-06-2	1,2-Dichloroethane					
75-35-4	1,1-Dichloroethylene					
127-10-5	Dimethylacetamide (DMAC)					
76-01-7	Pentachloroethane					
630-20-6	1,1,1,2- Tetrachloroethane					
79-34-5	1,1,2,2- Tetrachloroethane					
127-18-4	Tetrachloroethylene (PER)					
108-88-3	Toluene					
71-55-6	1,1,1- Trichloroethane					
79-00-5	1,1,2- Trichloroethane					
79-01-6	Trichloroethylene					
1330-20-7	Xylenes (meta-, ortho-, para-)					

Appendix A: Pesticides, Agricultural

CAS No.	Pesticide Name	CAS No.	Pesticide Name	CAS No.	Pesticide Name
93-72-1	2-(2,4,5-trichlorophenoxy) propionic acid, its salts and compounds	120-36-2	Dichloroprop	319-86-8	g-Hexachlorocyclohexane with and without Lindane
93-76-5	2,4,5-T	115-32-2	Dicofol	118-74-1	Hexachlorobenzene
93-72-1	2,4,5-TP ChemRRV	141-66-2	Dicrotophos	465-73-6	Isodrine
94-75-7	2,4-D	60-57-1	Dieldrine	4234-79-1	Kelevane
309-00-2	Aldrine	60-51-5	Dimethoate	143-50-0	Kepone
86-50-0	Azinophosmethyl	88-85-7	Dinoseb, its salts and acetate	7784-40-9	Lead hydrogen arsenate
2642-71-9	Azinophosethyl	57648-21-2	DTTB (Timperone)	58-89-9	Lindane
4824-78-6	Bromophos-ethyl	115-29-7	Endosulfan	121-75-5	Malathione
2425-06-1	Captafol	959-98-8	Endosulfan I (alpha)	94-74-6	MCPA
63-25-2	Carbaryl	33213-65-9	Endosulfan II (beta)	94-81-5	MCPB
510-15-6	Chlorbenzilat	72-20-8	Endrine	93-65-2	Mecoprop
57-74-9	Chlordane	66230-04-4	Esfenvalerate	10265-92-6	Metamidophos
6164-98-3	Chlordimeform	106-93-4	Ethylendibromid	72-43-5	Methoxychlor
470-90-6	Chlorfenvinphos	56-38-2	Ethylparathione	2385-85-5	Mirex
1897-45-6	Chlorthalonil	51630-58-1	Fenvalerate	6923-22-4	Monocrotophos
56-72-4	Coumaphos	1336-36-3	Halogenated biphenyls, including Polychlorinatedbiphenyl (PCB)	56-38-2	Parathion
68359-37-5	Cyfluthrin	53469-21-9		298-00-0	Parathion-methyl
91465-08-6	Cyhalothrin	Various		608-90-2	Pentabromobenzene
52315-07-8	Cypermethrin	Various	Halogenated terphenols, including polychlorinated terphenyl (PCT)	1825-21-4	Pentachloroanisole
78-48-8	S,S,S-Tributylphosphorotrithioate (Tribufos)	Various	Halogenated naphthalenes, including polychlorinated naphthalenes(PCNs)	52645-53-1	Permethrine
52918-63-5	Deltamethrin	Various	Halogenated diarylalkanes	7786-34-7	Phosdrin/Mevinphos
53-19-0	DDD	99688-47-8	Halogenated diphenylmethanes, including Monomethyl-dibromo-diphenyl methane, Monomethyl-dichloro-diphenyl methane, and Monomethyl-tetrachloro-diphenyl methane	72-56-0	Perthane
72-54-8		81161-70-8		31218-83-4	Propethamphos
3424-82-6	DDE	76253-60-6		41198-08-7	Profenophos
72-55-9		76-44-8		13593-03-8	Quinalphos
50-29-3	DDT	1024-57-3	Heptachloroepoxide	82-68-8	Quintozone
789-02-6		36355-01-8	Hexabromobiphenyl	8001-50-1	Strobane
333-41-5	Diazinone	319-84-6	a-Hexachlorocyclohexane with and without Lindane	297-78-9	Telodrine
1085-98-9	Dichlofuanide	319-85-7	b-Hexachlorocyclohexane with and without Lindane	8001-35-2	Toxaphene
120-36-5	Dichloroprop			731-27-1	Tolyfluanide

Supplementary Information

The following websites provide supplementary detail and guidance:

Material definitions and related test parameters	www.afirm-group.com/wp-content/uploads/2013/04/AFIRMSupplierToolkit.pdf
AFIRM supplier toolkit (Chinese, Vietnamese and Spanish translations available)	www.afirm-group.com/toolkit/
Selection of compliant dyes and chemicals	http://www.etad.com http://www.tegewa.de/en/tegewa-ev.html
Additional restricted substances with possible relevance	http://echa.europa.eu
Candidate list of substances of very high concern (SVHC)	http://echa.europa.eu/de/candidate-list-table
Overview of legal chemical limits and country of origin	https://www.wewear.org/industry-resources/restricted-substances-list/
Regulated volatile organic compounds (VOCs), mainly the EC 842/2006	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:161:0001:0011:EN:PDF
Regulated VOCs, EC 1005/2009	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:286:0001:0030:EN:PDF

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