

# Pentland Brands Ltd.

# Restricted Substances List

April 2016 Edition

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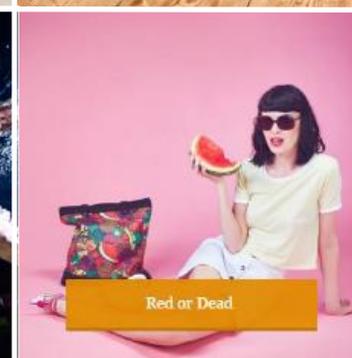
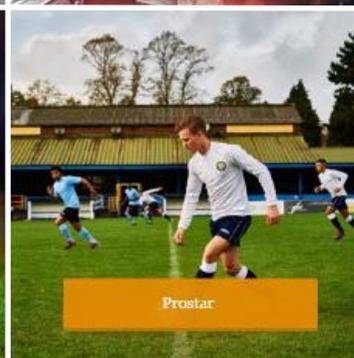
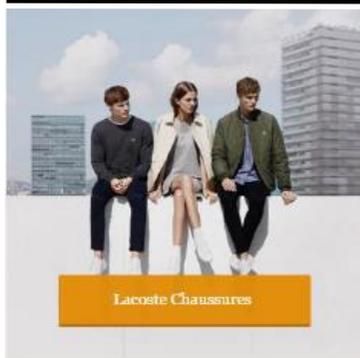
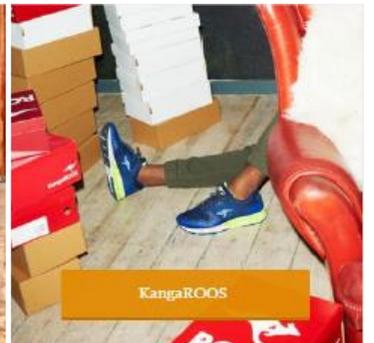
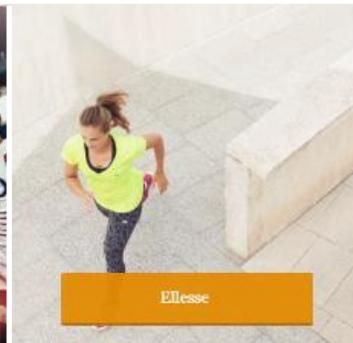
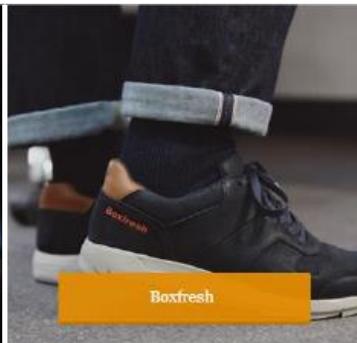
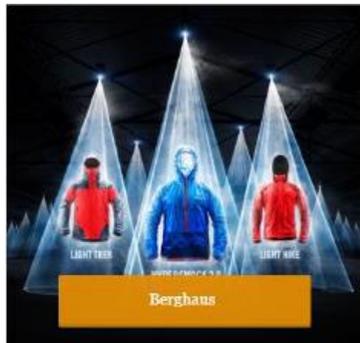
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# Pentland Brands Ltd overview

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
<b>Babies</b>	0 to 36 months
<b>Children</b>	36 months to 14 years
<b>Adults</b>	14 years and older

## Colour key for rate of occurrence

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

# Pentland Brands Restricted Substances List (RSL)

## 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
<b>Isocyanates</b>				
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)			
<b>Antimicrobials</b>				
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				
<b>pH</b>				
		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	
<b>SVHCs under Reach legislation (Substances of Very High Concern)</b>				
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 <a href="http://echa.europa.eu/candidate-list-table">http://echa.europa.eu/candidate-list-table</a> .  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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CAS No.	Substance Rate of Occurrence*	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement	
	<b>Acetophenone and 2-Phenyl-2-Propanol</b>				
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	<b>Pentland modification</b> 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				
	<b>Alkylphenol (AP) and AlkylphenolEthoxylates (APEOs), including all isomers</b>				
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.	Textile: EN ISO 18254:2014 Leather: EN ISO 18218-1:2015	<b>Pentland modification</b> 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	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.		
1806-26-4					
27193-28-8					
9002-93-1	Octylphenoethoxylates (OPEOs)	Total: 100 ppm			
9036-19-5					
68987-90-6	Nonylphenoethoxylates (NPEOs)	Total: 100 ppm			
9016-45-9					
26027-38-3					
37205-87-1					
68412-54-4	Nonylphenoethoxylates (NPEOs)	Total: 100 ppm			
127087-87-0					

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	<b>Azo-amines</b>			
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-Toluylendiamine			
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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	<b>Bisphenol-A</b>			
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)
	<b>Chlorinated Paraffins</b>			
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		
	<b>Chlorophenols</b>			
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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	<b>Chlororganic Carriers</b>			
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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	<b>Dimethylformamide</b>			
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
	<b>Dimethylfumarate</b>			
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

**Pentland modification**  
 To enable us to understand the presence of DMFa in our supplychain:

- All results above 100 ppm in mock leather must be reported
- All results above 5 ppm in other end uses must be reported

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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
	<b>Dyes, Forbidden and Disperse</b>			
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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CAS No.	Substance Rate of Occurrence*	Limits Raw Material & Finished Product	Potential Uses Textile Processing for Apparel & Footwear	Suitable Test Method Sample Preparation & Measurement
	<b>Dyes, Forbidden and Disperse continued</b>			
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				
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			
	<b>Dyes, Navy Blue</b>			
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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<b>Flame Retardants</b>				
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)			Methanol extraction, GC/MS
79-94-7	Tetrabromobisphenol A (TBBP A)			
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)			
<b>Fluorinated Greenhouse Gases</b>				
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
<b>Formaldehyde</b>				
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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	<b>Heavy Metals</b>				
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 H <sub>2</sub> O <sub>2</sub> /HNO <sub>3</sub> 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 H <sub>2</sub> O <sub>2</sub> /HNO <sub>3</sub> Measurement: EN ISO 17294-2:2014	
					<b>Pentland modification</b> High risk of occurrence in some products (Red risk rating)

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	<b>Heavy Metals continued</b>				
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	<b>Pentland modification</b> 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.	<b>Pentland clarification</b> 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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	<b>Heavy Metals continued</b>				
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	<b>Pentland modification</b> 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/cm <sup>2</sup> /week Pierced part: 0.2 µg/cm <sup>2</sup> /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	

# 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
	<b>N-Nitrosamine</b>			
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 (NMPPhA)			
612-64-6	N-nitroso N-ethyl N-phenylamine (NEPhA)			
	<b>Organotin Compounds</b>			
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)	0.5 ppm each		
Various	Tributyltin (TBT)			
Various	Triphenyltin (TPhT)			
Various	All tri-substituted Organotin compounds	1 ppm each		

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	<b>Ortho-phenylphenol</b>			
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
	<b>Ozone-depleting Substances</b>			
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
	<b>Perfluorinated and Polyfluorinated Chemicals (PFCs)</b>			
2795-39-3	PerfluorooctaneSulfonate (PFOS)			
3825-26-1	Perfluorooctanoic Acid (PFOA)	1 µg/m <sup>2</sup> 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

# 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
	<b>Pesticides, Agricultural</b>			
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
	<b>Phthalates</b>			
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
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			

**Pentland modification**  
The use of PVC must be approved by Pentland.  
  
Any PVC used must be free from the listed phthalates

# 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
	<b>Polycyclic Aromatic Hydrocarbons (PAHs)</b>			
83-32-9	Acenaphthene	No individual restriction	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
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- $\alpha$ )pyrene			
91-20-3	Naphthalene**			
85-01-8	Phenanthrene			
129-00-0	Pyrene			
56-55-3	Benzo(a)anthracene	Total: 10 ppm	**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).	High risk of occurrence in some products <b>(Red risk rating)</b>
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	1 ppm each Child care articles: 0.5 ppm each		

# 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
<b>Volatile Organic Compounds (VOCs)</b>				
71-43-2	Benzene	5 ppm	<p>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.</p>	<p>120 degrees C for one hour headspace solvent extraction GC-MS; Methanol extraction at 60 degrees</p>
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-)			

**Pentland modification**  
All results above 5 ppm must be reported so that Pentland can map solvent usage in the supplybase

# 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 (Timiperone)	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-dibromodiphenyl 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	Quintozene
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	Tolyfuanide

## Supplementary Information

The following websites provide supplementary detail and guidance:

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

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