

Pentland

POLICY, STANDARDS AND GUIDELINES FOR MANAGING RESTRICTED SUBSTANCES

June 2011

Section 1. Introduction

- 1.1 Purpose of the document
- 1.2 Pentland Restricted Substances Policy
- 1.3 What are restricted substances and why they are restricted?
- 1.4 Testing basics
 - 1.4.1 Testing methods
 - 1.4.2 Limits of detection
 - 1.4.3 Pass / fail limits
- 1.5 Our approach to managing restricted substances
- 1.6 Reach

Section 2. Detailed Standards and Testing Guidance

- 2.1 The Master RSL – restricted substances standards for Pentland products
- 2.2 Guidance for specific material types
 - 2.2.1 Textiles and leather
 - 2.2.2 Polymers and plastics
 - 2.2.3 Metallic components
 - 2.2.4 Coatings
- 2.3 Summary of standards by product group
 - 2.3.1 Clothing standards
 - 2.3.2 Footwear standards
 - 2.3.3 Equipment and accessories standards
 - 2.3.4 Electrical Items and electrical components
 - 2.3.5 Food and drink storage products
 - 2.3.6 Cosmetics
 - 2.3.7 Packaging

- 2.3.8 Marketing, promotional and point of sale materials standards
- 2.4 Testing guidance
 - 2.4.1 Assessing supply chain specific risks
 - 2.4.2 Risk assessment and testing frequency
 - 2.4.3 Submission of test results and due diligence

Section 3. Best Practice for Managing Restricted Substances

- 3.1 Causes of failure
- 3.2 How to avoid failure
- 3.3 Factory conditions
- 3.4 Worker safety

Section 4. Appendices

- 4.1 Restricted aromatic amines
- 4.2 Dyes that can cleave to yield carcinogenic amines
- 4.3 Dyes implicated in contact dermatitis
- 4.4 ETAD member dye companies
- 4.5 Restricted phthalates
- 4.6 Reach substances of very high concern (SVHC) – candidate list
- 4.7 Persistent organic pollutants (POPs)
- 4.8 Ospar list of chemicals for priority action
- 4.9 Restricted pesticides and insecticides
- 4.10 Volatile organic solvents
- 4.11 Selected chemical legislation
- 4.12 Children's legislation
- 4.13 Testing organisations
- 4.14 Useful websites
- 4.15 Acknowledgement

Section 1. Introduction

1.1 PURPOSE OF THE DOCUMENT

The document is much more than a set of standards – it is a guide to help ensure customers, workers and suppliers are not exposed to harmful chemicals in the manufacture or use of products that are sold by our brands.

The subject of restricted chemicals is complex and Pentland covers a diverse range of product types. We have developed this guidance document so that it can be used by experts and non-experts as we work with suppliers to reduce the use and exposure to harmful chemicals.

The information contained in this document sets out to:-

- Provide a single, unified set of standards for all our products and brands
- Provide a single unified approach to managing restricted substances
- Simplify the subject as much as possible and educate the non-expert reader
- Explain why specific substances are restricted
- Present information in a way that is relevant to individual brands and individual suppliers to those brands
- Provide information on best practice and how to avoid failures

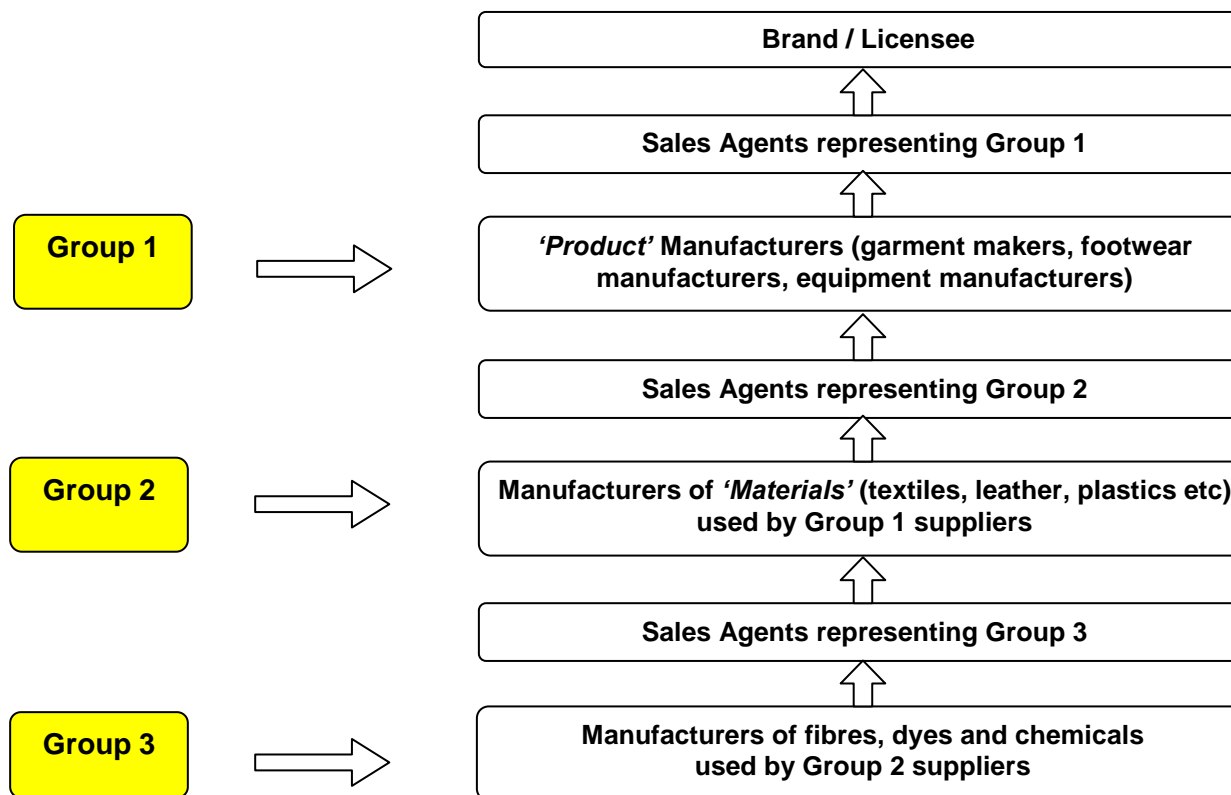
This is version 1 of Pentland's Policy, Standards and Guidelines for Managing Restricted Substances. It is a live document and future revisions will be published as required.

Who is the document aimed at?

This document is aimed at everyone involved in the specification, manufacture and approval of Pentland products.

The following is a schematic representation of a typical supply base. It is important that each tier of the supply base is in possession of these standards and aware of the restrictions they place on them. In reality, some suppliers have a degree of verticality (i.e. they make both 'materials' and 'products' within the same factory or company), and this makes dissemination of information throughout the supply chain relatively easy. There are also situations where a lack of verticality and existence of multiple sales agents makes the task more difficult.

Figure 1 - A typical supply chain



For each level of the supply chain, this document aims to:

- Brands
 - Ensure that specifications given to suppliers are clear and consistent
 - Ensure that failures and borderline failures are dealt with in a consistent manner
- Group 1 suppliers – who fabricate products from a range of materials
 - Ensure that specifications given to their suppliers are clear and consistent
 - Ensure they understand product specific risks and take appropriate preventative action
 - Ensure they know what they should be testing for and how to determine what is acceptable to Pentland
- Group 2 suppliers - who use chemicals in the manufacture of materials used in finished products
 - Ensure they know which chemicals and processes should be avoided in the manufacturing process
 - Provide information on alternative, compliant chemicals and processes
 - Provide best practice on management of restricted substances
- Group 3 suppliers – e.g. dye, chemical and fibre manufacturers
 - Give clear notice of which chemicals will not be tolerated by Pentland
 - Allow manufacturers and distributors to create advice regarding 'Pentland compliant' products

1.2 PENTLAND RESTRICTED SUBSTANCES POLICY

Pentland is committed to fair and sustainable business practices and we have developed the Pentland Business Standards Policies to guide us in our many relationships. These Policies concern the impacts that our business and products have on all our stakeholders, including our suppliers, customers, consumers, employees, wider society and the environment. We strive towards best practice and wish to:

- Comply with or exceed relevant legislative requirements
- Encourage manufacturing suppliers to recognise their responsibilities
- Design and manufacture our products with regard to environmental impacts.¹

¹ See Pentland's Business Standards Policies in 13 languages on www.pentland.com

We require that our suppliers ensure that the materials and processes used in the manufacture of our products and associated packaging will comply with relevant laws and regulations regarding working conditions, the environment and product safety.

We require that our suppliers ensure that the materials used in the manufacture of our products and associated packaging will comply with all relevant legal requirements regarding substances of concern and strive to meet best practice, as set out in the **Pentland Policy, Standards and Guidelines for Managing Restricted Substances** (this document).

We require our suppliers to test raw materials regularly using the recommended test methods by accredited testing bodies.

We will conduct our own independent tests on a regular basis.

1.3 WHAT ARE RESTRICTED SUBSTANCES AND WHY ARE THEY RESTRICTED?

Our products could not be manufactured without the use of chemicals and our approach is to promote the responsible use of chemistry. Some chemicals are widely recognised as being harmful but there is no single measure of 'harmfulness' and chemicals are restricted for a variety of reasons.

In general, Pentland restricts the use of chemicals if they have the potential to cause harm to **workers, consumers or the environment**. Common examples of chemicals that can cause harm are those that are:-

- Carcinogenic (causes cancer)
- Mutagenic (causes mutations of cells)
- Highly toxic
- Allergenic / irritant / sensitising (causes short or long term irritation of skin and mucous membranes)
- Endocrine disruptors (affects hormones)
- Persistent (does not biodegrade)
- Bioaccumulative (accumulates in body tissue and is not eliminated)

The main reasons why certain chemicals are restricted are:-

- **If they pose a direct risk to workers** who handle them in large quantities. These risks can either be in the *use* of chemicals (for example the application of dye to a fabric, or a lacquer to a piece of leather) or the *manufacture* of other chemicals (such as dyes).
 - There are short term risks – such as acute toxicity, where someone may ingest a fatal dose or suffer severe irritation or allergic reactions

- There are longer term risks – such as carcinogenicity and bioaccumulation
- **If they pose a risk to consumers** who come into contact with them. It is also important to consider workers in product assembly factories who may be exposed to chemical residues on textiles, leather, plastics or metallic components for several hours each day. An important consideration is that if a chemical poses a risk to consumers it will almost always pose a greater risk to workers who handle it in larger quantities.
- **If they are known to cause damage to the environment** if released via untreated effluent or in air emissions. It is also necessary to consider issues surrounding the disposal of some chemicals at the end of a product's useful lifetime. Damage can include harm to plants, animals, water systems and the atmosphere.
 - Some problems can be acute – i.e. they are immediate and catastrophic, such as the release of highly toxic waste
 - Some problems can build up over time – such as the release of bioaccumulative chemicals
 - **NOTE: Some chemicals that are considered as being relatively benign (such as common salt and simple acids and alkalis) are not included in the restricted substance standards, but can cause significant environmental damage.**

Hazard labels and 'R Phrases'

In the EU, chemicals have to be independently assessed and many are labelled with officially recognised 'Risk Phrases' or 'R Phrases' that provide useful information to users. Most, but not all, of the chemicals detailed in these restricted substances standards and guidelines have been assigned one or more R Phrases to denote just why they need to be carefully handled and managed. It should be noted that not all chemicals that have R Phrases are restricted.

In addition to R Phrases, some chemicals pose less specific hazards and these have to be labelled with orange warning labels, e.g. 'Corrosive', 'Harmful'. These labels are aimed at workers who handle the chemicals in large amounts and also indicate where there is the potential for chemicals to harm the environment.

Excellent information on hazard labels and R Phrases can be found at <http://www.hse.gov.uk/chip/phrases.htm>

Legislation

It is a requirement that all Pentland products, and chemicals used in the manufacture of Pentland products, comply with all appropriate legislative requirements.

In the rare event that you find local legislation relating to the use or disposal of specific chemicals to be more stringent than the standards contained in this document, it is necessary to comply with local legislation. Conversely, where the Pentland standards are tougher than local legislation it is necessary to comply with standards contained in this document.

In most cases legislation has been introduced because of concerns about the risk of harm to humans or the environment, but unfortunately there is not one single piece of legislation for all chemicals, countries and end products. As a result the picture is very fragmented and complex.

There are two main types of chemical legislation that are relevant to restricted substances:-

- Legislation that applies to the **finished products that are put on sale** – where it is illegal to have greater than **x** parts per million (ppm) of a specific chemical present at point of sale.
- Legislation that applies to the **use of chemicals in manufacture** – this can be a complete ban or, more commonly, a restriction that says it is illegal to sell or use formulations with greater than **x** ppm of a specific chemical present at point of sale.

In many instances legislation covers both the above scenarios.

In addition to specific chemical legislation there are also many local environmental regulations that forbid specific chemicals to be present in waste-water or air emissions above specified levels – often this amounts to a *de facto* ban on the use of many chemicals (unless very tight controls are put into place by the factories).

We have not tried to deliver an exhaustive list of worldwide legislation as part of the restricted substances standards. Instead, this document highlights some specific pieces of legislation to demonstrate that certain chemicals are restricted by law. A summary of some pertinent legislation is given in Appendix 11.

It is the responsibility of suppliers to ensure they are aware of all chemical legislation in their locality.

Children's products

There are some specific pieces of legislation relating to toys and products for children. It is expected that suppliers who manufacture and supply these goods have in-house expertise and are familiar with all relevant legislation.

A summary of some pertinent legislation is provided in Appendix 12

It is an absolute requirement that children's products comply with all relevant legislation.

NOTE: The restricted substance limits in some children's legislation (e.g. the EU toy safety directive 2009/48 EC) are sometimes used by brands to define standards for articles that are not actually covered by that legislation. This can lead to unnecessarily strict or unnecessarily lenient standards for non-legislated products. For example, although the current limit of lead in toys is 90 ppm, we believe this to be far too high for textiles so have set the limit for Pentland products at 1 ppm.

1.4 TESTING BASICS

For each restricted substance mentioned in these standards there is a maximum allowable limit for that substance in one of our finished products. This limit level is expressed in parts per million (ppm).

The amount of substance present is determined by tests that are carried out under carefully controlled conditions in a laboratory.

We strongly encourage the use of laboratories with internationally recognised certifications (for example UKAS or HOKLAS) that have demonstrated their ability to conduct tests consistently and deliver reliable results. See Appendix 13 for a list of testing organisations that have the facilities to carry out restricted substance testing.

There are two basic types of test used to detect and quantify restricted substances:-

1. **Extraction tests** – these determine how much of a restricted substance can be removed from the test sample by a solvent. The solvent containing the substance is then analysed to see how much of the restricted substance is present. The purpose of these tests is to give an indication of how much of a restricted substance can be absorbed into liquids such as saliva or sweat - and several tests actually use synthetic sweat or saliva to extract the restricted substance.
2. **Total concentration tests** – these determine how much of a substance is present in total. The test sample is completely dissolved or digested and the resulting solution is tested to see how much of the restricted is present. These are tougher tests and take into account chemicals that may be 'locked' into materials. 'Locked in' chemicals would never come out during normal use, but may come out during incineration or after very long periods of time. They also give an indication of the worst case scenario for the rare occasions when a consumer swallows an item.

Not surprisingly, total concentration tests yield much higher figures than extraction tests so it is very important to ensure the correct method is used. The use of an extraction method where total concentration tests should be employed can give 'false passes', while the use of total concentration tests where extraction methods should be employed can cause unnecessary 'false failures'.

For each substance there is a standard test method that must be followed and many of these tests have an internationally recognised step by step methodology (often prefixed by EN or ISO). Sometimes there is more than one acceptable test for certain restricted substances and occasionally there is a unique test that is required in a specific geographical location. Where internationally recognised tests do not exist we have included a general method for extraction and analysis.

Standards, legislation and test methods do sometimes change and the information in this document is presented in good faith as being accurate at the time of publication. However it is good practice to confirm that methods have not been superseded at the time that samples are put into test and Pentland welcomes feedback that helps keep published standards and test methods up to date.

NOTE: although it is important to follow exact test methodologies to make decisions on whether products 'pass' or 'fail', many laboratories will sometimes, quite legitimately, carry out a preliminary 'screening' test to see if any of the specific restricted substance is present before carrying out the official test to accurately quantify the amount that is there. Screening tests can check for the presence of multiple chemicals in a single test and are a quick and cheap method for assessing whether further, more expensive testing is required.

In addition to conducting tests on finished products, suppliers and manufacturers are strongly recommended to carry out checks on raw materials that enter their factories – the results cannot be judged on a pass/fail basis according to these standards but do give a strong indication of potential problems.

1.4.1 Testing methods

Specific techniques are used in different test methods. There is no need to gain an in-depth knowledge of this and the information below is provided as background information only. The techniques fall into three categories and examples include:-

Analysis (a number of different machines and techniques are used to identify and quantify chemicals)

- Atomic Absorption Spectroscopy (AAS)
- Electron Capture Detection (ECD)
- Inductively Coupled Plasma Spectroscopy (ICP)
- Infra Red / Fourier Transform Infra Red Spectroscopy (IR/FTIR)
- Mass Spectrometry (MS)
- Nuclear Magnetic Resonance Spectroscopy (NMR)
- Ultraviolet/ Visible light Spectroscopy (UV/VIS)

Extraction/Dissolution/Digestion (where substances are put into solution for further analysis)

- Acid digestion
- Solvent extraction

Separation (often a mixture of chemicals is present in the test solution and a process to separate out individual chemicals is necessary prior to quantitative analysis)

- Gas chromatography (GC)
- Liquid chromatography (LC)

Information on these and other techniques is available at http://eaglabs.com/techniques/analytical_techniques/icp_oes_ms.php

1.4.2 Limits of detection

With modern analytical equipment, scientists can detect miniscule amounts of substances – down to parts per billion, or even parts per trillion. However, looking for the tiniest quantities requires incredibly sophisticated equipment and the costs are prohibitively expensive.

The 'limit of detection' gives an indication of the amount of a restricted substance that has to be present in order to be detected by a specific method / machinery combination.

If the amount present is below this limit, test reports will often specify that the substance is 'not detected'. This does not mean it is 'not present' in strict scientific terms, but simply that nothing was detected above a certain level by the stated method/machinery.

In order to detect and quantify such small amounts of the chemical it would be necessary to use a more sensitive piece of analytical equipment.

1.4.3 Pass / fail limits

For each restricted substance in this document there is a pass/fail limit expressed in parts per million (ppm). This is the most widely used unit for specifying standards and pass/fail limits but occasionally you will see them expressed as a percentage (%) or as milligrams per kilogram (mg/kg).

1 mg/kg is equivalent to 1 ppm, but percentages can be slightly confusing:

ppm	%
1	0.0001
10	0.001
100	0.01
1000	0.1
10,000	1

Laboratories will provide results in their standard format, which may not meet your needs, but most are flexible and will provide you with tailored reports when requested. It is good practice to ask that the following information is provided by the laboratories on their test reports:-

- The exact test method used, including specific reference numbers where appropriate
- The limit of detection for the particular chemical
- The pass/fail limit for the test
- The actual amount detected and not just a 'pass' unless the result is 'not detected' (this information is useful for monitoring trends and near misses)

Testing should form part of ongoing risk assessment and results should be collated to assess trends. Simply looking at each test result as an isolated 'pass' or 'fail' is a lost opportunity to identify potential future problems and/or to reduce the frequency of testing.

1.5 OUR APPROACH TO MANAGING RESTRICTED SUBSTANCES

There are different categories of restricted substances and our approach to managing them depends on the risks associated with failure. Where failure results in high risk to consumers, workers or the environment, or in merchandise being illegal, we adopt a more stringent approach to those where the consequences of failure are less serious.

There are four types of control and they are colour coded throughout the standards:

- **Deliberate application not permitted** Chemicals that must not be deliberately used in 100% form or as part of a formulation (they usually have a very low pass/fail limit that only permits trace levels of contamination).
- **Allowable limits in operation** Chemicals that can be used as part of a chemical formulation but for which we have an upper limit (e.g. formaldehyde).
- **Allowed on specific products with written permission from Pentland** Chemicals that can be used on specific products but only with permission (e.g. selected anti-microbials, waterproofing).
- **Best Practice / Advisory** Chemicals that are permitted but where we recommend a preference for suppliers to use alternative chemicals or processes.

In most cases, we our restrictions focus on the use of specific substances **on finished articles** above a specific level, but there are some instances where we prohibit or restrict the use of a particular **process** or make strong recommendations that alternatives are used.

The management of restricted substances is a dynamic situation and there are currently permitted substances that may be restricted in the future. We have tried to indicate where we have concerns but do not yet have standards in place, and in these cases we have tried to offer an alternative.

We view the management of restricted chemicals as a joint exercise with our supply base. We encourage suppliers to **avoid** the use of restricted chemicals where possible rather than trying to engineer products to 'just pass' the published standards.

There are thousands of harmful chemicals in the world but the likelihood of most of them appearing in one of our products is low. In the appendices, we have included further chemicals that have a very low risk of being present in normal circumstances. It is important to be aware that the presence of these chemicals could result in product rejections, so suppliers should familiarise themselves with the list and take necessary precautions to ensure they are not inadvertently used.

There are other harmful substances that not listed in this document because the chances of them ever being present is extremely remote. However their exclusion does not make it acceptable for them to be present. **We will deal with instances of unlisted, but harmful chemicals on a case by case basis.**

1.6 REACH

Reach is high profile EU chemical legislation that was first introduced in 2007 and is being rolled out over a ten year period. It is an acronym that stands for **R**egistration, **E**valuation and **A**uthorisation of **C**hemicals and it applies to chemicals that are manufactured, used or imported into the EU in chemical formulations or on finished articles* (for example clothing, footwear, equipment).

Whilst it is important to recognise that Reach is important chemical legislation that must be complied with, it should not be confused with restricted substances lists such as the Pentland restricted substances standards and guidelines - and it should be noted there are other, lower profile but equally important, pieces of chemical legislation in other areas of the world.

At the time of publication Reach is primarily aimed at ensuring that chemicals are properly registered with the EU authorities, whereas restricted substance lists give specific advice on the management and avoidance of selected chemicals.

Pentland will use these restricted substance standards and guidelines to manage harmful substances. They are global standards applicable to all products and all territories but we expect all suppliers to be aware of the Reach legislation and ensure ongoing compliance with the Reach programme.

SVHCs

Reach has termed the most harmful chemicals as **S**ubstances of **V**ery **H**igh **C**oncern or SVHCs. An up to date list is available on the ECHA website (http://echa.europa.eu/chem_data/authorisation_process/candidate_list_table_en.asp). This list will have more chemicals added to it over time and it is necessary to check the 'live' list on a regular basis. The list of SVHCs at the time of publication of this document is in appendix 6.

The first chemicals on the candidate list are generally categorised as 'persistent', 'bio accumulative', 'toxic', 'carcinogenic', 'mutagenic' or 'reproductive toxins', or have a number of the aforementioned characteristics.

There are some specific legislative requirements for SVHCs relating to registration and provision of information for downstream users. This is often **misinterpreted** as being a legal ban on SVHCs. SVHCs are not currently banned, but in future it may transpire that some of them will have to be authorised before use.

Pentland has a legal requirement to inform consumers upon request if articles* on sale in the EU contain greater than 1000ppm (0.1%) of any SVHC and it is good practice to avoid the use of SVHCs wherever practicable. Suppliers **must inform Pentland** if any SVHCs are present in any articles above 1000ppm.

It must be stressed that **the figure of 1000 ppm does not represent a Pentland standard.**

- Some SVHCs are restricted by the Pentland standards to much lower levels than 1000 ppm
- Some SVHCs may be permitted by the Pentland standards at levels above 1000 ppm in some product areas

**Reach categorises products as 'articles', 'substances' or 'formulations'. The vast majority of the products we sell are articles (things defined by shape: clothing, footwear, equipment) and this specific legal requirement relates to articles.*

Substances (individual chemicals) and formulations (mixtures of chemicals defined by chemical composition: shoe creams, candles, shampoo) have slightly different requirements and some form of Reach registration will be required irrespective of whether chemicals are harmful or not.

Section 2. Detailed Standards and Testing Guidance

These restricted substance standards have been developed to be applicable to all products that are sold by Pentland. The Master Restricted Substances List (RSL) contains information on specific substances, allowable limits and the reasons why they are restricted.

However we acknowledge that, with such a broad range of products, it is difficult for manufacturers of materials and finished products to see at a glance which restricted substances are most relevant to their particular business. Therefore, in Section 2.2 we have also provided information on the major materials used for our products (textiles, leather, polymers/plastics and metal) and Section 2.3 presents a summary of requirements by major product group (apparel, footwear and equipment/accessories).

2.1 THE MASTER RSL - RESTRICTED SUBSTANCE STANDARDS FOR PENTLAND PRODUCTS

The restricted substances standards in the tables that follow are described in one of two ways:-

- Groups of chemicals (such as 'banned amines' or 'skin sensitizing dyes')
- Specific, individual chemicals. These may be part of a wider group of chemicals (such as 'flame retardant chemicals'), for which some chemical types are restricted and others are permitted.

There are occasions where the chemical group is listed but specific chemicals from that group may be listed separately if they are worthy of particular attention. For example, PCPs and PCTs are listed separately in addition to some general information on 'Biocides'.

CHEMICAL / CHEMICAL GROUP	REASON FOR RESTRICTION	EXAMPLES OF LEGISLATION (NOT EXHAUSTIVE)	TEST METHOD	MAXIMUM ALLOWABLE LIMIT
Deliberate application not permitted The chemicals listed below should be avoided completely and all steps should be taken to ensure they are not deliberately used on their own or as part of a formulation				
Anti-microbial finishes – selected, not permitted See Note 1	Various depending on specific chemicals	BPD – Biocidal Products Directive requires registration	Solvent extraction GC-MS	Limit of detection
Alkyl Phenol Ethoxylates (APEO)	APEOs are a class of chemicals used as detergents and emulsifying agents that are illegal in many countries above certain concentrations because they are endocrine disruptors	EU Directive 2003/53/EC restricts the use of preparations containing nonylphenol (NP) or nonylphenol ethoxylate (NPEO) to those with less than 0.1% by mass (1000ppm).	Solvent Extraction LCMS	1000 ppm total of APEOs
Banned Amines Appendix 1	These are carcinogenic amines that can be formed when certain azo dyes split and are illegal in many countries. (e.g. 2002/61/EC)	Illegal in many countries –for both end product and use of dyes e.g. 2002/61/EC	EN 14362 part 1 (natural fibres) and part 2 (synthetic fibres)	30 ppm
Carrier dyeing of polyester using: halogenated aromatic hydrocarbons, tri-chlorobenzene, biphenyl or ortho phenyl phenol	Organic solvents that are known to be harmful to workers	Not illegal to sell merchandise with traces of residual carrier present but some chemical types are restricted in use	Solvent Extraction GC - MS	1 ppm total

CHEMICAL / CHEMICAL GROUP	REASON FOR RESTRICTION	EXAMPLES OF LEGISLATION (NOT EXHAUSTIVE)	TEST METHOD	MAXIMUM ALLOWABLE LIMIT
Flame retardants – selected, not permitted (tris-aziridinyl-phosphin oxide) TRIS (polybrominated biphenyls) PBB Octa and penta bromo diphenyl ether (DBE) See Note 2	Various depending on specific chemicals	EU Directive 83/264/EEC prohibits the use of TRIS (tris-aziridinyl-phosphin oxide) and PBB (polybrominated biphenyls) as flame retardants in textiles. EU Directive 2003/11/EC prohibits the use of octa or penta bromo diphenyl ether (BDE) as a flame retardant in textiles in concentrations higher than 0.1% (1000ppm).		Limit of Detection
Heavy metals and compounds				
Antimony	Irritant	88/378 EEC	EN ISO 105-E04 / ICP-MS	30 ppm
Asbestos	Carcinogenic, causes lung disease (asbestosis)		EPA 66/R-93/116	Not detected
Cadmium	Very toxic	Cadmium Directive EU Directive 91/338/EEC + 88/378 EEC	EN ISO 105-E04 / ICP-MS [EN 1122 for plastics + total digestion for metals]	0.1 ppm Guidance 40 ppm
ChromiumVI	Very toxic	88/378 EEC. Water regulations impose strict limits. German legislation introduced in 2010 makes presence above 3ppm illegal in leather.	EN ISO 17075:2007	3 ppm

CHEMICAL / CHEMICAL GROUP	REASON FOR RESTRICTION	EXAMPLES OF LEGISLATION (NOT EXHAUSTIVE)	TEST METHOD	MAXIMUM ALLOWABLE LIMIT
Lead	Very toxic	88/378 EEC + US Lead legislation	EN ISO 105-E04 / ICP-MS [total digestion for plastics, coatings and metals]	1 ppm Guidance 90 ppm
Mercury	Very toxic	88/378 EEC	EN ISO 105-E04 / ICP-MS	0.02 ppm
Nickel	Irritant	EU Nickel Directive (94/27/EC)	EN ISO 105-E04 / ICP-MS [EN 1811 migration test for components]	1 ppm 0.5 µg/cm ² /week
Organo Tin Compounds	These are a group of chemicals that are known to be bioaccumulative, toxic and also endocrine disruptors. They are recognised as being harmful and several are labelled as SVHC under Reach legislation.	Comes under Biocidal products directive and also use is restricted below 1000 ppm by EU2009/425/EC. Japanese law restricts levels of TBT to 1 ppm	ISO 17353:2004 Solvent Extraction GC – MS	1 ppm Tributyl Tin (TBT) and Triphenyl Tin (TPhT) in extract 2.5 ppm total of all other organotin compounds.
Pentachlorophenol (PCP) and derivatives	PCP is a carcinogen that is restricted by legislation	Comes under Biocidal Products Directive and also 91/173/EEC	In-house tests using GCECD e.g. LMBG B82.02.8 or SATRA TM342:1995 Leather: EN TS 14494:2003	1ppm total PCP and TeCP Leather 0.5ppm
PFOS	Persistent and bioaccumulative and some negative health effects		Solvent Extraction LCMS	1ppm

CHEMICAL / CHEMICAL GROUP	REASON FOR RESTRICTION	EXAMPLES OF LEGISLATION (NOT EXHAUSTIVE)	TEST METHOD	MAXIMUM ALLOWABLE LIMIT
Polychlorinated Biphenyls (PCBs) and Polychlorinated Terphenyls (PCTs)	They are on the POP and Ospar lists and known to be endocrine disruptors and are persistent in the environment.	EU Directive 76/769 EEC - prohibits the use and reuse of PCBs and PCTs, and any mixture containing them, in more than 0.005% by weight. EU Directive 96/59/EC aims at complete disposal of PCBs.	GC-ECD Method: B 80.56-1	Not Detected
Short Chain Chlorinated Paraffins (SCCPs)	These are highly toxic	76/769/EEC marketing and use of dangerous products directive	GC-MS	5 ppm
Skin Sensitizing Dyes Appendix 3	A small number of disperse dyes are known to cause severe skin irritation and are listed in appendix 3.	No legal restrictions	DIN 54231	45 ppm
Allowable limits in operation The chemicals listed below may be present in formulations used to manufacture our products and their use is permitted provided the concentration on finished products does not exceed the stated limits.				
Formaldehyde	Irritant to mucous membranes and skin.	Some workplace limits are in place. Japan law 112	ISO 14184-1:1999 [CEN/TS 17226 for leather]	75 ppm for 'free' and 300 ppm for 'released'.
Pesticides and Insecticides Appendix 9	Various depending on specific chemicals	Some are controlled under POP convention	HPLC or GCMS e.g. EPA 8081 / 8151	Total 0.05 ppm for cotton and 0.5 ppm for wool
PFOA	Persistent and bioaccumulative	Voluntary self governance by manufacturers	Solvent Extraction LCMS	1ppm

CHEMICAL / CHEMICAL GROUP	REASON FOR RESTRICTION	EXAMPLES OF LEGISLATION (NOT EXHAUSTIVE)	TEST METHOD	MAXIMUM ALLOWABLE LIMIT
Phthalates (in PVC) Appendix 5 See Note 3	Suspected endocrine disruptors / carcinogens	Six listed phthalates are restricted by 88/378 EEC (DEHP, DBP, BBP, DINP, DIDP, DOP)	Solvent Extraction GC-MS (Belstein test is qualitative test for PVC)	No limit where PVC use is permitted. Max 1000 ppm total where permission is not given
Allowed on specific products with written permission from Pentland The chemicals listed below should only be used with permission. If they are used <u>without</u> permission the amounts on finished products should not exceed the stated limits.				
Anti-microbial finishes – selected, permitted <i>Contact Pentland before application of any anti-microbial</i> See Note 1	Various depending on specific chemicals	BPD – biocidal products directive requires registration	Solvent extraction GC-MS	Limit of detection for non-permitted types and permitted types used without permission.
Flame retardants – selected, permitted <i>Contact Pentland before application of any flame retardant</i> See Note 2	Various depending on specific chemicals	See restricted	Solvent extraction GC/LC -MS	Limit of detection for non-permitted types and permitted types used without permission.
Best Practice / Advisory The chemicals and processes listed below are not prohibited but we recommend the use of available alternatives that are less harmful to people and the environment. Some items on the list may become subject of a ban in the future.				
Chlorine	Some worker safety and environmental issues with chlorine and also with chlorinated compounds	Some water regulations set limits	Best Practice only – no testing	Best practice only – no limit
Isocyanates Diphenylmethane diisocyanate (MDI) Hexamethylenediisocyanate (HDI) Isophorone diisocyanate (IPDI) Tetramethylxylene diisocyanate (TMXDI) Toluene diisocyanate(TDI)	Irritants		‘Free’ - Solvent extraction + HPLC ‘Blocked’ - Solvent extraction + GCMS	Guidance 1 ppm of ‘free’ isocyanates and 50 ppm ‘blocked’ isocyanates
Potassium Permanganate	Skin irritant		Best Practice only – no testing	Best practice only – no limit

CHEMICAL / CHEMICAL GROUP	REASON FOR RESTRICTION	EXAMPLES OF LEGISLATION (NOT EXHAUSTIVE)	TEST METHOD	MAXIMUM ALLOWABLE LIMIT
Sand blasting	Can cause silicosis		Best Practice only – no testing	Best practice only – no limit
Sequesterants	Can affect natural balance of water courses	Some water regulations set limits	Best Practice only – no testing	Best practice only – no limit
Metals in dyes			Best Practice only – no testing	Best practice only – no limit
Volatile Organic Solvents See Note 4	Various depending on specific chemicals	Some workplace limits in place and specific legislation for specific solvents	GC-MS with head space analysis	Limit of detection

Note 1 – Anti-microbial chemicals

The use of anti-microbial chemicals is not permitted without permission from Pentland. Where anti-microbial properties are desirable and requested by Pentland, the use of quaternised silicones and selected silver based products is recommended.

Note 2 – Flame retardant chemicals

There is a requirement for certain products to meet specific flammability legislation in some countries. This can occasionally be achieved using inherently non-flammable fibres and materials but the use of flame retardant additives or finishes is often required. At the time of publication we permit the use of selected phosphorous compounds and deca-brominated BDE.

We encourage suppliers to use the lowest impact solutions whilst meeting flammability requirements. Reliable information can be obtained from companies such as Huntsman, Avocet and Thor.

Note 3 – PVC

PVC-free products should be used wherever practicable. Where PVC is deemed the only practicable option, phthalate-free PVC should be used wherever practicable. The avoidance of phthalates restricted by EU toy legislation or categorised by Reach as a SVHC is strongly recommended.

Note 4 - Volatile organic solvents

Water based technology should be used wherever practicable and the use of volatile organic solvents should only be used with the permission of Pentland. It is accepted that some organic solvents may have to be used for certain products and processes but **the use of the solvents listed in Appendix 10 in any**

processing, cleaning or adhesive formulations is not permitted without written permission from Pentland. All practical steps must be taken to minimise exposure of workers to any organic solvent, and residues are not permitted in Pentland products.

Performance finishes

Pentland encourage suppliers to innovate and that often necessitates the use of new chemistry. Suppliers must be prepared to declare full details of all performance finishes for approval before agreeing contracts. It is not acceptable to claim formulations are secret. Before agreeing contracts Pentland will require either:-

- Full chemical details under an NDA agreement or
- A full test certificate confirming the absence of all restricted chemicals listed in this document

Fumigation




There is a legal requirement for some shipments in some countries to be fumigated to control pests and diseases. The chemicals used for this process are often stipulated by local law and Pentland will take this into account when passing judgement on chemical content of final products.











































Ozone depleting substances

We do not permit the deliberate use of any ozone depleting substances and they must not be present in finished products. Information on ozone depleting substances can be found at <http://www.epa.gov/ozone/science/ods/index.html>

2.2 GUIDANCE FOR SPECIFIC MATERIAL TYPES

The following table gives an indication of which restricted substances may be found in the three main material groups used in the manufacture of Pentland products – textiles, leather and polymers/plastics. This is general guidance only and more detailed information on the likelihood of specific restricted substances being present in specific types of material is provided in **Section 2.3** below.

-  Relatively high risk of this chemical being found on this material – preventative actions and/or testing required
-  Low risk of failure, but still a possibility – some preventative actions and testing still required
-  Extremely unlikely that this chemical would ever intentionally be used on this material – preventative actions and testing unlikely to be required

CONTROL LEVEL		TEXTILES	LEATHER	POLYMERS/PLASTICS
Deliberate application not permitted	Alkyl Phenol Ethoxylates (APEO)			
	Anti-microbials - restricted			
	Banned Amines			
	Dye carriers for polyester			
	Heavy metals			
	Antimony			
	Cadmium			
	Chromium VI			
	Lead			
	Mercury			
	Nickel			
	Octa and Penta brominated BDE			
	Organotin Compounds			
	Pentachlorophenol (PCP) and derivatives			
	PFOS			

CONTROL LEVEL		TEXTILES	LEATHER	POLYMERS/PLASTICS
	(polybrominated biphenyls) PBB	△	△	△
	Polychlorinated Biphenyls (PCBs)	△	△	△
	Polychlorinated Terphenyls (PCTs)	△	△	△
	Short Chain Chlorinated Paraffin (SCCPs)	△	△	😊
	Skin Sensitizing Dyes	🚫	😊	😊
	(tris-aziridinyl-phosphin oxide) TRIS	△	△	△
Allowable limits in operation	Formaldehyde	🚫	🚫	△
	Pesticides – restricted	🚫	🚫	😊
	PFOA	△	△	😊
	Phthalates - restricted	🚫	🚫	🚫
Allowed on specific products with written permission from Pentland	PVC	🚫	🚫	🚫
Best practice / advisory	Isocyanates	△	△	🚫
	Volatile Organic Solvents	△	△	🚫

2.2.1 Textiles and leather

Textiles and leather are predominantly used in the manufacture of apparel and footwear although both are also used in equipment and accessories. The guidance in the table above shows that textiles and leather are more prone to having higher levels of restricted substances present – this largely due to the fact that these materials usually have dyes/pigments and chemicals applied to them using chemical processes.

The table below aims to highlight the products and processes that pose the greatest risks in terms of RSL failures, and ways to minimise the chances of failure.

CHEMICAL/ CHEMICAL GROUP	NOTES ON USES, PROBLEMS AND RISKS	HOW TO AVOID FAILURES
Alkyl phenol ethoxylates (APEO) (Deliberate application not permitted)	APEOs are a class of chemical used as detergents and emulsifying agents that is illegal in many countries above certain concentrations because they are endocrine disruptors.(e.g. 2003/53/EC). They are present in many processing aids and finishes and can be found on all fibre types and leather at quite high levels since they tend to stay on a substrate rather being washed off.	Some countries still permit the use of APEOs (in particular Nonyl Phenol Ethoxylate (NPEO)), so it is necessary to get assurances from suppliers that all formulations are free from APEOs.
Anti-microbial finishes (Deliberate application not permitted)	Where anti-microbial properties are desired a number of different chemical finishes or inherently anti-microbial fibres can be used. (Some of the chemicals mentioned in this table such as organo tin, PCPs or PCBs are never used for this purpose – they are industrial biocides). We permit the use of quaternised silicones and selected silver based products. It is unlikely that anti-microbials will be used unless specifically requested by a brand.	Ensure anti-microbial finishes are of appropriate chemical type and ensure they are durable. Manufacturers should provide information on levels of chemical applied initially and after multiple domestic launderings plus provide test results to confirm efficacy.
Banned Amines (Deliberate application not permitted)	These are carcinogenic amines that can be formed when certain azo dyes split, and are illegal in many countries (e.g. 2002/61/EC). All fibre types and leather can be affected and darker colours are more likely to fail than paler colours. The banned amines are listed in appendix 1 and some dyes that can form the amines are listed in appendix 2. It should be noted the EU legislation applies to dyes only but Chinese law also applies to pigments.	The best way to avoid dyes that can yield banned amines is to select dyes from ETAD member companies (details in appendix 4).
Carrier dyeing of polyester (Deliberate application not permitted)	Polyester is normally dyed at high temperatures in pressurised equipment. It is possible to dye polyester at lower temperatures using certain organic solvents that are known to be harmful to workers (such as halogenated aromatic hydrocarbons, tri-chlorobenzene, biphenyl or orthophenyl phenol). Residues can also make products smell and affect consumers.	Knowledge of the dyehouses and their equipment is the best way to assess the risk of carrier dyeing – those without pressurised equipment have no option but to use carrier dyeing.

CHEMICAL/ CHEMICAL GROUP	NOTES ON USES, PROBLEMS AND RISKS	HOW TO AVOID FAILURES
Flame retardants (SELECTED, NOT PERMITTED: Deliberate application not permitted) (SELECTED, PERMITTED: allowed on specific products with written permission from Pentland)	Flame retardants must only be used where there is a legislative requirement to do so. There is legislation that restricts the use of certain flame retardants such as 83/264/EEC (which restricts TRIS and PBB) and 2003/11/EC (which restricts octa or penta BDE). It is highly unlikely that flame retardant finishes will be used unless there is a legislative need to do so.	Use flame retardant suppliers who can confirm absence of restricted chemicals.
Heavy metals and compounds (Deliberate application not permitted)	There is much concern about heavy metals and there are several pieces of legislation in place to control their use. Metals themselves are not used in textiles although compounds of heavy metals are sometimes used. It is common to apply the limits stated in EU toy legislation to textile articles but this legislation was primarily aimed at metal components and we believe the limits to be very high compared to best available technology for textiles. Therefore Pentland has set lower limits.	
Antimony	Metallic antimony causes various acute and chronic health issues so is restricted by legislation (e.g. 88/378/EEC). Antimony trioxide is used in flame retardant finishes and is also used as a catalyst for polyester at levels of approximately 250 ppm.	Antimony will be present in most polyester but there are now some antimony free polyesters present.
Cadmium	Cadmium is a highly toxic substance that is restricted by legislation such as 91/338/EEC and 88/378/EEC. It is never used directly in leather or textile production but is present in some pigments. It can be present in prints, coatings and mock leather	Select pigments from ETAD member companies.
Chromium VI	Chromium is a metal that can exist as a metal and in different oxidation states. Chrome VI is known to be carcinogenic and can be formed if processing conditions (such as pH) when using chrome salts are not correct. Several chrome salts are classed as SVHC under Reach. The two most common uses of chrome salts are in the after-chrome dyeing of wool in dark shades and in chrome tanning of leather.	Wool can be dyed with pre-metallised dyes that contain chromium that is bound within a dye molecule or with metal-free reactive dyes. After chrome dyeing of wool is not permitted. Chrome tanning of leather is the industry standard and process control is vital to prevent the formation of chrome VI salts. Vegetable tanning and gluteraldehyde tanning are two available technologies.
Lead	Lead is toxic and bioaccumulative so is restricted by certain legislation such as 88/378/EEC. It is present in some pigments – so can be present in mock leather, prints and coatings. Lead compounds can also be used as stabilisers for PVC. Lead pipes are also used in some areas of the world so can be present in trace quantities on any fibre or leather.	Select pigments from ETAD member companies. Use alternatives to PVC where practicable.

CHEMICAL/ CHEMICAL GROUP	NOTES ON USES, PROBLEMS AND RISKS	HOW TO AVOID FAILURES
Mercury	Mercury is highly toxic and on the Ospar list. It is never used directly in textiles or leather production but can be present in caustic soda produced by the 'mercury cell process'. Any production methods using caustic could be affected. Mercury can be present as a contaminant in dyes and pigments	Select caustic soda suppliers who can demonstrate their product is not manufactured using the mercury cell process. Select dyes from ETAD member companies.
Nickel	Metallic nickel is known to be allergenic and is restricted by legislation (e.g. 94/27/EC). It is never used in textile or leather processing but nickel is incorporated into some dye molecules at levels of several percent to deliver performance and specific hues.	Nickel is present in some dye molecules at several thousand ppm but this will not be extracted during the test. See section on metals in dyes. Nickel directive is aimed at metal components and trims not specifically at textiles.
Organo tin Compounds (Deliberate application not permitted)	These are a group of chemicals that are known to be bioaccumulative, toxic and endocrine disruptors. They are recognised as being harmful and several are labelled as SVHC under Reach legislation. They are used as preservatives for fibres and also chemical formulations and can therefore be present on any type of fibre or leather. They can also be used as stabilizers for PVC and catalysts for a number of reactions.	The best way to avoid failures is to use reputable chemical suppliers who can give assurances that products are compliant.
Pentachlorophenol (PCP) and derivatives (Deliberate application not permitted)	PCP is a carcinogen that is restricted by legislation (e.g. 91/173 EC) and is on the Ospar list. It has been used as a fabric preservative for some time. It is used to stop mildew and rotting of cellulosic greige so can be found on fabric that is transported from the country where it is woven to another for dyeing. It is also sometimes used in chemical formulations so can also theoretically be found on other fibres and leather.	Knowing where greige is woven and dyed helps assess risks of use of preservative use. Selection of reputable chemical suppliers who can give assurances of compliance is the best way to avoid failures.
PFOS (Deliberate application not permitted)	PFOS is persistent and bioaccumulative and is formed as a by-product when 'C8' water repellents are made by the electrofluorination process. 3M withdrew 'C8' Scotchguard several years ago and these products are now rare.	We do not support the use of 'C8' electrofluorination products. They have been replaced by 'C4' chemistry that uses shorter chained molecules.
Polychlorinated Biphenyls (PCBs), Polychlorinated Terphenyls (PCTs) (Deliberate application not permitted)	These are pesticides and biocides that are illegal in many countries (e.g. 76/769 EEC and 96/59/EC) and are on POP and Ospar lists. They are known to be endocrine disruptors and are persistent in the environment. They have virtually fallen out of use so risk of failure is low.	Reputable chemical manufacturers can provide assurances of compliance.

CHEMICAL/ CHEMICAL GROUP	NOTES ON USES, PROBLEMS AND RISKS	HOW TO AVOID FAILURES
Short Chain Chlorinated Paraffins (SCCPs) (Deliberate application not permitted)	These are highly toxic chemicals that can be used as flame retardants or plasticisers for PVC. They can therefore be present in PVC and also in textiles that are deliberately treated with FR finishes.	Avoidance of PVC where practicable or the use of lower impact plasticisers where PVC is used. Reputable suppliers of flame retardant treatments can provide assurances of compliance.
Skin Sensitizing Dyes (Deliberate application not permitted)	A small number of disperse dyes are known to cause severe skin irritation and are listed in appendix 3. They are not illegal but are widely restricted. Disperse dyes are routinely used to dye polyester and acetate, and occasionally for nylon. Skin sensitizing dyes may be present in trace quantities in some compliant dye formulations. Dark colours are more likely to fail.	The best way to avoid failures above the allowable limit is to use dyes from ETAD member companies and get assurance from manufacturers regarding compliance.
Formaldehyde (Allowable limits in operation)	Formaldehyde is a known irritant for skin and mucous membranes and a suspected carcinogen. It is restricted by Japanese law which controls it at very low levels. It occurs at low levels in nature and at higher concentrations in easy care resins, anti-pill finishes, shrink resist resins for cellulose and some coatings. It is also present at low levels in some dye fixatives.	Formaldehyde is a naturally occurring substance that is always present at background levels.
Pesticides and Insecticides See appendix 9 (Allowable limits in operation)	The use of pesticides during cotton and wool fibre production is widespread and these standards aim to ensure no residues are present on final products. The use of some pesticides is restricted by the POP convention. Since almost all cotton and wool fibres undergo multiple wet processing steps most residues should be washed away during processing so failures are unlikely. Pesticides can also theoretically be present on animal skins in leather manufacturing.	The use of certified organic fibres ensures that pesticides and insecticides are not used. Cotton from the Better Cotton Initiative uses less synthetic chemicals than conventional cotton. Raw materials should be tested to check for levels of pesticides and insecticides rather than simply passing these standards for finished products.
PFOA (Allowable limits in operation)	PFOA is persistent and bioaccumulative. It is a by-product of 'C8' fluorotelemer production and is present at very low levels (a few ppm max) in commercial formulations and much lower levels on finished fabric or leather. PFOA is present in products that have water and stain repellent finishes applied.	The chances of failing these standards is very low even when 'C8' telemeres are knowingly used. Choose products from companies who are part of the PFOA Stewardship scheme where possible. Alternatives using lower chain lengths such as 'C6' are available.
Phthalates (in PVC) (Allowable limits in operation)	Phthalates are used to soften PVC. They are considered to be endocrine disruptors and 6 of them have been restricted by EU legislation (88/378) in toys above specific levels. They are: BBP, DBP, DEHP, DIDP, DINP, and DOP. They are not illegal in clothing, and nor is the use of PVC, but some phthalates are now listed as SVHC's under Reach. Mock leather and plastisol placement prints are most likely to be affected and some coatings can contain PVC.	Alternatives to PVC must be used wherever practicable. Polyurethanes are now becoming more popular for certain end uses but care must be taken to avoid issues with isocyanates (see above). Where PVC has to be used try to avoid the use of phthalates that are restricted and/or classed as SVHCs.

CHEMICAL/ CHEMICAL GROUP	NOTES ON USES, PROBLEMS AND RISKS	HOW TO AVOID FAILURES
Chlorine (Best practice/advisory)	Chlorine is largely regarded as a risk to the environment because of its effect on water courses, although gaseous chlorine is also a noxious gas. Chlorine based chemicals are used in bleaching (both for preparation and denim processing) and wool shrinkproofing processes, and gaseous chlorine can also be used for shrinkproofing wool.	Peroxide based bleach systems should be used where possible. Some reductive bleach processes can be employed where required. Chlorine free wool shrink resist process should be used where possible. Non chlorine bleach systems should be used for denim where possible
Isocyanates (Best practice/advisory)	Isocyanates are very irritating and sensitising. They can be present on finished goods if polyurethane formulations are not cured properly. They can be present in some finishes, binders, coatings and mock leather.	Chemical suppliers should be asked to provide technical advice to ensure products are applied and cured appropriately. It is important to know when PU is being used (e.g. in binders) to assess the risk of failure.
Metals in dyes (Best practice/advisory)	There are two types of metal in dye:- where it is an unwanted contaminant or where it is deliberately used as part of the dye molecule to deliver technical performance. Copper and nickel are commonly used in dye synthesis to deliver satisfactory technical performance on a wide range of dyes for different fibres, and chromium is used in pre-metallised dyes for nylon, silk and wool.	Where practicable dyers should use metal free dyes as a first option. Metal in dyes is bound within a molecule and poses very little risk. To avoid unwanted metal contamination dyes should be selected from ETAD member companies.
Potassium Permanganate (Best practice/advisory)	This is used to produce localised bleaching effects on denim. It is harmful to workers and residues can cause skin irritation for wearers.	Best practice is to use lasers or less harmful bleaching systems such as Magnalite DS to achieve these effects.
Sand Blasting (Best practice/advisory)	Sand blasting is used to produce abraded and faded looks on denim. If workers are not protected they can develop silicosis, a potentially fatal lung disease.	We prefer techniques other than sandblasting to be used (best practice is to use lasers or less harmful bleaching systems such as Magnalite IDS). Where sandblasting is done, workers must be made to wear appropriate protective equipment.
Sequesterants (Best practice/advisory)	Sequesterants (such as EDTA) take hardness out of water and can improve the effectiveness of many textile processes. However the hardness is actually part of the natural eco-system (caused by water having a high mineral content), so dispensing sequesterants into water courses can affect the natural balance.	It is almost always best to use soft water. If softening is required, it is better to soften it using ion-exchange resins.

CHEMICAL/ CHEMICAL GROUP	NOTES ON USES, PROBLEMS AND RISKS	HOW TO AVOID FAILURES
Volatile Organic Solvents (Best practice/advisory)	Historically a wide range of volatile organic solvents have been used in many textile processes (such as scouring), machine cleaning and in chemical formulations to facilitate good flow and drying properties. Their use is now less common but still significant, particularly in printing formulations and coating, spot cleaning and some scouring processes. The risks vary from solvent to solvent but they tend to pose immediate risks to workers and longer term environmental problems. Finished products can also retain odours.	The use of any volatile organic solvents in the production of textiles is not allowed with the exception of closed loop, zero emission continuous dry cleaning machines. Water-based formulations should be used wherever practicable.

2.2.2 Polymers and plastics

Polymers and plastics are largely used for footwear, equipment and accessories, although they are occasionally used as trims for clothing – and very occasionally as the base for clothing (e.g. Neoprene [polychloroprene])

Polymers and plastics are relatively low risk compared to textiles, although many are pigmented. It is therefore necessary to ensure that all colorants used in polymers meet the standards set out in the Master RSL.

Most of the polymers used for Pentland products are inherently low risk in terms of RSL failure but the methods of manufacture are many and varied. Care has to be taken to ensure that no residual organic solvents are present and that no additives (such as restricted flame retardants) have been introduced. It is also strongly advised that ‘blown’ sponge-like products are produced using inert gases such as nitrogen.

The main risks of RSL failure associated with polymers/plastics are related to pigmentation, applied coatings, and the adhesives used to manufacture finished products. A wide variety of adhesives, coatings, lacquers and paints are applied to products and care must be taken to ensure they do not contain chemicals listed in the Master RSL or residual organic solvents.

PVC

Whilst we do not currently ban the use of PVC, our policy is that suppliers should strive to use PVC-free materials wherever practicable. Where there is a PVC-free product that meets our technical performance requirements we expect this to be used in preference to PVC containing alternatives.

It is important to remember that certain phthalates are restricted by legislation for toys and childcare articles and, where PVC is used, phthalate-free PVC should be used in preference to standard products.

2.2.3 Metallic components

Certain legislation restricts the use of specific metals (e.g. cadmium, lead and nickel). Suppliers of metallic components and product should familiarise themselves with all relevant laws and regulations across all global territories (See Appendix 11 and 12).

In the absence of specific legislation, our general requirement for metallic components is that they must not exceed the following limits (based on Standard EN71-3 (Safety of Toys)):-

CHEMICAL	LIMIT
Antimony (Sb)	60 ppm
Arsenic (As)	25 ppm
Barium (Ba)	1000 ppm
Cadmium (Cd)	75 ppm
Chromium (Cr)	60 ppm
Lead (Pb)	90 ppm
Mercury (Hg)	60 ppm
Selenium (Se)	500 ppm

It should be noted that more stringent limits for EN71-3 are intended to be introduced and these will apply to products placed on the market after 20th July 2013.

Element	New requirements			Current requirements in EN 71-3	
	mg/kg in dry, brittle, powder-like or pliable toy material	mg/kg in liquid or stick toy material	mg/kg in scraped off toy material	Any toy materials excluding modelling clay	Modelling clay
Aluminium	5625	1406	70000	-	-
Antimony	45	11.3	560	60	60
Arsenic	3.8	0.9	47	25	25
Barium	4500	1125	56000	1000	250
Boron	1200	300	15000	-	-
Cadmium	1.9	0.5	23	75	50
Chromium (III)	37.5	9.4	460	60	25
Chromium (IV)	0.02	0.005	0.2		
Cobalt	10.5	2.6	130	-	-
Copper	622.5	156	7700	-	-
Lead	13.5	3.4	160	90	90
Manganese	1200	300	15000	-	-
Mercury	7.5	1.9	94	60	25
Nickel	75	18.8	930	-	-
Selenium	37.5	9.4	460	500	500
Strontium	4500	1125	56000	-	-
Tin	15000	3750	180000	-	-
Organic Tin	0.9	0.2	12	-	-
Zinc	3750	938	46000	-	-

It is not acceptable to use non-compliant metallic components covered by a compliant coating or lacquer as these can break, crack or erode.

Note: The acceptable limits for metals on textiles are much lower than those stated above and are in line with Oeko-Tex Standard 100, a globally uniform testing and certification system for textile raw materials, intermediate and end products at all stages of production (see www.oeko-tex.com).

2.2.4 Coatings

Coating is a general term that can be applied to a wide variety of techniques from painting to the production of mock leather.

Coatings can be applied to textiles, leather, plastics/polymers and metals. They can be of many different chemical types and contain many different types of colorant and active ingredients.

It is essential that both the underlying substrate and the coating comply with the standards set out in the Master RSL standards because coatings can break, crack or erode, exposing the substrate underneath.

One of the main concerns with coated products is that their production can generate very high levels of solvent fumes, causing unacceptable working conditions and air pollution.

Our policy is that water based coating systems should be used wherever practicable and that factories that carry out coating operations for Pentland products must comply with relevant workplace exposure limits set out in local legislation.

2.3 SUMMARY OF STANDARDS BY PRODUCT GROUP

2.3.1 Clothing Standards

The following table summarises the standards and risks associated with different materials and techniques used for textiles and leather.

The information in this table is provided as guidance for the main types of material used for clothing– if materials not listed in this table are used for clothing you should refer to the Master RSL and ensure compliance with all restricted chemicals.

Where bonded materials and composites are used, both/all materials (and adhesives) must be assessed to ensure compliance with the RSL standards.

- ⊘ Relatively high risk of this chemical being found on this material – preventative actions and/or testing required
- △ Low risk of failure, but still a possibility – some preventative actions and testing still required
- 😊 Extremely unlikely that this chemical would ever intentionally be used on this material – preventative actions and testing unlikely to be required

	LIMIT (PPM)	COTTON	VISCOSE	LYOCELL	LINEN	POLYESTER	NYLON	ACRYLIC	WOOL	CASHMERE	SILK	DENIM	MOCK LEATHER	LEATHER (PURE FINISH)	PANEL PRINTS	COATINGS FOR TEXTILES AND LEATHER	FLAME RETARDANTS	EASY CARE FINISHES	ANTI-MICROBIAL FINISHES	WATER REPELLENT FINISHES
Alkyl Phenol Ethoxylates (APEO) (Deliberate application not permitted)	1000	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘						⊘
Anti-microbials – restricted (Deliberate application not permitted)	ND	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊	😊					⊘	
Banned Amines (Deliberate application not permitted)	30	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	😊	⊘	⊘						
Dye carriers for polyester (Deliberate application not permitted)	1	😊	😊	😊	😊	⊘	😊	😊	😊	😊	😊	😊	△	😊						
Heavy metals (Deliberate application not permitted)																				
Antimony	30	△	△	△	△	△	△	△	△	△	△	△	△	△						
Cadmium	0.1	△	△	△	△	△	△	△	△	△	△	△	⊘	△	⊘	⊘				
Chromium VI	3	😊	😊	😊	😊	😊	😊	😊	⊘	😊	😊	😊	😊	⊘						
Lead	1*	△	△	△	△	△	△	△	△	△	△	△	⊘	△	⊘	⊘				
Mercury	0.02	△	△	△	△	△	△	△	△	△	△	△	△	△						
Nickel	1	△	△	△	△	△	△	△	△	△	△	△	△	△						

	LIMIT (PPM)	COTTON	VISCOSE	LYOCELL	LINEN	POLYESTER	NYLON	ACRYLIC	WOOL	CASHMERE	SILK	DENIM	MOCK LEATHER	LEATHER (PURE FINISH)	PANEL PRINTS	COATINGS FOR TEXTILES AND LEATHER	FLAME RETARDANTS	EASY CARE FINISHES	ANTI-MICROBIAL FINISHES	WATER REPELLENT FINISHES
Octa and Penta brominated BDE (Deliberate application not permitted)	ND	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺			☹			
Organotin Compounds (Deliberate application not permitted)	1 TBT/ TPHT and 2.5 for others	△	△	△	△	△	△	△	△	△	△	△	△	△						
Pentachlorophenol (PCP) and derivatives (Deliberate application not permitted)	1	△	△	△	△	☺	☺	☺	☺	☺	☺	△	△	△						
PFOS (Deliberate application not permitted)	1	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺						☹
(polybrominated biphenyls) PBB (Deliberate application not permitted)	ND	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺			☹			
Polychlorinated Biphenyls (PCBs) (Deliberate application not permitted)	ND	△	△	△	△	△	△	△	△	△	△	△	△	△						
Polychlorinated Terphenyls (PCTs) (Deliberate application not permitted)	ND	△	△	△	△	△	△	△	△	△	△	△	△	△						
Short Chain Chlorinated Paraffin (SCCPs) (Deliberate application not permitted)	5	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☹	☺	☹	☹	☹			
Skin Sensitizing Dyes (Deliberate application not permitted)	45	☺	☺	☺	☺	☹	△	△	☺	☺	☺	☺	△	☺						
(tris-aziridinyl-phosphin oxide) TRIS (Deliberate application not permitted)	ND	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺			☹			
Formaldehyde (Allowable limits in operation)	75 'free', 300 'released'	△	☹	☹	☺	☺	△	☺	☺	☺	☺	☺	△	☹			☹	☹		
Pesticides (Allowable limits in operation)	0.05 for cotton, 0.5 for wool	☹	☺	☺	△	☺	☺	☺	☹	△	☺	☺	☺	☺					☹	
PFOA (Allowable limits in operation)	1	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺						☹
Phthalates – restricted (Allowable limits in operation)	1000	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☹	☺	☹	☹				
PVC (Allowed on specific products with written permission from Pentland)	ND	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☹	☺	☹	☹				

	LIMIT (PPM)	COTTON	VISCOSE	LYOCELL	LINEN	POLYESTER	NYLON	ACRYLIC	WOOL	CASHMERE	SILK	DENIM	MOCK LEATHER	LEATHER (PURE FINISH)	PANEL PRINTS	COATINGS FOR TEXTILES AND LEATHER	FLAME RETARDANTS	EASY CARE FINISHES	ANTI-MICROBIAL FINISHES	WATER REPELLENT FINISHES
Isocyanates (Best practice / advisory)	Guidance 1 'free', 50 'blocked'	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☹	☺		☹				
Volatile Organic Solvents (Best practice / advisory)	ND	☺	☺	☺	☺	△	△	☺	☺	☺	☺	☺	☹	☺	☹	☹				

Trims and components

Clothing components (e.g. zips, pulls, toggles) and trims must meet specific legislation relating to physical issues (such as choking hazards) as well as the standards for restricted substances. ***It is common for textile trims to be bought locally without any standards being discussed with the vendor and there are therefore a disproportionate number of failures.***

Clothing care products

There are a very small number of 'care products' that are sold to be applied to clothing – for example water-proofing agents. When applied to textiles or leather according to the manufacturer's recommendations, the resulting textile or leather products must comply with the above restricted substances standards. It is expected that suppliers of these products have their own in-house experts to ensure they comply with all legal and regulatory requirements.

Clothing packaging




There are specific requirements for packaging detailed in section 2.3.7 but it should be noted that, in addition to meeting the specific standards for packaging materials, it is necessary to ensure that chemicals in the packaging do not contaminate the clothing materials they contain and cause failures.

2.3.2 Footwear standards

Most footwear is made from leather, rubber, textiles, non-textile synthetics, or combinations of those materials. There may be trims and components made of other materials including metal.

The information in this table is provided as guidance for the main types of material used for footwear – if materials not listed in this table are used for footwear you should refer to the Master RSL and ensure compliance with all restricted chemicals.

Where bonded materials and composites are used, both/all materials (and adhesives) must be assessed to ensure compliance with the RSL standards.

-  Relatively high risk of this chemical being found on this material – preventative actions and/or testing required
-  Low risk of failure, but still a possibility – some preventative actions and testing still required
-  Extremely unlikely that this chemical would ever intentionally be used on this material – preventative actions and testing unlikely to be required

	LIMIT (PPM)	TEXTILES					LEATHER		POLYMERS / PLASTICS								
		COTTON	POLYESTER	NYLON	WOOL	MOCK LEATHER	LEATHER (PURE FINISH)	COATINGS	EVA	NATURAL RUBBER	MULTISPANDEX	PVC	PU	TPU	TPE	TPR	TR
Alkyl Phenol Ethoxylates (APEO) <i>(Deliberate application not permitted)</i>	1000																
Anti-microbials – restricted <i>(Deliberate application not permitted)</i>	ND																
Banned Amines <i>(Deliberate application not permitted)</i>	30																
Dye carriers for polyester <i>(Deliberate application not permitted)</i>	1																
Heavy metals <i>(Deliberate application not permitted)</i>	30																

	LIMIT (PPM)	TEXTILES					LEATHER		POLYMERS / PLASTICS								
		COTTON	POLYESTER	NYLON	WOOL	MOCK LEATHER	LEATHER (PURE FINISH)	COATINGS	EVA	NATURAL RUBBER	MULTISPANDEX	PVC	PU	TPU	TPE	TPR	TR
Antimony																	
Cadmium	0.1	△	△	△	△	⊘	△	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘
Chromium VI	3	☺	☺	☺	⊘	☺	⊘	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺
Lead	1*	△	△	△	△	⊘	△	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘
Mercury	0.02	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△
Nickel	1	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△
Octa and Penta brominated BDE <i>(Deliberate application not permitted)</i>	ND	☺	☺	☺	☺	☺	☺	△	△	△	△	△	△	△	△	△	△
Organotin Compounds <i>(Deliberate application not permitted)</i>	1 TBT/ TPhT and 2.5 for others	△	△	△	△	△	△	☺	△	△	△	△	△	△	△	△	△
Pentachlorophenol (PCP) and derivatives <i>(Deliberate application not permitted)</i>	1	△	☺	☺	☺	△	△	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺
PFOS <i>(Deliberate application not permitted)</i>	1	☺	☺	☺	☺	☺	☺	△	☺	☺	☺	☺	☺	☺	☺	☺	☺
(polybrominated biphenyls) PBB <i>(Deliberate application not permitted)</i>	ND	☺	☺	☺	☺	☺	☺	△	△	△	△	△	△	△	△	△	△
Polychlorinated Biphenyls (PCBs) <i>(Deliberate application not permitted)</i>	ND	△	△	△	△	△	△	☺	△	△	△	△	△	△	△	△	△
Polychlorinated Terphenyls (PCTs) <i>(Deliberate application not permitted)</i>	ND	△	△	△	△	△	△	☺	△	△	△	△	△	△	△	△	△
Short Chain Chlorinated Paraffin (SCCPs) <i>(Deliberate application not permitted)</i>	5	☺	☺	☺	☺	⊘	☺	⊘	☺	☺	☺	☺	☺	☺	☺	☺	☺
Skin Sensitizing Dyes <i>(Deliberate application not permitted)</i>	45	☺	⊘	△	☺	△	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺
(tris-aziridinyl-phosphinoxide) TRIS <i>(Deliberate application not permitted)</i>	ND	☺	☺	☺	☺	☺	☺	△	△	△	△	△	△	△	△	△	△
Formaldehyde <i>(Allowable limits in operation)</i>	75 'free', 300 'released'	△	☺	△	☺	△	⊘	⊘	☺	☺	☺	☺	☺	☺	☺	☺	☺
Pesticides <i>(Allowable limits in operation)</i>	0.05 for cotton, 0.5 for wool	⊘	☺	☺	⊘	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺

	LIMIT (PPM)	TEXTILES					LEATHER		POLYMERS / PLASTICS								
		COTTON	POLYESTER	NYLON	WOOL	MOCK LEATHER	LEATHER (PURE FINISH)	COATINGS	EVA	NATURAL RUBBER	MULTISPANDEX	PVC	PU	TPU	TPE	TPR	TR
PFOA (Allowable limits in operation)	1	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺
Phthalates – restricted (Allowable limits in operation)	1000	☺	☺	☺	☺	☹	☺	☹	☺	☺	☺	☹	☺	☺	☺	☺	☺
PVC (Allowed on specific products with written permission from Pentland)	ND	☺	☺	☺	☺	☹	☺	☹	☺	☺	☺	☹	☺	☺	☺	☺	☺
Isocyanates (Best practice / advisory)	Guidance 1 'free', 50 'blocked'	☺	☺	☺	☺	☹	☺	☹	☺	☺	☺	☺	☹	☹	☺	☺	☺
Volatile Organic Solvents (Best practice / advisory)	ND	☺	☺	☺	☺	☹	☺	☹	☺	☺	☺	☺	☺	☺	☺	☺	☺

*The standard of 1 ppm for metallic components is based on extraction methods. Some end uses in some territories require a total digestion test – see Master RSL for details.

Footwear components (e.g. eyelets, labels, laces)

Footwear components (e.g. zips, pulls, toggles) and trims must meet specific legislation relating to physical issues (such as choking hazards) as well as the standards for restricted substances.

Footwear care products

There are a very small number of 'care products' that are sold to be applied to footwear - for example water-proofing agents. When applied to footwear according to the manufacturer's recommendations, the resulting textile or leather products must comply with the above restricted substances standards. It is expected that suppliers of these products have their own in-house experts to ensure they comply with all legal and regulatory requirements.

Footwear packaging




There are specific requirements for packaging detailed in section 2.3.7 but it should be noted that, in addition to meeting the specific standards for the packaging materials, it is necessary to ensure that chemicals in packaging do not contaminate the footwear materials they contain.

2.3.3 Equipment and accessories standards

Equipment and accessories covers a diverse range of products that can be made of plastic, metal, glass, rubber, leather or combinations of these materials.

The information in this table is provided as guidance for the main types of material used for equipment – if materials not listed in this table are used for equipment you should refer to the Master RSL and ensure compliance with all restricted chemicals.

Where bonded materials, composites or coatings are used, all materials (and adhesives) must be assessed to ensure compliance with the RSL standards.

-  Relatively high risk of this chemical being found on this material – preventative actions and/or testing required
-  Low risk of failure, but still a possibility – some preventative actions and testing still required
-  Extremely unlikely that this chemical would ever intentionally be used on this material – preventative actions and testing unlikely to be required

	LIMIT (PPM)	TEXTILES					LEATHER		POLYMERS / PLASTICS														
		COTTON	POLYESTER	NYLON	WOOL	MOCK LEATHER	LEATHER (PURE FINISH)	COATINGS	EVA	NATURAL RUBBER	MULTISPANDEX	PVC	PU	TPU	TPE	TPR	TR	POLYCARBONATE	CP / NEOPRENE	SILICONE	POLYPROPYLENE	PE FOAM	LDPE
Alkyl PhenoI Ethoxylates (APEO) (Deliberate application not permitted)	1000																						
Anti-microbials – restricted (Deliberate application not permitted)	ND																						
Banned Amines (Deliberate application not permitted)	30																						
Dye carriers for polyester (Deliberate application not permitted)	1																						

	LIMIT (PPM)	TEXTILES					LEATHER		POLYMERS / PLASTICS															
		COTTON	POLYESTER	NYLON	WOOL	MOCK LEATHER	LEATHER (PURE FINISH)	COATINGS	EVA	NATURAL RUBBER	MULTISPANDEX	PVC	PU	TPU	TPE	TPR	TR	POLYCARBONATE	CP / NEOPRENE	SILICONE	POLYPROPYLENE	PE FOAM	LDPE	
Heavy metals (Deliberate application not permitted)	30	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△
Antimony		△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△
Cadmium	0.1	△	△	△	△	⊘	△	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	
Chromium VI	3	☺	☺	☺	⊘	☺	⊘	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	
Lead	1*	△	△	△	△	⊘	△	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	
Mercury	0.02	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	
Nickel	1	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	
Octa and Penta brominated BDE (Deliberate application not permitted)	ND	☺	☺	☺	☺	☺	☺	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	
Organotin Compounds (Deliberate application not permitted)	1 TBT/ TPhT and 2.5 for others	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	
Pentachlorophenol (PCP) and derivatives (Deliberate application not permitted)	1	△	☺	☺	☺	△	△	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	
PFOS (Deliberate application not permitted)	1	☺	☺	☺	☺	☺	☺	△	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	
(polybrominated biphenyls) PBB (Deliberate application not permitted)	ND	☺	☺	☺	☺	☺	☺	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	
Polychlorinated Biphenyls (PCBs) (Deliberate application not permitted)	ND	△	△	△	△	△	△	☺	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	
Polychlorinated Terphenyls (PCTs) (Deliberate application not permitted)	ND	△	△	△	△	△	△	☺	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	
Short Chain Chlorinated Paraffin (SCCPs)	5	☺	☺	☺	☺	⊘	☺	⊘	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	

	LIMIT (PPM)	TEXTILES					LEATHER	POLYMERS / PLASTICS																	
		COTTON	POLYESTER	NYLON	WOOL	MOCK LEATHER	LEATHER (PURE FINISH)	COATINGS	EVA	NATURAL RUBBER	MULTISPANDEX	PVC	PU	TPU	TPE	TPR	TR	POLYCARBONATE	CP / NEOPRENE	SILICONE	POLYPROPYLENE	PE FOAM	LDPE		
Deliberate application not permitted																									
Skin Sensitizing Dyes Deliberate application not permitted	45	☺	☹	△	☺	△	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	
(tris-aziridinyl-phosphinoxide) TRIS Deliberate application not permitted	ND	☺	☺	☺	☺	☺	☺	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	
Formaldehyde Allowable limits in operation	75 'free', 300 'released'	△	☺	△	☺	△	☹	☹	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	
Pesticides Allowable limits in operation	0.05 for cotton, 0.5 for wool	☹	☺	☺	☹	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	
PFOA Allowable limits in operation	1	☺	☺	☺	☺	☺	☺	△	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	
Phthalates – restricted Allowable limits in operation	1000	☺	☺	☺	☺	☹	☺	☹	△	△	△	☹	△	△	△	△	△	△	△	△	△	△	△	△	
PVC Allowed on specific products with written permission from Pentland	ND	☺	☺	☺	☺	☹	☺	☹	☺	☺	☺	☹	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	
Isocyanates Best practice/advisory	Guidance 1 'free', 50 'blocked'	☺	☺	☺	☺	☹	☺	☹	☺	☺	☺	☺	☹	☹	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	
Volatile Organic Solvents Best practice / advisory	ND	☺	△	△	☺	☹	☺	☹	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	

*The standard of 1 ppm for metallic components is based on extraction methods. Some end uses in some territories require a total digestion test – see Master RSL for details.

2.3.4. Electrical items and electrical components

It is an expectation that suppliers of electrical equipment have in-house experts who are familiar with global legislation and manage restricted substances in these products.

It is a requirement for all equipment to comply with legislation that relates to the electrical function and safety of electrical items, such as the Low Voltage Directive 2006/95/EC and Electro Magnetic Compatibility (EMC) Directive 2004/108/EC.

Products must also comply with recycling requirements such as WEEE Directive 2002/95/EC and 2002/96/EC. For example, under the WEEE Directive, components and batteries containing mercury should be removed and collected separately from electronic and electrical waste).

The RoHS (Restriction of Hazardous Substances) Directive 2002/95/EC seeks to substitute and reduce the use of hazardous substances in electrical and electronic goods. Electronic equipment put on the market **should not contain lead, mercury, cadmium, chromium (VI), polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE)**. The maximum permitted concentrations are 1000 ppm (except for cadmium, which is limited to 100 ppm) by weight of homogeneous material. This means that the limits do not apply to the weight of the finished product, or even to a component, but to any single substance that could (theoretically) be separated mechanically—for example, the sheath on a cable or the tinning on a component lead.

There are also separate rules relating to batteries (Directive 2006/66/EC as amended) which prohibit the placing on the market of certain batteries and accumulators with a proportional mercury or cadmium component above a certain threshold.

NOTE: The RoHS and WEEE Directives do not apply directly to textile or leather products, but **would apply** to battery-operated items such as flashing lights on children's shoes, jackets with in-built iPod connectors, heat-cell jackets etc.

2.3.5 Food and drink storage products

Plastics - Any food or drink storage item made out of plastic (e.g. water bottles) must comply with EU Directive 90/128/EC Commission Directive Relating to Plastics Materials and Articles Intended to Come into Contact with Foodstuffs. The test required is EN 1186:2002, which determines the total amount of all substances that can be extracted from the product.

Recycled Plastics – Any recycled plastic that comes into contact with food must comply with requirements and authorisation procedure of recycling processes used in manufacture under Regulation EC 282/2008.

Restricted substances include N-Nitrosamine, vinyl chloride monomers and epoxy derivatives. For more detailed information please refer to http://ec.europa.eu/food/food/chemicalsafety/foodcontact/spec_dirs_en.print.htm

2.3.6 Cosmetics

Cosmetics are not usually part of our product range and therefore are not covered in this document. It is an expectation that suppliers of cosmetics have in-house experts who are familiar with global legislation and manage restricted substances in these products.

If cosmetics are produced, specific regulations in different countries would apply. For example in the UK, cosmetics need to comply with the Cosmetic Products (Safety) Regulations 2008.

For information, please refer to http://www.opsi.gov.uk/si/si2008/uksi_20081284_en_1

A useful guide can be found at

<http://www.newham.gov.uk/NR/rdonlyres/C1731F94-11FE-48BD-AB79-9705383D494A/0/DTIGuideToTheCosmeticsProductsSafetyRegs.pdf>

2.3.7 Packaging

Suppliers are encouraged to design and select packaging materials that can be re-used or recycled. Suppliers must be familiar with legislation in this area and ensure compliance. For example the EU Packaging & Packaging Waste Directive (94/62/EC) is concerned with minimising packaging waste material and promoting energy recovery, re-use and recycling of packaging.

We require that the total metal content of lead, cadmium, mercury and chromium VI in packaging should not exceed 100ppm, in accordance with the EU Packaging Directive.

We also remind suppliers that certain additives in packaging materials can transfer onto the products they contain. If this occurs, it can result in legal packaging causing products to fail against the Pentland restricted standards.

European toy legislation states that packaging for children's items must be a minimum of 380mm in thickness and that bags of certain size must not have drawstrings for closures. There may be occasions where packaging is considered as being integral to the toy (such as a bag to store toys) and will therefore need to be free from the six phthalates listed in the legislation.

For the full Directive: http://eur-lex.europa.eu/smartapi/cgi/sga_doc?smartapi!celexplus!prod!DocNumber&lg=en&type_doc=Directive&an_doc=1994&nu_doc=62

We believe the use of sachets of silica gel and other desiccants to be largely useless in preventing mould and mildew during transportation. The use of any active biocides is not permitted without the permission of Pentland and suppliers are reminded that some products (such as Dimethyl Fumarate) are now illegal in certain territories, including Europe.

2.3.8 Marketing, promotional and point of sale material standards

Marketing and promotional items incorporates all additional materials used to sell or promote a brand or product. This is a very diverse category that can include paper and plastic used for displays, sweets, 'giveaways' and gifts that can be made of virtually any type of material.

Relevant legislation for restricted substances standards still applies to these items and suppliers should ensure they have in-house experts who are familiar with all relevant legislation and standards relating to their specific products.

It is recommended that suppliers carry out a risk assessment on these items before orders are placed.

2.4 TESTING GUIDANCE

The tables in Section 2.3 indicate which finished apparel products are most likely to have restricted substances present, and give an indication of where most risk assessment and testing attention should be focussed. However these risk assessments are simply product based and take no account of the suppliers involved in the manufacture of those products.

Our experience is that it is absolutely necessary to consider the product and supply route to properly assess the risk of failure.

2.4.1 Assessing supply chain specific risks

The indications of risk in the tables in Section 2.3 show the relative chances of restricted substances being found on articles selected at random from manufacturing facilities around the world. Those that are lower risk (indicated by the green or grey icon) are likely to remain low risk in all circumstances but there is not a uniform level of risk for all those indicated as higher risk (red icon).

In reality the risks of failure are dependent on a number of factors including:-

- Type of product
- Colour of product (for dye or pigment related issues)
- Country of manufacture (e.g. differences in legislation, differences in policing of legislation)

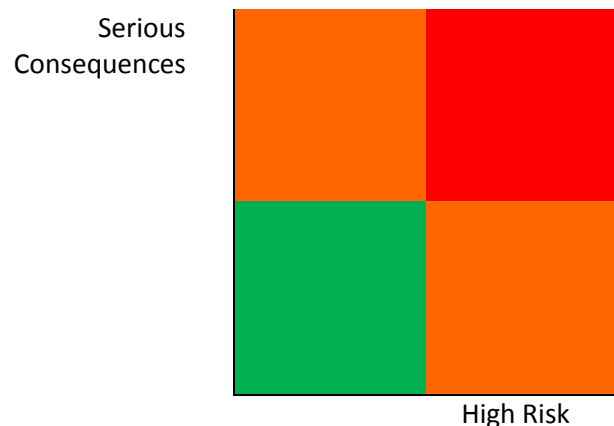
- Knowledge of entire supply route – products manufactured using unknown routes, or using any unknown factory as part of the process, pose a very high risk
- Previous history – products made by known suppliers who use known factories, with whom there is a long history of compliance are much lower risk than those made by new suppliers
- Direct knowledge of factories – where factories have been audited and there is detailed knowledge of chemical inventories and factory systems it is much easier to make judgments as to whether a factory is low risk or high risk.

2.4.2 Risk assessment and testing frequency

Whilst there is always a demand for specific, prescriptive advice on which tests should be done and how frequently, it is absolutely essential that individual assessments are made on a case by case basis.

We encourage risk-based testing to minimise the chances of restricted substances being present on finished products whilst avoiding unnecessary testing costs.

A simple way to carry out risk assessment is to look at the risk of failure and consequences of failure on a graph (examples of serious consequences of failure include situations where merchandise is shown to be illegal or where products have a very high likelihood of causing consumer injuries).



Products that fall into the red area should be tested more frequently. An example of such a scenario would be the presence of banned amines in black textiles produced in an unknown dyehouse in a developing country. There is a high risk of chemical failure and the finished products would be illegal in many countries –

necessitating product rejections and even product recalls – so it would make sense to test almost every batch of fabric until more details on the dyer were obtained.

Examples of higher risks:-

- Unknown dyer, laundry, tannery, printer
- Multiple post-material processes (coating, laminating, bonding, etc)
- Developing nations
- Materials bought via agents/converters
- Previous failures
- Failure to provide information on dyes, chemicals and process routes

Examples of lower risks:-

- Factories that have been audited by Pentland representatives and deemed low risk
- Production of raw materials in developed nations
- Verticality
- Previous track record of conformance – backed up by independent test reports
- Full disclosure of information on dyes, chemicals and process routes

The consequences of failure can include:-

- Illegal products
- Unsafe products
- Known harm caused to environment
- Known harm caused to workers
- Serious brand damage

2.4.3 Submission of test results and due diligence

You may be asked to provide proof of compliance by one of the Pentland companies in the form of a test certificate from an accredited/approved lab.

- In some instances brands will require confirmation of compliance before approving a product for sale
- In some instances brands will permit suppliers to self-approve and will conduct due diligence checks once the products are manufactured/in store

It is the responsibility of suppliers who have been permitted to self-approve products and materials to develop systems to evaluate specific risks and determine testing frequency.

NB – there are some countries where a test certificate or 'declaration of conformity' may be mandatory by law for certain products (e.g. under US lead legislation, children's items require a test certificate, while German consumer goods legislation requires declarations of conformity).

Pentland will carry out due diligence testing for a wide range of restricted chemicals across a wide range of products. Items will be routinely selected from ranges of products that are on sale and tested in season.

Section 3. Best Practice for Managing Restricted Substances

Our aim is to provide information and guidance to avoid restricted substance failures. In the event that a failure does occur, Pentland will deal with issues on a case by case basis and make judgments according to the particular situation.

Failures fall into two distinct categories:-

- Tests carried out **before** products are put on sale
 - Failures may result in products being rejected and not put on sale
- Tests that are carried out on products that are **already** on sale by one of our brands
 - We may be legally obliged to remove stock from stores
 - We may be legally obliged to remove stock from stores and recall products
 - We may decide to remove legal merchandise from stores if we believe it poses a risk to consumers (e.g. skin complaints etc)
 - We may decide to keep existing stock in stores but refuse take further deliveries until suppliers can demonstrate a plan is in place to ensure the offending chemical is removed from future production
 - We may decide that product poses very little risk and keep stocks and orders in place, provided suppliers can demonstrate a plan is in place to ensure the offending chemical is removed from future production

In the event of a failure, decisions will be taken by brands and their expert advisors. It is in the supplier's interest to make all information relating to production chemicals, processes and existing test data available on request to ensure pragmatic decisions can be made.

3.1 CAUSES OF FAILURE

One of the most common underlying causes of failure is that suppliers and manufacturers do not know the RSL standards that they are expected to meet.

It is therefore important that these standards are communicated to every single company involved in the manufacture of raw materials, components and final products.

In cases where suppliers are aware of the standards, one of the following will be the basic cause of failure:-

- Deliberate or wilful use of restricted substances by manufacturers with the knowledge that there is a high risk of failure
- Non-deliberate use of restricted substances that results in failure
- Genuine mistakes or unforeseen circumstances
- No attempt to establish whether restricted substances are present in the chemicals used or on the raw materials
- Ignorance of the need to obtain information on restricted substances
- Deliberate avoidance of information gathering

It is entirely the responsibility of Group 1 and 2 suppliers (materials and product manufacturers – see Section 1.1) to establish which chemicals are used in the manufacture of our products. Not knowing what is in raw materials or chemical formulations is not an acceptable defence in the event of a failure.

The level of some restricted chemicals in final product is determined by a combination of both chemical selection and processing routes. For example, chemicals such as formaldehyde can be generated during certain curing processes, and the level of residual chemical is determined by the curing conditions (temperature, time, pH etc) as much as by the choice of starting chemicals. Other processes that involve deliberate or inadvertent changes of oxidation state (such as those using chromium salts) can also yield failures if processes are not controlled properly.

There are occasional failures where materials that pass RSL standards can become contaminated after their manufacture (e.g. by packaging), or where downstream processing can cause a failure (e.g. textiles that pass restricted substance standards can be used to make a garment that fails restricted substances standards following processes such as bonding and lamination).

3.2 HOW TO AVOID FAILURE

RSLs

Different brands have different restricted substances lists. Whilst they are not all identical, there is a large degree of commonality. All manufacturers and factories should ensure they have all relevant restricted substances lists in their possession and be aware of their content.

It is the responsibility of garment, footwear and equipment manufacturers to ensure that all factories that supply them with materials have this RSL in their possession.

Inventories

Each factory should have a full, up to date inventory of all chemicals and raw materials. Ideally, an individual with relevant chemicals expertise should be in charge of managing incoming chemicals and raw materials to ensure that chemicals that could potentially cause restricted substances failures are either rejected or flagged as being a risk.

Systems should be in place to ensure that all chemicals are clearly labelled and that all relevant information is available to workers in their local language. This is important for worker safety and reduces the chance of mistakes being made when chemicals are selected.

Selection of Chemical Suppliers

Like any other product, chemicals are produced and distributed by companies of varying quality and ability.

When selecting suppliers of dyes, chemicals and other raw materials it is important to choose those that:-

- Provide technical information on all their products
- Provide MSDS (Material Safety Data Sheets) for all products
- Provide test data relating to the presence or absence of restricted substances when requested
- Provide written declarations that their products will meet these RSL standards on request

The best dye, chemical and raw material suppliers will be fully aware of all major RSLs and will have assessed and categorised their product range accordingly. Occasionally there will be companies whose entire range of products is compliant with these standards, while many companies will be able to advise downstream users which products will pass, which will fail and which can pass when processed according to their recommendations.

When selecting suppliers it is important to recognise the difference between 'marginal failure' and an out-and-out disregard for worker safety and environmental damage. For example, if a chemical supplier has a range of dyes that includes dyes that are carcinogenic or can yield carcinogenic amines, then that company should be avoided.

Suppliers of **all** chemicals should be assessed - not just those that are intended to stay on or in the final product. Attention should be paid to:-

- Cleaning chemicals (often containing preservatives, solvents, APEOs)
- Basic process chemicals (acids, alkalis, salts)
- Additives, stabilizers, buffers, lubricants, anti-oxidants, anti-reductants

It is a mistake to buy cheap process chemicals for two reasons. Firstly they can be contaminated and cause direct failures, and secondly they can be inconsistent – resulting in poor process control and subsequent failures.

The use of independent chemical approval/certification schemes such as Oeko-tex or Bluesign is helpful for avoiding the use of harmful chemicals, but cannot be used to absolve suppliers of their responsibility for checking all chemicals and processes.

Process Control

All factories should have documented Standard Operating Procedures (SOPs) that describe the chemicals that are used and exactly how they should be applied. SOPs should be risk assessed to highlight any risks of failure, and should be reviewed on a regular basis to ensure they are still in line with published RSLs and best practice.

There should be a unique batch card for each batch of production that records exactly what chemicals were used and how they were applied, as well as details of any other processes that can affect levels of restricted substances.

Testing

Factories must carry out testing on their finished products if requested to do so by Pentland, or where legislation demands that a test certificate is required to supply products into a specific country. It is also good practice to carry out RSL testing on finished products on a risk basis if the number of test requests from downstream customers is low.

In addition to these tests it is best practice to carry out risk based testing on incoming dyes, chemicals and raw materials to check for contamination.

Testing is often considered to be a cost. While testing can be expensive it is much lower cost than the cost of failure, which can run into millions of pounds in the most extreme circumstances.

Factories with well controlled inventories of chemicals from high quality suppliers should need to do less testing than those who have less information on their raw materials.

3.3 FACTORY CONDITIONS

The chemicals selected to manufacture products have the greatest bearing on the risk to downstream consumer and workers who manufacture clothing, footwear and equipment, but application methods can also have an influence.

The chances of mistakes that can lead to RSL failures are vastly reduced in factories that are clean, tidy and well organised, and have clear production and management systems in place. This helps ensure processes can be carried out consistently and with minimal risk of mistakes or contamination. We expect factories to pay great attention to housekeeping and to provide workers with an environment in which they can work safely.

3.4 WORKER SAFETY

We expect workers in our supply chain to be provided with safe working conditions. This expectation covers the general factory environment, machinery, and exposure to chemicals.

It should be noted that, although many of the restricted substance standards are designed to protect consumers by limiting the amount of a chemical on a finished product, workers involved in manufacturing textiles, plastic and component materials are in fact exposed to much higher quantities of chemicals than consumers on a routine basis. We therefore expect them to be appropriately protected:-

- By ensuring the most harmful chemicals are not used anywhere in the factory
- By minimising their exposure to the harmful chemicals that are used:-
 - By introducing mechanisation and automation to reduce direct exposure
 - By providing appropriate personal protective equipment
 - By providing information on chemicals in their local language

Workers should be provided with adequate safety training to ensure they are aware of specific risks and how to minimise them.

3.5 ENVIRONMENTAL CONTROLS

The avoidance of specific chemicals listed in these standards will reduce the risk of environmental damage associated with their use.

It is important to note that some of the worst environmental damage is caused by relatively benign chemicals whose use is routinely permitted by restricted substances standards (such as acids, alkalis, salt and natural oils and waxes).

It is necessary for factories to be in a position to demonstrate **ongoing compliance** with local environmental standards for effluent, air emissions and solid waste.

Suppliers are reminded that they must do everything possible to comply with the Pentland Environmental Policy.

Section 4. Appendices

4.1 RESTRICTED AROMATIC AMINES

The following amines are restricted under **EU Directive 2002/61/EC**. In countries outside the EU, several other pieces of national legislation restrict the same group of chemicals.

NAME	CAS NUMBER	
1	4-Aminodiphenyl	92-67-1
2	Benzidine	92-87-5
3	4-Chloro-2-Toluidine	95-69-2
4	2-Naphthylamine	91-59-8
5	o-Aminoazotoluene	97-56-3
6	2-Amino-4-Nitrotoluene	99-55-8
7	4-Chloroaniline	106-47-8
8	2,4-Diaminoanisole	615-05-4
9	4,4'-Diaminobiphenyl methane	101-77-9
10	3,3'-Dichlorobenzidine	91-94-1
11	3,3'-Dimethoxybenzidine (o-Dianisidine)	119-90-4
12	3,3'-Dimethylbenzidine	119-93-7
13	3,3'-Dimethyl-4,4'- Diaminodiphenyl methane	838-88-0
14	p-Cresidine	120-71-8
15	4,4'- Methylene-Bis-(2-Chloroaniline)	101-14-4
16	4,4'- Oxydianiline	101-80-4
17	4,4'- Thiodianiline	139-65-1
18	2,4-Diaminotoulene	95-80-7
19	2,4,5-Trimethylaniline	137-17-7
20	o-Toulidine	95-53-4
21	2-methoxyaniline	90-04-0
22	4-Aminoazobenzene	60-09-3
23	2,4-Xylidine	95-68-1
24	2,6-Xylidine	

Note: the two Xylidine isomers are not restricted under EU legislation

4.2 DYES THAT CAN CLEAVE TO YIELD CARCINOGENIC AMINES

Dyes are listed according to their generic Colour Index number (CI number). They may be available as individual dyes or as part of commercial mixtures under a range of trade names. The list is not exhaustive and dyers must seek assurances from their dye suppliers that their particular dyes cannot yield banned amines.

Acid Black 209	Direct Blue 15	Direct Brown 222	Direct Red 10
Acid Black 29	Direct Blue 151	Direct Brown 25	Direct Red 13
Acid Orange 45	Direct Blue 160	Direct Brown 27	Direct Red 17
Acid Red 114	Direct Blue 173	Direct Brown 31	Direct Red 2
Acid Red 115	Direct Blue 192	Direct Brown 33	Direct Red 21
Acid Red 128	Direct Blue 2	Direct Brown 51	Direct Red 22
Acid Red 148	Direct Blue 201	Direct Brown 59	Direct Red 28
Acid Red 158	Direct Blue 215	Direct Brown 6	Direct Red 37
Acid Red 167	Direct Blue 22	Direct Brown 79	Direct Red 39
Acid Red 24	Direct Blue 25	Direct Brown 95	Direct Red 44
Acid Red 265	Direct Blue 295	Direct Green 1	Direct Red 46
Acid Red 85	Direct Blue 3	Direct Green 6	Direct Red 62
Azoic Diazo Component 12	Direct Blue 35	Direct Green 8	Direct Red 67
Basic Brown 4 / Solvent Brown 12	Direct Blue 6	Direct Green 8.1	Direct Red 7
Developer 14 Oxidation Base 20	Direct Blue 76	Direct Green 85	Direct Red 72
Direct Black 154	Direct Blue 8	Direct Orange 1	Direct Violet 1
Direct Black 29	Direct Blue 9	Direct Orange 10	Direct Violet 12
Direct Black 38	Direct Brown 1	Direct Orange 108	Direct Violet 21
Direct Black 4	Direct Brown 1:2	Direct Orange 6	Direct Violet 22
Direct Blue 1	Direct Brown 101	Direct Orange 7	Direct Yellow 1
Direct Blue 10	Direct Brown 154	Direct Orange 8	Direct Yellow 24
Direct Blue 14	Direct Brown 2	Direct Red 1	Direct Yellow 48

4.3 DYES IMPLICATED IN CONTACT DERMATITIS

Dyes are listed according to their generic Colour Index number (CI number). They may be available as individual dyes or as part of commercial mixtures under a range of trade names. The list is not exhaustive and dyers must seek assurances from their dye suppliers that their particular products do not contain skin sensitizing dyes.

Disperse Blue	1
Disperse Blue	3
Disperse Blue	7
Disperse Blue	26
Disperse Blue	35
Disperse Blue	102
Disperse Blue	106
Disperse Blue	124
Disperse Brown	1
Disperse Orange	1
Disperse Orange	3
Disperse Orange	37
Disperse Orange	76
Disperse Red	1
Disperse Red	11
Disperse Red	17
Disperse Yellow	1
Disperse Yellow	3
Disperse Yellow	9
Disperse Yellow	39
Disperse Yellow	49

4.4 ETAD MEMBER DYE COMPANIES

The **Ecological and Toxicological Association of Dyes and Organic Pigments Manufacturers (ETAD)** is an organisation whose members source and produce dyes and pigments according to strict limits on the presence of harmful chemicals.

Sourcing products from ETAD member companies carries a much lower risk of RSL failure than sourcing from non-member companies, although there are some high quality dye suppliers who choose not to be members of ETAD.

Member companies are obliged to adhere to the ETAD Code of Ethics, which is based on the principles of responsible care.

For a complete current list of ETAD member companies, look at www.etad.com

4.5 RESTRICTED PHTHALATES

The phthalates listed below are banned or restricted from use in toys and child care items **by EU Directive 2005/84/EC**. Whilst we encourage suppliers to use alternatives to PVC where practicable, these phthalates are not illegal in clothing or footwear.

Banned phthalates

The following three phthalates cannot be used as substances or constituents of preparations, at a concentration greater than 0.1% by mass, of the plasticised material in all toys and child care items.

SUBSTANCE	ACRONYM	CAS NO.	EINECS NO.
Bis(2-ethylhexyl) phthalate	DEHP	117-81-7	204-211-0
Benzyl butyl phthalate	BBP	85-68-7	201-622-7
Dibutyl phthalate	DBP	84-74-2	201-557-4

Restricted phthalates

The following three phthalates cannot be present in concentrations greater than 0.1% by mass in toys and childcare items intended for children under 36 months and which can be placed in the mouth.

SUBSTANCE	ACRONYM	CAS NO.	EINECS NO.
Di-isononyl phthalate	DINP	28553-12-0	249-079-5
Dioctyl phthalate	DOP	117-84-0	204-214-7
Di-isodecyl phthalate	DIDP	26761-40-0	247-977-1

4.6 REACH SUBSTANCES OF VERY HIGH CONCERN (SVHC) – CANDIDATE LIST

The following list was correct at the time of publication but you are advised to be aware of the up-to-date list on an ongoing basis. The up-to-date list is available at http://echa.europa.eu/chem_data/authorisation_process/candidate_list_table_en.asp#download

2,4-Dinitrotoluene	Cobalt(II) sulphate
2-Ethoxyethanol	Diarsenic pentaoxide
2-Methoxyethanol	Diarsenic trioxide
4,4'- Diaminodiphenylmethane (MDA)	Dibutyl phthalate (DBP)
5-tert-butyl-2-4-6-trinitro-m-xylene (musk xylene)	Diisobutyl phthalate
Acrylamide	Disodium tetraborate
Alkanes C10-13 chloro (Short Chain Chlorinated Paraffins)	Hexabromocyclododecane (HBCDD) and all major diastereoisomers (see ECHA website for detail)
Aluminosilicate Refractory Ceramic Fibres (see ECHA website for detail)	Lead chromate
Ammonium dichromate	Lead chromate molybdate sulphate red (C.I. Pigment Red 104)
Anthracene oil (See ECHA website for detail)	Lead hydrogen arsenate
Anthracene;;204-371-1;120-12-7;28.10.2008;PBT (article 57d);ED/67/2008	Lead sulfochromate yellow (C.I. Pigment Yellow 34)
Benzyl butyl phthalate (BBP)	Pitch, coal tar, high temp
Bis (2-ethylhexyl)phthalate (DEHP)	Potassium chromate
Bis(tributyltin)oxide (TBTO)	Potassium dichromate
Boric acid	Sodium chromate
Chromic acid	Sodium dichromate
Chromium trioxide	Tetraboron disodium heptaoxide
Cobalt dichloride	Trichloroethylene
Cobalt(II) carbonate	Triethyl arsenate
Cobalt(II) diacetate	Tris(2-chloroethyl)phosphate
Cobalt(II) dinitrate	Zirconia Aluminosilicate Refractory Ceramic Fibres (see ECHA website for detail)

4.7 PERSISTENT ORGANIC POLLUTANTS (POPS)

These chemicals have been identified as dangerous for the environment because they are bio-accumulative, persistent and toxic. The 2001 Stockholm Convention on Persistent Organic Pollutants (POPs) identified the following 12 chemicals as those that should be reduced until they are totally eliminated. The chemicals on this list **should not be present above the limit of detection**.

Aldrin
Chlordane
DDT (plus DDD & DDE)
Dieldrin
Dioxins
Endrin
Furans
Hepatchlor
Hexachlorobenzene (HCB)
Mirex
Polychlorinated Biphenyls (PCBs)
Toxaphene

More information is available at www.pops.int/documents/guidance

4.8 OSPAR LIST OF CHEMICALS FOR PRIORITY ACTION

The Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention) has produced a list of Chemicals for Priority Action. It is unlikely that these will be routinely used in the production of our products and **we do not permit them to be present above the limits of detection.**

TYPE	GROUP OF SUBSTANCES / SUBSTANCES	CAS NO	EINECS NO
A: CHEMICALS WHERE A BACKGROUND DOCUMENT HAS BEEN OR IS BEING PREPARED			
Aromatic hydrocarbon			
Metallic compound	cadmium		
Metal/organometallic compounds	lead and organic lead compounds		
	mercury and organic mercury compounds		
Organometallic compounds	organic tin compounds		
Organic ester	neodecanoic acid, ethenyl ester	51000-52-3	256-905-8
Organohalogens	perfluorooctanyl sulphonic acid and its salts (PFOS)	1763-23-1	217-179-8
	tetrabromobisphenol A (TBBP-A)	79-94-7	201-236-9
	1,2,3-trichlorobenzene	87-61-6	201-757-1
	1,2,4-trichlorobenzene	120-82-1	204-428-0
	1,3,5-trichlorobenzene	108-70-3	203-608-6
	brominated flame retardants		
	polychlorinated biphenyls (PCBs)		
	polychlorinated dibenzodioxins (PCDDs) polychlorinated dibenzofurans (PCDFs) short chained chlorinated paraffins (SCCP)		
Organic nitrogen compound	4-(dimethylbutylamino)diphenylamin (6PPD)	793-24-8	212-344-0
Organophosphate			
Pesticides/Biocides/ Organohalogens	dicofol	115-32-2	204-082-0
	endosulphan	115-29-7	204-079-4
	hexachlorocyclohexane isomers (HCH)		
	methoxychlor	72-43-5	200-779-9

TYPE	GROUP OF SUBSTANCES / SUBSTANCES	CAS NO	EINECS NO
	pentachlorophenol (PCP)		
	trifluralin	1582-09-8	216-428-8
Pharmaceutical	clotrimazole	23593-75-1	245-764-8
Phenols	2,4,6-tri-tert-butylphenol	732-26-3	211-989-5
	nonylphenol/ethoxylates (NP/NPEs) and related substances		
	octylphenol	140-66-9	205-426-2
Phthalate esters	certain phthalates: dibutylphthalate (DBP), diethylhexylphthalate (DEHP)		
Polycyclic aromatic compounds	polyaromatic hydrocarbons (PAHs)		
Synthetic musk	musk xylene		
B: CHEMICALS WHERE NO BACKGROUND DOCUMENT IS BEING PREPARED BECAUSE THEY ARE INTERMEDIATES IN CLOSED SYSTEMS			
Aliphatic hydrocarbons	1,5,9 cyclododecatriene	4904-61-4	225-533-8
	cyclododecane‡	294-62-2	206-033-9
C: CHEMICALS WHERE NO BACKGROUND DOCUMENT IS BEING PREPARED BECAUSE THERE IS NO CURRENT PRODUCTION OR USE INTEREST			
Organohalogens	2-propenoic acid, (pentabromo)methyl ester	59447-55-1	261-767-7
	2,4,6-bromophenyl 1-2(2,3-dibromo-2-methylpropyl)	36065-30-2	252-859-8
	pentabromoethylbenzene	85-22-3	201-593-0
	heptachloronorborene	28680-45-7 2440-02-0	249-153-7
	pentachloroanisole	1825-21-4	-
	polychlorinated naphthalenes		
	trichloronaphthalene	1321-65-9	215-321-3
	tetrachloronaphthalene	1335-88-2	215-642-9
	pentachloronaphthalene	1321-64-8	215-320-8
	hexachloronaphthalene	1335-87-1	215-641-3
	heptachloronaphthalene	32241-08-0	250-969-0
	octachloronaphthalene	2234-13-1	218-778-7
	naphthalene, chloro derivs.	70776-03-3	274-864-4
Organic nitrogen compound	3,3'-(ureylenedimethylene)bis(3,5,5-trimethylcyclohexyl) diisocyanate	55525-54-7	259-695-6
Pesticides/Biocides	ethyl O-(p-nitrophenyl) phenyl phosphonothionate (EPN)	2104-64-5	218-276-8

TYPE	GROUP OF SUBSTANCES / SUBSTANCES	CAS NO	EINECS NO
	flucythrinate	70124-77-5	274-322-7
	isodrin*	465-73-6	207-366-2
	tetrasul*	2227-13-6	218-761-4
Pharmaceutical	diosgenin*	512-04-9	208-134-3

Further information is available from the OSPAR Commission: www.ospar.org

4.9 RESTRICTED PESTICIDES AND INSECTICIDES

Those used on natural cellulose fibres, including cotton:-

2,4 D
2,4,5,T
Aldrin
Captafol
Chlordane
Chlordimeform
Chlorobenzilate
DDT
Dieldrin
Dinoseb (and its salts)
Endrin
Heptachlor
Hexachlorobenzene
Hexachlorocyclohexane
Monocrotophos

Those used on wool and animal fibres:-

Aldrin
Chlorfenvionphos
Cyhalothrin
Cypermethrin
DDD
DDT
Deltamethrin
Diazinon
Dichlofenthion
Dieldrin
Endrin
Fenchlorphos
Fenvalerate
Alpha-Hexachlorocyclohexane
Beta-Hexachlorocyclohexane
Gamma-Hexachlorocyclohexane
Lindane
Propetamphos

4.10 VOLATILE ORGANIC SOLVENTS

The following solvents must not be used in the manufacture of our products unless their use has been authorised by Pentland, we are satisfied the working conditions are safe and the risk of residual solvent in final products is acceptably low.

Benzene
Cresols
1,1-Dichloroethylene
Dimethyl formamide (DMF)
Dimethylsulfoxide (DMSO)
Ethylene glycol monobutyl ether
Formaldehyde
Methylene Chloride
4,4'-methylenebis (2-chloraniline)
N,N-Dimethylacetamide (DMAC)
n-hexane
n-methyl pyrrolidone (NMP)
Phenol
Tetrachloroethylene
Toluene
2,4-toluene diisocyanate
Toluene-2,6-Diisocyanate
1,1,1-trichloroethane
1,1,2-Trichloroethane
Trichloroethylene
Trichloromethane
Xylene

4.11 SELECTED CHEMICAL LEGISLATION

SUBSTANCE	LEGISLATION	LIMIT
Alkylphenols and Alkylphenol Ethoxylates	EU Directive 2003/53/EC Annex XVII of the REACH Regulations 1907/2006	Use of nonylphenol and nonyphenol ethoxylate should be limited to 0.1% by mass (1000ppm)
Antimony	EU Directive 88/378 EEC (Toy Safety Directive)	Maximum limit 60ppm
Arsenic	EU Directive 88/378 EEC (Toy Safety Directive)	Maximum limit 25ppm
Azo-Dyes	EU Directive 2002/61 Annex XVII of the REACH Regulations 1907/2006	On break down, none of the 22 named amines should be detectable above a maximum limit of 30ppm per amine.
Barium	EU Directive 88/378 EEC (Toy Safety Directive)	Maximum limit 1000ppm
Cadmium	EU Directive 91/338 EEC (Cadmium Directive)	Maximum limit 100ppm
	EU Directive 88/378 EEC (Toy Safety Directive)	Maximum limit 75ppm
	EU Directive 94/62 EC (Packaging and Packaging Waste Directive)	Maximum limit 100ppm *
	Dutch Legislation	Maximum limit 50ppm
Chromium VI	EU Directive 88/378 EEC (Toy Safety Directive)	Maximum limit 60ppm+
	EU Directive 94/62 EC (Packaging and Packaging Waste Directive)	Maximum limit 100ppm*
	EU Directive 89/686/EEC (Personal Protective Equipment Directive)	Maximum limit 10ppm for safety footwear
	German Law	Zero tolerance (See note on Maximum Detection Limits)
Dimethyl Fumarate	EU 2009/251/EC	0.1 ppm
Formaldehyde	Japan Law 112	Maximum limit 75ppm (13ppm for children's wear) Maximum limit 75ppm outerwear
Lead	EU Directive 88/378 EEC (Toy Safety Directive)	Maximum limit 90ppm
	EU Directive 94/62 EC (Packaging and Packaging Waste Directive)	Maximum limit 100ppm*
	US Consumer Product Safety Improvement Act of 2008 (HR4040)	Children's products (age 12 & younger) imported into the US: Maximum limit 90ppm for lead in paint and coatings** All materials used in children's shoes imported into the US: 300 ppm (from August 2009) 100 ppm (from August 2011)

SUBSTANCE	LEGISLATION	LIMIT
Mercury	EU Directive 88/378 EEC (Toy Safety Directive)	Maximum limit 60ppm
	EU Directive 94/62 EC (Packaging and Packaging Waste Directive)	Maximum limit 100ppm*
Nitrosamines	EU Directive 93/11/EEC restrictions on use of N-nitrosamines and N-nitrosatable substances	Maximum limit 0.01mg/kg of material for N-nitrosamines. Maximum limit 0.1mg/kg for N-nitrosatable substances.
Nickel	EU Nickel Directive 94/27	Maximum limit 0.5µg/cm ² /week
Organotin	EU 2009/425/EC	Maximum 1 ppm TBT
Pentachlorophenol	EU Directive 91/173/EEC Annex XVII of the REACH Regulations 1907/2006	Maximum limit 1000ppm
	German Chemicals Law	Maximum limit 5ppm
Phthalates	EU Directive 2005/84/EC (Phthalates) Annex XVII of the REACH Regulations 1907/2006	Banned: DEHP, DBP, BBP. Restricted use of DINP, DIDP, DOP in toys and childcare items for children under 36 months to Maximum limit 0.1% by mass (1000ppm)
	US Consumer Product Safety Improvement Act of 2008 (HR4040) (products for children aged 12 & younger imported into the US that are deemed a toy or a game) <ul style="list-style-type: none"> • Child care articles • Toys that can be placed in mouth • Toys that cannot be placed in mouth 	Must meet restrictions below and be tested by an accredited laboratory. DEHP DBP BBP DINP DIDP DNOP - Maximum limit 0.1% or 1000ppm DEHP DBP BBP DINP DIDP DNOP - Maximum limit 0.1% or 1000ppm DEHP DBP BBP Maximum limit 0.1% or 1000ppm
Selenium	EU Directive 88/378 EEC (Toy Safety Directive)	Maximum limit 500ppm
Hydrofluorocarbons (HFCs), Sulphur hexafluoride (SF6), Perfluorocarbons (PFCs)	EU Directive 842/2006 (F- Gas Regulation)	Prohibits use of air-cushioned soles in footwear.
<p>* EU Packaging Directive states that the total metal content of Lead, Cadmium, Mercury and Chromium VI should not exceed maximum limit of 100ppm.</p> <p>** US Consumer Product Safety Improvement Act of 2008 (HR4040) sets limit of 90ppm in paint and surface coatings for each component of any product for children aged 12 years or younger. Please note: An interim enforcement policy, issued by the CPSIA on 29 Dec 2009, states that importers need to provide testing certificates on total lead content for all children's products from 11 Feb 2010. The interim policy also states that importers can demonstrate compliance based on either final product or representative component testing.</p> <p>+ This Directive relates to Chromium in general and does not differentiate between Chromium III and Chromium VI.</p>		

4.12 CHILDREN'S LEGISLATION

NOTE: The definitions of 'children' and 'toy' can vary from country to country. It is important to ensure that you comply with relevant legislation.

SUBSTANCE	LEGISLATION		
	EUROPEAN UNION	UNITED STATES	OTHER
Allergenic fragrances	<p>***Toys may not (other than with a few narrow exceptions) contain the following allergenic fragrances:</p> <ul style="list-style-type: none"> (1) Alanroot oil (Inula helenium) (2) Allylisothiocyanate (3) Benzyl cyanide (4) 4 tert-Butylphenol (5) Chenopodium oil (6) Cyclamen alcohol (7) Diethyl maleate (8) Dihydrocoumarin (9) 2,4-Dihydroxy-3-methylbenzaldehyde (10) 3,7-Dimethyl-2-octen-1-ol (6,7-Dihydrogeraniol) (11) 4,6-Dimethyl-8-tert-butylcoumarin (12) Dimethyl citraconate (13) 7,11-Dimethyl-4,6,10-dodecatrien-3-one (14) 6,10-Dimethyl-3,5,9-undecatrien-2-one (15) Diphenylamine (16) Ethyl acrylate (17) Fig leaf, fresh and preparations (18) trans-2-Heptenal (19) trans-2-Hexenal diethyl acetal (20) trans-2-Hexenal dimethyl acetal (21) Hydroabietyl alcohol (22) 4-Ethoxy-phenol (23) 6-Isopropyl-2-decahydronaphthalenol (24) 7-Methoxycoumarin (25) 4-Methoxyphenol (26) 4-(p-Methoxyphenyl)-3-butene-2-one (27) 1-(p-Methoxyphenyl)-1-penten-3-one (28) Methyl trans-2-butenoate (29) 6-Methylcoumarin (30) 7-Methylcoumarin (31) 5-Methyl-2,3-hexanedione (32) Costus root oil (Saussurea lappa Clarke) (33) 7-Ethoxy-4-methylcoumarin 		

SUBSTANCE	LEGISLATION		
	EUROPEAN UNION	UNITED STATES	OTHER
	(34) Hexahydrocoumarin (35) Peru balsam, crude (Exudation of Myroxylon pereirae (Royle) Klotzsch) (36) 2-Pentylidene-cyclohexanone (37) 3,6,10-Trimethyl-3,5,9-undecatrien-2-one (38) Verbena oil (Lippia citriodora Kunth) (39) Musk ambrette (4-tert-Butyl-3-methoxy-2,6-dinitrotoluene) (40) 4-Phenyl-3-buten-2-one (41) Amyl cinnamal (42) Amylcinnamyl alcohol (43) Benzyl alcohol (44) Benzyl salicylate (45) Cinnamyl alcohol (46) Cinnamal (47) Citral (48) Coumarin (49) Eugenol (50) Geraniol (51) Hydroxy-citronellal (52) Hydroxy-methylpentylcyclohexenecarboxaldehyde (53) Isoeugenol (54) Oakmoss extracts (55) Treemoss extracts		
Aluminium	***Migration limits (m/kg) EU Directive 2009/48/EC: <ul style="list-style-type: none"> • 5,625 in dry, brittle, powder-like or pliable toy material • 1,406 in liquid or sticky toy material • 70,000 in scraped-off toy material 		
Antimony	EU Directive 88/378 EEC (Toy Safety Directive) <60ppm ***Migration limits (m/kg) EU Directive 2009/48/EC: <ul style="list-style-type: none"> • 45 in dry, brittle, powder-like or pliable toy material • 11,3 in liquid or sticky toy material • 560 in scraped-off toy material 		
Arsenic	EU Directive 88/378 EEC (Toy Safety Directive) <25ppm ***Migration limits (m/kg) EU Directive 2009/48/EC: <ul style="list-style-type: none"> • 3,8 in dry, brittle, powder-like or pliable toy material • 0,9 in liquid or sticky toy material • 47 in scraped-off toy material 		
Azocolourants	Regulation 1907/2006 (REACH). Not permitted in textile or leather toys or toys which include textile or leather garments.		

SUBSTANCE	LEGISLATION		
	EUROPEAN UNION	UNITED STATES	OTHER
Barium	EU Directive 88/378 EEC (Toy Safety Directive) <1000ppm ***Migration limits (m/kg) EU Directive 2009/48/EC: <ul style="list-style-type: none"> • 4 500 in dry, brittle, powder-like or pliable toy material • 1 125 in liquid or sticky toy material • 56 000 in scraped-off toy material 		
Benzene	Regulation 1907/2006 (REACH). Not permitted in toys or parts of toys where the concentration in the free state is in excess of 5mg/kg of the weight of the toy or part		
Boron	***Migration limits (m/kg) EU Directive 2009/48/EC: <ul style="list-style-type: none"> • 1 200 in dry, brittle, powder-like or pliable toy material • 300 in liquid or sticky toy material • 15 000 in scraped-off toy material 		
Cadmium	EU Directive 88/378 EEC (Toy Safety Directive) <75ppm ***Migration limits (m/kg) EU Directive 2009/48/EC: <ul style="list-style-type: none"> • 1,9 in dry, brittle, powder-like or pliable toy material • 0,5 in liquid or sticky toy material • 23 in scraped-off toy material 		Dutch Legislation <50ppm
Chromium III	***Migration limits (m/kg) EU Directive 2009/48/EC: <ul style="list-style-type: none"> • 37,5 in dry, brittle, powder-like or pliable toy material • 9,4 in liquid or sticky toy material • 460 in scraped-off toy material 		
Chromium VI	EU Directive 88/378 EEC (Toy Safety Directive) <60ppm+ ***Migration limits (m/kg) EU Directive 2009/48/EC: <ul style="list-style-type: none"> • 0,02 in dry, brittle, powder-like or pliable toy material • 0,005 in liquid or sticky toy material • 0,2 in scraped-off toy material 		German Law Zero tolerance
Formaldehyde			Japan Law 112<75ppm (13ppm for children's wear)
Lead	EU Directive 88/378 EEC (Toy Safety Directive) <90ppm ***Migration limits (m/kg) EU Directive 2009/48/EC: <ul style="list-style-type: none"> • 13,5 in dry, brittle, powder-like or pliable toy material • 3,4 in liquid or sticky toy material • 160 in scraped-off toy material 	US Consumer Product Safety Improvement Act of 2008 (HR4040) <90ppm** (products imported into the US for children aged 12 & younger)	
Manganese	***Migration limits (m/kg) EU Directive 2009/48/EC: <ul style="list-style-type: none"> • 1 200 in dry, brittle, powder-like or pliable toy material • 300 in liquid or sticky toy material 		

SUBSTANCE	LEGISLATION		
	EUROPEAN UNION	UNITED STATES	OTHER
	<ul style="list-style-type: none"> 15 000 in scraped-off toy material 		
Mercury	EU Directive 88/378 EEC (Toy Safety Directive) <60ppm ***Migration limits (m/kg) EU Directive 2009/48/EC: <ul style="list-style-type: none"> 7,5 in dry, brittle, powder-like or pliable toy material 1,9 in liquid or sticky toy material 94 in scraped-off toy material 		
Nickel	***Migration limits (m/kg) EU Directive 2009/48/EC: <ul style="list-style-type: none"> 75 in dry, brittle, powder-like or pliable toy material 18,8 in liquid or sticky toy material 930 in scraped-off toy material 		
Phthalates	Regulation 1907/2006 (REACH). Banned: DEHP, DBP, BBP. Restricted use of DINP, DIDP, DOP in toys to <0.1% by mass.	US Consumer Product Safety Improvement Act of 2008 (HR4040) Products for children aged 12 & younger imported into the US that are deemed a toy or a game must meet restrictions below and be tested by an accredited laboratory. Child care articles DEHP DBP BBP DINP KIDP DNOP < 0.1% or < 1000ppm Toys that can be placed in mouth DEHP DBP BBP DINP DIDP DNOP < 0.1% or < 1000ppm Toys that cannot be placed in mouth DEHP DBP BBP < 0.1% or < 1000ppm	
Selenium	EU Directive 88/378 EEC (Toy Safety Directive) <500ppm ***Migration limits (m/kg) EU Directive 2009/48/EC: <ul style="list-style-type: none"> 37,5 in dry, brittle, powder-like or pliable toy material 9,4 in liquid or sticky toy material 460 in scraped-off toy material 		
Strontium	***Migration limits (m/kg) EU Directive 2009/48/EC: <ul style="list-style-type: none"> 4 500 in dry, brittle, powder-like or pliable toy material 1 125 in liquid or sticky toy material 56 000 in scraped-off toy material 		
Tin	***Migration limits (m/kg) EU Directive 2009/48/EC: <ul style="list-style-type: none"> 15 000 in dry, brittle, powder-like or pliable toy material 3 750 in liquid or sticky toy material 180 000 in scraped-off toy material 		

SUBSTANCE	LEGISLATION		
	EUROPEAN UNION	UNITED STATES	OTHER
Organic tin	***Migration limits (m/kg) EU Directive 2009/48/EC: <ul style="list-style-type: none"> • 0,9 in dry, brittle, powder-like or pliable toy material • 0,2 in liquid or sticky toy material • 12 in scraped-off toy material 		
Zinc	***Migration limits (m/kg) EU Directive 2009/48/EC: <ul style="list-style-type: none"> • 3 750 in dry, brittle, powder-like or pliable toy material • 938 in liquid or sticky toy material • 46 000 in scraped-off toy material 		

** US Consumer Product Safety Improvement Act of 2008 (HR4040) sets limit of 90ppm in paint and surface coatings for each component of any product for children aged 12 years or younger.

Please note: An interim enforcement policy, issued by the CPSIA on 29 Dec 2009, states that importers need to provide testing certificates on total lead content for all children's products from 11 Feb 2010. The interim policy also states that importers can demonstrate compliance based on either final product or representative component testing.

*** Indicates rules under the new Directive 2009/48/EC, which specific provisions will come into effect as of 20 July 2013.

+ This Directive relates to Chromium in general and does not differentiate between Chromium III and Chromium VI.

EU Directives 2009/48/ ec and 88/378 EEC (Toy Safety Directives)

In addition to the bans on inclusion of certain substances set out elsewhere in this document, the above table outlines the European Union limits or bans for restricted substances for toys. For more detailed information about particular substances and testing required, please see information under each substance in the Pentland Restricted Substances List.

Safety Requirements

All toys supplied in the EU must meet the safety requirements under the European Directive (2009/48/EC) in addition to other EU substance restrictions from 20 July 2011. In relation to the chemical substances restrictions, these obligations only come into effect from 20 July 2013. Until such time the obligations set out in the previous Directive 88/378/EEC shall continue to apply.

Under the existing Directive, a toy is defined as 'any product or material designed or clearly intended for use in play by children of less than 14 years of age, but excluding those products specified in Schedule 3' of the Regulations (relevant products excluded: sports equipment and aquatic equipment intended to be used in

deep water). Under the new Directive this definition will change to 'any product designed or intended, whether or not exclusively, for use in play by children under 14 years of age' but excluding those products specified in Annex 1 of the Directive (relevant products excluded: sports equipment for children of a body mass of more than 20 kg, and aquatic equipment intended to be used in deep water and swimming learning devices).

In the UK, the existing Directive is implemented under The Toys (Safety) Regulations 1995 but this will be replaced by the new Toys (Safety) Regulations 2011 which are currently still being finalised (consultation closed on 1 April 2011). Consultation documents can be found on the Department for Business Innovation and Skills (BIS) website: <http://www.berr.gov.uk/> (formally known as the Department for Business, Innovation and Skills (BERR)).

CE Marking

Toys must carry a CE Marking to indicate to enforcement authorities that they are intended for sale in the European Community. It signifies a declaration by the manufacturer or his authorised representative that the toys satisfy the essential safety requirements applicable to them and are entitled to access to Community markets. The CE marking is not a European safety marking or quality symbol intended for consumers and should not be considered as such.

Warnings

The new Directive 2009/48/EC requires display of minimum/maximum age for users at point of sale and specific warnings regarding age or ability as well as minimum/maximum user weight and the need for relevant toys to be used under supervision. Toys which are not intended for but might be dangerous for children under 36 months must bear an appropriate warning e.g. "Not suitable for children under 36 months" and an explanation of the specific hazard.

Packaging EN71 Part 1: 2005+ A9 2009 Clause 6

The following requirements apply to packaging of toys:

- Bags made from flexible plastics, with an opening perimeter greater than 380mm used for external or internal packaging, shall have an average sheet thickness of not less than 0.038mm when tested in accordance with **8.26.1** (plastic sheeting, thickness)
- Bags made from flexible plastics with an opening perimeter of greater than 380mm shall not have a draw string or cord as a means of closing.

The full Directive can be found at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:170:0001:0037:en:PDF>

US Legislation for Children's Products: US Consumer Product Safety Improvement Act (CPSIA) of 2008 (HR4040)

Full details can be found at: <http://www.cpsc.gov/about/cpsia/legislation.html>

A PDF copy of the CPSIA can be obtained from the following: <http://www.cpsc.gov/cpsia.pdf>

LEAD (Section 101 CPSIA)

Lead must not exceed a **maximum limit of 90ppm in paint and surface coatings for each component* of any product, including footwear, for children aged 12 and younger.**

Section 101 of the CPSIA states that all products for children being imported into the US require testing certificates from an accredited laboratory.

Please note: An interim enforcement policy, issued by the CPSIA on 29 Dec 2009, states that **importers need to provide testing certificates on total lead content for all children's products from 11 Feb 2010.** The interim policy also states that importers can demonstrate compliance based on either final product or representative component testing.

Lead in **all** materials used in children's products imported into the US should not exceed:

- 300 ppm (from August 2009)
- 100 ppm (from August 2011).

Exemptions may be allowed if it can be shown that the component is inaccessible as defined by the US Consumer Product Safety Commission (CPSC).

PHTHALATES (Section 108 CPSIA)

Products imported into the US for children aged 12 and under that are deemed a toy or a game must meet new restrictions for phthalates (see below) *and* require testing certificates from an accredited laboratory. This would include components of a shoe if they could be classified as a toy or game.

The CPSC have stated that **children's shoes and socks are not considered as either toys or child care articles** and are outside of the scope of section 108.

The following limits apply for phthalates:

- **Child care articles** - DEHP DBP BBP DINP DIDP DNOP < 0.1% or < 1000 parts per million
- **Toys that can be placed in mouth** - DEHP DBP BBP DINP DIDP DNOP < 0.1% or < 1000 parts per million
- **Toys that cannot be placed in mouth** - DEHP DBP BBP < 0.1% or < 1000 parts per million.

Full details about CPSIA Section 108 can be found at: <http://www.cpsc.gov/about/cpsia/sect108.html>

See **Appendix 4 for restricted and banned phthalates.**

Full details can be found at: <http://www.cpsc.gov/about/cpsia/sect108.html>

Tracking labels for children's products – including footwear (Section 103(a) CPSIA)

Under Section 103(a) of the CPSIA, tracking labels or other distinguishing permanent marks are required on all children's products imported into the US "to the extent practical", including toys and footwear. This requirement came into force in August 2009. The label must have:

- Name of manufacturer or private labeller (brand or retailer)
- Location of manufacture
- Date of production
- Batch information
- Any other information to enable identification of the factory where the product was made

Manufacturer claims regarding compliance with safety standards (Section 103(c) CPSIA)

As of 12 October 2008, a manufacturer cannot make a claim that they comply with any mandatory or voluntary safety standards on packaging, labelling, or advertisements for a particular product unless the product complies with that standard.

Labelling Requirement for Advertising Toys and Games (Section 105 CPSIA)

Section 105 of the CPSIA requires the presence of cautionary statements or "Choke Hazard Warnings" on all advertisements for the following products:

- Any toy or game intended for use by children who are at least 3 years old but not older than 6 years
- Any latex balloon
- Any ball with a diameter of 1.75 inches or less intended for children 3 years of age or older
- Any marble intended for children 3 years of age or older.

CPSIA requirements and definitions

The US ASTM F963 - 08 Standard Consumer Safety Specification for Toy Safety implements the CPSIA in the US. It is similar to the European Standard EN71(Toy Safety Directive).

For more information about the ASTM F96308 - <http://www.astm.org/Standards/F963.htm>

Children's toy

A 'children's toy' is defined under Section 108 of the CPSIA as a "consumer product designed or intended by the manufacturer for a child 12 years of age or younger for use by the child when the child plays."

When determining whether a product is a 'children's toy', consider the following factors:

- A statement by the manufacturer about the intended use of the product, including a label on the product if such statement is reasonable.
- Whether the product is represented in its packaging, display, promotion or advertising as appropriate for use by the ages specified.
- Whether the product is commonly recognized by consumers as being intended for use by a child of the ages specified.
- The Age Determination Guidelines issued by the Commission staff in September 2002, and any successor to such guidelines.

Sporting equipment e.g. balls

The category of products known as "sporting goods" can include toys but not all sporting goods are toys.

Generally, regulation-size footballs, basketballs and soccer balls are athletic equipment and, therefore, are excluded by ASTM F963. However, general purpose balls are deemed to be toys and therefore, subject to the requirements of the CPSIA section 108.

Toys that can be placed in a child's mouth

The CPSIA considers a toy to be a "toy that can be placed in a child's mouth" if "any part of the toy can actually be brought to the mouth and kept in the mouth...so that it can be sucked and chewed." In addition, if any part of the toy is less than 5 cm in any dimension, then it can be put in a child's mouth.

If the manufacturer determines that an article is a "toy", then the manufacturer must determine whether the toy can be put in a child's mouth. The 5 cm criterion should be applied to inflatable toys in the inflated or deflated state e.g. pool toys and beach balls. While they are designed to be inflated by the consumer, they are commonly available to children in deflated form. However, general purpose balls that are permanently inflated by the manufacturer (normal state) and cannot be re-inflated by the consumer, including inflatable regulation-size athletic equipment, such as basketballs, footballs, and soccer balls excluded by ASTM F963, are not considered toys.

Child care articles

Under Section 108, the CPSIA defines a "child care article" as "a consumer product designed or intended by the manufacturer to facilitate sleep or the feeding of children age 3 and younger, or to help such children with sucking or teething."

Packaging for children's products

Packaging is generally not intended for use by children when they play, given that most packaging is discarded and is not used or played with as a children's toy or child care article. However, if the packaging is intended to be reused, or used in conjunction with a child care article or with a children's toy while playing, such as a heavy gauge reusable bag used to hold blocks, it would be subject to the phthalates ban.

4.13 TESTING ORGANISATIONS

The following organisations have the facilities to carry out restricted substance testing (listed in alphabetical order):

BLC	www.blcleathertech.com
Bureau Veritas	http://certification.bureauveritas.co.uk/homePage_frameset.html
Intertek	www.intertek.com
SATRA	www.satra.co.uk
SGS	www.sgs.com
TUV Rheinland	www.tuv.com

4.14 USEFUL WEBSITES

The following websites contain information (or links) to relevant topics regarding restricted substances and the environment.

ORGANISATION/ TOPIC	WEBSITE
Agency for Toxic Substances and Disease Registry	www.atsdr.cdc.gov
Environment Council (UK consortium offering advice to business on environmental concerns)	www.the-environment-council.org.uk
Environmental Data Information Exchange (general environmental information)	www.edie.net
Environmental News Network (environmental news / current affairs)	www.enn.com
EU Eco label	http://europa.eu.int/comm/environment/ecolabel
European Chemicals Bureau	http://ecb.jrc.it/
European Directives	www.europa.eu.int
European Environment Agency	www.eea.eu.int/
Friends of the Earth	www.foe.co.uk
Green Pages (environmental web directory)	www.eco-web.com
Greenpeace	www.greenpeace.org
Hong Kong government environmental links	http://www.gov.hk/en/residents/environment/air/
MSDS Online (MSDS information on all widely used chemicals)	www.msdsonline.com
Pollution Online (environmental news / current affairs)	www.pollutiononline.com
Oeko-tex Secretariat	www.oeko-tex.com
REACH Annex XIV (full details of the current candidate list and the reasons for inclusion.	http://echa.europa.eu/chem_data/authorisation_process/candidate_list_table_en.asp
REACH Annex XVII	http://www.reach-compliance.eu/english/REACH-ME/engine/sources/reach-annexes/launch-annex17.html
SATRA	www.satra.co.uk
The Environment Directory (environmental search engine)	www.webdirectory.com
UK Department for Environment, Food and Rural Affairs (Defra)	www.defra.gov.uk
UK Environment Agency (advice on legislation, regulatory processes)	www.environment-agency.gov.uk
UK Environmental Technology Best Practice Programme (offers 'best practice' advice)	www.etbpp.gov.uk
United Nations Environment Programme	www.unep.org
US CPSIA legislation	http://www.cpsc.gov/about/cpsia/legislation.html http://www.cpsc.gov/cpsia.pdf
World Health Organisation – International Programme on Chemical Safety	www.who.int/pcs

4.15 ACKNOWLEDGEMENT

We would like to express our appreciation to the many individuals who assisted with this document, with particular thanks to Phil Patterson of Colour Connections (www.colour-connections.com).

For additional information regarding the contents of this guide, or if you have any suggestions or comments, please contact:

Corporate Responsibility Department

Pentland Brands plc
Squires Lane
London, N3 2QL
United Kingdom

Telephone: +44 (0) 208 346 2600
Email: corporateresponsibility@pentland.com