

# 生态纺织品

## 挑战



消费者越来越关注绿色、无毒和对环境无污染的消费品，他们更乐意选择对人体和环境无害的产品。绿色消费的倾向已经扩展到纺织和服饰产品领域，所涉及的产品包括可能直接和长期与皮肤或口腔接触的产品，如服装、被褥、毛巾、假发、帽子、尿布及其它卫生用品、鞋袜、手套、表带、皮带、钱包 / 皮夹、公文包、椅套和玩具等。

世界主要发达国家，如欧洲和美国的主要纺织品买家积极回应这种公众意识，从生态的角度审视纺织产品，而且已经提出了一些相应的要求，这促使了纺织品和服装生产商重新审视他们的产品，使其在从生产到废弃处理整个生命周期过程中的每一步，都应对人体和环境的危害降低到最低程度。同时要求他们必须特别关注染料的选择、确保产品的甲醛含量在很低水平、且不含杀虫剂和重金属等。下文列出了常规的生态纺织品要求及其由来。Intertek可以检测所有这些有害物质，并且对如何降低纺织品中的有害物质提供咨询服务及解决方案。

## 我们的解决方案



### Intertek 天祥集团为您提供整套的生态纺织品测试

#### 生态毒性物质甲醛含量

甲醛通常作为纺织品易护理树脂整理中的交联剂，从而赋予纺织品防缩、抗皱、免烫和易去污功能。

纺织品和服装上残留的甲醛可以未交联或水解游离状态存在。这两种状态的甲醛都可能被释放出来，从而损害人体健康，尤其是对人体粘膜及呼吸道刺激强烈。

在许多国家，某些产品的甲醛释放量受到严格限制。

#### 可萃取重金属

\* 锑 (Sb)   \* 铅 (Pb)   \* 汞 (Hg)   \* 总铬 (Cr)   \* 钴 (Co)  
\* 砷 (As)   \* 镉 (Cd)   \* 铜 (Cu)   \* 六价铬 (Cr VI)   \* 镍 (Ni)

某些染料中含有重金属。天然纤维在种植过程中也可能从土壤及空气中吸收重金属。此外在纺织产品的染整加工过程中也可能带入某些重金属。

重金属一旦被人体吸收，便会累积在人体的肝、肾、骨骼、心及脑中。这种累积一旦达到某种程度即会对人体健康造成严重的损害，如汞会影响人的神经系统。由于儿童相对体重较轻而且在生长发育阶段，所以重金属对儿童的损害更为严重。

#### 六价铬 (Cr VI)

六价铬主要是在皮革铬鞣过程中产生的副产品。它是一种强氧化剂且对人体及环境有害，因此必须加以控制。

#### 杀虫剂和除草剂残留物

有20种以上的各种杀虫剂和除草剂残留被认为是对人体健康有害及污染环境的。其中有：艾氏剂 (aldrine)、甲萘威 (胺甲奈, carbaryl)、滴滴涕 (DDD)、滴滴伊 (DDE)、滴滴涕 (DDT)、狄氏剂 (dieldrin)、硫丹 (endosulfan)、异狄氏剂 (endrine)、七氯 (heptachlor)、七氯环氧化物 (heptachloroepoxide)、六氯苯 (hexachlorobenzene)、林丹 (高丙体六六六, lindane)、甲氧氯、甲氧滴滴涕 (methoxychlor)、氟乐灵 (trifluralin) 等。

# 生态纺织品



杀虫剂用于天然植物纤维如棉花的种植过程中以防病虫害和贮存中发生虫蛀。除草剂是用于除去杂草和落叶的化学品。尽管它们中的绝大部分在加工处理过程中会被除去，但也可能被纤维吸收并残留在最终产品中。

这些杀虫剂或除草剂的残留物对人体的毒性强弱不一，一些很容易透过皮肤被人体所吸收，高丙体六六六（林丹）就是一种可能诱发癌症的杀虫剂。

## 五氯苯酚（PCP）和2,3,5,6 四氯苯酚（TeCP）

为了防止由霉菌引起的霉斑，含氯酚如PCP常直接用于纺织品、皮革和木材。PCP和TeCP是很强的毒性物质，并被认为是一种致癌物质。它们的化学稳定性很高而不易分解，从而对人体和环境造成持续的危害。

## PVC增塑剂-邻苯二甲酸酯类

邻苯二甲酸酯类是最常用的增塑剂用于软化PVC。软质PVC由于其极好的柔顺性和实用性而被广泛采用。但有研究表明软质PVC在模拟试验条件下可能释放出相当量的邻苯二甲酸酯，这种物质对儿童具有潜在的危害。因此欧盟对某些儿童用品使用邻苯二甲酸酯类增塑剂执行2005/84/EC指令。

## 有机锡化合物-TBT&DBT

三丁基锡（TBT）是一种用于抗微生物整理的有机锡化合物。在纺织工业中，它用于防止汗液中微生物分解及因此产生的鞋袜、运动服上散发出难闻的气味。

二丁基锡（DBT）是另一种应用相当广泛的有机锡化合物，如作为聚氯乙烯稳定剂的中间体、电镀及多种聚氨酯制造中的催化剂。

高浓度的有机锡化合物被认为是有毒的。这些物质能透过皮肤被人体吸收并对人的神经系统造成影响。

## 偶氮 / 致癌 / 致敏染料

偶氮染料是以偶氮化学为基础的合成染料的统称，常用于纺织品。某些偶氮染料经还原可释放出某些有致癌作用的芳香胺。欧盟指令2002/61/EC中规定了在纺织品和皮革中禁止使用会释放出22种禁用芳香胺的偶氮着色剂。

某些用于纺织工业的染料被认为是对人体健康有害的，即某些分散染料被认为对人体有致敏作用，某些染料被认为对人体有致癌作用。这些染料在与人体皮肤长期的接触过程中可通过皮肤被人体吸收。

## 含氯有机载体

通常作为聚酯纤维染色的加工助剂。含氯有机化合物是有害的并且会诱发肝功能失常、刺激粘膜和皮肤、引发生殖系统功能紊乱。

## 抗微生物处理剂

纺织品上使用的抗微生物处理剂通常是有机锡化合物或季铵盐化合物。它们中大部份是有毒的。它们被用作抗菌防霉处理剂。

## 阻燃剂

纺织材料中常常会以涂层形式或化学方式加入阻燃剂以改善它们的阻燃性能。常用的阻燃剂包括2,3-二溴丙基磷酸酯、多溴联苯（PBB）和多溴联苯醚（PBDE）。但是长期与这些高剂量的阻燃剂接触将会对人体产生十分不利的影

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## pH 值

pH值从1~14表示从酸性到碱性的酸碱度。

人体皮肤表面呈弱酸性以防止疾病的传播。纺织品处于中性（pH7）或弱酸性（略低于pH7）的区域对人体皮肤是有利的。

纺织品的pH值如果处于较强的酸性或碱性，皮肤表面容易受损甚至会受到刺激。

## 色牢度（沾色）

尽管没有充分的证据表明用于纺织品的染料对人体都是有害的，但提高产品的色牢度无疑可以极大地降低这种危险性。色牢度很差会使染料或颜料转移到汗液中，并通过皮肤被人体吸收。

有四种色牢度测试与人体穿着或使用纺织品直接有关，它们是耐水色牢度、耐汗液色牢度、耐摩擦色牢度和耐唾液色牢度（仅对婴幼儿）。

## 气味检测

气味的存在意味着纺织品上残留有过多的化学品并可能会对人体健康造成损害。

## 镍释放

镍通常存在于服装的金属合金辅料中，如纽扣、拉链、铆钉等。某些人对镍过敏，这些含镍辅料如果与身体长期接触将严重刺激皮肤。

欧盟已经颁布了94/27/EC指令，并已经更新为2004/96/EC指令，限制镍的使用并规定了用以下两个测试方法进行分析：

- (i) EN 1811
- (ii) EN 12472



## 相关服务

纺织品验货

环球服装生产社会责任认证 (WRAP) REACH 欧盟《关于化学品注册、评估、许可和限制法规》

皮具产品测试

手袋箱包测试

技术咨询和培训

纺织品、服装和家用饰品测试

成衣及护理标签测试

中国国家强制性标准GB 18401测试

# 生态纺织品

## 为什么选择Intertek?



Intertek是全球领先的质量和安全管理机构，为众多行业提供专业创新的解决方案。从审核和检验，到测试、质量保证和认证，Intertek致力为客户的产品和流程增加价值，最终促进客户在全球市场取得成功。Intertek在110个国家拥有1,000家实验室和办事处，超过22,000名的员工，凭借专业技术、资源和全球网络，为客户提供最优质的服务。

Intertek覆盖全球的网络将分布世界各地的供应商与买家连接起来。我们代表产品最终市场的客户和消费者在原产国对整条供应链涉及到的工厂和货物进行独立检验。事实上，只要客户有所要求，我们就能依据一系列的国际标准测试相同的产品。

我们将资源进行战略性部署，以便在每个国家提供恰当的服务。我们会不断地评估对我们服务的需要，同时我们也经常评估制造业及市场的发展趋势，力求为客户提供最好的服务。

Intertek正是在理想的定位来帮助消费者和客户满足质量、安全和职业道德方面标准的要求，无论他们或他们的客户身处何方。我们的测试、检验、审核和咨询的一体化服务在消费品领域独树一帜，使得Intertek成为众多世界一流品牌选择的供应商。

### 实验室认可

Intertek拥有享誉全球的卓越技术能力，并通过获得众多国家试验室认可机构的认可而使这种

声誉得以保持。目前已经认可Intertek的机构有：

- \* 中国 — 中国实验室国家认可委员会 (CNAS)
- \* 香港 — 香港实验室认可组织 (HKAS) \*
- \* 韩国 — 韩国实验室认可组织 (KOLAS)
- \* 墨西哥 — 墨西哥标准理事会
- \* 摩洛哥 — 法国认可委员会 (COFRAC)
- \* 新加坡 — 新加坡实验室认可组织 (SAC—SINGLAS)
- \* 泰国 — 泰国实验室认可组织 (TLAS)
- \* 英国 — 英国实验室认可服务组织 (UKAS)
- \* 美国 — 美国实验室认可协会 (A2LA)
- \* 美国 — 美国加州防火局

除上述认可外，我们绝大多数的纺织品实验室还被众多零售商和生产商所认可。

\* Intertek香港实验室经由香港实验室认可组织的认可。认可的测试项目详列于HOKLAS实验室认可目录中，编号为第5号。

## 区域联络

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# Eco-Textiles Challenge



Consumers are becoming more conscious with respect to green activities, non-toxic and environmentally friendly consumer goods. They prefer products which pose no threat either to themselves or the environment. This trend for green consumerism has been extended to textile and apparel products. The products involved are those having potential for direct and prolonged skin or oral contact such as clothing, bedding, towels, hairpieces, wigs, hats, diapers and other sanitary products, footwear, gloves, watch straps, belts, purses/wallets, briefcases, chair covers, toys and so on.

Major European and U.S. textile buyers have responded to this public awareness by viewing their textile products from an ecological standpoint and have established certain requirements for textile products. Textile and clothing manufacturers are encouraged to re-examine the whole life cycle of their products with the aim of minimising hazards to humans and the environment at every stage, from manufacture to disposal. They are asked to pay special attention to the selection of dyes, ensuring the products are low in formaldehyde, free from pesticides and heavy metals etc. The general Eco-textile requirements and the rationale behind them are listed below. Intertek are able to test for all these hazards and can offer consultancy advice on reducing the ecological impact of textile products.

## Our Solutions



### Intertek offers full set of testing services for Eco-Textiles

#### The Eco- Toxic Substances Formaldehyde Content

Formaldehyde acts as a cross-linking agent together with an artificial resin to make an easy-care finish which is intended to prevent shrinkage and to give the product a crease-resistant, smooth-dry, soil-releasing finish.

The presence of formaldehyde in a garment or textile can be in either the resin or free forms. Both may lead to the release of formaldehyde, which can be harmful to health especially through irritation of the mucous membranes and respiratory tract.

In many countries, emission of formaldehyde from certain products is restricted.

#### Extractable Heavy Metals:

|                  |                |                |                       |               |
|------------------|----------------|----------------|-----------------------|---------------|
| * Antimony (Sb ) | * Lead (Pb )   | * Mercury (Hg) | * Chromium (Cr) Total | * Cobalt (Co) |
| * Arsenic (As)   | * Cadmium (Cd) | * Copper (Cu)  | * Chromium (Cr) VI    | * Nickel (Ni) |

Heavy metals are constituents of some dyes. They can also be found in natural fibres having been absorbed by plants through the soil or air. Metals may also be introduced into the textiles through the dyeing and finishing processes.

Once absorbed by humans, heavy metals tend to accumulate in the liver, kidney, bones, heart and brain. The effects on health can be tremendous when high levels of accumulation are reached, e.g. mercury will affect the nervous system. The effect is particularly serious in children due to effects on growth and their relatively low body mass.

#### Chromium (VI)

Chromium (VI) is mainly an undesirable by-product generated during the leather tanning process. It is a strong oxidant and a heavy metal capable of poisoning humans and the environment, so has to be controlled.

#### Pesticides & Herbicides Residues

More than 20 varieties of pesticides and herbicides are concerned. For example, aldrine, carbaryl, DDD, DDE, DDT, dieldrine, endosulfan, endrine, heptachlor, heptachloroepoxide, hexachlorobenzene, lindane, methoxychlor, trifluralin, etc.

# Eco-Textiles



Pesticides are used in the cultivation of natural plant fibres like cotton to combat insects, and also as moth protection during storage. Herbicides are weed-eradication and defoliant chemicals. They can be absorbed by the fibres and might remain in the final product. Most of them can be removed during manufacture.

These pesticide and herbicide residues are rated from slightly to strongly toxic and sometimes are very easily assimilated through the skin. Lindane is a pesticide assumed to be cancer inducing.

#### Pentachlorophenol (PCP) & 2,3,5,6 Tetrachlorophenol (TeCP)

To prevent mould spots caused by fungi, chlorinated phenols such as PCP are applied directly on textiles, leather and wood. Both PCP & TeCP are very toxic and regarded as cancer-inducing agents. Their chemical stability is very high, so they are not easily broken down. Thus they remain harmful to people and the environment.

#### PVC Plasticizers - Phthalates

Phthalates are the most popular plasticisers used to soften PVC. Softened PVC is very useful due to its greater flexibility and workability. However, some studies have shown that under simulated mouthing conditions, softened PVC might release phthalates in quantities considered to cause potentially hazardous effects to young children. Directive 2005/84/EC has been implemented in the European Union for some childrens' products.

#### Organotin Compounds - TBT & DBT

Tributyltin (TBT) is one of the organotin compounds used for anti- microbial finishing. In the textile industry, it has been used for preventing the bacterial degradation of sweat and the corresponding unpleasant odour of socks, shoes and sport clothes.

Dibutyltin (DBT) is another organotin with various applications, such as an intermediate for stabilisers of PVC, as well as a catalyst for electro-deposition paints and for the manufacture of various types of polyurethanes.

High concentrations of these compounds are considered toxic. They can be absorbed through the skin and depending on the dosage may affect the nervous system.

#### Azo / Carcinogenic / Allergenic Dyes

Azo dyes are the name of the group of synthetic dyestuffs based on nitrogen that are often used for textiles. Some azo dyestuffs may separate under certain conditions to produce carcinogenic and allergenic aromatic Amines. In Europe the Azocolourants Directive 2002/61/EC restricts 22 azocolourants (dyes) in Textiles and Leather.

Some other dyestuffs used in the textile industry are classified as having similar adverse effects on humans. That is, some disparate dyestuffs are said to be allergenic, while some dyestuffs are classified as carcinogenic. These dyes may be absorbed through the skin with prolonged skin contact.

#### Chlorinated Organic Carriers

These are commonly used as auxiliaries in the dyeing of polyester. Chlorinated organic compounds are harmful and May induce liver malfunction, irritation to mucous membranes and the skin as well as reproductive disorders.

#### Biocides

Biocides for textiles are usually organotins or quaternary ammonium compounds. They are toxic in nature. They are used as antifungal or antibacterial agents.

# Eco-Textiles



## Flame Retardants

Flame retardants are added to textiles to delay or prevent ignition in a fire and can either be coatings or chemically bound in. Commonly used examples are 2,3-dibromopropyl phosphate, polybrominated biphenyls (PBB) and polybrominated diphenylether (PBDE). Prolonged contact to high dosages of flame retardants can cause impairment of the immune system, hypothyroidism, memory loss and joint stiffness.

## PH Value

pH is a scale ranging from 1 to 14 to indicate acidity and alkalinity.

Human skin has a slightly acidic coating which inhibits the development of many diseases. Textiles in which the pH lies in the neutral (pH 7) or slightly acid regions (below 7) are friendly to skin.

Fabrics with extreme pH values can easily damage skin and may cause an allergic reaction.

## Colour Fastness (Staining)

Though there is not enough evidence to prove that all dyes used on textiles are harmful, improving the colour fastness of dyed products can reduce this risk. With poor colour fastness, dyes or pigments may be released into sweat and could be absorbed through skin.

Four colour fastness tests are recommended for textiles with direct skin contact. They are colour fastness to water, to perspiration, to rubbing and to saliva (only for babies).

## Determination of Odours

The presence of a smell may indicate high levels of residual chemicals in the textiles and may pose a hazard to health.

## Release of Nickel

Nickel is found in alloys used for metal accessories on garments such as buttons, zippers, rivets etc. Some people are allergic such that nickel-containing accessories, in contact with body for a long period, may cause serious skin irritation.

The European Union has issued Directive 94/27/EC and updated as 2004/96/EC to limit the nickel, under which the following test methods are used for analysis.

(i) EN 1811 (ii) EN 12472



## Related Services

Inspection  
WRAP  
REACH  
Leather goods testing  
Handbag & luggage testing  
Technical Consultation and Training  
Textile, Apparel and Soft Home Furnishings Testing  
Care Labelling  
GB 18401

# Eco-Textiles

## Why Intertek?

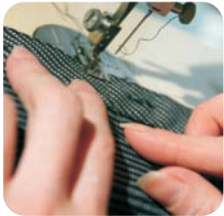


Intertek is a leading provider of quality and safety solutions serving a wide range of industries around the world. From auditing and inspection, to testing, quality assurance and certification, Intertek people are dedicated to adding value to customers' products and processes, supporting their success in the global marketplace. Intertek has the expertise, resources and global reach to support its customers through its network of more than 1,000 laboratories and offices and over 22,000 people in 110 countries around the world.

Intertek's global reach is our major strength linking suppliers in one part of the world with buyers in another. We independently inspect factories and goods in the countries of origin across the whole supply chain on behalf of clients and consumers located in the products' final market. In fact we can test the same product to a range of international standards if required.

Our resources are strategically placed, providing appropriate services in each country. These needs are continuously reassessed, and we are constantly evaluating manufacturing and market trends to best serve our customers.

Intertek is in the ideal position to help our customers and clients meet the Quality, Safety and Ethical standards irrespective of their, or their customer's location in the world. Our mix of testing, inspection, auditing and consultancy services is unparalleled in the consumer goods arena making Intertek the supplier of choice for many of the world's leading brands.



### Accreditation

Intertek has a worldwide reputation for outstanding technical ability. One of the ways this reputation is maintained is by achieving and holding accreditation offered by organizations in various countries.

Examples of some currently held accreditation certificates include:

- \* **China**—China National Accreditation Board for Laboratories (CNAS)
- \* **Hong Kong**—Accreditation Service (HKAS)\*
- \* **Korea**—Korea Laboratory Accreditation Scheme (KOLAS)
- \* **Mexico**—Entidad Mexicana de Acreditación (EMA)
- \* **Direccin**—General de Normas (DGN)
- \* **Morocco** —French Committee for Accreditation (COFRAC)
- \* **Singapore** —Singapore Laboratory Accreditation Scheme (SAC SINGLAS)
- \* **Taiwan** —Chinese National Laboratory Accreditation (CNLA)
- \* **Thailand** —Thai Laboratory Accreditation Scheme (TLAS)
- \* **UK** —United Kingdom Accreditation Service (UKAS)
- \* **USA** —American Association for Laboratory Accreditation (A2LA)
- \* **USA** —California Bureau of Home Furnishing and Thermal Insulation

In addition to the above accreditations, most textile testing laboratories are also approved and/or certified by numerous retailers and manufacturers.

\* Intertek Testing Services Hong Kong Ltd. is accredited by the HKAS for specific tests as listed in the HOKLAS Directory of Accredited Laboratories under Registration No. 5.

## Regional Contacts

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