



## Apparel & Footwear Testing

Textiles, apparel and footwear are closely associated with our life therefore there is a growing concern for their safety and quality. In the ever-changing market, competent departments of all countries are adjusting supervision measures in accordance with the latest technical regulations and standards, for instance, recalls of the EU Rapid Alert System for Non-Food Products (RAPEX), US Consumer Product Safety Commission (CPSC) and Inspection and Quarantine of the People's Republic of China (AQSIQ). Besides, they inspect products such as apparel and footwear on a regular basis or from time to time. Meanwhile, they will publicise the inspection results timely and handle unqualified products, brands and companies.

Undoubtedly, green, toxic-free and pollutant-free consumption are new highlights along with the promotion of eco-friendly and health awareness based on performance assessment. Producers must constantly improve their own products to fulfil the eco-friendly demand with a view to guarantee product quality, protect the interests of producers, vendors and consumers, when countries keep on updating relevant technical regulations and standards.

C&K Testing summarises test items and requirements for apparel and footwear in accordance with relevant technical regulations and standards from different markets in the hope of providing professional guidance in production and specialised testing solutions for enterprises so as to ensure the entry of products into markets.

### Regulations and Standards

## 1. EU Regulations and Standards on Textile Products

### 1.1 REACH Regulation

REACH is the Regulation (EC) NO 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals, which came into force on 1 June 2007 and applied on 1 June 2008. It is a harmonised regulation concerning preventative administration on all chemicals to be placed on the EU market.

#### Textiles-related Restrictions under REACH

Entry of Annex XVII under REACH	Conditions of Restriction
4. Tris (2,3 dibromopropyl) phosphate	Shall not be used in textile articles, such as garments, undergarments and linen, intended to come into contact with the skin.
8. Polybromobiphenyls; Polybrominatedbiphenyls (PBB)	Shall not be used in textile articles, such as garments, undergarments and linen, intended to come into contact with the skin.
20. Organostannic compounds	Tri-substituted organostannic compounds such as tributyltin (TBT) compounds and triphenyltin (TPT) compounds shall not be used after 1 July 2010 in articles where the concentration in the article, or part thereof, is greater than the equivalent of 0,1 % by weight of tin.  Dibutyltin (DBT) compounds shall not be used after 1 January 2012 in mixtures and articles for supply to the general public where the concentration in the mixture or the article, or part thereof, is greater than the equivalent of 0,1 % by weight of tin.  Diocetyl tin (DOT) compounds shall not be used after 1 January 2012 in the following

Entry of Annex XVII under REACH	Conditions of Restriction
	articles for supply to, or use by, the general public, where the concentration in the article, or part thereof, is greater than the equivalent of 0,1 % by weight of tin: textile articles intended to come into contact with the skin, footwear or part of footwear intended to come into contact with the skin
23. Cadmium	Risks in textile articles: ink, plastic material, synthetic leather, metal Limit: 0,01 %
27. Nickel	Risks in textile articles: metal components Limit: Body-piercing post assemblies : 0,2µg/cm <sup>2</sup> /week For direct and prolonged contact: 0,5µg/cm <sup>2</sup> /week
43. Azocolourants and Azodyes	Azodyes may release one or more of the aromatic amines listed in Appendix 8, in detectable concentrations, i.e. above 30 mg/kg (0,003 % by weight) in the articles or in the dyed parts thereof shall not be used, in textile and leather articles which may come into direct and prolonged contact with the human skin or oral cavity., (22 aromatic amines)
45. Diphenylether, octabromo derivative	Shall not be placed on the market, or used as a substance or as a constituent of other substances, or in mixtures, in concentrations greater than 0,1 % by weight.
46. Nonylphenol, Nonylphenol ethoxylates	Shall not be placed on the market, or used, as substances or in mixtures in concentrations equal to or greater than 0,1 % by weight for textiles and leather processing.
47. Chromium VI compounds	Leather articles and parts Limit: 3mg/kg (0,0003 %)
50. Polycyclic-aromatic hydrocarbons (PAH)	For articles come into direct as well as prolonged or short-term repetitive contact with the human skin or the oral cavity: no more than 1mg/kg of any of the listed PAHs For toys and childcare articles come into direct as well as prolonged or short-term repetitive contact with the human skin or the oral cavity: no more than 0,5mg/kg of any of the listed PAHs
51 & 52 Phthalates	All toys for children under 14 years of age and childcare articles: DEHP+ DBP + BBP ≤ 0,1% Toys and childcare articles can be placed in the mouth: DEHP + DBP + BBP ≤ 0,1% ; DINP + DIDP + DNOP ≤ 0,1%
61. Dimethylfumarate (DMF)	Shall not be used in articles or any parts thereof in concentrations greater than 0,1 mg/kg.
63. Lead	Risks in textiles: pigment, plastic material, paint, metal Limit: 0,05 %

## 1.2 OEKO-TEX® standard 100

OEKO-TEX® standard 100 mark is widely used in the field of Textile Ecology. Published by the International Association for Research and Testing in the field of Textile Ecology (OEKO-TEX®) in 1992, OEKO-TEX® standard 100 mainly focuses on testing of the harmful substances in textile products so as to ensure their safety. Such mark can be affixed to the products only when their manufacturers can provide certifications for quality assurance in accordance with strict testing and examination procedures.



Currently, most textile products are tested as per the standards for chemical safety.

- |   |   |
|---|---|
| 1. Determination of pH value              | 9. Colourants identified to have adverse effects in view of human ecology |
| 2. Determination of formaldehyde          | 10. Testing of chlorinated benzenes and toluenes                          |
| 3. Determination of heavy metals          | 11. Determination of polycyclic aromatic hydrocarbons (PAHs)              |
| 4. Determination of pesticides            | 12. Determination of colour fastness                                      |
| 5. Determination of phenol                | 13. Determination of volatiles  |
| 6. Determination of phthalates            | 14. Determination of odours   |
| 7. Determination of organic tin compounds | 15. Identification of asbestos  |
| 8. Determination of PFOS/PFOA             |   |

## 2. US Regulations and Standards on Textile Products

### 2.1 Statutes

Statute Name	Scope	Limit
<b>Consumer Product Safety Improvement Act (CPSIA)</b>	Children's products for children under 12 years of age	Lead: 90ppm (surface coatings), 100ppm (substrates) DEHP, DBP, BBP, DINP, DIDP, DNOP (each) $\leq 1,000$ ppm
<b>Vermont S81</b>	Upholstered furniture and children's products for children under 12 years of age	TDCPP $\leq 1,000$ pm
<b>New York A6195</b>	Children's products for children under 3 years of age	TCEP (forbidden)

### 2.2 State Requirements on Flame Retardants

TDCPP	13674-87-8
TCEP	115-96-8
TCPP	13674-84-5
TBB	183658-27-7
TBPH	26040-51-7
TPP	115-86-6
V 6	38051-10-4
MDPP	56803-37-3
DBPP	65652-41-7
TBPP	78-33-1
PentaBDE	32534-81-9
OctaBDE	32536-52-0
DecaBDE	1163-19-5

All US states have the power to establish their own legislations. So products intended for export to the United States should also conform to state requirements.

\* The above information is not complete. Please refer to state bills for more details.

### 2.3 Restricted Substances List (RSL) of American Apparel & Footwear Association (AAFA)

This Restricted Substance List (RSL) was created by a special working group of the American Apparel & Footwear Association's (AAFA) Environmental Task Force. The RSL is intended to provide apparel and footwear companies with information related to regulations and laws that restrict or ban certain chemicals and substances in home textile, apparel, and footwear products around the world.

AAFA hope that this RSL will serve as a practical tool to help those individuals in textile, apparel and footwear companies, and their suppliers, responsible for environmental compliance throughout the supply chain, to become more aware of various national regulations governing the amount of substances that are permitted in

finished home textile, apparel and footwear products.

C&K Testing can provide test solutions for enterprises' compliance in accordance with AAFA requirements.

## 3. Chinese Regulations and Standards on Textile Products

### 3.1 GB 18401-2010 National General Safety Technical Code for Textile Products

GB 18401-2010 sets forth the general safety technical requirements, test methods, inspection rules and supervision, which is a mandatory standard applicable to apparel, decoration and home textile products produced or sold in domestic China.

**General Safety Technical Code for Textile Products**

Item		Category A (babies and young children under 36 months of age)	Category B (direct contact with skin)	Category C (no direct contact with skin)
Formaldehyde (mg/kg)≤		20	75	300
pH Value		4.0-7.5	4.0-8.5	4.0-9.0
Colour fastness/ Grade	To water (colour change, staining)	3-4	3	3
	To acidic perspiration (colour change, staining)	3-4	3	3
	To alkali perspiration (colour change, staining)	3-4	3	3
	To rubbing, dry (colour change, staining)	4	3	3
	To saliva ( colour change, staining )	4	--	--
Abnormal odour		None		
Cleavable carcinogenic arylamines		Forbidden (24 in total , Limit: 20mg/kg)		

### 3.2 GB 5296.4-2012 Instructions for Use of Products of Consumer Interest—Party 4: Textiles and Apparel

GB 5296.4-2012 mainly provides for general principles, label contents and requirements in the instruction for use of textiles and apparel. All textiles and apparel intended for sale in China should fulfil the requirements thereof. The type of instructions includes tags (print or sticker) and permanent label (wash mark) with the following contents:

1. Name and address of manufacturer
2. Product name
3. Model and specification of product (permanent label)
4. Fibre composition and content (permanent label)
5. Maintenance method (permanent label)
6. Applicable standard
7. Safety category
8. Notes to use and storing (for special products)

## Our Test Items

### 1. Chemical Test

Various harmful substances are often introduced in the production of textiles, apparel and footwear as restricted by production techniques, leading to chemical risks in end products.

- Planting of natural fibre: heavy metals, pesticides and residues
- Manufacturing of synthetic (artificial) fibre: residue monomer or solvent
- Processing, boiling-off and bleaching: acidic & alkali, detergents and bleach residues
- Techniques such as bleaching & dyeing, printing: dyestuffs, heavy metals, dye auxiliaries
- Finishing and processing: wrinkle free/resistance to ironing (formaldehyde), finishing of resistance to micro-organism (organic tin), flame retardant finishing/anti-corrosion treatment (PCP)
- Techniques for decoration accessories: plastic and rubber materials (phthalates), metal accessories (nickel)

### Common Test Items and Materials of High Concern

Items	Natural Fabrics	Synthetic Fabrics	Blended Fabrics	Leather	PU/PVC Artificial Leather	Plastics/ Polymers	Coating/Print/ Ink	Metal Components
Azodyes	√	√	√	√			√	
Carcinogens (colourants)	√	√	√	√			√	
Allergens (colourants)		√	√				√	
Formaldehyde	√	√	√	√	√		√	
Chlorinated phenols (PCP, TeCP, TrCP)	√		√	√				
Total lead				√	√	√	√	√
Total cadmium					√	√	√	√
Chromium (VI)				√				
Nickel release								√
Phthalates					√	√	√	
DMF				√				
Organic tin compounds	√	√	√	√	√	√	√	
Flame retardants	√	√	√	√	√	√		
Chlorinated organic carriers		√	√		√			
Alkyl phenol					√	√	√	
Alkyl phenyl polyoxyethylene ether	√	√	√	√	√	√	√	
SCCP	√	√	√	√	√			
PAH						√	√	
PFOS / PFOA	√	√	√	√	√			
Volatiles					√	√	√	
Pesticides	√		√	√				
pH value	√	√		√				

\* The above information is only for reference.



## 2. Performance Test for Textile Products

Fibre Content Analysis  
Feather and Down  
Colour Fastness  
Dimensional Stability

Piling Resistance  
Strength  
Flammability  
Water Resistance

## 3. Performance Test for Footwear and Leather Articles

Flexing Resistance  
Colour Fastness  
Hardness

Abrasion Resistance  
Slip Resistance  
Fatigue Resistance

Pull Strength  
Attachment Strength  
Peeling Strength

We can render test solutions according to the following standards

United States	American Association of Textile Chemists and Colorists (AATCC)
	American Society for Testing and Materials (ASTM)
	Consumer Product Safety Commission (CPSC)
Canada	Canada Standards Association (CAN/CGSB)
Europe	European Committee for Standardisation (EN)
United Kingdom	British Standards Institution (BS)
France	French Association for Standardisation (NF)
China	National Standards of the People's Republic of China (GB)
	Textile Standards of the People's Republic of China (FZ)
	Industry Standards of the People's Republic of China (QB)
Japan	Japanese Industrial Standards Committee (JIS)
Australia	Standards Australia (AS)
Germany	German Institute for Standardisation (DIN)
Other	International Organisation for Standardisation (ISO)

## Attentive Services

C&K Testing also renders five extra services while providing strong technical support:

- Special offers for testing on a regular basis;
- Management and integration of suppliers for free;
- Sharing of the latest technical news;
- Door-to-door training and orientation for suppliers;
- Customised solutions.



## Company Profile

C&K Testing is a leading testing company to render you specialised solutions concerning green and sustainable development of products. Established in 2008, we've helped thousands of customers to minimise the risks of their products to human health and the environment through our testing services.

Our company is a member of CIRS which is a leading product safety management consulting firm. With our offices in Ireland and the United States as well as our laboratory in China, a global network of testing facilities enables you to meet all the relevant regulatory requirements across different markets more cost-efficiently.

Combining widely global recognition and extensive local experience, staffed by knowledgeable experts, C&K Testing will help you to gain a competitive advantage in the global marketplace by ensuring product safety and quality, removing trade barriers and optimising manufacturing procedures.

Our Testing Services: food and food-related products, cosmetics, environment, consumer products, industrial goods and chemicals, etc.



## An Authoritative Platform for 3rd-Party Testing

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