

Update on Regulatory Limits of Free Formaldehyde in Textiles

This year Korea has formally recognised the potential hazard to human health associated with free and released formaldehyde in textile products and published the Quality Management and Safety Control of Industrial Products Act and the American Apparel & Footwear Association (AAFA) has added free and released formaldehyde to its recently developed Restricted Substances List.

Textile formaldehyde resins have been used on fabrics since the mid 1920's by the textiles industry to make easy care, wrinkle and stain resistant, durable press garments. These resins, if not fixed properly onto the textile, release significant amounts of formaldehyde which can cause harmful effects to consumers with chemical sensitivity or textile dermatitis such as breathing difficulties, skin and eye irritation. Formaldehyde is particularly dangerous to asthma sufferers.

Major Applications of Formaldehyde in Textile and Footwear Industries

- ◆ Used in shrinkage control, crease resist, wrinkle free & other chemical treatments of textiles,
- ◆ Urea-formaldehyde and melamine formaldehyde resins are used in foam insulation,
- ◆ Used as adhesives in the production of particleboard and plywood,
- ◆ Used as leather preservative.



Health Hazards of Formaldehyde Exposure

Formaldehyde is a gas at room temperature; it is readily soluble in water. And therefore human exposure is most common through inhalation of the vapour or skin and eye irritation as formaldehyde is dissolved in perspiration or tears for example.

- ◆ May cause skin allergy and mucous membrane irritant
- ◆ Classified as a probable human carcinogen by the U.S., Environmental Protection Agency, having sufficient evidence that formaldehyde causes nasal and lung cancer, and with possible links to brain cancer and leukemia in humans,
- ◆ Exposure to high concentrations of formaldehyde can be fatal.

Development of the Environmental Measure of Formaldehyde in Textile Products


In 1973 Japan enacted the Law for the Control of Household Products Containing Harmful Substances. The Law restricts the content of several harmful substances in household products, including the amount of free formaldehyde allowed in textile articles. Since the late 1980s, other countries have also established limits on free formaldehyde¹ in textiles as shown on the following page.

¹ Free formaldehyde is available to be dissolved in water i.e. not chemically cross-linked to the textile

Regulatory Limits of Free Formaldehyde in Different Countries

Country	Restriction	Requirement
Norway	1999, T-1307, Royal ministry of the Environment, Norway	Textiles baby articles (<24 months): 30 mg/kg; Textiles with direct skin contact: 100 mg/kg; Textiles with no direct skin contact: 300 mg/kg.
Finland	Decree on Maximum Amount of Formaldehyde in Certain Textile Products (Decree 210/1988)	Textiles baby articles (<24 months): 30mg/kg; Textiles with direct skin contact: 100 mg/kg; Textiles with no direct skin contact: 300 mg/kg.
Netherlands	07/2000, Commodities Act- Regulation on formaldehyde in Textiles	Textiles that come into direct skin contact which contain > 120ppm of formaldehyde must be labeled: " Wash before first use" They must contain not more than 120ppm of formaldehyde after being washed once
Germany	Gefahrstoff Verordnung (Hazardous Substances Ordinance), Annex III, No. 9, 26.10.1993	Textiles which normally come into contact with the skin and that release more than 1500 ppm must be labeled in German and English as follows: " <i>Contains formaldehyde. Washing this garment is recommended prior to first time use in order to avoid irritation of the skin.</i> "
Austria	Formaldehyd Verordnung, BGBL Nr. 194/1990	Textile articles, intended for skin contact, with a content of 1500ppm by mass, have to be labeled as follows: " <i>Contains formaldehyde. Washing this garment is recommended prior to first time use in order to avoid irritation of the skin</i> "
Japan	Japanese Law 112	Textiles baby articles (<24 months) :A-A0 < 0.05 Others: 75ppm
U.S	AAFA-RSL Version 2007 (<i>Voluntary requirement</i>)	Textiles baby articles (<36 months): 20 mg/kg; Textiles with direct skin contact: 75 mg/kg; Textiles with no direct skin contact: 300 mg/kg
China	GB 18401	Textiles baby articles (<24 months): 20 mg/kg; Textiles with direct skin contact: 75 mg/kg; Textiles with no direct skin contact: 300 mg/kg
France	Draft Decree 1997 (voluntary)	Textiles baby articles (<24 months): 20 mg/kg; Textiles with direct skin contact: 200 mg/kg; Textiles with no direct skin contact: 400 mg/kg
Thailand	TIS 2231-2548 (2005)	Textiles baby articles (<36 months): 20 mg/kg; Textiles with direct skin contact: 75 mg/kg; Textiles with no direct skin contact, decoration materials: 300 mg/kg
Slovakia	Decree 635/2005	Textiles child articles (<36 months): 20 mg/kg; Textile child articles (>36 months): 75 mg/kg; Leather child articles (<36 months): 50 mg/kg; Leather child articles (>36 months): 150 mg/kg;

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Country	Restriction	Requirement
Poland	Decree of 19 th Oct 2001	Textiles baby articles (< 36 months): 20 mg/kg; Textiles with direct skin contact: 150 mg/kg; Textiles with no direct skin contact: 300 mg/kg Decoration materials: 500 mg/kg
New Zealand	Product Safety Policy Statement	Textiles baby articles (< 24 months) and for sensitive skin : 30 mg/kg; Textiles with direct skin contact: 100 mg/kg; Textiles with no direct skin contact: 300 mg/kg
Korea	Quality Management and Safety Control of Industrial Products Act	Textiles baby articles (< 24 months): 20 mg/kg; Underwear articles: 75 mg/kg; Bedding articles : 300 mg/kg
European voluntary initiatives	 <p>the European Ecolabel</p>	COMMISSION DECISION (2002/231/EC) establishing revised ecological criteria for the award of the Community eco-label to footwear and amending Decision 1999/179/EC The amount of free and partially hydrolysable formaldehyde of the textile components of the footwear shall not exceed 75 ppm and of the leather components shall not exceed 150 ppm.
		COMMISSION DECISION (2002/371/EC) establishing the ecological criteria for the award of the Community eco-label to textile products and amending Decision 1999/178/EC The amount of free and partly hydrolysable formaldehyde in the final fabric shall not exceed 30 ppm for products that come into direct contact with the skin, and 300 ppm for all other products.

How do you ensure that your textile products contain acceptable levels of free formaldehyde and are safe for consumer use?

SGS is recognised for its professionalism and expertise and is always available to offer you its extensive range of restricted substance testing services which cover a wide variety of products including textiles, garments and footwear.

We are ready to provide you with further information. Please feel free to contact us.

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