

SGS CHROMIUM VI PREVENTION SOLUTIONS FOR THE FOOTWEAR & LEATHER INDUSTRIES

CHALLENGES IN CHROMIUM VI PREVENTION

The formation of chromium VI in leather and leather products is one of the most prevalent restricted substance issues in the leather and footwear supply chain. Chromium VI in leather products is restricted in many parts of the world and its presence prevents the sale of non-conforming products.

Chromium VI can be formed during both the leather and leather product manufacturing processes and may even be formed during storage and shipment. This makes the issue particularly complex and can cause significant costs to the supply chain in terms of adding further production value, storage, transport, product rejection by customers, product recall and brand damage.

HEALTH AND SAFETY CONCERNS WITH CHROMIUM VI

Hexavalent Chromium (commonly known as Chromium VI) is rarely found in nature. In apparel, chromium VI is usually associated with plastics, dyes and tanned leather. Chromium VI is known to be carcinogenic and is corrosive to skin. Skin contact with certain chromium VI compounds can cause skin ulcers.

CURRENT REGULATORY REQUIREMENTS (UPDATED AS OF APRIL 2014)			
COUNTRY	REGULATION	REQUIREMENT	RELEVANT TEST METHOD
Egypt	Ministerial Decrees No. 961/2012	3 mg/kg	ISO 17075 / LFGB § 64 BVL B 82.02-11 / KSM 6902 / KSM ISO 17075
EU	Proposed restriction in leather articles under Annex XVII of the REACH Regulation	3 mg/kg (Leather articles and articles containing leather parts coming in to contact with skin)	
Germany	Item 2 of Appendix 4 in Bedarfsgegenständeverordnung	3 mg/kg	
Korea	Safety Quality Mark Act (Annex 3 Leather Products)	0.5 mg/kg (Infant < 36 month) 3 mg/kg (children aged 3-14, innerwear, midwear, outerwear and beddings)	

WHAT IS CHROMIUM VI?

Chromium is a metal which can exist in its pure form (chromium metal) or as salts in a number of oxidation states. The most common two oxidation states of chromium are chromium III (3) and chromium VI (6).

Chromium III is present in nature in many forms, used in foodstuffs as a dietary supplement and is even believed to be a critical ingredient for metabolism in humans. Chromium III is commonly used in the leather manufacturing process in the form of basic chromium sulphate and is used to stabilise ('tan') the leather. In fact, chrome tanned leathers are by far the most common of all tannages and accounts for around 85% of leathers worldwide. Chromium III in leather is not deemed to represent a risk and is not restricted in consumer products.

Chromium VI is not used in the leather manufacturing process but can be formed from the oxidation of chromium III under certain circumstances. Once chromium is in this oxidation state, significant risks exist to anybody that comes in to contact with a contaminated product.



OUR SOLUTION

CHROMIUM VI PREVENTION AWARENESS TRAINING

Understanding how chromium VI can be inadvertently formed during leather production, storage and transport is a critical part of ensuring that the final product conforms to legal requirements. Our chromium VI awareness training course targets stakeholders at each part of the supply chain to ensure that each step and potential risk is avoided where possible. The awareness training includes the following areas:

- Understanding how chromium VI is formed
- Preventative measures right back to the leather production process
- Practical steps to be taken within the leather product supply chain
- Screening system for whether chromium VI is likely to be formed post-production / during shipment
- Recommended testing procedures and protocols

This training is designed to ensure that attendees are given a clear and uncomplicated understanding of the cause and prevention of one of the most problematic restricted substance areas within leather. Attendees of this course will be able to undertake practical measures in both the tannery and leather product manufacturing facilities and perform critical assessments of the risk areas within their supply chain.

CHROMIUM VI TESTING SERVICE

Routine testing of leather and leather containing products is a fundamental part of ensuring that consumer products conform to both legislation and customer requirements. SGS offer a range of testing services including component and final product chromium VI testing as well as an accelerated ageing chromium VI test to assess the propensity of chromium VI to be formed during storage and transport to the final consumer market.

ON-SITE CHROMIUM VI PREVENTION ASSESSMENT

Under certain conditions chromium VI can be formed from chromium contained within dyes, pigments and plastics but is usually associated with the chromium used in the tanning stage of leather. At each stage of the leather (and leather product) manufacturing process, certain chemicals, tanning auxiliaries and processing conditions of pH and temperature may subject the chromium III to unfavourable oxidative conditions. This is where chromium VI can be produced.

SGS has also developed a chromium VI audit which allows production sites (tanneries, footwear manufacturers, garment manufacturers, etc) to assess where chromium VI may be produced in their facilities and take appropriate steps to reduce chromium VI formation. The audit is specifically designed for:

- **Tanneries** – the audit assesses leather production techniques, processing chemicals, leather storage and leather transport conditions. The audit provides specific advice on how to employ best available practices with respect to reducing chromium VI formation
- **Footwear, Garment and Furniture Manufacturers** – the product manufacturing audit assesses the conditions to which the leather is subjected during the manufacturing of the final product. Danger areas are identified and highlighted and specific advice is given on how to reduce chromium VI formation. Storage and onward transport is also assessed.

SGS recommends that the entire leather product supply chain regularly checks their products for chromium VI and to take steps to reduce the likelihood of its production.

SCOPE OF THE ON-SITE CHROMIUM VI PREVENTION ASSESSMENT

- Manufacturer's chromium VI prevention policy
- Staff training, awareness and competence
- Leather processing chemical selection
- Process control during the leather manufacturing process
- Storage and transport conditions
- Due diligence testing protocol

ABOUT SGS

Headquartered in Switzerland, SGS is the world's leading inspection, verification, testing and certification company. Founded in 1878, SGS is recognised as the global benchmark in quality and integrity. We operate a network of over 1,650 offices and laboratories around the world with nearly 80,000 employees.

SGS Global Softlines has an extensive network of over 40 laboratories worldwide, with a strong team of committed professionals from multi-disciplinary backgrounds. Our internationally accredited state-of-the-art testing laboratories offer a comprehensive range of physical, chemical and functional testing services for components, materials or finished products. We help your company ensure the quality and performance needs and comply with international, industrial and regulatory standards worldwide.

CONTACT US

To learn more about our services, please visit us at www.sgs.com/softlines or contact our representatives for more information.

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WHEN YOU NEED TO BE SURE

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