

Chromium (VI) in Leather Products

Chromium is one of the most commonly used mineral tanning agents in leather industry. Leather manufacturing consists of many different processes and "Tanning" is one of the crucial steps in the production process. In fact, tanning is a chemical process to stabilize the collagen fibers by cross-linking action of the tanning agents to bring about irreversible stabilization of the skin substance that is prone to putrefaction. Chrome tanning is a common, effective and fast method to produce high performance leather for handbag, footwear and clothing. However, **Chromium (VI) contamination** is really a "headache" to every leather manufacturer.



Normally, Chromium (III) salt is used as the tanning agent in this process. Chromium (VI) either appears as an impurity in the tanning substance or it is formed through oxidation from Chromium (III) in the ensuing processing stages. From previous research studies, the following conditions will favor the conversion of Chromium (VI) from Chromium (III):

- **High Temperature**
- **Exposure to UV Light**
- **Low Humidity**
- **Usage of Unsaturated Fats as Fat Liquoring Agent**
- **High pH Value**



The presence of Chromium (VI) in leather introduces health hazard to human. The World Health Organization (WHO) & U.S Environmental Protection Agency (EPA) have determined that Chromium (VI) is **human carcinogen**. Chromium (VI) compounds may cause **irritation to respiratory tract** after inhalation exposure and may increase the risk of lung cancer. Direct skin contact with certain Chromium (VI) compounds can cause **skin irritation**. In extreme cases, allergic reactions ending with severe redness and swelling of the skin have been noted.

Whereas the health concern is important to consumers, many European countries & famous brands propose restricting the use of chromium salts in leather production as far as possible or technically reducing their concentrations during processing to such an extent that Chromium (VI) can **no longer be detected in the end product**. According to Commission communication in the framework of the implementation of the **Council Directive 89/686/EEC** relating to Personal Protective Equipment, the analytical detection limit is set at **3mg/kg**. Recently, some famous brands introduce **artificial aging process** into Chromium (VI) testing in quality guidelines to estimate the influence of extreme conditions during storage, shipment & transport.

Available Test Methods:

- 1) **DIN 53314: 1996** 2) **CEN/TS 14495: 2003** 3) **pr EN ISO 17075: 2007**

**As your key business partner,
STR-HK offers Chromium (VI) Testing for Leather Products to
ensure they are safe for marketing worldwide!**

For enquiries or other information on **Aging + Chromium (VI)** testing, please contact STR at :

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