THE USE OF CHROMIUM METAL IN LEATHER PRODUCTION

APPROXIMATELY 75-85% OF THE LEATHER MADE IN THE WORLD TODAY IS TANNED WITH CHROMIUM, a metal that is naturally present in minerals; that number is as high as 90% in the U.S. Chrome tanning, which was developed more than a century ago, is now the most commonly used tanning method in the global leather industry. Tanning refers to the process by which an animal hide or skin is converted into leather. Although myths abound concerning the risks of chromium use in leather tanning, a closer look reveals consumers should feel confident about its safety.

Chromium III vs. VI: An Important Distinction

Much of the misinformation surrounding chromium use in leather manufacturing stems from the lack of public awareness, complicated by inaccurate narratives, regarding the important difference between chromium III (Cr III) and chromium VI (Cr VI).

The leather industry uses Cr III, not Cr VI, during the tanning process. THIS IS AN EXTREMELY IMPORTANT DISTINCTION.

Cr III is safe and has been proven harmless; it is neither dangerous nor a carcinogen. In fact, Cr III is a necessary part of our diet, and many people take daily supplements that contain this essential element. In fact, Cr III is a trace element in bread, green peppers, eggs, chicken, and apples, and helps those with type II diabetes.

Adverse health outcomes from contact with Cr III have not been observed in tanners who work with this element on an almost daily basis, or among consumers and users of finished products who wear and use leather products in their everyday lives.

More than 95% of chromium is used outside of the leather industry, and only a small portion of all mined chrome ore ends up in leather. The vast majority finds its application in premium stainless steel and chromium-plated articles. It's also commonly used in the tattoo industry.

Cr VI, on the other hand, is an important chemical intermediate to purify chromium for use in all manufacturing applications. In this form, chromium VI is known to be toxic to animals and humans, and is handled under extremely strict conditions by professional chemical companies. This ensures leather tanners receive chromium-based tanning products in the safe Cr III state. However, leather tanners themselves never use Cr VI in the tanning process.

Are there health or environmental risks from chromium use?

HUMAN HEALTH

Tanners do not use Cr VI when making leather, and it is nearly impossible to create in the tanning process. Oxidation of Cr III to Cr VI is extremely unlikely under standard conditions – only at temperatures greater than 800°C would the oxidation reaction start converting Cr III to Cr VI.

Because standard leather manufacturing practices and technologies are known to avoid the formation of Cr VI, there is no measurable risk of carcinogenicity from wearing, or even having oral contact with, chrome-tanned leather. For instance, a person would only be at risk of health-related Cr VI concerns after eating more than 35 pairs of affected shoes per day.

Cr VI is also a known allergen that can irritate the skin, causing contact dermatitis. The number of individuals exhibiting chromium sensitivity is very low, and less than those who react to other common products, such as gold, nickel, or certain foods.
ENVIRONMENT

The chrome tanning process is constantly being improved, and best-practice chrome tanning uses half the chemicals required by alternates, while producing effluent that is fully manageable. Professional, well-regulated tanneries implement and use effluent treatments to prevent waste from polluting land or waterways.

Even if chromium is released into the environment, Cr VI, which, again, is only produced under extremely rare conditions, will immediately react with many of the organic components present, and will be reduced to the safe form of Cr III.

BOTTOM LINE: Chromium used in leather manufacturing – Cr III – is safe and presents no risk to humans. By following good practices, tanners can easily prevent the formation of Cr VI. The industry takes seriously its responsibility to ensure the safety of its workers, consumers, and the environment.

ADVANTAGES OF CHROME TANNING

Chrome tanning is more efficient than alternatives, such as vegetable tanning, and can be completed in a matter of days. Chrome-tanned leather is quite supple, and is resistant to heat, water, and stains. Leather treated in this manner can be dyed a range of colors, making it the perfect material for use in jackets, bags, gloves, upholstery, and similar products.

ADDITIONAL RESOURCES:

- Leather Naturally
- Useful Articles: Facts/Veg or Chrome
- Nothing to Hide
- LeatherFacts: Chrome: The Facts 1
- LeatherFacts: Chrome: The Facts 2