



Leather and Footwear

Medium Risk Sector



Processing raw skins into leather and producing leather goods such as clothing, shoes and luggage. Dyeing of textiles and fur.

Related Sectors:

- Textiles and Apparel



Production Processes

Leather-ware production starts from raw skins, which require various steps to turn them into leather ready for further processing. The main processes are cleaning, pickling, tanning and finishing.

Cleaning: Hides and raw skins are first preserved by salting or chilling, before excess flesh and fatty tissue are removed. Hides are then loaded into drums, where dirt and blood from the surface of the skin are washed away. Other impurities are removed by adding water, lime and alkaline chemicals. Used lime and alkaline substances are removed by lowering the pH level and raising the temperature. In the bating process the grain surface is cleaned by enzymes and remaining hair roots and pigments are destroyed.

Pickling (in acid solution) prepares the hides and skins for the tanning process, which may involve chromate and other chemical reagents or substances of vegetable origin. The resulting leather is heat resistant and does not shrink at 100°C. The wet-blue hides are then removed from the processing drums and excess moisture is squeezed out.

The **finishing** process depends upon the type of leather to be produced and its further use. Some leathers are thinned using splitting or shaving methods; other leathers are retanned to be softer or firmer. Leather can also be dyed and then coated with oil. Dried leather is staked to remain soft, smooth and flexible. Overall the finishing process protects the surface of the leather from moisture, dirt and abrasion.

Sustainability Issues

L	Energy
M	Water Use
H	Emissions to Water
M	Waste
L	Emissions to Air
L	Ecosystems
M	Workplace Health & Safety
L	Disaster Risk
H	Site Contamination

Sector Rating

- H High risk issue
- M Medium risk issue
- L Low risk issue

Risks & Opportunities

- **Wastewater and liquid waste from the leather industry (especially from tanning activities) may contain toxic substances and lead to environmental pollution.**
Tanning and dyeing are the steps in leather production that generate significant amounts of hazardous wastewater. Potential pollutants are heavy metals (chromium), dyes, solvents and other substances. Pre-treatment may be required to minimize negative impacts on water quality, health risks and conflicts with other uses.
- **The main risks to workers are: Toxic and highly active substances (tanning, dyeing), high temperatures, noise and dust and exposure to machinery.**
Risks to the health and lives of workers may be mitigated by training, protective equipment, low-risk process design and substitution of hazardous substances.
- **The contamination of property presents a risk to its value, to human health and to the environment.**
Spills of liquids in production, leaks in tanks or pipes and disposal of liquid waste may contaminate buildings and the ground. This may present a risk to groundwater resources or to human health. Clean-up costs may be considerable. The market value of contaminated property may be impaired. Contaminations can be avoided by training of staff and technical measures.
- **Leather manufacturing may generate organic residues and hazardous waste which present a nuisance (bad odors) and risk to human health.**
Organic residues stem from the preparation of raw skins for leather production. Sources of hazardous waste are mainly tanning and dyeing processes. Appropriate storage and disposal of these waste fractions minimizes risks to human health and the environment.