

# Product Development

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# LEATHER



**Leather is used to make a variety of articles, including footwear, automobile seats, clothing, bags, book bindings, fashion accessories, and furniture. It is produced in a wide variety of types and styles and decorated by a wide range of techniques. The earliest record of leather artifacts dates back to 2200 BCE.**

# leather under criticism

Leather production poses a triple threat—it inflicts cruelty on animals, harms and kills humans, and destroys vital ecosystems. Leather is not merely a byproduct of animal farming, but rather directly contributes to the profitability of factory farms and slaughterhouses.





**It is time we ban animal cruelty and use cruelty free and eco friendly materials for our luxury products !**



# Leather

## Raw Materials

Cows, Pigs, Goats, and Sheep are the most common animals used for leather making. Exotic animals such as alligators are used for luxury leathers.



Cows / Cattle most common source of raw hides.

- Tanning**
- Biocides
  - Surfactants
  - Degreasers
  - Seed regulating agents
  - Lime
  - Sodium sulphide
  - Sodium hydroxide
  - Use sulphur unharding agents
  - Caustic soda
  - Soda ash
  - Ammonium sulphate
  - Ammonium chloride
  - Sodium metabisulphite
  - Formic acid
  - Sulphuric acid
  - Salt
  - Sodium formate
  - Chromium sulphate
  - Aldehyde tanning agents
  - Magnesium oxide
  - Fungicide



- Dyehouse**
- Surfactants / Wetting agents
  - Degreasers
  - Sodium formate
  - Sodium bicarbonate
  - Formic acid
  - Chromic syriana
  - Chromium sulphate
  - Synans
  - Resins
  - Polymers
  - Dyeing auxiliaries
  - Fatliquors

- Finishing**
- Acrylic resins
  - Butadiene resins
  - Polysulfone resins
  - Fillers
  - Diluters
  - Coatliners
  - Hardie modifiers
  - Nano-cellulose lacquers
  - Acrylic lacquers
  - Polyurethane lacquers
  - Viscosity modifiers
  - Pigments
  - Delaminers

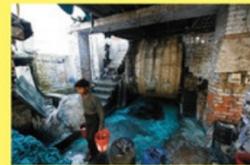
**Chromium Sulphate Chemical Formula**  
The most toxic of the chemicals used in Leather tanning.



## Energy

Energy Usage  
Combining Catalonia, Spain and Europe

Hydroelectric 48.02% out of 300%  
Thermoelectric 246.56%  
Nuclear 149.41%  
Coal 66.51%  
Fuel-Oil (NG) 30.64%  
Co-generation and incineration 4.72%



## WASTE

### WATERBORNE WASTE

From almost every step, the resulting wastewater has shown to have toxic elements. During the process of soaking, wastewater has elements of salt, dirt and blood. In the removal of hair, epidermis, and certain soluble proteins, wastewater had traces of dissolved hair and alkaline solutions. While bating, the removal of residual unharding chemicals and non-leather making substances, wastewater had traces of unwanted hide constituents and alkaline solutions. In the process of tanning, wringing, and retanning, wastewater had traces of non-exhausted chromium and other salts.

### AIRBORNE WASTE

According to data, workers have long exposure to arsenic, due to its role in the actual tannery.

↑ **20% to 50%**

Studies of leather-tannery workers in Sweden and Italy found cancer risks "between 20% and 50% above [those] expected."

Tannery can create dusts, fumes and malodors that often get trapped within the factory, making for a toxic environment. In the process of transporting leather, PM10 and CO2 have had implications on climate change.

### SOLID WASTE

Since leather is usually chrome-tanned, there is a significant amount of chromium related waste. Most waste is in the form of shavings or leftover trimmings of either the animal used for leather or lime.

▲ **600 kg of waste**

For each ton of wet salted hides



### USEABLE PRODUCTS

Due to a relatively large specific surface of solid tannery waste, it is possible to use this waste for decolorization of textile industry wastewater, which contains organic dyes. This method has been proposed to remove methylene blue and reactive red textile dye from aqueous residues. Another method to create a byproduct from waste, is through the process of pyrolysis. Through this, chromium- and vegetable-tanning shavings, and buffing dust produce gas, oil, ammonium carbonate and carbonous residue.

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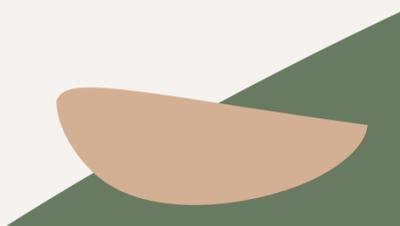
As currently practised, leather production is linked to some serious sustainability issues, not least as a by-product of the meat industry. Extensive rearing of livestock has severe environmental impacts such as deforestation, water and land overuse, and gas emissions. Clearing of the Amazon for cattle ranching, including for leather, is contributing to climate change.

HOW ABOUT WE  
SWITCH LEATHER  
WITH A MORE  
SUSTAINABLE AND  
CRUELTY FREE  
MATERIAL?



# PINATEX - THE PINAPPLE LEATHER

famous fruit-based vegan leathers on the market, Piñatex, is made from pineapple leaf fibers and has even been spotted on the red carpet of the Met Gala in 2017. By turning the part of the fruit that cannot be eaten, and is usually discarded, it provides an additional income for farmers and is a cruelty-free option for shoes, bags and clothes. Ananas Anam, the company behind Piñatex, was founded by Dr Carmen Hijosa, whose background in the leather industry inspired the change to a more sustainable alternative. In March, Ananas Anam is releasing the next generation of Piñatex which will up its sustainability factor by using a bio-based resin, rather than PU, and will also include new metallic pigments made from minerals.





PRODUCTS  
MADE  
FROM  
PINATEX  
LEATHER