

Biodegradable Leather® "GAIOLE"



Product quality and process sustainability are the vision of the future of [LA SCARPA srl](#) tannery. The circularity of the production process through the reduction of impacts on the environment and attention to the end of life products have stimulated the search for ecological innovations such as "GAIOLE".

GAIOLE is the tanning system developed by Tannery LA SCARPA srl that gives life to the line of vegetable leathers that are biodegradable in waste water and compost even at the end of the finishing stages, offering customers the guarantee of a product that is safe for humans and for the environment, ready to be transformed into strictly eco-friendly footwear or leather goods.

Compliance with the essential requirements for the protection of the natural environment during the production process and the implementation and application of production procedures capable of guaranteeing the traceability of raw materials are the minimum requirements for obtaining specific environmental certifications.

GAIOLE has obtained the Blue Label and Green Label certifications by passing all the laboratory tests required by the "[Biodegradable Leather](#)" protocol:

- Biodegradability test in waste water¹
- Biodegradability test for composting²
- Disintegrability test³
- Ecotoxicity test⁴

The "Biodegradable Leather" certification system is aimed at operators in the tanning industry including tanneries and suppliers of chemical products.

"Biodegradable Leather" is a voluntary certification consisting of a technical specification related to the characteristics of the process and of the product, a registered trademark and a certificate that is issued to the manufacturers of leather and leather articles declared compliant with the requirements indicated in the technical document adopted.

Verification of compliance with the requirements is carried out by [TECHA Srl](#) through the inspection report issued by the independent third party Certiquality and the experimental results contained in the test reports issued by third party laboratories recognized by TECHA Srl.

¹ UNI EN ISO 20136:2020

² UNI EN 13432:2002 and UNI EN ISO 14855-1:2013

³ ISO 16929:2021

⁴ OECD 208:2006



Biodegradability and Composting of "Gaiole" leather

Biodegradability

Biodegradability is a process of transforming complex substances or materials into simpler organic substances through the action of micro-organisms. The phenomenon of biodegradation is part of the natural cycle of life on earth.

The biodegradability certification was obtained through the test which provided for the measurement of the CO₂ released by the sample.

The biodegradability test in liquid medium by aerobic micro-organisms present in the activated sludge of waste treatment plants from the tanning sector, was conducted according to the international standardized protocol⁵.

This test effectively applicable to leather, therefore specific for the tanning sector, simulates the ability of the leather to biodegrade in conditions similar to those of biological tanning wastewater treatment plants.

The test is considered positive if the collagen naturally present in the skin and scalp degrades by at least 70% within 50 days. To determine how much the leather / hide sample is degradable with respect to collagen, the % of relative degradation deriving from the ratio between the % of biodegraded sample and % of biodegraded collagen is calculated.

If the value is equal to or greater than 80%, the BLUE LABEL certification is obtained.

The GAIOLE leather sample is ground and placed in a bottle together with the activated sludge taken from the area's tanning waste treatment plant.

The test is carried out for about two months at a controlled temperature of 23 ° C. For the entire duration of the test, the concentration of CO₂ emitted by the sample, by the inoculum and by the reference is measured, using an infrared sensor.

The result⁶ of the test on the test material returned an average degree of relative biodegradation of 94.1% after 56 days.

⁵ Leather - Determination of degradability by micro-organisms (ISO 20136:2020)

⁶ Complies with the requirements of the UNI EN ISO 20136: 2020 standard for the degree of biodegradability from micro-organisms

Composting

Composting is the transformation of the organic substance contained in animal and vegetable residues by microorganisms present in the soil, such as bacteria, fungi, algae and protozoa.

The term compost derives from the Latin “compositum”, meaning “made up of several materials”, precisely because organic substrates of different origins are present among the products of the microbial reaction. Composting is normally carried out as a process of recycling the organic fraction (food waste) of solid household waste. The process innovation adopted by the LA SCARPA tannery consists in having passed laboratory tests on biodegradability in industrial composting conditions.

The method evaluates the biodegradability of the Gaiole product under aerobic composting conditions at a controlled temperature of 58 ° C. The material is considered biodegradable under the test conditions if more than 90% of the organic carbon is mineralized to CO₂ within six months of the test. Gaiole reached an average biodegradability under composting conditions of 91.6% after about 80 days of testing. The disintegration test was then carried out⁷. This test meets the disintegration requirements if it reaches values above 90% within twelve weeks.

The test material is placed in composting containers made of plastic, non-biodegradable, heat-resistant, with a volume of at least 35 Lt called "reactors" and the temperature, oxygen, PH and humidity are monitored. After the disintegration time required by the standard, the "composted" material is passed through a 2 mm sieve and the degree of disintegration is calculated by weighing the residual material. The analyzed sample complies⁸ with the disintegration requirements with 99.6% as the average final degree of disintegration obtained.

The final compost obtained from the disintegration test with and without the test material was analyzed to determine the presence of heavy metals and other quality parameters of the compost resulting in compliance with the requirements of Italian and European regulations for fertilizers. The last step of the laboratory tests was the evaluation of the ecotoxicity of the compost. The test method involves the use of compost obtained from disintegration for the cultivation of plant species (barley and watercress). The test showed no phytotoxic effects.

⁷ In accordance with ISO 16929: 2021 (quantitative sieving test)

⁸ Compliance with the requirements of UNI EN 13432: 2002 for the disintegration test