NORDIC FISH LEATHER
iceland

WATER PROOF

Fishleather production with CO_2-based formic acid

Interview with Hlynur Ársælsson Nordic Fish Leather (NFL)

Hlynur Ársælsson

Nordic Fish Leather (NFL) is a producer of fish leather based in Iceland. In the EU-funded research project WaterProof, CO_2 is captured from waste- and wastewater-treatment plants and electrochemically transformed into formic acid. NFL will test and implement this renewable chemical in its fish leather production process in order to assess the sustainability of CO_2-based formic acid.

Could you elaborate on the historic background of fishleather production in Iceland and explain the role of fishleather for waste valorisation?

The use of fish leather in Iceland stretches back many centuries and probably pre-dates the settlement of the country in the 9th century in the sense that the settlers probably knew how preserve and use fish skin in daily life before they moved across the ocean from Norway and the British Isles. Initially, fish leather, and particularly Wolffish leather was used to make shoes and smaller artifacts. In the 20th century new techniques were applied to the tanning of fish skin to make it more durable. What drove the initial use of fish leather was the need to make the most of the limited resources available in the high north. In the present-day abundance

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Tanned and dyed fish leather bellows (Source: Nordic Fish Leather).

of alternative leather and leather imitations, the driving force is both the heritage and the realisation that it still makes sense to make use of what we have in the local environment even if it has the tendency of being regarded as waste. The newest initiative in Iceland is a concept that has been named 100% fish and the logic is that it is possible to use any part of the fish to create value, even the bones and the intestines. Today, Nordic Fish Leather produces high quality leather from fish skins, mainly Salmon and Wolffish thus creating value from what is in most places regarded as waste.

What is WaterProof's CO_2-based formic acid used for in fishleather production? Can this chemical also be used for other, more common leather types?

At Nordic Fish Leather we have started to test the use WaterProof's CO_2-based formic acid in our fish leather production. Formic acid has a very important role in the tanning process itself and at later stage in the fixation of colours in the leather. Without formic acid it would be very challenging to produce high quality fish leather. In principle, formic acid can and is being used in the production of other types of leather as well.

Why do you aim for a renewable alternative to fossil formic acid, and what other measures does NFL take to make the production process more sustainable?

It is our mission to make our tanning process as sustainable as possible without compromising the high quality of the production. This is the reason why we are so exited to have the opportunity to use renewable formic acid in our production. The process starts with using "waste material" i.e., fish skin and then use only renewable energy to drive all equipment in the tannery. We use very clean water from a local well, that is warmed up with the same renewable energy. All chemicals used in the process are in in line with the European Union REACH standard.

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What is special about fish leather compared to more common leather types? What are currently the main applications and where do you see huge potential for its implementation in the future?

What is special about fish leather is the fact that it is very thin and light weight, but at the same time very strong. In addition, it has a very distinctive pattern. This is especially true for salmon leather that does resemble exotic leather, like snake skins, but does not have the same negative connotation that often is associated with exotic leather. In this sense it has a huge potential for future implementation in various products and fashion items.

Examples for valuable products derived from WaterProof's renewable formic acid, which is obtained through CO_2 capture and subsequent electrochemical conversion; ADES = acidic deep eutectic solvents

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