



INTRODUCTION

A BIOGENIC SOLUTION TO CIRCULAR LEATHER PROCESSING.

Peer-reviewed publications in scientific journals have shown that leather is a durable, high performing, biogenic, and biodegradable material. It has highlighted that several alternatives have been greenwashing the public with claims of sustainability, only to show that alternatives to leather are worse for the environment than they were claiming. New information, on just how environmentally friendly modern leathers are, improves frequently.

This White Paper will show that the Succuir tanning system makes a certified 100 % biogenic, low-carbon footprint, compostable leather that is free of metals and forever chemicals. A chromium-free tanning system that allows the end users to recycle their leather articles in composting systems; to know that they are using a low-carbon footprint leather; and to be put at ease that their material choice has allowed their purchase to be part of the natural carbon cycle.



SUCCUIR FROM NATURE

PLANT-BASED GLYCEROL WASTE COMES FROM SEVERAL FOOD AND INDUSTRIAL SOURCES

Succuir is a modified glycerol tanning agent – the input is waste glycerol, and this is then changed into a tanning agent that produces a chromium-free leather. The advanced manufacturing process that Schill+Seilacher use to make Succuir uses the glycerol from the area where the plant oils are being processed, lowering travel miles.

Plant-based glycerol comes from several food and industrial sources. Often when somebody needs a fatty acid, they break plant oils into a fatty acid and its glycerol backbone (like in food or catering). Succuir is made from that plant-based glycerol.

The technology used to convert the glycerol into Succuir makes use of low-energy production methods that does not involve any harmful solvents or hazardous substances. The efficiency of the process means that there is an almost 100% conversion into Succuir – a revolutionary tanning agent manufacturing process.

RENEWABLE TANNING

SUCCUIR IS A TANNING AGENT MADE FROM A RENEWABLE WASTE SOURCE.

The future of tanning agents in the leather industry relies on a renewable stream. Traditional tanning agents come from mineral, plants, or synthetic manufacture sources – Succuir is a tanning agent made from a renewable waste source. As mentioned above Succuir comes from plant-based waste glycerol. Our societies are always going to need fatty acids from plant oils, so they will always be producing large quantities of waste glycerol (4.2 million tonnes in 2020).

Vegetable oils such as sunflower and rapeseed, are farmed for food and industrial reasons. After the food industry has been supplied, the oils can be further processed to produce fatty acids - which again are used in food and industrial applications. The processing of these vegetable oils produces waste glycerol. Succuir tanning agents help the vegetable oil industry get rid of glycerol that would otherwise be wasted – a circular economic solution that helps the food industry utilise the generated quantities of glycerol more resource efficiently.



100 % BIOGENIC

...IF LEATHER THAT WAS TANNED WITH SUCCUIR AND BIODEGRADED, THEN ALL THE CO₂ GAS EMITTED WOULD BE BIOGENIC...



Tanning agents that are made from natural sources are called biogenic. Biogenic means that the atoms in the tanning agents come from natural sources like plants. Tanning agents can also come from fossil sources which are not biogenic. If the tanning agent decomposes, fossil carbon dioxide enters the atmosphere increasing the levels of atmospheric greenhouse gases.

Schill+Seilacher instructed a world-renowned laboratory to analyze, if Succuir is biogenic. The results showed that Succuir is 100 % biogenic, meaning that if leather that was tanned with Succuir biodegraded, then all the CO_2 gas emitted would be biogenic. That is the current natural greenhouse gas which is part of the carbon cycle and does not increase the atmospheric levels. The carbon cycle shown in the image below shows the cycling of carbon – without increase.

Customers using Succuir-tanned leather are using a product that is designed for the circular bioeconomy – that makes use of the natural carbon cycle, without using fossil-carbon.

LOW CARBON

THE STUDY CONCLUDED THAT SUCCUIR'S CARBON FOOTPRINT WAS 90 % LOWER THAN THE WORLD'S FAVOURITE TANNING AGENT.

The 2021 Intergovernmental Panel on Climate Change (IPCC) report showed beyond reasonable doubt that the levels of CO_2 emissions are increasing. Humans are a source of those emissions, and the IPCC is concerned that the climate could be changed as result. The United Nations (UN) Framework Convention on Climate Change (FCCC) signed the Paris Agreement in 2016, with nations promising to limit the global temperature increase to 2°C through reducing CO_2 emissions.

Sustainable tanning agents should have a low carbon footprint to help keep emissions low. Going forward the leather industry's leading chemical companies are producing low-carbon footprint tanning agents and Succuir is no exception.

Schill+Seilacher had a third-party company compare the carbon footprint of Succuir with traditional tanning agents. The study concluded that Succuir's carbon footprint was 90 % lower than the world's favourite tanning agent.



COMPOSTABLE LEATHER

A 100 % biogenic, low-carbon footprint tanning agent should also be able to play a role in the circular economy of leather. Rather than a leather that is destined for landfill, Succuir has been designed to decompose at the end of its life and return to the natural carbon cycle.

Succuir has been certified biodegradable; certified that it will fully disintegrate in industrial composting; certified that it is metal- and PFAS-free; certified that it will not harm plants. Succuir is the first tanning system certified by SATRA as compostable and has received biodegradable status by INESCOP.

Tanned leather and tanned leather waste made using Succuir tanning will produce high grade compost that can be used in agricultural and home gardening closing the loop back to nature.





PREVENTING WASTE

The diagram below shows how Succuir was designed to make leathers (and its wastes). The natural oils are produced by farmers and the waste glycerol is produced. The waste glycerol is modified into the Succuir tanning agent that gets incorporated into leathers. The shavings, trimmings, buffing dust, cutting waste, and the leather products at their end of life can be safely composted. The compost has been certified for use on plants and the cycle continues.

End users who have bought a leather tanned with Succuir are secure in the knowledge that they have used a certified 100 % biogenic, low-carbon footprint, compostable leather that at the end of its working life can be industrially composted in the circular bioeconomy. The farmers that are looking to increase the carbon content and nutrition levels can use this certified compost to assist with food crops and healthy grasses for livestock. Global food production will benefit from fashion items converted to compost at the end of their life, preventing them from going to landfill. The same applies to leather cutting waste. Succuir leather is also a valuable part of the circular economy in that cutting waste can be reused or remanufactured.



SUCCUIR LEATHER PRODUCTS

A WIDE RANGE OF LEATHERS CAN BE MADE

Deep shades have typically been a difficult ask for most wet white systems. The sites on the leather fibre where the tanning material binds are also the binding sites for the dyestuffs. Other wet white tanning systems struggle to give deep dye shades and the fastness levels that most customers are expecting.

Succuir is so effective at binding dyes that it could even be used as a dye binding agent in other wet white tanning systems. The dye intensity and fixation are a key advantage of this tanning agent. The dye and fatliquor exhaustion allow low chemical waste in the post tanning stages – resulting in a tannery that is not responsible for feeding an effluent plant but is responsible for making high performance leathers.

The tanning agent can make loose leathers for floating grains and mill-types for upholstery or automotive but can also be used to make tight-grained uppers and smooth bag leathers. The fullness and softness can also be tailored using Succuir.

As wet white tanning materials have been invented in the last 30 years there have always been one or two leather types that are not yet reachable. Succuir leathers have enormous versatility. High quality leathers are well within the ability of Succuir pleasing leather crafters who can work with a bright, high performing product.



REGULATION RELIEF

SUCCUIR DOES ALLOW A CRAFTER OR RETAILER TO PROMOTE LEATHERS TANNED WITH SUCCUIR KNOWING THAT IT HAS A COMPREHENSIVE SUSTAINABILITY PORTFOLIO THAT IS BACKED UP USING CERTIFICATION AND SCIENCE-BASED EVIDENCE

Several key pieces of global legislation coming through are set to affect companies that use leather in their footwear, fashion, upholstery, and leather goods articles, like:

- EU Corporate Social Sustainability Due Diligence Directive (EUCSDDD)
- EU Ecodesign for Sustainability Products Regulation (ESPR)
- EU End-of-life Vehicle Directive (ELV)
- EU Packaging and Packaging Waste Directive
- EU Green Claims Directive

Succuir cannot help with all of them, but Succuir does allow a crafter or retailer to promote leathers tanned with Succuir knowing that it has a comprehensive sustainability portfolio that is backed up using certification and science-based evidence. The evidence shows that Succuir is a perfect part of the circular bioeconomy with its 100 % biogenic and compostable nature.

A tanning agent which has a low carbon footprint that lends itself to ecodesign allowing retailers to show their extended producer responsibility in organic recycling (especially for automakers looking for their seating and trim) to increase the recycled content of their products.

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