

WORLD LEATHER

THE WORLD'S NO.1 MAGAZINE FOR THE LEATHER INDUSTRY

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Change on the menu for meat

COD as a diagnostic tool

Veja case shows LCA flaws

Dr Martens wants to keep key skills



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Essential reading

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The World Leather team has been publishing a new series of original, dynamic podcasts since 2019. The whole series is available on Anchor, Spotify, Apple Podcasts, Google Podcasts, Pocket Casts, Overcast and other podcasting platforms. Just search for the World Leather Podcast on the platform you prefer.



Cover image: Dr Martens seems to have found a way to ride wave after wave of popular culture. This image is from its stage at The Great Escape Festival for new music at Brighton. The boot on show is the 1460 Black Smooth.

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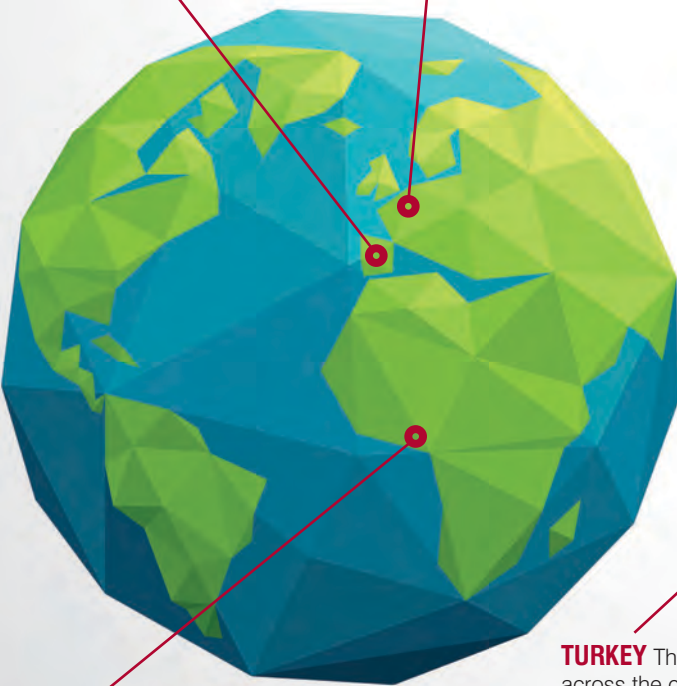
FRANCE The French government has breathed new life into a proposal to create a leather museum and showroom in the town of Saint-Junien in the Haute-Vienne region of the country. Called the Cité du Cuir (Leather City) project, the idea was first discussed around 15 years ago. Now the government has said it will provide €600,000 to help convert two former industrial buildings on the banks of the river Vienne into the new complex. One building will house a museum, showing the region's rich history in producing leather and finished leathergoods. A second building will host workshops and a showroom for products made by local leather artisans. It should open in 2024.

SPAIN National statistics institute (INE) has published figures showing that some parts of Spain's manufacturing sector have already recovered enough to reach pre-pandemic levels, but it has warned of a very uneven recovery. The figures showed a number of areas of manufacturing that are still more than 25% lower than they were two years ago, with leather and footwear production at the bottom of the pile, down by 29% in May this year compared to May 2019. Garment manufacture was down by 28.4% and automotive production by 26.6%.

BELGIUM Luxury group Richemont has acquired 100% of Belgian luxury leathergoods brand Delvaux in a private transaction. Delvaux was previously owned by billionaire Hong Konger brothers Victor and William Fung, alongside Singaporean state investment company Temasek Holdings, since 2011. Delvaux, the world's oldest luxury leathergoods company, filed the first official patent for a leather handbag in 1908.

GERMANY An explosion and fire at an industrial park in Leverkusen in late July killed two people and injured at least 31, five of them seriously. Initial reports said several other people were missing. Chemicals makers including Lanxess and TFL have operations at the site. Park operator Currenta said it was not initially clear what had caused the explosion. The fire took three hours to extinguish.

CROATIA Croatian car manufacturer Rimac has taken control of luxury automotive brand Bugatti. It is to set up a new company called Bugatti Rimac "to create a new automotive and technological powerhouse". Rimac began as an electric vehicle start-up in the garage of founder, Mate Rimac, in 2009. It manufactures and markets high-performance vehicles under its own brand, most recently launching the Nevera model in 2018. However, Rimac also develops and produces battery packs, drivetrain systems, and vehicles for other companies.



NIGERIA At the inauguration workshop for the National Leather and Leather Products Policy, Nigeria's vice-president Yemi Osinbajo said the country's leather sector has the potential to grow 70% by 2025, generating \$1 billion annually. He was quoting the Nigeria Economic Summit Group's 2019 macroeconomic outlook report, which also stated the leather processing sector employs over 750,000 and the leathergoods sector about 500,000. Nigerian leather exports had grown steadily to reach \$117 million in 2018 but fell in 2020 due to the pandemic, according to local press.

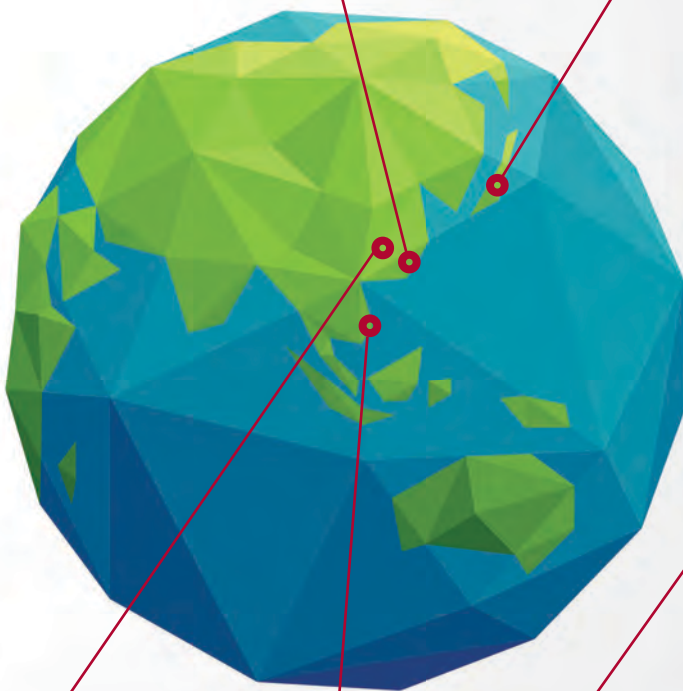
TURKEY The authorities in Turkey have estimated that celebrations across the country for the Eid al-Adha festival, which took place between July 20 and 23, have led to the slaughter of approximately 2.5 million sheep and goat, and of 900,000 head of cattle. However, leather-sector commentators in Turkey have said they fear many of these hides and skins will fail to find their way to the country's tanneries owing to weak demand for finished leather. Another factor is that, with Eid al-Adha occurring at the hottest time of the year, the window of opportunity for salvaging the hides and skins is narrow.

BANGLADESH The leather industry in Bangladesh achieved export revenues of more than \$940 million in the country's recently ended financial year, the 12-month period from July 2020 to June 2021. This figure represents growth of 18% compared to the previous financial year. The government had set the industry an export revenue target of \$920 million.

HONG KONG The organisers of the APLF exhibition have announced that the event will next take place in Hong Kong from March 30 to April 1, 2022. They had hoped to be able to run APLF in November 2021 for the first time since March 2019, but the organisers have now said that waiting until March will allow for greater international participation. Traditionally, APLF attracts participants from around 90 countries. At the moment, many people from these countries would be prevented from travelling to Hong Kong by their home governments and, on arrival, would be obliged to self-isolate for seven days by the Hong Kong authorities.

JAPAN Entrepreneurs in Japan have taken advantage of widely available deerskins to launch a new shop selling a range of accessories. Akari Nagasaki, who runs a restaurant in the city, began putting venison on his menus when the meat became available. Enquiries revealed that the authorities culled 600,000 deer in 2019, with the skins going to waste. He mentioned the waste of this material to his friends, Yu Wada, who works in the fashion industry, and Minako Wada, a leathersgoods artisan.

US Figures for shipments of US hides in the first five months of the year show "considerable growth in value and volume for key industry exports compared to 2020", the Leather and Hide Council of America has said. From January to May this year, tanners, packer companies and traders exported more than 14.6 million hides, an increase compared to the same months last year of 62.7%. Wet-salted hides contributed just under 13 million pieces to the total, while the figure for wet blue was a little over 1.6 million. These figures represent increases of 70% and 20% respectively.



CHINA Citing China Leather Industry Association (CLIA) data, Chinese media have reported a "significant" decline in local leather footwear production, which dropped to around 3.2 billion pairs between January and November 2020, reportedly owing to the negative effects of covid-19 on business. This represented a year-on-year decrease of 18.7%.

MEXICO National footwear industry associations in Latin America held an online meeting at the end of June to discuss the state of the industry in their different countries. President of Mexico's CICEG, Alfredo Padilla Villalpando, told his colleagues that footwear manufacturers there had produced 132 million pairs of shoes and boots in 2020, a decline of 34% compared to the figures for 2019. He said that total footwear consumption in the Mexican market had fallen by 34%, too, from around 330 million pairs in 2019 to 220 million pairs last year.

VIETNAM Leather manufacturing group ISA TanTec has announced that an expansion programme is already under way at TransAsia TanTec. Production began at this, the second of two tanneries the group has in Vietnam, last year. It said it had begun a project to expand TransAsia TanTec's capacity to 5 million square-feet of leather per month. ISA TanTec said it aims to have the project complete in the first quarter of 2022.



BRAZIL Brazil's leather exports in the first six months of this year showed an increase of 51% in value and 17.4% in terms of area compared to the same period in 2020. In the first half of 2021, leather exports brought in revenues of \$680 million and registered a total area of 14.25 million square-metres. Finished leather accounted for 56.7% of the total value and 53.3% of the total area. Wet blue's share was 26.1% of value and 36.4% of area.

GUATEMALA Guatemalan women who have been supported by UK leathersgoods company Elvis & Kresse through scholarships have completed training as solar engineers. The UK brand, which makes accessories with leather offcuts, has been donating to the Barefoot College over the past few years and says the results show "when you unleash goodness, it has a tendency to multiply". Co-founder Kresse Wesling said: "These women have not stopped at solar, they are building businesses, they are sharing their learnings, they are empowering other women in their communities."



Unsubstantiated claims must stop

Unity and leadership in the global leather industry are growing. This much is clear from a joint statement on alternatives to leather that industry bodies the International Council of Tanners (ICT), the International Union of Leather Technologists' and Chemists' Societies (IULTCS), the International Council of Hides, Skins, and Leather Traders Association (ICHSLTA), leather's representative body in the European Union, COTANCE, and advocacy group Leather Naturally issued on July 16.

New materials continue to appear on the market, the statement said, with the stated ambition of replacing leather. This is usually on the basis of claims of improvements in sustainability that are "rarely, if ever, substantiated".

It went on to say that any presentation of leather which the groups described as a long-lasting biodegradable material made from a renewable, residual product from another industry, as unsustainable, "is unwarranted and unsupported, particularly when juxtaposed with emerging materials that are largely comprised of fossil fuel-based plastics".

Every year, the statement continued, tanneries recover at least 8 million tonnes of hides and skins from the food sector. It said: "Without the leather industry and its upcycling activity, this residual material would simply become waste. Destroying this waste instead of using it, would release around 5 million tonnes of greenhouse gas. The recycling of this waste by the leather industry reduces greenhouse gas emissions while creating a valuable and versatile product."

It questioned the capability of any of the new materials to emulate this, saying that little or nothing is known about the performance and composition of these materials, not to mention the sustainability of the processes required to produce them.

Next, it mentioned the analysis that testing and research centre FILK carried out on alternative materials earlier this year, publishing the results in a paper called 'Comparison of the Technical Performance of Leather and Trendy Alternatives'.

"Leather was far superior to the alternatives in most performance parameters," the July statement said, "and none of the alternatives could equal leather for all of them. In addition, the claimed sustainability of the majority of these new materials appeared to be deeply compromised by the need for large quantities of synthetic materials such as polyurethane, to try to equal the functional performance of real leather."

It described as counterintuitive any move



Sea buckthorn can be game-changer

Leather chemicals group Smit & Zoon is involved in a new partnership with Rotterdam-based Enviu, a specialist in developing circular business models, and bio-based products manufacturer SN Botanicals to use leaves from the sea buckthorn plant to make circular, metal-free leather.

Tanning materials to come out of the partnership have been named Desert Spring and they will be brought to market by Nera, the company Smit & Zoon set up in October to focus on new tanning solutions, including its Zeology system.

The leaves they are using are from sea buckthorn plants from China. They only use the leaves rather than the shrubs so as not to have any impact on biodiversity or local economies. For centuries, communities have harvested berries from the sea buckthorn plant for use in food and medicine.

Sea buckthorn thrives in poor soils and improves soil conditions thanks to its rooting system. In China, the shrubs are widely planted in areas affected by soil degradation. By sourcing from these regions, the Desert Spring project will bring new income opportunities to communities there and stimulate soil improvement initiatives.

by sustainability-conscious fashion brands to replace a durable, biodegradable, circular material such as leather with materials that are largely synthetic.

"There is enough space in the market for a diversity of material choices and the leather industry has no issue with competition, provided it is fair," the statement concluded. "However, it will not stand for the appropriation of the image of leather or the denigration of the genuine article for the promotion of alternatives with questionable performance and sustainability claims."

Video shows knock-on effect of wasted hides

The Leather and Hide Council of America (LHCA) has released a new video as part of the campaign through which it aims to defend and promote the industry, Real Leather, Stay Different.

In the new video, LHCA takes the message that we can either use hides or lose them.

It gives a figure of 300 million as the volume of cattle hides accruing from the

meat and dairy sectors across the globe each year. LHCA says 60% of this volume is used to make leather.

This means 120 million hides a year are "just thrown away", material from which tanners could make 560 million square-metres of leather, which LHCA says would be enough to put a pair of new shoes on the feet of every adult and every child in Africa.

This is more than a wasted opportunity to use the material because these discarded hides represent 3 million tonnes of waste going into landfill, producing 2.7 million tonnes of greenhouse gases each year.

PrimeAsia responds to request for shared LCA data

Leather manufacturing group PrimeAsia has published data from its recently completed lifecycle assessment (LCA) on the Sustainable Apparel Coalition's (SAC) Higg Materials Sustainability Index (MSI).

PrimeAsia completed its LCA in March this year, after 12 months' work. This involved collecting information from more than 3000 data points across five countries.

Publishing the results on the newest version of Higg MSI (version 3.2), means PrimeAsia's scores will be accessible to all users of the platform. The Higg Index is widely used by fashion brands and manufacturers to inform their materials selection.

Leading leather industry bodies wrote to the SAC in October last year to ask it to suspend the score the non-profit organisation applies to leather in the MSI. The SAC's initial response was to refuse. It said leather industry bodies and companies in the leather value chain should submit data that will, perhaps, help the SAC "improve the tools" it uses to compile the Higg Index.

Ecotan partner tannery launches new range

Mexican leather manufacturer Suelas Wyny has launched a new collection of footwear leather called Nexta, which it has made using the Ecotan range of technologies from Silvateam.

Ecotan technologies involve the use of only natural products in the making of leather, allowing specialist partners to take the material back at the end of a finished product's useful life for use in fertiliser production.

In its presentation of Nexta, Suelas Wyny has focused on three properties that Ecotan gives to the new range of leather, claiming that they will lead to increased consumer wellbeing and reduced foot odour.

According to the Mexican group, Nexta leather has good ability to absorb perspiration from the foot, helping to turn shoes into "a dry environment, averse to bacterial growth because bacteria feed on components in the perspiration".

Secondly, it says the formula of tannins used in the production of Nexta helps make the leather "highly effective in fighting the bacterial activity".

Thirdly, it says that Nexta will eliminate 99% of any bacteria that might occur inside a shoe and that this will help prevent the shoe from becoming "a bacteria incubator", meaning that the wearer's feet will not be "contaminated by bacteria every time we wear shoes".

Study calls for more research on plastics

A new paper from the Swiss Federal Institute of Technology (ETH) in Zurich has called for much more extensive research into the potential risk to human, animal and aquatic life, and to the environment, of the chemical substances widely found in plastics.

ETH researchers investigated plastic monomers, additives, and processing aids, reviewing more than 60 industrial, scientific, and regulatory data sources. From this,

they identified more than 10,000 relevant chemical substances in the plastics.

They said in the report that more than 2,400 of these substances are "of potential concern". Around 10% of these "are hardly studied" the paper said, while more than 50% of them are not adequately regulated in many parts of the world.

"Substantial information gaps exist in the public domain," the authors said, "particularly on substance properties and use patterns." They called on stakeholders in the plastics industry to carry out more research into the substances their materials contain, to avoid hazardous chemicals and to increase the amount of information about the content of plastics that consumers can access.

Tanners launch online platform

French tanning industry association FFTM has launched a new online marketplace for designers and leather buyers, calling it the French Leather Marketplace.

FFTM explained that the platform would give buyers direct access to tanners and would host the details of 230 leather articles available to buyers immediately.

Access to the information will be free, but will be limited to professional buyers, designers and leather artisans. Twenty-seven French leather manufacturers have already signed up to use it as a means of showcasing their leather collections.

FILK research quoted in high places

Research carried out by the leather industry earlier this year into nine prominent alternative materials has earned coverage on a high-profile business publishing platform.

At the start of 2021, the leather industry's representative body in the European Union, COTANCE, procured samples of alternative materials and asked testing and research centre FILK to test their properties and compare their performance attributes to those of leather.

FILK concluded that technical progress among the manufacturers of synthetic materials has led to some of these having "individual properties that are similar here and there to leather's". However, it found that none of the tested substitutes could "truly be called an alternative to leather". The tests also uncovered the fibres used in these materials, which some manufacturers have been reluctant to reveal.

In July, the FILK research caught the attention of *Forbes*; the business publication gave a prominent mention to its report, 'Comparison of the Technical Performance of Leather and Trendy Alternatives' in an article on the use of

synthetics in fashion. It said: "Recent scientific research conducted by FILK has analysed the chemical compositions of vegan alternatives to leather, like Desserto, Piñatex and Appleskin. Alarming, the findings reveal that a number of these materials, commonly lauded as sustainable, also contain polyurethane, PVC, or polyamide microfibres."

The *Forbes* article was about a new report into synthetic materials from Changing Markets Foundation, a London-based consultancy. The report provides analysis of 50 fashion brands and says they show "no clear commitment to ending their addiction to fossil-fuel based fibres". It says that almost 60% of claims by these brands about sustainability are "unsubstantiated or misleading to consumers".

New life for airline leather

Dallas-headquartered Southwest Airlines recently worked with Nashville non-profit Turnip Green Creative Reuse (TGCR), an organisation that diverts materials from landfill to its "repurpose with purpose" programme. TGCR typically looks to rehome used and waste materials with creatives, teachers and students to extend their use value over time.

Almost 55,000 kilos of Southwest-owned leather seat covers will be converted into art kits by TGCR for Nashville public school students.

The non-profit will host community creative workshops with the leather, engage local artists to use the material, and put their works on public show in a dedicated gallery space. The airline commented that it "can't wait" to see the first fruits of the project.

US acquisition for Rino Mastrotto Group

Rino Mastrotto Group has acquired Carroll Leather, a supplier of leather to the furniture industry. Founded in 1970, Carroll Leather was part of a larger group called Carroll Companies Inc. The parent company decided to sell its leather division and Rino Mastrotto Group has made the acquisition and will set it up as a new US division for the group, RMG Leather USA.

Group chief executive, Matteo Mastrotto, said the group had been searching for a way to expand its business in the US and that the acquisition of Carroll Leather had given it an ideal opportunity to do that. He said that the combination of the Italy-based group's ability to produce high-end leather and Carroll Leather's experience in marketing and customer service would make RMG Leather USA "the US furniture industry's most important supplier of premium leather".



Assopellettieri re-elects Franco Gabbrielli

Italian leathergoods manufacturers' association Assopellettieri has re-elected **Franco Gabbrielli** as its president for another two-year term. Mr Gabbrielli's re-election was confirmed at the organisation's annual general meeting, which took place online on July 22. Vice-presidents **Stefania Orselli** and **Andrea Calistri** were also re-elected.

Assopellettieri said it was pleased with the entrepreneurial approach that Franco Gabbrielli had brought to the role. He is the founder and still principal designer of Cesena-based handbag brand Gabs.

It also paid tribute to ideas he has introduced, such as sharing an annual 'state of the industry report' and an initiative called Mipel Lab, which will aim to connect Assopellettieri members with luxury brands at home and abroad.

After the meeting, Mr Gabbrielli thanked his colleagues for asking him to continue in the role of president and said he would work hard to repay their faith in him. He added: "I am pleased to be able to continue to offer my contribution as an entrepreneur, making my experience available to help others, for the future of the association. The challenges that await us are many but I am sure that, together, we will be able to face them and further consolidate Italy's global leadership in the leathergoods sector."

Another honour for Royal Smit & Zoon

Leather chemicals manufacturing group **Smit & Zoon** has been granted permission by **King Willem-Alexander of the Netherlands** to add the term 'Royal' to its company name.

This honour, called the granting of the Royal Predicate, marks Smit & Zoon's 200th anniversary and comes less than two months after a royal visit to the company's headquarters in Weesp by **Queen Máxima**.

Reacting to the news, seventh-generation owner of the company, **Marc Smit**, said being able to use the Royal Predicate was "a visible reward for the efforts of seven generations of entrepreneurship, innovation, and care for our customers".

He said receiving the honour and being able to call the company Royal Smit & Zoon from now on would provide an extra incentive "to continue on our road to sustainable innovation".

The monarch can award any company, association or institution the right to use 'Royal' in their name, but to be eligible the organisation must hold "a highly prominent position within its field, be of national importance and have been in existence for at least 100 years". Only the monarch can



New CEO starts work at Stahl

Leather chemicals group Stahl is now under the leadership of **Maarten Heijbroek**, who took up the role of chief executive on July 1. Mr Heijbroek has joined the company from UK-based specialty chemicals manufacturer Croda International, where he was president of consumer care.

He explained that, because Stahl is a customer of Croda's, he had been able to get to know the company well. He said the levels of professionalism and "clear focus on customer intimacy" that he had observed in the members of the Stahl team had impressed him and he said he valued these qualities highly.

He also said he thought the company's recently announced strategic focus areas (open innovation, renewable feedstocks, digital transformation, and sustainable development) indicate that "Stahl is well aware of what's happening around it and able to anticipate the latest trends and developments".

confer the designation.

The Royal Predicate was introduced to the Netherlands in 1807 by **King Louis Napoleon**. Royal Smit & Zoon's launch in May 1821 coincided with the death of King Louis's brother, **Napoleon Bonaparte**.

CLE elects new chairman

India's Council for Leather Exports (CLE) has elected **Sanjay Leekha** as its new chairman. Mr Leekha is the managing director of Alpine Apparel, based in Haryana state.

He said on being elected that covid-19 had led to a decline in exports of 27.7% but that India's leather exports were now "back on the growth track".

He pointed out that figures for the first two months of the 2021-2022 financial year, April and May, showed exports of more than \$640 million, more than three times higher than the figures for the same months in 2020.

"This is the perfect beginning for us," the new CLE chairman said. "We hope to sustain it in the coming months."

Why EV producers must choose leather

President of the Leather and Hide Council of America (LHCA), **Stephen Sothmann**, has provided a thought-provoking comment article to influential car industry publication *Automotive News*.

Commenting on the current push towards making electric vehicles (EVs), Mr Sothmann pointed out that there was an irony in automotive brands celebrating the ability of these products to help consumers lower their use of fossil fuels while, frequently, using fossil-fuel derived synthetic fibres in the cars' interiors.

"For an EV industry built for the purpose of reducing our carbon footprint," the LHCA president said, "supporting the fossil fuel and petrochemical industries [in their material choices for vehicle interiors] is problematic, counter-productive and, potentially, toxic to its branding."

He warned that if consumers choose plastic interiors for their cars, there is a real danger that hides, which could be used to make automotive leather, will go to landfill. He said this would represent "the worse possible environmental outcome in terms of vehicle interiors and CO₂". This does not need to occur, he insisted, because a natural solution exists in the form of leather.

Burberry CEO to leave for Ferragamo

London-based luxury brand Burberry has announced that its chief executive, **Marco Gobbetti**, will leave the company at the end of this year.

Burberry explained that Mr Gobbetti had decided to take up "another opportunity" that will allow him to return to his native Italy and be closer to his family. Bloomberg has reported that the new opportunity he will take up will be as chief executive of Ferragamo.

Chairman of Burberry's board of directors, **Gerry Murphy**, said that Marco Gobbetti had made "an immense contribution" to the company. "He has had a transformative impact and established a clearly-defined purpose and strategy, an outstanding team and strong brand momentum," Mr Murphy said. He added that Burberry was determined to build on the foundations the outgoing chief executive had established.

Recognition for Lear's covid-19 response

The Automotive Hall of Fame, which celebrates the accomplishments of individuals in the international motor vehicle industry, has awarded its distinguished service citation to the chief executive of automotive seating developer Lear Corporation, **Ray Scott**.

It said a project Lear embarked on in the early phase of the covid-19 pandemic merited the award. In response to the pandemic, Lear had produced a Safe Work Playbook to help its employees feel safe in the workplace.

Mr Scott said he was happy to accept the award on behalf of the entire Lear team.

Former Hermès CEO joins MycoWorks

A former chief executive of Parisian luxury goods house Hermès, **Patrick Thomas**, recently announced that he has joined the board of California-based biomaterials startup MycoWorks, which specialises in mycelium materials.

The startup's Reishi-branded technology was previously linked to Hermès back in March, but Mr Thomas has reportedly had no direct involvement with the brand since stepping down from his role there in 2014.

He told *Vogue Business* that he believes there will be an additional category reserved for mycelium-derived (and other non-animal) materials going forward, "particularly [one made up of] young women who don't want to eat meat".

Mr Thomas said that the aforementioned consumer group, which he believes already exists, could be responsible for growing this category to at least 10% of the luxury goods industry over the next 20 years.

Real Leather, Stay Different China winners named

The final awards ceremony for China's 2021 Real Leather, Stay Different competition was held recently in Xinji International Leather City in Shijiazhuang, Hebei province, local media have reported.

The event was co-sponsored by China Leather Industry Association (CLIA) and the Leather and Hide Council of America (LHCA). Focusing on the competition's clothing category, the event saw two winners announced from 55 finalists, themselves selected from a total of 800 entries from 23 colleges and universities across the country.

Luo Jingtian and **Cao Liwei** from Jilin's Northeast Dianli University were named joint winners, closely followed by **Jiang Yinzhu** and **Hua Yangyang** (both of

Zhejiang Fashion Institute of Technology) in second and third place, respectively.

Other individual awards were given out for the leather clothing designs considered by the judges to have the most market potential, the best display of artisanship and the best use of colour.

In a speech, CLIA chairman, **Li Yuzhong**, underscored how the competition had inspired a new generation's love for leather, including its sustainable qualities. Due to the effects of the covid-19 pandemic, the competition's 2020 winners were also presented with their awards during this year's ceremony.

LWG names sustainability project manager

The Leather Working Group has hired **Leticia Millward** as a sustainability project manager to develop audits and lifecycle assessments for leather as well as provide technical assistance.

She has completed a PhD in leather technology at the University of Northampton and will work closely with LWG programme manager **Christina Trautmann** and technical manager **Mark Lucas**.

Damien Doyle has joined LWG as an administrator, working on audit reports, peer reviews and memberships. 🌐

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GRINDING WHEELS

COPPER CAULKING

World Leather's publishing cycle and limitations on space make it impossible for us to run more than a carefully selected sample of news from across the industry. However, we publish hundreds more stories on *leatherbiz.com*. The site is updated every day with news from every continent and every part of the industry, making *leatherbiz.com* one of the most comprehensive archives of news anywhere on the web for the global leather industry.

We list below just a few of the headlines that have appeared on the site in recent weeks and can still be accessed.

30/07/2021

Requirement for "absolute quality" helps Hermès
Tannery plans for Senegal

29/07/2021

Italian machinery companies set up new joint venture
Long-service honours for Pittards people
Korean platform reports 90% jump in online searches for luxury bags
Coach leans on leather in latest campaign

28/07/2021

US cattle slaughter up
Vietnam footwear and leather show postponed
All brands contribute to strong Kering first half

27/07/2021

Enduring product quality helps LVMH to first-half growth

26/07/2021

75 LVMH brands sign artisanship pact

23/07/2021

Chinese luxury platform to open 300+ locations
LWG and Textile Exchange grant reciprocal membership

22/07/2021

Pride of place for bags in new Burberry store concept
Ferragamo at pre-covid levels outside Europe

21/07/2021

Change on the way for hide shipments to Mexico
Richemont up 129% in Q1, currently 'deeply analysing' its leather supply
US groups say Vietnam tariffs would be serious setback

20/07/2021

Market Intelligence: signs that point to shorter supply chains
LVMH now majority owner of Virgil Abloh's Off-White

19/07/2021

Project examines ways of bringing young people into the shoe sector
Clarks Originals makes shoes from surplus leather

16/07/2021

Q1 results represent "excellent start" for Burberry
Reebok Classic Leather's latest signing has 100m+ followers

15/07/2021

Substantial H1 growth for Stella International
Automotive market could double in 10 years - Volkswagen
JBS publishes 2020 Sustainability Report

14/07/2021

USDA to help livestock producers hit by pandemic losses

13/07/2021

Revisions to LWG protocol
Loewe latest to mine Korea for global brand representation

12/07/2021

General Motors announces Supplier of the Year winners
Gold rating celebration for Stahl
Shanghai Auto Museum hosts leather exhibition

09/07/2021

Haining China Leather Expo opens with press conference

08/07/2021

Travel concessions could boost Tanning Tech attendance
Fish skin tannery says sustainable practices are transforming stocks

07/07/2021

New luxury leather footwear from Italian fashion royalty

06/07/2021

Market Intelligence: materials rethink could favour leather
LCA shows Bridge of Weir automotive leather has lowest carbon intensity
'Most important' Italian fashion event in Korea to run in mid-July

05/07/2021

Automotive exports from China double
LVMH's new roots highlight sustainable luxury focus

01/07/2021

Kering Foundation to support 15 new support centres for women
Mipel Lab will help bag producers find outsource customers
JBS moves deforestation commitments forward

30/06/2021

Delvaux unveils new Seoul address
Istanbul event goes ahead in person
Ex-Coach chairmen team up on Gen-Z idea
Capri confident on luxury outlook

29/06/2021

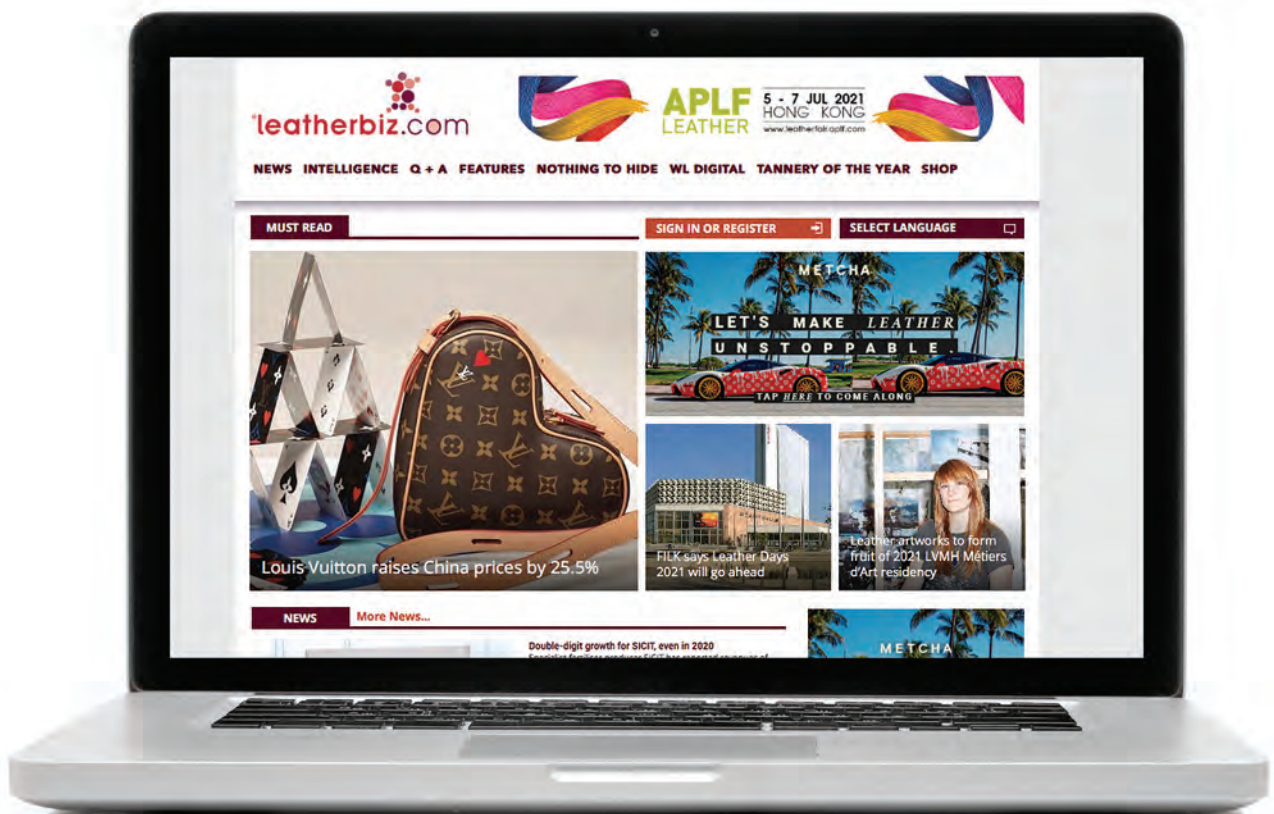
Five tanneries join SLF Transparency Dashboard
China: leather industry 'will never go down'
IULTCS Congress and World Leather Congress confirm hybrid format

28/06/2021

Montblanc goes live with Maison Kitsuné
Leather-sector exports from India down by almost 30%

25/06/2021

Pigment progress for Codyeco
Kering moves into leathergoods rental with investment
Micam to return to traditional form



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As reported in World Leather June-July, Finnish bio-materials manufacturer Spinnova is using wet blue shavings to produce “a new category of sustainable and circular textiles”, Respin. Juha Salmela, co-founder and chief technology officer, gives extra insight into the company’s proprietary technique for making sustainable, recyclable yarns that manufacturers can then knit or weave to make finished products. Ecco and adidas are among the footwear brands that are investing in, and waiting to use, Spinnova’s technology.

A home for tanning waste

What is it about Spinnova fibres that makes them sustainable?

Every day we talk about this. It’s not easy to educate about this, but it is very simple. First, we have our products and technology, and how we produce the fibre. We don’t use any chemicals in production; zero chemicals. We don’t do any washing cycles. We don’t have to. We have no wastewater treatment in our production set-up.

What raw materials have you been using?

For our raw material, we have been focusing on wood fibres. We don’t have to dissolve the pulp, so the yield is 60% better than for viscose. The next one is leather waste. That’s super-interesting. Then the third raw material is agricultural side-streams, more waste. The environmental footprint of these is even less than with the wood-based material. So it’s a combination of these two factors, our products and technology and our raw material sourcing, that makes a huge impact.

How would you describe that impact?

The carbon footprint and the water footprint are minimal compared to anything else. We don’t say that it’s just about sustainability. We want to show that we have functionalities that no other fibre has. We have a price point that is good enough. From the beginning we have said that our fibre has to be cheap enough so that it can make a difference globally. We are not trying to produce anything other than sustainable fibre. It has to meet the mechanical properties of cotton, and that’s it. We’re not trying to do carbon fibre or spider silk. We want to meet the properties of cotton fibre. Then we have some unique thermoinsulation, moisture-management, antiviral, touch-and-feel properties too.

*Juha Salmela, co-founder
and chief technology officer
of Spinnova.*

ALL CREDITS: SPINNOVA.

“We have functionalities that no other fibre has and the carbon footprint and the water footprint are minimal compared to anything else.”





Spinnova is increasing its production capacity with a new factory in Finland.

You must see lots of claims about other fibres being sustainable. Brands and, sometimes, their supply chain partners are quick to make a sustainability claim, but the claims often do not really stand up to scrutiny. How do they get away with that?

This is one of my favourite topics. It's just mind-blowing. We've watched this greenwashing many times. The best is shirts or whatever made out of bamboo. It's just another viscose. Then there are fleece jackets made out of recycled PET bottles when, in some cases, the bottles have never contained water or anything else. I think this is just marketing. Companies have good marketing people and they come up with these slogans. There has been a lot of greenwashing, but we have seen now that brands are very aware of this and want to stop things like the questions about the PET bottles from happening any more.

You have talked about inherent dyeing of Spinnova fibres and have said this is a way of reducing water, energy and chemicals consumption. How does that work?

We have tested industrial dyes and natural dyes. It all depends on the end product. Let's say we want black fibre: the dyeing process goes so that we have a big tank, full of fibres. We drop an ink pellet into that tank, mix it for a little while and all of the dye absorbs into the fibre. With our fibres from wood pulp, the raw material is always micro-fibrillated cellulose. All of the dyestuff goes into the fibrils. Then we just do the same extrusion and drying process and the end product is black fibre. All we have then is a short curing time and the fibre is ready for spinning. We don't have to do anything else. The drawback is we cannot have an infinite number of colours; just the basic ones.

Why doesn't everyone dye the fibre before extrusion?

Because for manmade cellulose, you first have to dissolve the material to polymers and regenerate the fibre. You can't dye the polymers. Some companies do dope-dyeing, the inherent dyeing we are talking about, is at fibre stage and it is working very well in applications such as women's underwear. It's clear there is a demand for that kind of dyeing, but they can't do it where we do it. It's impossible using anyone else's method.

Does this have any impact on the recyclability of Spinnova yarn?

The only impact is the colour. In some cases we can remove the colour also, but that would require a washing cycle, although the mechanical properties would remain the same. For our fibre, recycling does not mean that the quality of the fibre goes down. It remains as good. In fact, in some cases, it can even improve. The energy required to produce Spinnova again is almost 50% less than using the raw material. The principal of my son's school asked me to talk to the students about Spinnova. An 11-year-old boy asked me about this after the presentation. He said that if the fibre recycles and recycles, time and time again, maybe it means it wouldn't be necessary to use raw material any more. Well, actually, he's right. But even if we can recycle 10% it will make a big difference. 🌱



Major footwear brands are waiting to use the renewable, biodegradable, recyclable fibre that Spinnova is able to make from wet blue shavings in knitted shoe uppers.

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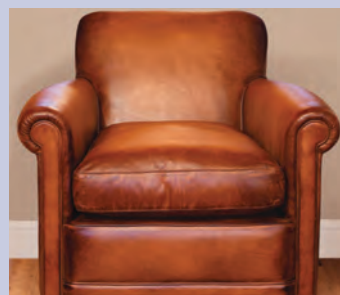


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Nothing to Hide:

The meat industry and cattle hides

Beef cattle in the US. Farmers raise the cattle for meat, demand for which is still strong, meaning hides will continue to be available to tanners.

CREDIT: USDA/BRIAN PRECHTEL



Executive summary

There has always been a delicate balance between the meat industry and the leather sector. Since we published the original version of essay five in the Nothing To Hide series, the challenges facing the meat sector have intensified. The purpose of this essay is to try to track some of the major changes that are affecting the meat sector and to invite those in the leather industry to keep a close watch on what is happening.

Livestock farmers will continue to send cattle to slaughter to supply growing global demand for beef. However, the rise of processed, substitute non-meat protein products (and, especially, the enormous level of influence their advocates appear to have in shaping the policies that will govern global food systems in the years ahead) are making many in the meat sector wary.

A decade of change lies ahead as the world strives to recover from the covid-19 pandemic and to fulfil the United Nations' Sustainable Development Goals by 2030. Business as usual for the meat industry and, therefore, for the leather manufacturers who use the hides that accrue from it will not be possible. 🌱

About this essay

The original version of Nothing To Hide Essay Five, published at the end of 2014, came from Dr Phil Hadley, now the international market development director at the UK's Agriculture and Horticulture Development Board (AHDB). Additional information for this new version of the essay has come from the Leather and Hide Council of America, the United Nations Food and Agriculture Organisation, a number of the bodies involved in setting up the 2021 UN Food Systems Summit in New York, some groups opposed the summit, and the BBC.



Some in the meat industry are fearful of the influence producers of and investors in substitute proteins are having in the wider food industry. CREDIT: ILJA NESOLEVNI/SHUTTERSTOCK

Nothing to Hide: The meat industry and cattle hides

There is great interest in ethical sourcing, animal welfare and social responsibility across many consumer product categories, especially food. Livestock farmers will continue to send cattle, sheep and goat to slaughter and will continue to generate millions of hides and skins that tanners can turn into leather, but the meat sector in 2021 faces a more complex set of challenges than ever before and the leather sector will do well to pay attention to what is going on.

The global market for beef and for hides remains strong, but it is finely balanced. Supply is clearly based on the demand for beef, rather than the needs of the leather sector. In early 2021, the Leather and Hide Council of America (LHCA) commissioned a study from two agricultural economists, Professor Gary Brester of Montana State University and North Carolina-based Dr Kole Swanser. LHCA said its objective was to address claims that cattle are raised for their hides.

The two agricultural economists presented economic analysis of the potential impact that the price of hides can have on cattle production in the US¹. After applying a method called the Granger Causality Test to the data, Professor Brester and Dr Swanser concluded that no direct relationship exists between hide values and cattle production numbers. They argued that an increase in the value of hides could have an indirect effect on cattle numbers, but only a small one. They concluded

that even if hide prices were to increase by 10%, the increase in cattle numbers that they might expect, based on established research methodologies and previous research they have carried out, to be less than 0.2%. The only possible conclusion is that livestock farmers are in business for meat, not the hides.

Meat consumption grows

Demand for meat and communication about meat are being affected in some parts of the globe by the growing popularity of vegetarian and vegan diets, but across the world as a whole meat consumption continues to grow. According to the Food and Agriculture Organisation (FAO) of the United Nations (UN)², average global per capita meat consumption grew from 36.4 kilos per year at the end of the twentieth century to 41.3 kilos in 2015. FAO projections suggest a level of 45.3

kilos in 2030. Poultry will account for a large proportion of this growth. Poultry's share of total consumption was 28% in 1999, but it will be 38% in 2030. There will be growth in consumption of meat from cattle, sheep and goats, too, reaching 10.6 kilos of beef per person per year, and 2.4 kilos of sheep and goat meat by then, up from 2015 figures of 10.1 and 2.1 kilos respectively.

Livestock farmers will continue to send cattle to slaughter, which means there will be millions of hides for tanners to work with every year. It is a sound principle to hold that consumers who want to eat meat should be able to continue to do so, just as vegetarian consumers who do not want to eat meat and vegan consumers who extend this to avoiding consumption of dairy products as well, have every right to make their choices too. But many fear the situation may be less straightforward than that.

The development of synthetic meat-like products has attracted much attention. Some developers see these products as a way of broadening their protein offering and making money from consumers who want to eat less or no meat. Major suppliers of meat, including Cargill, Tyson, JBS and Marfrig, have invested in non-meat protein products or developed their own. All of these companies will continue to be major players in the animal-based protein market, which earns them billions every year. Synthetics are a side-line that can sit side by side with their main range.

SDG call to action

Those arguing for fast and affordable developments to help feed a growing world population are also happy to see new forms of protein come to market. Food features prominently in the Sustainable Development Goals (SDGs) that the UN adopted in 2015, issuing a call to action for all governments to help end poverty and hunger, to promote health and wellbeing, to take urgent action to combat climate change, ensure sustainable patterns of consumption and protect the land³. The target for meeting the SDGs is 2030.

"Today, more than 820 million people do not have enough to eat and the climate emergency is an increasing threat to food security," said UN secretary general, António Guterres, on World Food Day in 2019. "It is unacceptable that hunger is on the rise at a time when the world wastes more than 1 billion tonnes of food every year." He said it was time to change how we produce and consume food⁴. He added that "transforming food systems" is crucial to delivering the SDGs and said he intended to convene a Food Systems Summit in 2021 to start a decade of action to deliver the SDGs on time. "As a human family, a world free of hunger is our imperative," Mr Guterres said.

For the UN, the term 'food systems' refers to the full set of activities involved in producing, processing, transporting and consuming food, touching "every aspect of human existence". The Food Systems Summit, scheduled to take place in New York in September 2021, aims to provide an opportunity "to unleash ambitious new actions, innovative solutions and plans to transform our food systems to deliver progress across all the SDGs". Since Mr Guterres announced the summit, the world of course, has had to begin learning to cope with covid-19; the UN has said the summit will lead to the unveiling of ideas for "rebuilding for resilience" in the wake of the pandemic.



United Nations secretary general, António Guterres, says it's time to change how we produce and consume food if we are to meet the Sustainable Development Goals.

CREDIT: UN PHOTO/ESKINDER DEBEBE

Voices of protest

Laudable as these ambitions are, the 2021 Food Systems Summit has attracted criticism. La Via Campesina, an international movement representing 200 million small- and medium-size farmers and other people in rural communities, called for "a total boycott" of the New York event and said scientists and academics who work in agriculture and food systems around the world shared its opposition.

La Via Campesina's complaint centres on the contention that "a handful of transnational companies dominate current global food and commodity trade"⁵. It claimed that transnational agribusinesses are now entering into partnerships with technology firms "to digitalise the global food system to cement their dominance". It insisted this should not be allowed to happen because the food systems these big corporations have come up with have proved incapable of feeding the world. "Despite their control of nearly 75% of the world's food production-related natural resources," La Via Campesina has said, "they can barely feed one-third of the global population. Furthermore, they are responsible for most of the \$400 billion worth of food lost annually and for the emission of large amounts of greenhouse gases."

By contrast, it continued, small-scale farmers, fisherfolk, farmworkers, peasants, pastoralists and indigenous people, with barely 25% of the world's food-production-related natural resources, provide about 70% of the world's food. It added: "Our web of local small-scale food producers stepped up in every corner of the world when the industrial food supply chain crumbled under the covid-19 pandemic. Yet, when it comes to defining the future of our food system, guess

who gets invited by the UN to conceive and construct the plan, principles and content of the global summit: big agribusinesses.”

Shareholder interests

One of the academics to hold similar reservations to La Via Campesina's is Dr Michael Fakhri, an associate professor of law at the University of Oregon with a specialist interest in international food policy. He is also a UN special rapporteur, which he describes as “being the eyes and ears of the UN” on a given subject, food in his case. In comments⁶ he gave to BBC Radio's The Food Programme in late July 2021, Dr Fakhri said: “Transnational corporations are gaining more and more power in all aspects of the food system. The problem when you have a small number of people who have a disproportionate amount of power is that they're going to serve their own interests, and more specifically, when it's a corporation, they're going to prioritise shareholder profit over the common good.”

He said this was evident in the work the UN and its partners did in the build-up to the 2021 summit, arguing that corporations' key ideas about the food system and its future were already baked in before the New York event began. “The process has been designed and implemented mostly by people who are very close to corporations and philanthropic organisations like The Bill and Melinda Gates Foundation and the Rockefeller Foundation,” Dr Fakhri continued. “The ideas and the leadership and the language is all from a network of people that think that corporations are part of the solution.” He accepted that it was important to hear what these big organisations had to say about food, but not to “grant them privileged access”. To do so was like “inviting the fox into the henhouse”, he insisted.

On the same BBC programme, Dr David Nabarro, a special envoy for the World Health Organisation, pointed out that, in spite of these objections, large numbers of other organisations, including some representing farmers, did agree to take part in the 2021 Food Systems Summit and were happy “to have a seat at the table”. One of the reasons for La Via Campesina's boycott and for a distinct nervousness among some in the meat industry is that they will share the forum with campaigners who, in the recent past, have



Three years on from the high-profile launch of the controversial EAT-Lancet diet, the founder of the EAT, Dr Gunhild Stordalen, was appointed to the role of chairing one of five Action Tracks at the 2021 Food Systems Summit.

CREDIT: LINUS SUNDAHL DJERF

lobbied, in some cases quite aggressively, against meat. Dr Frédéric Leroy, a food scientist based at the University of Brussels and a great social media champion of meat and livestock farming, has coined the term ‘vegan tech industry’ to describe this group.

Imitation game

Organisation of the New York summit involved dividing the range of tasks into five areas, called Action Tracks. According to Dr Leroy, Action Track Two, which addresses the shift to sustainable consumption patterns, was heavily geared towards people representing the ‘vegan tech industry’. They are, he insists, working to replace animal-source foods with “imitation foods”, a term he uses for cell-cultured meat and dairy imitation products. For instance, Dr Gunhild Stordalen, founder of EAT, the Oslo-based non-profit organisation dedicated to “transforming our global food system” that launched in 2019 its own meat-meagre diet (recommending no more than 50 grammes per person per week for beef, a quarter of what the UN believes the global average will be in 2030), was appointed the overall chair of Action Track Two⁷.

Dr Leroy also thinks it is worth noting that non-profit organisation the Good Food

Institute (GFI) played a leading role in preparing the innovation component for Action Track Two. Innovation, in GFI's own words, means presenting plant-based and cultivated meat as “a better way to feed the world”⁸. The lead for global civil society's contribution to Action Track Two (ostensibly to counter-balance the views of the corporate world), was Lasse Bruun, chief executive of 50by40, a coalition of organisations dedicated to cutting the production and consumption of industrial animal products around the world by 50% by 2040, “for the earth, the climate, and people”⁹.

Frédéric Leroy made it clear to the BBC's The Food Programme that he shares the aim of improving efficiency and environmental performance across the global meat industry, but were the summit to produce a message urging people to shift to processed, patented, fake meat products, he said it would be a big mistake. “We're talking about an even higher centralisation of the food system,” he explained, “with patented foods that are very difficult to produce, requiring specific expertise. This will shift the food supply system even more to the corporate world and move it away from traditional food systems.”

Over-consumption

In the build-up to New York, Gunhild Stordalen said she could understand scepticism about the involvement of big corporations in a UN summit such as this one. She said there was no doubt that big business had contributed significantly to the problems that exist in the global food system and that now need fixing. She argued, though, that the same can be said about government policies, adding that most in the food industry accepted that governments needed to take part in the event to help shape the food policies of the next decade. "And, in my view, the same goes for business," she said.

Her view of animal protein now is that it is an important part of a healthy and sustainable diet. "That's what the best available science shows," she explains. "What we need to tackle with urgency is the over-consumption of factory-farmed, grain-fed animals. Factory farming has to end. On the contrary, free-range, grass-fed livestock is an important part of regenerative and nature-positive farming systems. They can restore biodiversity and soil health, and store carbon in the ground." She said the 2021 Food Systems Summit would draw a clear distinction between "good meat and bad meat".

There is a need for change, but certainly not for giving big corporations a chance to tweak the systems they have engineered for the way we make and consume food, Dr Leroy says. "We need to use the best science available," he says. "We need to use the whole portfolio of scientific solutions and we need more engagement from the people that actually

produce the food." He wants fewer people with expertise in investment flows to become involved in shaping the future of meat and of food more generally. Instead, he wants more people with deep knowledge of the soil, of animals and of human health to make their voices heard.

Positive relationships with suppliers in the meat industry are important for leather manufacturers. With foods systems in general, and meat as a high-profile component part of them, facing far-reaching changes in the decade ahead, it seems likely that there will be implications for the leather industry too. 🌐

- 1 <http://www.usleather.org/sites/default/files/documents/BresterSwanser2021.pdf>
- 2 <http://www.fao.org/3/y4252e/y4252e05b.htm>
- 3 <https://sdgs.un.org/goals>
- 4 <https://www.un.org/sg/en/content/sg/statement/2019-10-16/secretary-generals-message-world-food-day-scroll-down-for-french-version>
- 5 <https://viacampesina.org/en/un-food-systems-summit-here-is-why-we-are-boycotting-it/>
- 6 <https://www.bbc.co.uk/sounds/play/m000y5fg>
- 7 <https://eatforum.org/learn-and-discover/eat-at-the-un-food-systems-summit-2021/>
- 8 <https://gfi.org/about/>
- 9 <https://50by40.org/about-us>



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At the Leather Working Group, we have been working to drive positive change in the leather industry for over 15 years, through our auditing standards and engagement with the leather supply chain. Since then, our group has grown significantly to become the world leading certification for responsible leather manufacturing and the largest independent not-for-profit organisation for the leather industry.

The Leather Working Group leads the way for a responsible leather industry

Our group was founded on the principle of transparency, accountability, and democracy. Our Executive Committee is elected by and fully accountable to our 1,300 members, and our membership provides input through our various sub-committees and engagement opportunities. As a member-led organisation, our group's direction and development is determined by the needs, input, and expertise of our members and partnerships.

The 2020 annual LWG Member Survey identified five top priorities for the immediate future: 1) traceability & deforestation; 2) environmental impact; 3) animal welfare; 4) chemical compliance; and 5) social responsibility.

Following our member's lead, we have evolved the scope of our audit standard into a more holistic assessment of a tannery's performance, that covers all elements of responsible leather manufacturing, including environmental management, traceability, chemical management, social responsibility, and governance. LWG's philosophy is to drive positive change incrementally through new iterations of the audit standard. The first phase to introduce the new, expanded scope was implemented with the launch of the LWG Leather Manufacturer Audit Protocol 7.0 (P7) in February 2021.

Our flagship Audit Standard is a powerful tool, designed to connect all actors in the leather manufacturing supply chain from raw material to finished leather. As of July 2021, over 950 leather manufacturers and traders are LWG-certified, making us the largest global certification programme for the leather industry. Through our auditing programme, we aim to provide brands with a fully

“Protocol 7 will set a unique and unmatched bar in terms of providing an all-encompassing surety of supply for those who source from accredited leather manufacturers under our program.”

**Ian Scher, VP of Procurement at PrimeAsia Leather Co.,
and Chairman of the LWG Executive Committee**

transparent leather supply chain, giving them more responsible suppliers to source from; greater insights into their impact; the ability to meet science-based targets; and to ensure they are making credible sustainability claims.

Traceability & Deforestation

With consumers wanting more sustainable products from more responsible companies, the commercial landscape for leather goods is changing — and traceability is a key factor in this conversation.

Rated as one of the most important areas of concern for our membership, we formed the LWG Traceability Working Group (TrWG) in late 2020 as a forum for LWG-certified tanners and brand members to join forces. The group provided their expertise in the development of our new

traceability requirements in the new LWG Audit Standard, P7. We have expanded the traceability portion of our audit from one section to three, where leather manufacturers are assessed based on their material procurement, incoming traceability, and outgoing traceability. We have also developed a framework to give more nuance to the regional differences in traceability of raw material based on the prevalent farming style and expanded the areas that require additional due diligence due to deforestation concerns, following expert advice from leading NGOs, NWF and WWF.

The TrWG will continue to provide valuable input to create our traceability roadmap that will pave the way to a more transparent and traceable leather supply chain.

Environmental Impact

LWG is working to evolve our industry's understanding of the full environmental impact of leather from beginning to end. To do this, we are creating a new working group – the LWG Environmental Impact Working Group – for LWG members to discuss this important area. This will provide a platform for discussion, engagement, and education on a variety of topics related to the environmental impact of leather. Importantly, the group will provide valuable guidance on a number of our major developments.

The LWG will be conducting an LWG lifecycle assessment (LCA) involving over 40 LWG-certified leather manufacturers around the world. The LCA will provide detailed and accurate insights on the environmental impact of leather made by LWG-certified suppliers.

In addition to this, we are launching a Supplier Scorecard, that will empower Leather Manufacturers to demonstrate their audit performance to their customers, support clearer consumer messaging, and strengthen end-to-end sustainability claims. Finally, the next update to our flagship Audit Standard (P8) will introduce a carbon footprint calculator, which will provide a carbon footprint of the leather produced.

Animal Welfare

Given the leather industry's inherent link with the meat industry, brands and consumers continue to ask questions about animal welfare in the leather supply chain.

In 2016, we launched the LWG Animal Welfare Group (AWG) to provide information on animal welfare standards across the world. A consortium of major brands and retailers, the LWG AWG has published 26 Country Profile Reports, giving a meta-analysis of animal husbandry, welfare, transport, and legislation, as well as an additional due diligence rating to guide brands on extra steps they can take to ensure good animal welfare. Furthermore, the group has developed an Animal Welfare Best Practice Guide, in collaboration with the RSPCA and Progressive Beef.

Through our strengthened traceability requirements, we aim to facilitate better transparency into the leather supply chain, which will in turn enable companies to conduct their own animal welfare due diligence as part of their sourcing process.

Chemical Compliance

A major change in Version 7.0 of our Audit Standard is the introduction of additional chemical management requirements, further restricted substances criteria, and extra measures to prevent the formation of Chromium VI (CrVI).

Under P7, leather manufacturers must demonstrate

“LVMH has been working for more than five years to improve tannery's environmental performance with LWG [...]. We've seen visible progress from our suppliers thanks to the formidable LWG Audit tool and the network of expertise held by LWG. Whilst we see tangible success in some important key performance indicators, there is also a noticeable change in the mindset of tanners.”

Hugues Pichon, Project Director at LVMH

compliance with all national or regional laws that apply (e.g., EU Biocidal Products Regulation 528/2012), as well as compliance with a Restricted Substance Lists (RSL) and a Manufacturing Restricted Substance List (MRSL). The LWG is aligned with the AFIRM risk based RSL for leather and the ZDHC MRSL. Additionally, as part of our ongoing collaboration with ZDHC, all LWG certified members have been granted free access to the ZDHC Gateway, which can be used to demonstrate MRSL compliance during their audit.

As the presence of Chromium VI remains a concern for both brands and consumers, we have introduced new CrVI testing requirements that specify the frequency of testing, the most appropriate test methods, and the limits to which a tannery should conform. As such, brands can be reassured that material they purchase from LWG-certified tanneries has a reduced risk of CrVI formation.

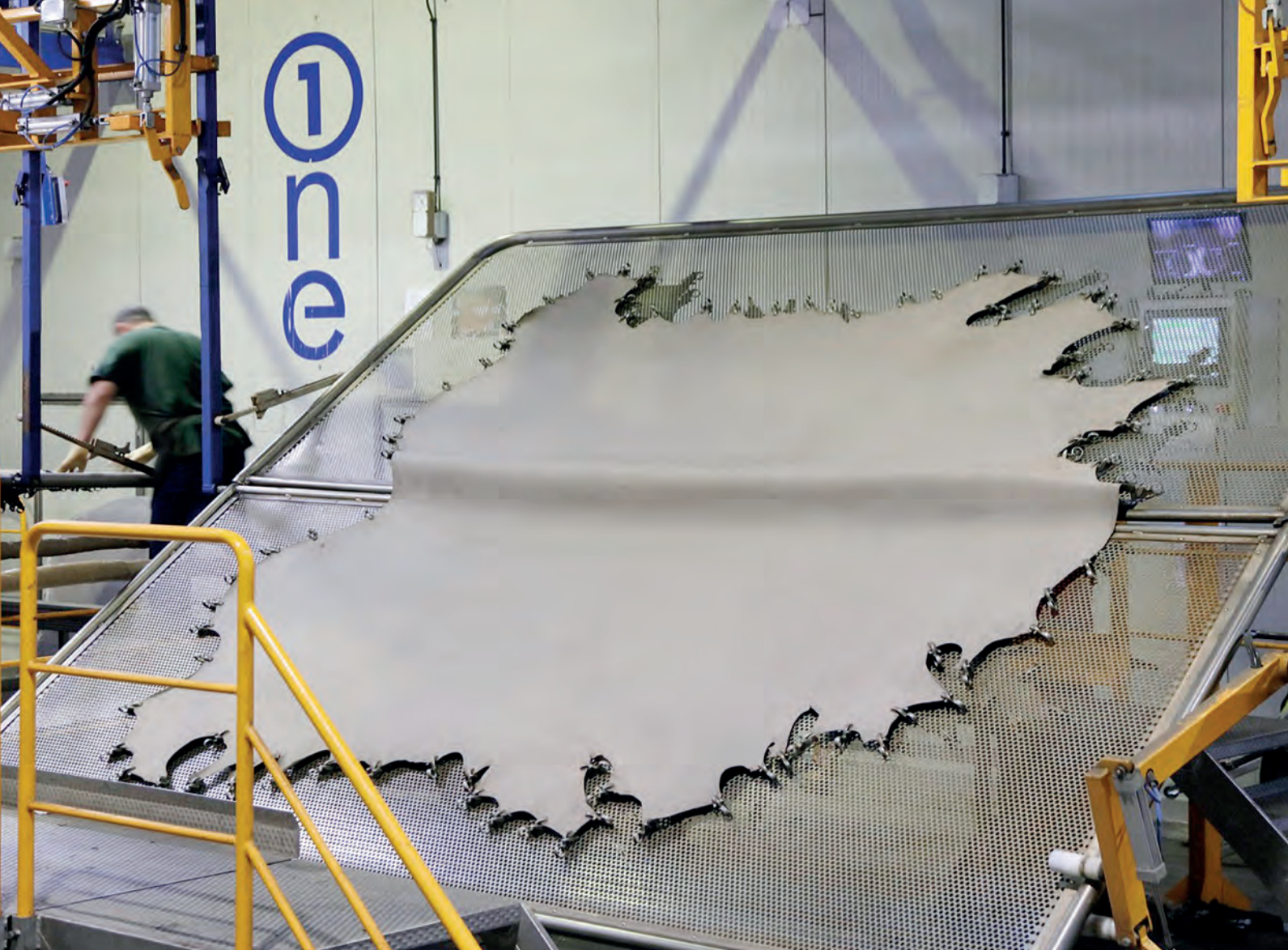
Social Responsibility

Historically, the LWG has focused primarily on the environmental impact of leather manufacturing. By engaging with our annual surveys, our sub-groups, and during events, our membership have made it clear that social responsibility is the next essential element to include to ensure a truly responsible leather industry.

For the first time, we have introduced a social compliance requirement to our audit, which recognises leading social certifications from third-party providers. Rather than developing our own social audit standard, we aim to support industry alignment on social compliance and reduce the duplication of effort.

Over time, the social audit requirement will be phased in, to give leather manufacturers time to prepare for and acquire a social audit before their next LWG Audit. We intend to increase the importance of social compliance in the next major revision of the LWG Audit Standard, P8. 🌐

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One

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Part Two: COD – chemical oxygen demand as a diagnostic tool

Dr Jeffry Guthrie-Strachan, Stephen Trantum, Ulrich Buckenmayer
Trumpler, Germany

The determination of chemical oxygen demand (COD) is a reliable, reproducible, fast, convenient, and affordable way of measuring the amount of organic matter in a sample of effluent (see Part 1: COD, World Leather, April/May 2021).

The conventional use of COD is to measure the amount of organic matter presented to the effluent plant in order to determine (i) how polluting the effluent is, (ii) how hard the effluent plant needs to work, (iii) what is required to treat the effluent and (iv) how well the effluent plant performs.¹

While COD is such an important parameter in effluent analysis and costing, Trumpler decided to use COD analysis as a diagnostic tool to:

- (A) understand the COD composition of its proprietary products,
- (B) investigate the use of COD to determine the exhaustion of dyehouse products (retanning and fatliquoring agents), and
- (C) use comprehensive experimentally determined COD data of proprietary and commodity leather chemicals to predict effluent COD loadings from practical dyehouse leather recipes.

A: The COD/organic composition of dyehouse proprietary products

Trumpler determines the COD content of its proprietary products as standard quality assurance practice, using a standard COD analysis (see Part 1: COD). The COD of a product depends on:

- (i) the amount of organic material present in the product, which is directly linked to the active matter (AM), namely the non-water component of a product (Box 1), and
- (ii) the Inherent COD of a chemical, e.g., the degree to which the organic material is already oxidised (Box 2).

The company determined the COD for more than 100 of its dyehouse products, including fatliquors, phenolic syntans and vegetable tannins, and resins and polymers. The COD of the individual products was measured and plotted against active matter (Box 3). The data was then extrapolated to determine the COD based on a theoretical 100% active matter equivalent (AME) for each product, summarised in Table 1.

A product with high COD indicates:

- the product is predominantly organic in nature (fatliquors, phenolic syntans, vegetable tannins etc.), and/or
- the product has a high active matter, i.e., low water content (e.g., powder vegetable tannins and syntans and/or high active matter fatliquors, AM>90%)

A product with low COD indicates:

- the product is predominantly inorganic in nature (e.g., fillers and selected neutralising syntans etc.), and/or
- the product has a low active matter, i.e., high water content (e.g., acrylic syntans, AM=30-35%), and/or
- the product is organic but has a low inherent COD (e.g., acrylic syntans, formic acid etc.)

Therefore, the COD of a proprietary product should be expressed in terms of 100% AME in order to be compared directly with other products.

Products, such as fatliquors, are expected to have high CODs as fats and oils from natural sources are organic and have a high Inherent COD.

What is most important with all products is exhaustion.

Table 1: A summary of Figures 3.1-3.3 (Box 3) showing the COD ranges for Trumpler retanning & dyehouse proprietary products based on their active matter and Inherent COD based on 100% active matter equivalent (AME).

Proprietary Products	Product COD Range (mg/g)	COD Range based on 100% AME (mg/g)	Inherent COD based on 100% AME (mg/g)
Fatliquors	826 (40% AM) to 2730 (100% AM)	2000-3000	2550
Retanning Agents & Vegetable Tannins	210 (35% AM) to 1500 (92% AM)	1200-1600	1500
Acrylic Syntans	250 (30% AM) to 491 (33% AM)	800-1500	990



Box 1 What is a proprietary product² and what is active matter?

Proprietary products contain one or more active ingredients and then a range of stabilisers, emulsifiers, and/or auxiliaries where required, and often water. The active ingredients, stabilisers, emulsifiers and auxiliaries may be organic (COD active), and/or inorganic in nature (COD inactive).

Water is found in most products, even powders, where it commonly makes up between 0 and 8% by mass (humidity and product dependent). Liquid products often vary between 0 and 70% water by mass. Table 1.1 summarises some typical active matter values expected for selected retanning and fatliquoring products.

Table 1.1: Typical active matter ranges for selected retanning and fatliquoring agents.

Product	Typical Active Matter Ranges
Syntans, Vegetable Tannins (powder)	>90%
Acrylic Syntans (liquid)	30-35%
Fatliquors (high AM)	>90%
Fatliquors (low AM)	40-50%
Syntans (liquid)	40-70%

Trumpler considers the active matter (AM) in powder products to be the dry matter (after heating at 105°C and determined gravimetrically) and in liquid/paste products the AM is determined as the non-water content (the water content of a product is determined using the Karl-Fischer titration). For this investigation, AM includes active ingredients, stabilisers, emulsifiers and auxiliaries (Figure 1.1).

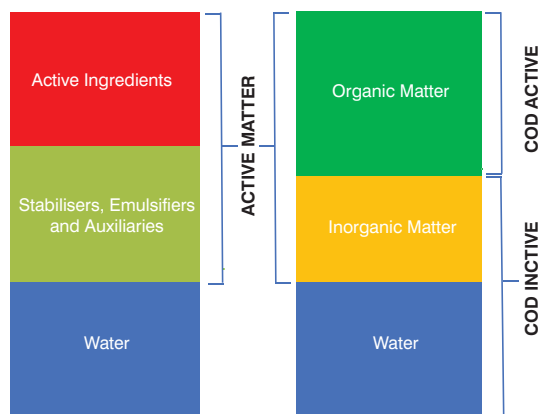


Figure 1.1: Generic representation of the composition of proprietary products indicating active matter and COD activity.

If a product has a high COD but exhausts very well it is likely to contribute to less COD in the effluent than a low COD product that does not exhaust well.

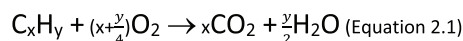
Trumpler considered the use of COD as a tool to measure the exhaustion of its proprietary dyehouse chemicals.

B: The exhaustion of Trumpler dyehouse products utilising COD

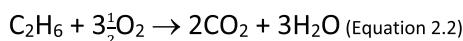
With the aid of a simple mass balance, it can be understood that the total organic matter (TOM) comprises the endemic organic matter (EOM) (Box 4) and the added organic matter (AOM) according to Equation 1. The AOM will either bind/fix to the chrome-tanned collagen matrix or it will not bind/fix and is drained out of the drum and heads to the effluent plant (Equation 3). If we assume that the amount of EOM remains constant, we can further deduce that the amount of bound organic matter can be determined according to Equation 4

Box 2 The inherent COD of organic matter

The degree to which organic matter is oxidised has a significant effect on the inherent COD of an organic material. The COD analysis process actually determines the amount of oxygen required to oxidise an organic material completely to carbon dioxide and water according to Equation 2.1 (see *World Leather April-May Part 1*).



So, for an unoxidised chemical (when $x = 2$ and $y = 6$) called ethane:



And for a highly oxidised chemical (when $x = 2$ and $y = 2$, with 4 oxygens) called oxalic acid:



Thus, to oxidise one molecule of ethane requires 3.5 oxygen molecules and to oxidise one molecule of oxalic acid requires half a molecule of oxygen. This means that it takes 7 times more oxygen to oxidise ethane than it takes to oxidise oxalic acid, therefore, the COD of ethane is 7 times higher than the COD of oxalic acid even though both materials are organic.

Trumpler calculated the theoretical inherent COD of several chemicals (Figure 2.1). From Figure 2.1 we can determine that the highest inherent organic COD possible is 4000mg/g for methane (CH_4) and the lowest possible inherent organic COD is 178mg/g for oxalic acid ($C_2H_2O_4$).

As an organic molecule gets bigger, with longer carbon chains, the inherent COD increases to between 2500 and 3500 mg/g (except for hydrocarbons that decrease from 4000 to 3500mg/g). Finally, as an organic molecule has additional groups added to the chain the COD decreases according to hydrocarbons > mono-alcohols > di-alcohols > mono-carboxylic acids > di-carboxylic acids.

The inherent COD of fatliquors, retanning agents and acrylic syntans can be determined from the average 100% active matter equivalents (AME) in this study.

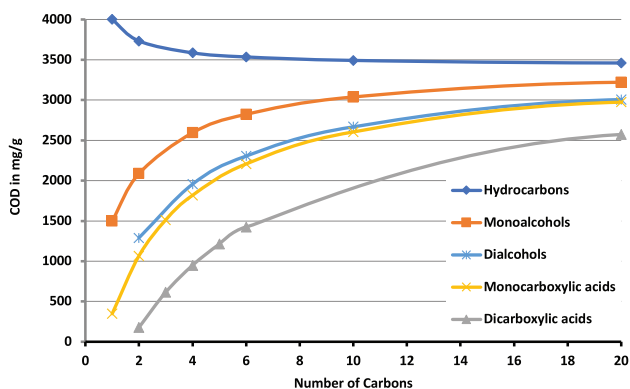


Figure 2.1: A graph representing theoretically calculated inherent COD values for a range of simple organic molecules with chains up to 20 carbons long.

using the COD of the AOM (measured in Section A for each individual product) and the COD of the unbound organic matter (float COD) after processing.

Total Organic Matter = Endemic Organic Matter + Added Organic Matter (Equation 1)

Total Organic Matter = Endemic Organic Matter + Bound Organic Matter + Unbound Organic Matter (Equation 2)

Added Organic Matter = Bound Organic Matter + Unbound Organic Matter (Equation 3)

Bound Organic Matter = Added Organic Matter – Unbound Organic Matter (Equation 4)



Box 3 Proprietary product COD vs active matter and inherent COD for fatliquors, retanning agents and acrylic syntans

The graphs show the relationship between active matter and COD and the 100% active matter equivalent (AME) for fatliquors (●, Figure 3.1), phenolic syntans (▲, Figure 3.2) and acrylic syntans (◆, Figure 3.3). The units of mg O₂/g indicate the mass of oxygen (in mg) that would theoretically be required to completely 'neutralise' 1 gram of the product, i.e., the oxygen demand per gram of product.

Fatliquors ●

Fatliquors are generally 100% organic in nature with a high inherent COD, therefore the products integrate well in Figure 3.1 to provide a linear trendline when plotting COD vs AM. The inherent COD of fatliquors is represented by the average 100% AME for fatliquors of 2550mg O₂/g.

Retanning agents ▲

Retanning agents may be 100% organic but are often blended with inorganic powders for a number of practical reasons and this results in a more complicated picture. The results in Figure 3.2 fall into three categories, namely,

(i) fully organic phenolic retanning agents (▲) with 100% AME ranging from 1330-1630mg/g. These products integrate well and provide a linear trendline when plotting COD vs AM. The inherent COD of fully organic retanning agents is represented by the average 100% AME of 1500mg O₂/g.

(ii) High AM organic/inorganic retanning agents (▲) with 100% AME ranging from 800-1200mg/g. The products have a moderate inorganic content and organic components with low inherent COD. Products tend to be neutralising syntans and polymeric retanning agents.

(iii) High AM Inorganic/organic syntans (▲) with 100% AME ranging from 130-700mg/g. These products tend to have a high inorganic content and organic components with a low inherent COD, such as neutralising syntans and filling agents.

Acrylic Syntans ◆

Acrylic syntans are generally 100% organic in nature and completely COD active, therefore the products integrate well in Figure 3.3 to provide a linear trendline when plotting COD vs AM. The inherent COD of acrylic syntans is represented by the average 100% AME for acrylic syntans of 990mg O₂/g.

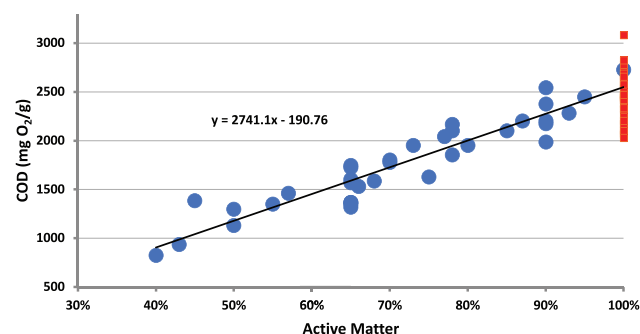


Figure 3.1: Graph showing fatliquor (●) product COD (mg/g) versus active matter (AM) (including 100% AME, ■). The average 100% AME for fatliquors is 2550mg/g.

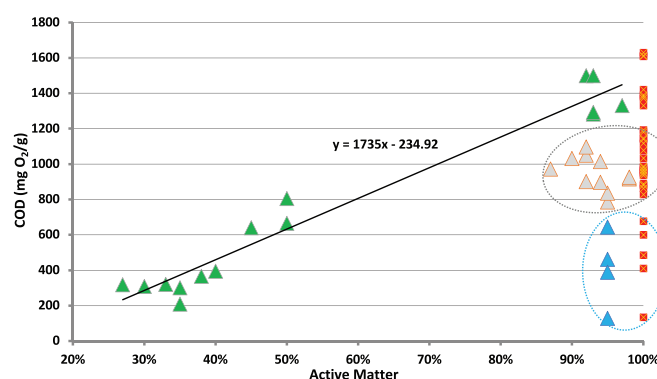


Figure 3.2: Graph showing retanning agents (▲) proprietary product COD (mg/g) versus active matter (AM) (including 100% AME, ■). The average 100% AME for fully organic retanning agents is 1500mg/g.

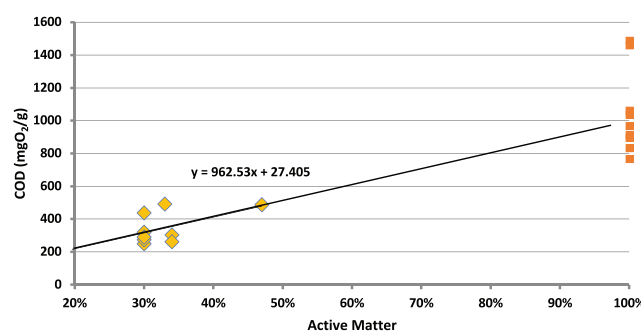


Figure 3.3: Graph showing acrylic synten (◆) proprietary product COD (mg/g) versus active matter (AM) (including 100% AME, ■). The average 100% AME for acrylic syntans is 990mg/g.

Experimental design – product exhaustion

Trumpler conducted a number of experiments in an effort to determine viable product offers (Table 2), product processing conditions, and practical recipes in accordance with standard leather manufacturing processing parameters.

Wet blue was used from the same supplier and the same batch wherever possible. Every hide that was processed was divided into 12 samples, including two internal blank samples to eliminate interferences arising from EOM.

Wet blue hides were prepared and processed according to standardised recipes and procedures developed for the investigation (Appendix 1: Recipes 1, 2 & 3). In addition, the blank samples were processed under the same experimental conditions, times and chemical offers without the proprietary products, to eliminate any interferences due to products not

Table 2: Product offers determined experimentally based on 100% Active Matter Equivalent (AME)

Product	Product Offer based on 100% AM Equivalent
Fatliquors	7%
Retanning Agents & Vegetable Tannins	8%
Acrylic Syntans	1.8%

under investigation. This allowed the experiments to isolate the effect of the proprietary products and determine the COD of the unbound organic matter according to Equation 5. The exhaustion of the individual proprietary products could then be determined according to Equation 6.

**APPENDIX 1: Exhaustion study recipes for fatliquors (Recipe 1), retanning agents (Recipe 2) and acrylic syntans (Recipe 3)****Recipe 1: Standard recipe for Fatliquor product exhaustion investigation.**

Process	%	Product	T (°C)	Time	Comments
12 Samples Processed Together					
Neutralisation	300	Water	35		
	2	Sodium formate		20'	
	0.3	Sodium bicarbonate		40'	pH 5.2-5.5 (Ø BCG)
Retanning	3	Acrylic Syntan (1:3)		30'	
	6	Phenolic Syntan		60'	Drain
Wash	300	Water	60	15'	Drain
Samples separated and processed individually					
Fatliquoring	200	Water	60		
	7*	FATLIQUOR (1:3)		60'	Blank = no fatliquor
Fixing	1	Formic acid (1:10)	20	40'	pH 3.4-3.8
Sample of float removed for COD analysis					
Wash	300	Water	20	15'	

* Based on 100% AME. A fatliquor with AM of 50% would require an actual offer of 14%.

Recipe 2: Standard recipe for retanning agent product exhaustion investigation.

Process	%	Product	T (°C)	Time	Comments
12 Samples Processed Together					
Neutralisation	300	Water	35		
	2	Sodium formate		20'	
	0.3	Sodium bicarbonate		40'	pH 5.2-5.5 (Ø BCG)
Wash	300	Water	60	15'	
Samples separated and processed individually					
Retanning	3	Acrylic Syntan (1:3)		30'	
	8*	RETANNING AGENT		60'	Blank = no veg/phenolic syntan
Fatliquoring	200	Water	60		
	7	Fatliquor (1:3)		60'	
Fixing	1	Formic acid (1:10)	20	40'	pH 3.4-3.8
Sample of float removed for COD analysis					
Wash	300	Water	20	15'	

* Based on 100% AME. A retanning agent with AM of 90% would require an actual offer of 8.9%.

Recipe 3: Standard recipe for acrylic syntan product exhaustion investigation.

Process	%	Product	T (°C)	Time	Comments
12 Samples Processed Together					
Neutralisation	300	Water	35		
	2	Sodium formate		20'	
	0.3	Sodium bicarbonate		40'	pH 5.2-5.5 (Ø BCG)
Wash	300	Water	60	15'	
Samples separated and processed individually					
Retanning	1.8*	ACRYLIC SYNTAN (1:3)		30'	Blank = no acrylic syntan
	6	Phenolic Syntan		60'	
Fatliquoring	200	Water	60		
	7	Fatliquor (1:3)		60'	
Fixing	1	Formic acid (1:10)	20	40'	pH 3.4-3.8
Sample of float removed for COD analysis					
Wash	300	Water	20	15'	

* Based on 100% AME. An acrylic syntan with AM of 30% would require an actual offer of 6%.

A full-page background image showing the lower legs and feet of a person walking on a tightrope. The person is balancing on a thin, dark line against a blurred background of warm, golden light. The image conveys a sense of precision and balance.

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Unbound Organic Matter COD = Proprietary Product Float
COD – Blank Float COD (Equation 5)

% Exhaustion = $\frac{(\text{Bound Product COD})}{(\text{Added Product COD})} \times 100$ (Equation 6)
Proprietary Product

The results for the exhaustion of products can be viewed in Figures 5.1-5.3 (Box 5).

Discussion

At the beginning of the study, the hypothesis was that fatliquors with a lower AM would have lower exhaustions due to the need for extra emulsifiers and stabilisers. This, however, is not evident based on the results. Generally, fatliquor exhaustion is high to almost complete based on 7% offer at 100% AME with most exhaustions above 90%. One low AM fatliquor exhibited an almost complete exhaustion of 98%.

The almost complete exhaustion fatliquors (>98%) tended to be fish oil-based with very low emulsifier and stabilizer requirements.

The moderate exhaustion product with 74.5% exhaustion was not unexpected as it is a cationic fatliquor and exhaustion was predictably lower.

The fatliquor results showed excellent correlations between duplicate and similar products.

The results for the retanning agents were a bit more complicated as the products are significantly more diverse. There are liquid and powder products, as well as vegetable tannins, phenolic syntans, naphthalene-based neutralizing syntans, collagen-hydrolysates, and melamine-based filling resins.

The vegetable tannins, phenolic syntans and collagen hydrolysates exhibited moderate to high exhaustions illustrated by the 70-90% exhaustion results (▲&▲Figure 5.2).

Products containing components with reduced binding capacity, e.g., naphthalene sulphone condensate-based neutralising agents, gave somewhat lower levels of exhaustion, as expected.

The acrylic syntans delivered with very high to almost complete exhaustions across the board (93-100% exhaustion) based on 1.8% at 100% AME. The offer of 1.8% for a 30% AM product equates to an actual offer of 6% which is in line with industry expectations. Industry norms for acrylic syntan offers vary from 2-4% for European hides up to 10% for South American material.

All the data gathered for the individual products was combined with COD data for commodity products in an effort to predict the effluent COD values of standardised recipes.

C: Prediction of effluent COD values

Imagine if one could design a recipe and, with the click of a button, predict the effluent COD that would be produced. It would be an invaluable tool in the formulation of low COD recipes if it were possible. Trumpler decided to use the extensive COD data generated from this project and investigate how accurate effluent COD predictions could be.

Experimental design – COD prediction

Standard recipes were developed in accordance with those for the exhaustion experiment based on 100% AME of 8% retanning agent and 7.5% fatliquor. The retanning agent and fatliquor offers comprised three products each. Due to the extremely high exhaustion of acrylic syntans the acrylic offer was fixed at 5% for all experiments.

Box 4 Endemic and added organic material in hides, skins and leather manufacture

In leather manufacture, the beamhouse operations remove undesirable materials from the hide or skin and leave collagen, elastin and other residual components behind in a natural, fibrous, collagen matrix. This is why the beamhouse processes generate effluents with significant COD loadings (Figure 4.1) as fats, hair and other components have a high Inherent COD. Tanning, retanning and dyehouse operations, stabilise the collagen matrix and then fill it with the required chemicals in the desired amounts to provide the base colour and properties required of the final leather. Many of the retanning and dyehouse products added are also COD active.

Table 4.1: Endemic organic matter for raw hides and wet blue and added organic matter in retanning, dyeing & fatliquoring

Endemic Organic Matter (Raw Hides)	Endemic Organic Matter (Wet Blue)	Added Organic Matter in Retanning and Dyehouse
Collagen	Collagen (80%)	Vegetable Tannins
Keratin (hair, epidermis)	Elastin	Syntans
Elastin	Residual Fats	Fatliquors
Natural Proteins	Residual Proteins	Dyestuffs
Fats		Formic acid/Formate
Natural Sugars		Resins & Polymers

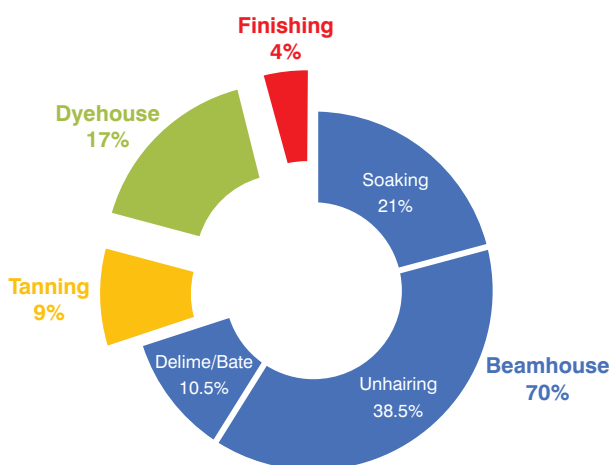


Figure 4.1: Generic COD effluent contributions according to leather manufacturing stages/processes.³

The experiments were designed to look at fatliquors (Appendix 2: Recipes 4 & 5) and retanning agents (Appendix 2: Recipes 6 & 7) independently but also to investigate the potential for synergistic and antagonistic effects for high exhaustion products (Recipe 4 & 6) and for moderate/poor exhaustion products (Recipes 5 & 7). The predicted COD was calculated using individual product and chemical COD data and the amount of water used. Samples were removed and sent for analysis to compare with the calculated values. The results are summarised in Table 3.

Discussion

The exhaustion studies produced results that were a great deal closer than initially expected. It must be understood that COD variations of 5% are not unexpected and that a difference in COD of $\pm 2550\text{mg/L}$ may equate to an equivalent difference of $\pm 1\text{g/L}$ of a 100% AME fatliquor.

As suspected, products that exhaust well have a synergistic effect on other products and both high exhaustion product experiments resulted in measured effluent CODs that

**APPENDIX 2: COD prediction study recipes for fatliquors (Recipes 4 & 5) and retanning agents (Recipes 6 & 7)**

The % Active Matter refers to the AM for the individual product and the Exhaustion % is the exhaustion value measured for each product in Part B of this exercise (AM%/Exhaustion%).

Recipe 4: Standard recipe for COD prediction study using high exhaustion fatliquors (A, B & C) including chemical active matter (AM) and exhaustions (AM%/Exhaustion%).

Process	%	Product	T (°C)	Time	Comments
Wet Back	100	Water	20		
Retanning	5	Acrylic Syntan (30%/96%)		20'	Dilute 1:3
	2*	Retanning Agent 1 (35%/87%)		20'	
	3*	Retanning Agent 2 (95%/78%)		20'	
	3*	Retanning Agent 3 (94%/87%)		60'	
Fatliquoring	100	Water	60		
	2.5*	FATLIQUOR A (90%/98.9%)			
	2.5*	FATLIQUOR B (95%/98.2%)			
	2.5*	FATLIQUOR C (85%/98.5%)	60	90'	Blend & dilute 1:4
Fix	2x1	Formic acid (70%/5%)		40'	Dilute 1:10

Sample Collected for Analysis

* Based on 100% AM equivalent

Recipe 5: Standard recipe for COD prediction study using moderate/high exhaustion fatliquors (D, E & F) including chemical active matter (AM) and exhaustions (AM%/Exhaustion%).

Process	%	Product	T (°C)	Time	Comments
Wet Back	100	Water	20		
Retanning	5	Acrylic Syntan (30%/96%)		20'	Dilute 1:3
	2*	Retanning Agent 1 (35%/87%)		20'	
	3*	Retanning Agent 2 (95%/78%)		20'	
	3*	Retanning Agent 3 (94%/87%)		60'	
Fatliquoring	100	Water	60		
	2.5*	FATLIQUOR D (70%/88.9%)			
	2.5*	FATLIQUOR E (65%/87.0%)			
	2.5*	FATLIQUOR F (65%/86.3%)	60	90'	Blend & dilute 1:4
Fix	2x1	Formic acid (70%/5%)		40'	Dilute 1:10

Sample Collected for Analysis

* Based on 100% AM equivalent

Recipe 6: Standard recipe for COD prediction study using high exhaustion phenolic syntans (α, β & γ) including chemical active matter (AM) and exhaustions (AM%/Exhaustion%).

Process	%	Product	T (°C)	Time	Comments
Wet Back	100	Water	20		
Retanning	5	Acrylic (30%/96%)		20'	Dilute 1:3
	2*	RETANNING AGENT α (35%/87%)		20'	
	3*	RETANNING AGENT β (95%/78%)		20'	
	3*	RETANNING AGENT γ (94%/87%)		60'	
Fatliquoring	100	Water	60		
	7.5*	Fatliquor (90%/98.2%)	60	90'	Dilute 1:4
Fix	2x1	Formic acid (70%/5%)		40'	Dilute 1:10

Sample Collected for Analysis

* Based on 100% AM equivalent

Recipe 7: Standard recipe for COD prediction study using moderate/high & poor exhaustion phenolic syntans (δ, ε & σ) including chemical active matter (AM) and exhaustion (AM%/Exhaustion%).

Process	%	Product	T (°C)	Time	Comments
Wet Back	100	Water	20		
Retanning	5	Acrylic (30%/96%)		20'	Dilute 1:3
	2*	RETANNING AGENT α (27%/44%)		20'	
	3*	RETANNING AGENT β (98%/8%)		20'	
	3*	RETANNING AGENT γ (92%/77%)		60'	
Fatliquoring	100	Water	60		
	7.5*	Fatliquor (90%/98.2%)	60	90'	Dilute 1:4
Fix	2x1	Formic acid (70%/5%)		40'	Dilute 1:10

Sample Collected for Analysis

* Based on 100% AM equivalent

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Box 5: Exhaustion study results for fatliquors (●), phenolic syntans (▲) and acrylic syntans (◆)

The results from the exhaustion study utilising fatliquors (●, Figure 5.1, Recipe 1), retanning agents (▲, Figure 5.2, Recipe 2) and acrylic syntans (◆, Figure 5.3, Recipe 3). Please note that the exhaustion measured in this study is based on organic COD active material. The exhaustion of inorganic or COD inactive components is not represented or measured in this exercise.

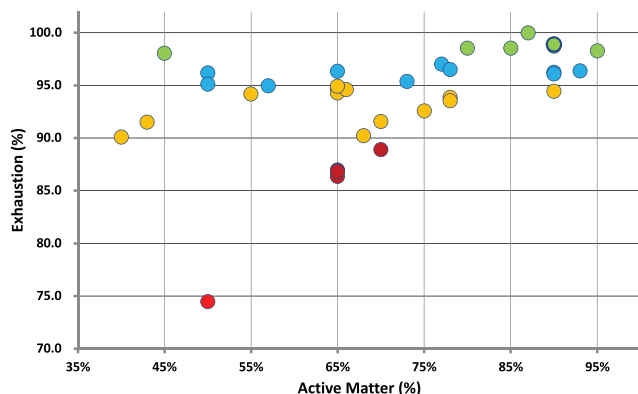


Figure 5.1: The exhaustion of proprietary fatliquor products versus their active matter (AM). Exhaustion results were arranged into four categories, (i) Almost Complete Exhaustion, >98% (●), (ii) Extremely High Exhaustion, 95-98% (●), (iii) Very High Exhaustion, 90-95% (●), and High Exhaustion, 85-90% (●). One product (●), a cationic fatliquor, stands out with an expected Moderate Exhaustion of 74.5%.

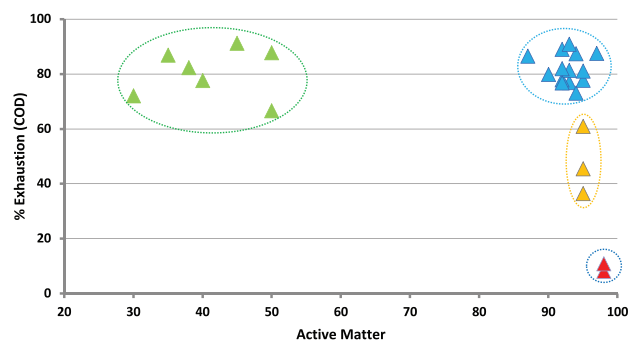


Figure 5.2: The exhaustion of proprietary retanning agents versus their active matter (AM). Exhaustion results fall into four apparent categories, (i) Low AM – Moderate to High Exhaustion (▲), (ii) High AM – Moderate to High Exhaustion (▲), (iii) High AM – Moderate to Poor Exhaustion (▲), and (iv) High AM – Poor Exhaustion (▲).

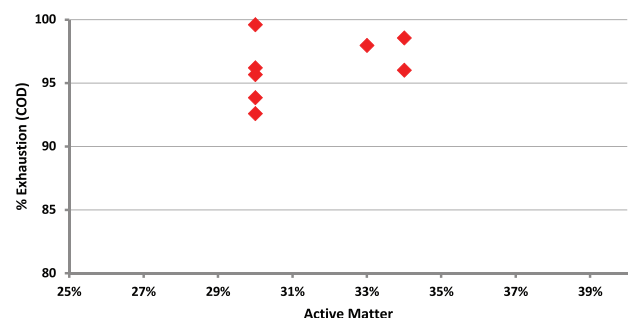


Figure 5.3: The exhaustion of proprietary acrylic syntans (◆) versus active matter (AM). All products exhaust to a very high amount or almost complete.

Table 3: Results for the COD prediction study for fatliquors and retanning agents using using high exhaustion and moderate/poor exhaustion products.

Products Investigated	Recipe	Product Exhaustion	COD predicted (mg/L)	COD measured (mg/L)	COD measured Vs COD Predicted)
Fatliquors	4	High	7 546	5 770	23.5% lower
	5	Moderate	14 053	13 580	3.4% lower
Retanning Agents	6	High	7 878	6595	16.3% lower
	7	Moderate/Poor	22 648	26 451	16.8% higher

were lower than expected, 23.5% and 16.3% respectively.

Moderate and poor exhaustion products produced measured COD results that were close to expected and higher than expected, illustrating the potential of an antagonistic effect.

The results show great promise for the prediction of effluent COD when using simple recipes and may be easily applied to production systems that rely on large volume production cycles. Modifications and changes to the recipe can be reliably measured and followed using COD as a diagnostic tool.

Conclusions

Leather manufacture is an incredibly complicated process with multiple products and process parameters, without even considering the variety of raw materials. A deeper understanding of COD and its contributions goes a long way to provide a better picture of what is happening between chemical products in the drum, the leather and what goes down the drain to the effluent. COD is an effective tool for the tanner's arsenal.

As a diagnostic tool, COD can be effectively used to understand the COD contributing components of individual proprietary products.

The individual COD data for each proprietary product can be applied to the measurement of individual product

exhaustions using standardised recipes.

The exhaustion COD data for each individual product can be successfully combined with other product data in simple standardised recipes to predict effluent CODs and shows better than expected correlation with measured data.

Synergistic and antagonistic effects are demonstrated between product groups. 🌐

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Acknowledgements:

Trumpler would like to thank the following people for their significant contributions in the processing, measurement and generation of data that made this study possible: Christiane Schiefer, Andreas Frank, and Simone Heymann and her team.

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Advantages of fatliquoring polymers over traditional oils

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Cromogenia Units, S.A., Spain

Increasingly stringent requirements make it difficult to select appropriate fatliquoring agents. Fatliquoring polymers offer an alternative to traditional oils, in that they confer very good properties without affecting the degree of softness. Leathers must need to be soft and with a good milling effect, but they must also be very tight, with no looseness, or must have high heat resistance that will pass automotive tests. Another important characteristic is that leathers must be lightweight, and so fatliquors should not add weight to leather — or only add the smallest percentage possible. Cromogenia Units investigated the application of several types of fatliquoring agents in relation to their physical-chemical properties and to the properties they confer to the skin. Eight different products were selected: sulfited and sulfated oils, lecithins, sulpho-chlorinated paraffins, phosphoric esters, and fatliquoring polymers.

Conventional oils, such as fish or lecithin-based fatliquors, provide high softness and high physical resistances, but can cause looseness or have low heat resistance. As a result, Cromogenia has proposed a range of polymeric fatliquors that can achieve similar organoleptic properties as compared to standard oils, but with improved properties, e.g., better fastness, lower weight, lower extractability, or better aging. Furthermore, because these products act as retanning and fatliquoring agents, leathers with higher fullness can be achieved.

The purpose of fatliquoring is not purely to soften the leather but rather to keep leather fibres lubricated. Thus, when leather is dried and water evaporates from its structure, the presence of the fatliquor inside the fibres allows them to slide past each other. After fatliquoring, a smooth, elastic leather is obtained, with increased physical resistances plus other properties depending on the fatliquor, such as water repellency or fullness.

In fatliquoring, a few important parameters should be taken into account.

1. Leather neutralisation is an important parameter. If leather is not neutralised or anionised, fatliquoring emulsions do not penetrate.
2. The emulsion must remain stable until complete penetration occurs and the leather must not react with the fatliquor. Emulsion stability depends on leather neutralisation and bath pH. Low bath pH can break the emulsion and prevent fatliquor penetration, thus leading to hard leathers.
3. The neutral fraction of the oil is also important because it is the part of the oil that provides softness to the leather.

4. The particle size of the emulsion will influence fatliquor penetration and therefore the degree of softness. The smaller the particle size, the better the penetration.
5. Treatment is one of the most important factors. Fatliquors treated differently behave differently with leather, for instance, sulfited oils are usually softer than sulfated oils. The type of fatliquor is also a very important parameter, for instance, lecithin-based products usually provide higher softness than other types of fatliquor.

Materials and methods

Products

In this study, 8 different fatliquors of different natures were selected (*Table 1*). Two polymers, Unix UP (a softening polymer with high softening power) and Repelan HC (a pure polymer with high retanning effect and low softening power) were included. All were applied at 8% of active matter.

Table 1: Selected fatliquors

Product	Nature
FAT 1	Sulfated
FAT 2	Sulfited
FAT 3	Emulsified lecithin
FAT 4	Additive lecithin
FAT 5	Sulpho-chlorinated paraffin
FAT 6	Phosphoric ester
UNIX UP	Polymeric fatliquor
REPELAN HC	Polymer

**Table 2: Application formula**

Product	Remarks
100% Water at 35°C, 2% Sodium formate. Run 15'	
0.5% Sodium bicarbonate. Run 60'	pH=5.5 Drain - Wash
100% Water at 50°C, 8% fatliquor (active matter). Run 120'	
2% Formic acid. Run 60'	pH=3.8 Drain - Wash
100% Water at 35°C	
Assessments: Staining techniques, Fastness tests	
0.1% Ammonia Run 15'	pH > 4.5
3% Dyestuff (Acid brown 83). Run 60'	
2% Formic acid. Run 60'	pH=3.8 Drain - Wash
Assessments: Physical and chemical determinations	

Raw material

Wet blue of Spanish origin shaved at 2.2 mm was used in this study. Hides were cut along the backbone. The left halves were used as a reference and the product was applied on the right halves.

Hydrophilic/Lipophilic balance determination

The emulsified (neutral fraction) and emulsifying (anionic fraction) parts of the eight fatliquors were determined in a liquid/liquid separation with a mixture of petroleum ether and ethanol 50% (1:1). The phases were dried at 100-105°C.

Leather assessments

The degree of softness was determined according to IUP 36 using a standard sulfated fatliquor as a reference. Leather thickness was determined according to IUP 4. To determine thickness and weight, wet blue (raw material) and crust samples were evaluated.

The degree of whiteness was assessed with a colorimeter. Lightfastness was performed according to IUF 402 (xenon lamp), and artificial aging to heat was performed according to IUF 412 (conditions: 100 hours at 102°C).

Determination of matter soluble in dichloromethane was performed according to IUC 4.

Staining techniques

Wet and dried leather sections were stained with Sudan IV and methylene blue.

1. Neutral fraction

To determine the penetration of the neutral fraction of the fatliquors in leather, a staining method with Sudan IV was used. This product is a dyestuff soluble in lipids, and therefore only soluble in the neutral fraction of the fatliquors. It has a

bright red colour when it is dissolved and allows visualising the extent of the neutral part penetration.

Small pieces of leather were immersed in a solution of Sudan IV for 1 hour. Subsequently, three washes were carried out with distilled water.

2. Anionic fraction

A methylene blue staining method was used to determine the penetration of the anionic fraction of the fatliquors in the leather. This product is a cationic dyestuff that reacts with anionic substances. It has a bright blue colour when it reacts with anionic products and allows visualising the extent of the anionic part penetration.

Small pieces of leather were immersed in a solution of methylene blue for 1-2 minutes and then washed with water.

Results and discussion

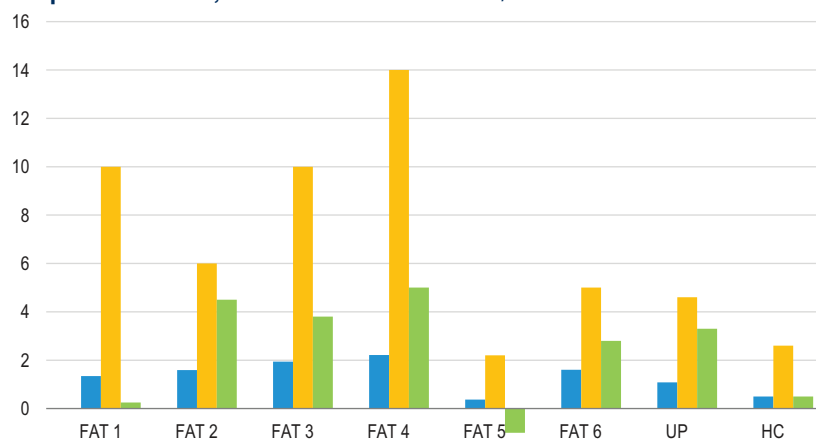
In general, fatliquoring agents are composed of an emulsifying agent and a neutral oil. The emulsifying agent has an hydrophilic part that interacts with water, and a hydrophobic tail that is

dissolved in the oil. The relationship between the neutral fraction (L) and the hydrophilic fraction (H) of the fatliquor is expressed as L/H balance. L/H balance results are shown in Graph 1 (Blue column). Lecithins and sulfated oils have the highest L/H ratio values, closely followed by sulfited, phosphoric ester, and polymeric fatliquor.

The results of degree of softness are expressed as a percent variation of sulfated oil. As shown in Graph 1 (green column), sulfated (FAT 2) and lecithins (FAT 3 and FAT 4) are the softest, while phosphoric ester (FAT 6) and polymeric fatliquor (Unix UP) have medium-high softness. Sulpho-chlorinated paraffin (FAT 5), sulfated oil (FAT 1) and polymer Repelan HC have lower softness levels than the rest of the products.

Extractable matter results are shown in Graph 1, yellow column, and are expressed as a percentage. Sulfated oils and lecithins are the most extractable products, closely followed by sulfited oil and phosphoric ester. Finally, polymeric fatliquors and sulpho-chlorinated paraffin have the lowest extractable matter levels.

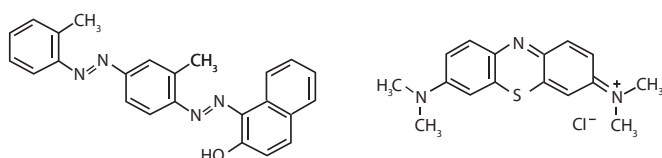
As seen, these three properties are related. Higher softness implies higher extractable matter and higher L/H balance for most products. However, this relationship does not occur with the sulfated oil and the softening polymer. Sulfated oil has high extractable matter and high neutral fraction, but low softness. This is due to the nature of the fatliquor. The low stability of sulfated oil leads to poor penetration and thereby to poor softness. The softening polymer, Unix UP, has low extractable matter, medium neutral fraction and good softness, and therefore these three properties are not related.

Graph 1: Softness, extractable matter and L/H ratio



To determine the penetration of the anionic and neutral part of the fatliquors, two staining techniques, Sudan IV and methylene blue, were used. Sudan IV is a red dye used for the detection of lipidic substances (neutral part), and methylene blue is a cationic blue dye that reacts with the anionic parts of the fatliqur. In leather drying, changes can occur in the interfibrillar regions. Consequently, staining techniques were applied in wet and dry leather samples.

Figure 1: Structure of Sudan IV (left) and methylene blue (right).



The results of the Sudan IV staining technique (Figure 2) show that this method works. Indeed, the fatliqur-free reference sample has no red staining, only a pale red colour on the surface, probably due to the natural fat of wet blue.

Also, the neutral fraction of the fatliqur migrates when the leather is dried, except for the polymeric fatliquors, which remain stable.

Sulfites and lecithins have a high penetration of the neutral part and as shown in Graph 1, a high neutral part percentage (high L/H balance) and high softness. Although FAT 1 (sulfated oil) has a high neutral part percentage, its low penetration leads to low softness. Sulpho-chlorinated paraffin with low neutral part percentage shows low neutral part penetration.

In conclusion, the tendency was: the higher the softness, the higher the neutral fraction; and the higher the extractable matter, the higher the neutral fat penetration.

The results obtained with the methylene blue staining technique (Figure 3) show that, as with Sudan IV, this method also works. As with Sudan IV, the fatliqur-free reference sample has no blue staining, which means that there is no anionic substance.

After neutralisation with sodium formate / bicarbonate, wet blue leather has no anionic charge. Accordingly, the anionic part of the fatliqur plays an important role in the penetration of the product and can be detected with the use of a cationic dye. Wet and dry leather sections stained with methylene blue are shown in Figure 3. As seen, the anionic fraction does not migrate when drying, except for polymers.

Dyestuff penetration was also measured. A better penetration of the fatliquoring polymers was observed. As shown in Figure 3, a better penetration of the anionic part was evidenced.

Importantly, adequate retanning/fatliquoring agents that do not yellow the final crust article should be used in pale or non-coloured crust items. Whiteness determination by colorimetric measurements allows selecting the best products for this type of article. The parameters evaluated for the degree of whiteness were L^* , a^* , and b^* . L^* indicates brightness, and a^* and b^* are the green-red (a^*) and blue-yellow (b^*) opponent colours. The results obtained are shown in Table 3.

Figure 2: Neutral fraction with Sudan IV.

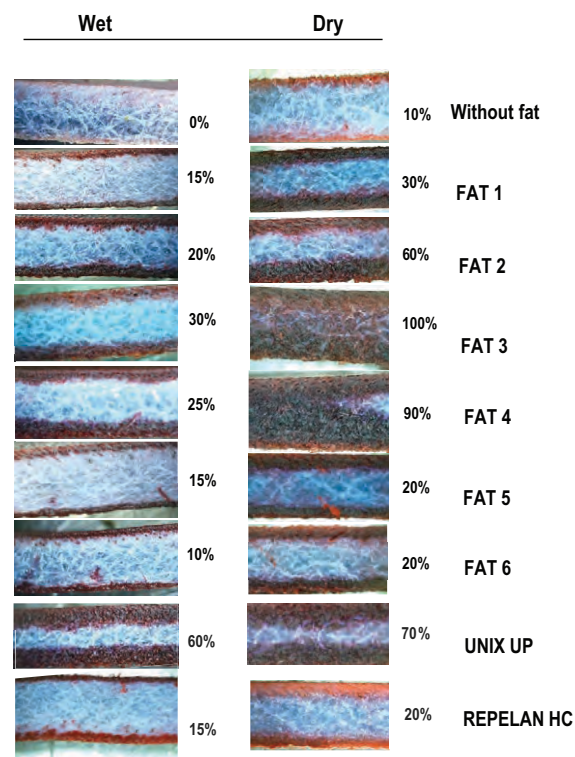
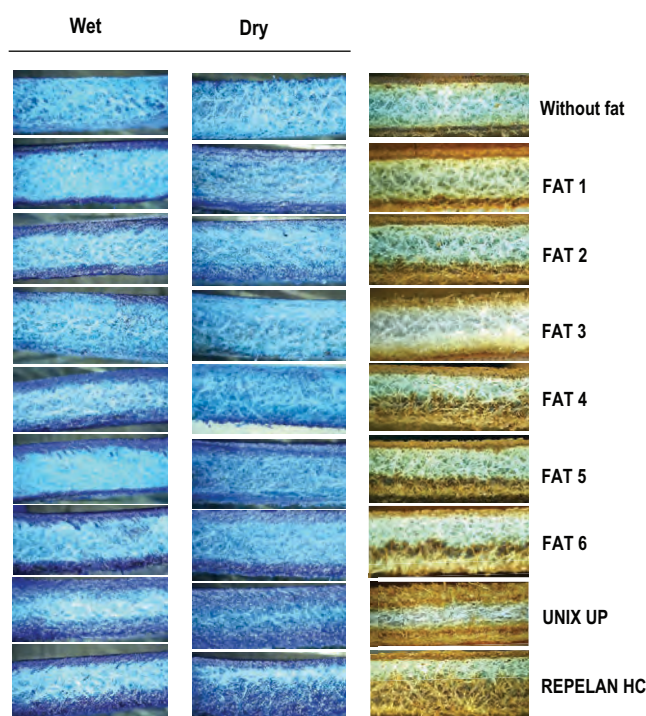


Figure 3: Anionic fraction with methylene blue, and dye penetration.



**Figure 4: Degree of whiteness**

While the L^* value is similar for all products, the b^* value is quite different. Sulfited oil (FAT 2) has a higher b^* value, which means that the leather sample is yellowier. The best results are obtained with polymeric fatliquors and sulphochlorinated paraffin (lower b^* values and higher degree of whiteness) (Figure 4). We can conclude that polymeric fatliquors provide higher degrees of whiteness as compared to standard oils.

The evaluation of the thermal and photo-oxidative degradation of the products involved in the article is another important factor. In this study, two accelerated aging tests were performed: heat resistance and lightfastness. Heat resistance values are expressed in a grey scale (GS) from 1 to 5 (minimum 1, maximum 5). The lowest values were obtained with lecithin and sulfited fatliquors (2/3 GS). Sulfited fatliquor FAT 2 is based on fish oil. These types of oils contain fatty acids with a high degree of unsaturation and are more easily oxidised, thus giving the classic yellow colour to the leather. Sulfated, phosphoric ester (3 GS) and sulphochlorinated paraffin (3/4 GS) obtain good heat resistance results. The best results were obtained with the polymeric fatliquors (Repelan HC and Unix UP, 4/5 and 5 GS, respectively).

Conversely, the values for lightfastness test are expressed in a blue scale (BS) from 1 to 8 (minimum 1, maximum 8). Good results were obtained with all products, ranging from 4 (minimum) to 5 (maximum). All results are listed in Table 3.

In general, the results suggest that FAT 6, Unix UP and Repelan HC have the best fastness values. Unix UP also provides the best degree of whiteness.

Thickness and weight were also measured (Table 4). Because polymeric fatliquors provide higher thickness, they serve two purposes: fatliquoring and retanning. The results show that all products increase thickness when compared to wet blue, but that polymeric fatliquors do it to a lesser extent. These results give rise to concluding that polymeric fatliquors provide much less weight and more fullness.

Table 4: Thickness and weight.

Product	Thickness (%)	Weight (%)
FAT 1	14.5	25
FAT 2	14.1	22
FAT 3	10	21
FAT 4	13	19
FAT 5	9.2	17
FAT 6	11	15
UNIX UP	16.5	9
REPELAN HC	17.6	10

In conclusion, polymeric fatliquors provide similar organoleptic properties as compared to traditional fatliquors, with improved fullness, lower weight, better fastnesses, lower extractability, and higher degree of whiteness. In addition, polymeric fatliquors are very versatile products that can be modified depending on the article. For example, Unix UP can be used in automotive articles due to its good fogging properties, and Repelan HC can be used in waterproofed articles. 🌐

Table 3: Degree of whiteness and fastness test.

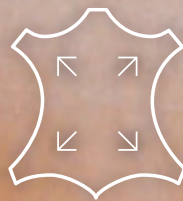
Product	Nature	Degree of whiteness			Lightfastness (BS)*	Heat resistance (GS) 100h
		L^*	a^*	b^*		
FAT 1	Sulfated	84.09	-3.04	2.73	5Y	3
FAT 2	Sulfited	82.77	-3.34	4.20	4Y	2/3
FAT 3	Emulsified lecithin	84.95	-2.89	1.99	4/5Y	2/3
FAT 4	Additivated lecithin	84.94	-2.87	2.12	5Y	2/3
FAT 5	Sulpho-chlorinated paraffin	83.47	-2.74	2.20	5Y	3/4
FAT 6	Phosphoric ester	83.54	-3.08	2.04	4Y	3
UNIX UP	Polymeric fatliquor	84.93	-3.06	1.63	5Y	4/5
REPELAN HC	Polymer	82.73	-3.53	1.98	5Y	4

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VOC-free finishing

Volatile organic compounds and their emission are responsible for odour, such as the scent in perfumes or an air freshener. They are also responsible for attracting bees to plants or for playing a role in communication amongst animals. Of concern, however, are that they also influence air quality, not just environmentally but also within car interiors. Legislation, banning unhealthy VOCs, is driving down their usage in an effort to reduce CO₂ emissions. Over the years GSC Group has been driven by the goal of obtaining a zero VOC environment for both its portfolio and manufacturing methods. With their latest automotive range, the company, based in Arzignano, claims they are in touching distance of that goal.

We are constantly surrounded by emissions. Amongst them, VOCs are organic carbon compounds that will evaporate at room temperatures or above, and are therefore classified as volatile. These have a high vapour pressure, low boiling points and low water solubility. Many VOCs are manmade compounds that are consumed in chemical products such as solvents and have a wide and varied use in the production of many articles, including leather manufacturing. Due to local legislation, the regulation and definitions of VOCs can vary as a result. Overall, it is a subject of constant interest, periodically rising to the forefront of focus in individual countries. Often, they are also blamed for causing nauseous reactions in certain susceptible people or can affect their respiratory system. However, so far there is no proven link between VOC and odour, with some VOCs having no odour at all. It is an area that is and, we suspect, always will be under constant investigation. What exactly, with particular emphasis and interest for leather manufacture, the aldehydes are contributing to the unpleasant odour is unclear.

In finishing, particularly, one of the major issues has always been the flow out of the topcoat especially with polymeric dulling agents, where solvents have to assist the flow of the chemicals on the leather. If the chemicals do not flow into themselves before drying and film forming, it can result in the film being left with a haze or cloudiness that can be seen when looking across a dark coloured hide. With this in mind, GSC Group has made its automotive topcoats flow out uniformly, whilst eliminating most of the solvents. Automotive finishes that meet all global OEM specifications with less than 1% VOC and with any desired gloss level give a technical leather that appeals in terms of both aesthetics and performance.

One of the keys to this success is CRX A 100, a 100% solid Isocyanate dull crosslinker. This can be used in hotpot crosslinking, i.e., mixed prior to application, or with in-line systems, being mixed at the point of application and thereby eliminating pot-life issues. It is designed to replace the current isocyanate crosslinkers in all automotive leather finishing formulations.

Syntal 3214	30% solid. High Wear
Syntal 45 Conc	55% solid. High Wear
Syntal 5336	55% solid. Stick Slip

To aid the achievement, GSC's development team has produced a range of BTX-free silicones (benzene, toluene, and xylene). Being VOC free, these water-based silicone emulsions are suited to the global market with a range that has various wear and haptic properties.

Combined with a range of easy to use polyurethane and acrylic resins, meeting the rigorous requirements of any OEM, from extreme high wear and flexing to severe solvent resistance, can be expected. At the same time, they are designed to maintain the natural aspect of the leather.

GSC Group has expanded its technical and commercial capabilities to cope with the future demands of the automotive leather sector. It should be well placed to become an important automotive chemical supplier as well as achieving its goal of zero VOCs. 🌱

Mitigating overspray

*Gemata prides itself in being a leader in the search for new solutions for the tanning sector. Sensitivity in the environmental field has pushed them to face the problem of overspray in spray finishing operations. Investigating and analysing some critical points in the production of overspray has made it possible for the company to develop a new economiser. World Leather's technical editor, **Mat Abbott**, spoke to the Gemata technical team about the project and the development of the new technology.*

Question: Let's talk about the economiser: have you managed to mitigate the existing problems?

Answer: Innovation is not about improving the products of others, perhaps limiting yourself to increasing resolutions or performance, but looking for solutions to new needs. In the case of the economiser, in recent years we have seen a continuous increase in the accuracy in the process sensors to reduce the phenomenon of overspray, but if we analyse the spraying process, we see that the spray pattern (plume) from the guns, as they approach the leather as managed with limited nebulisation pressures, cover an area much greater than the resolution with which the skin is read. Frustratingly, the reading cannot, therefore, be the way to improve the efficiency of the process and involves unjustified costs. Let's not forget that whatever the technology used, the increase in resolution leads to an inevitable increase in costs.

Since the increase in resolution does not pay off, what strategy did Gemata choose?

We focused on the effect of the plume on the leather, and we took a new approach. Instead of approximating the plume with a point, generally central, and managing the enlargements on the skin to properly work the edges, we considered the entire area affected by the spray, evaluating the percentage of the area sprayed by the gun that



overlaps. Only when this percentage exceeds a certain value is the gun activated. With this system, advances are managed to compensate for the various timings that are typical with the process, such as the activation times of the individual guns. Now, the activation of the gun is such as to obtain an effective percentage of leather coverage equal to the set threshold.

Can you explain it in more detail?

The crux of the matter was to focus as much as possible on the real process and not on a simplified model of it, as was done years ago. If we look at the classic rotary cabin, the plume of the gun covers a largely elliptical area and, during the rotation of the carousel, undergoes a "rototranslation", that is, it rotates on itself as it moves around the circumference of



the carousel. This movement is reflected in the amount of product that is deposited on the leather. If we imagine a skin that advances on a conveyor (Figure 1), and the centre of the gun is superimposed on the edge of the skin, in the central area of the conveyor belt, the plume will be almost parallel to the direction of the movement of the skin. As a result, the area affected by spraying will extend quite "deeply" into the skin. If, on the other hand, the centre of the gun is located in an outlying area of the conveyor, the angle of the plume will be skewed, so a shallower area will be affected by spraying. Using the edge widening approach, a compromise must be sought between the correct processing of the edges and the limitation of overspray. Considering instead, as in the Gemata economiser, the entire plume and its movement during processing, no compromises should be sought, but simply choosing the processing quality of the edges. The containment of overspray is managed autonomously and repetitively by the machine.

In summary, if we limit ourselves only to the centre of the plume, we lose the important information relating to its rotation. While considering the shape and dynamics of the plume, precision, quality and product savings can be increased. Interestingly, this does not require high resolutions in the detection of the leather; on the contrary, it can also work with resolutions of 20mm, which are particularly economical and proven.

Must this operation be repeated on all four sides of the leather?

Absolutely not. The threshold works smoothly on all sides equally. It manages with the same logic for any edge, shape or profile of the leather, regardless of its size, as well as on close-fitting leathers or with the presence of holes.

In addition, by adjusting this single parameter you can decide the quality with which the edges are processed. If, for example, you are working on the flesh side, and you do not care for or need very precise processing of the edges, a very high threshold setting will only activate the guns when the spray is completely within the confines of the skin. If you want to finish the edges perfectly, a particularly low threshold can be set, initiating the spray as soon as the plume "touches" the skin, despite the centre of the gun still being on the outside of the skin.

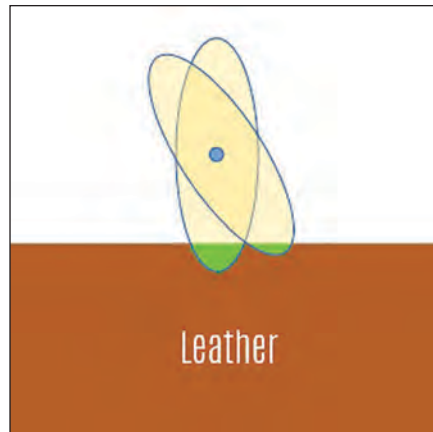


Figure 1. At the same distance from the edge of the centre of the plume (blue circle), the angle of the gun with respect to the direction of advancement of the skin affects the surface of the skin reached by the colour (highlighted in green).

We imagine, however, that the threshold greatly affects overspray. Have you thought about how to evaluate this aspect?

Yes. Having a clear understanding of the operation, it is understood that the higher the quality required on the edges, the greater the overspray will be, and on this there is no way around. If you spray with only a part of the superimposed plume, inevitably the non-overlapping part generates a waste of product, regardless of the management used. Thanks to our approach, however, it is possible to have a real-time estimate of this waste and adjust accordingly. Data on the operator panel is presented and updated continuously, representing the percentage of the area of the plume not depositing colour on the leather.

So now it is possible to evaluate overspray?

That's right. With this data it is finally possible to have a clear and precise feedback on the actual use of colour. If this quantity is judged excessive, the overlap threshold can be altered, and the effect directly verified.

What if the client wanted to work in the usual way?

Obviously, our economiser can work in the traditional way, with the edge widenings and the usual parameters, although all the advantages of this innovative solution would be lost. We try to be attentive to our customer needs, and it is not in our philosophy to put them in difficulty by imposing a change of habits. The user can start with the traditional method and smoothly migrate to the new system. We are sure that after the first tests the results will encourage more and more to use the new approach. In this regard we would like to add a couple of considerations. As can be seen from Figure 2, the panel has been redesigned focusing on the use of the operator on the one hand, and on the data required for managing the production on the other. The result is a functional product, using icons to avoid any translation problems and a system able to completely manage the synoptic and recipe spraying process. All changes are recorded, and it is also possible to create restore points to recover complete operation even in the event of hardware replacement. Finally, the logs of accesses, recipes, parameters and alerts can be consulted both locally and remotely, in full spirit of Industry 4.0. 🌐

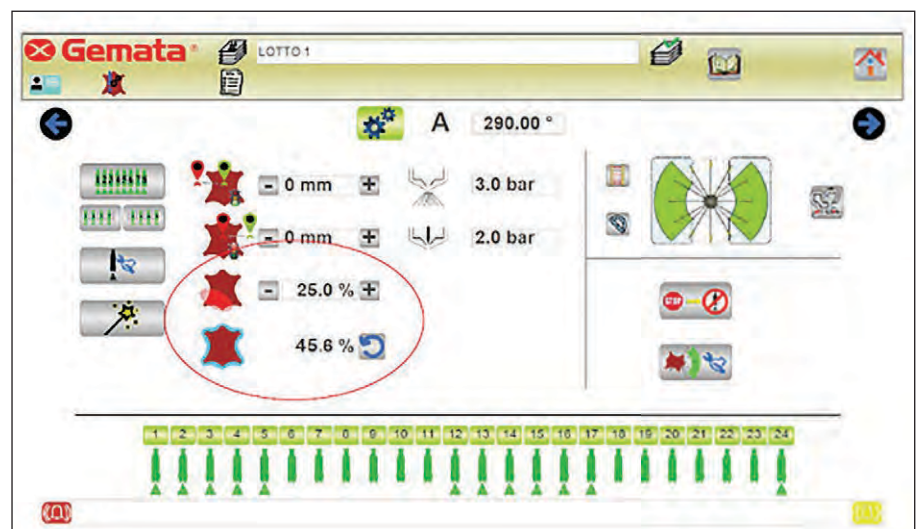


Figure 2. The threshold and overspray data are highlighted on the operator's screen.



Leather and the circular economy



Leather uses renewable raw materials



Waste from other sectors (meat and dairy) is the input for making leather



The material is long-lasting



Leather products are eminently repairable



Leather is in keeping with sustainable consumption and sustainable production and, thus, supports the UN's Sustainable Development Goals (SDGs)



Use of leather aids the battle against marine pollution, also part of the SDGs



The leather industry opens up pathways into the circular economy for companies of all sizes, including many thousands of small and medium enterprises



Leather content fulfils finished product manufacturers' desire to use recycled material



Finished products made from leather will meet criteria for green tax relief and for green procurement exercises



Leather manufacturing supports green employment commitments

Credit: WTP/Flaticon

Industry challenges Veja's leather decision

Footwear brand Veja published a detailed report on its carbon footprint earlier this year. It said that the raw materials it uses to make its shoes contribute 71% of its total carbon footprint. It went on to say that leather accounts for 97% of the impact of all of its raw materials. Based on this, Veja said it had decided to reduce the presence of leather in its collections. It pointed out that, while 70% of the shoes in its autumn-winter collection in 2019 contained leather, the corresponding figure for autumn-winter 2020 was 51%.

In its calculations, it found that, roughly, 70% of the carbon footprint that it attributes to leather occurs upstream in the supply chain, mostly from cattle farming. It attributed the remaining 30% to leather production and transportation (see further on). Paradoxically, the brand also said in the report: "Even if using leather is not always the best option, it allows us to produce long-lasting sneakers. As cows are raised and sold for their meat and not their skin, leather is considered a by-product. We give this [by-product] value."

To its credit, Veja has been transparent enough to reveal its total carbon footprint for 2019 as 36,867 tonnes of CO₂-equivalent. If 71% of this is attributable to raw materials and 97% of that figure is attributable to leather, it suggests that the leather the brand used in 2019 had a carbon footprint of 25,390 tonnes of CO₂e. Veja has also

Veja has published the results of a lifecycle assessment (LCA) exercise, claiming that it shows raw materials to contribute more than 70% of its total carbon footprint, with leather accounting for almost all of that. Senior figures in the leather industry have entered into dialogue with the Paris-based footwear brand, but Veja is sticking to its numbers and has trumpeted a decision, based on those figures, to reduce its use of leather.

revealed that, in the same year, it consumed more than 250,000 square-metres of finished leather. The carbon footprint of its leather works out at more than 100 kilos of CO₂-equivalent per square-metre.

Best in class

This seems implausibly high, especially taking into account that the Paris-based brand has told *World Leather* that it aims to source “the best leather in terms of quality, but also taking into account its lifecycle impact”. In contrast to Veja's figures, Scottish Leather Group has calculated the carbon footprint of its finished leather at 1.1 kilos of CO₂e per square-metre. In 2019, the same year as Veja's leather analysis, UNIC calculated an average of 1.98 kilos per square-metre for its member tanneries. What this means is that the industry's best performers, who don't include the animal footprint, are achieving carbon-footprint figures that are 70 times or even 90 times better than Veja's.

The footwear brand has said it believes its calculation to be correct. But its decision, on the back of this, to revise downwards its use of leather in its shoe collections has drawn much comment from leading voices in the leather industry. If Veja chooses to reduce its use of leather based on a flawed calculation of leather's carbon footprint, it only seems fair to ask it to reconsider. To its credit, Veja, in spite of appearing a little put out by the forcefulness of the reaction it received, and even accusing figures across the leather industry of ganging up on it, has shared extra detail about how it worked its figures out. But when it carried out a review of its calculations as part of its response to questions from the leather industry, the footwear company still ended up with a definitive figure for the average carbon footprint of its leather of 101.06 kilos of CO₂e per square-metre.

LCA's limitations

Not for the first time, lifecycle assessment (LCA) is at the root of the disagreement and confusion. *World Leather* covered the pros and cons of LCAs in a far-reaching interview earlier this year with Federico Brugnoli, a Milan-based consultant who had worked with the leather industry for years to secure European Commission approval of product category rules (PCR), or product environmental footprint category rules (PEFCR), for leather in 2018. We all hoped this achievement would end the debate about leather's carbon footprint once and for all, but it has not, as the discussion with Veja proves. Mr Brugnoli explains that LCA is a complex discipline; it is based on science, and assessments take a long time and have to be carried out by



After carrying out a lifecycle assessment of its supply chain, Paris-based footwear brand has chosen to reduce the percentage of shoes in its collections that have leather uppers. The leather industry has called its calculations into question. Credit: sylv1rob1/Shutterstock

professionals. “Just to communicate a number doesn't mean much,” Federico Brugnoli says. “The amount of data required to carry out a proper assessment is vast, and data quality is very important. I am trying to move as far away as possible from presenting single numbers in this debate now.”

Veja's sourcing team carried out an initial LCA in 2018, basing this exercise on the tools developed by Swedish group EPD International. EPD International has published a long list of PCRs and has many more under development. In the last year or so, it has published around 25 new PCRs, including separate ones for cooked and uncooked pasta. In the past, it has published one for finished leather too,

but in its analysis, Veja used a PCR designed for meat instead.

The tanneries Veja works with are in Brazil and it factored into its LCA a calculation of the value of a cattle hide in Brazil at 3.5% of the value of the animal. This figure seems high at a time when the value of hides in many markets has been closer to 1% of the value of the animal. It is not clear if Brazil's relatively complicated system of using kilos to calculate the weight of a live animal and the ancient measurement of arrobas (traders in Brazil round up one arroba to 15 kilos) to calculate the weight and value of a carcass has made this more complicated. What is clear, because Veja spells it out, is that 72.4 kilos of CO₂-equivalent, out of the total of 101 kilos

Veja says more than 70% of its total carbon footprint comes from the materials it uses to make its shoes and that 97% of that figure is attributable to leather.

Credit: sylv1rob1/Shutterstock





per square-metre of leather, "represents livestock farming". The tannery's share, it says, is 24.8 kilos, while the other 3.8 kilos can be pinned on the doors of the abattoir and transportation companies involved in supplying leather manufacturers with their raw material.

Data choices

Secretary to the International Council of Tanners (ICT), Dr Kerry Senior, says he sees little point in arguing with Veja about its choices. All LCA results are dependent on the choices companies make, the system boundaries they set and the data sources they quote.

He observes, however, that the economic allocation factor for hides "appears to be very high and out of date". Veja's figure of 3.5%, based on Brazilian prices, "was last accurate around 2014, depending on the market", Dr Senior explains. Since then, hide prices have fallen dramatically. Analysis of the prices in the US, European Union, Australian and, yes, Brazilian markets in 2020, gave an average of 1% of the value of the animal. The ICT secretary says Brazil's



Quality-check on finished leather at Scottish Leather Group's Bridge of Weir tannery in Renfrewshire. The group has calculated the carbon footprint of its finished leather to be 90 times lower than that of the leather Veja is sourcing. Credit: Scottish Leather Group

figure was lower than the average. Prices have risen in Brazil and elsewhere throughout 2021, but have not approached 3.5%. "Given the importance of livestock farming in the footprint of Veja's leather, correcting this figure would result in a dramatic impact," he says. However, he points out that market fluctuations mean wide-ranging figures

are always likely to come from a model that includes economic allocation.

No carry-over

Dr Senior makes it clear that the position of the leather industry is that no percentage of the impact of livestock rearing should carry over to the hide. "This is incorporated into the CEN EN

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standard for the carbon footprint of leather," he explains. "Cattle are reared for milk and meat and the hide is a by-product." To dispel any doubt about this, he raises the point that, globally, approximately 45% of the hides that result from meat and dairy consumption do not enter the leather supply chain. In the US in 2019, millions of hides, 17% of the total, went to landfill. Furthermore, objective economic analysis by Montana State University has shown that demand for hides and leather does not drive livestock farming; hide demand has no direct influence on the number of cattle reared or slaughtered.

Putting the by-product argument to one side, Dr Senior argues that, even if an allocation from livestock farming is to be passed on to the carbon footprint of hides and leather, the figure Veja quotes, 72.4 kilos of CO₂-equivalent for each square-metre of finished leather, seems high. He takes account of the footwear brand's inclusion here of a share of carbon emissions from crop farming (for animal feed), machinery, transport, and production. An alternative figure that

Food and Agriculture Organisation (FAO) of the United Nations quoted for Brazilian beef cattle in 2017 was 34.59 kilos of CO₂-equivalent per kilo of animal weight. "It is not clear what is included in the FAO figure and it may be that it does not include crop farming, machinery, transport and production," Dr Senior says. "However, I would be surprised if that were to make such a big difference."

At odds with other studies

He references a French, Irish, Italian and Spanish study from 2019, 'Life Beef Carbon', which analysed the footprint of cattle farming in all those countries, factoring in energy, chemicals and feed. It found that the highest footprint was less than 25 kilos of CO₂-equivalent per kilo of animal weight. He compares this with FAO figures and, applying the same differential to Brazil, concludes that the inclusion of energy and the other extra factors from the Veja LCA would give an adjusted figure for Brazil of between 39 and 43 kilos of CO₂-equivalent.

The Veja figure for what goes on in tanneries, 24.8 kilos of CO₂-equivalent

for each square-metre of finished leather, also seems high to Dr Senior. It would seem high to anyone who has seen the figures quoted above from Scottish Leather Group and UNIC. If it seems unfair to compare the leather Veja sources with what tanners in Italy and Scotland could offer it, the ICT secretary references a 2016 study from Romania. Considering only the process steps in the manufacture of finished leather, the Romanian study reaches a figure of just under 3.3 kilos of CO₂-equivalent per square-metre of natural full grain, bovine leather, with a thickness 1.4-1.6 millimetres. A final point that Dr Senior makes concerns the impact of products on a per-wear basis. "Veja acknowledges that its leather sneakers are long-lasting," he says. "Its recycled plastic shoes, which contain some leather, have a carbon footprint of 16.6 kilos of CO₂-equivalent, compared to 21.5 kilos for its leather shoes. The leather shoes wouldn't have to last much longer to have an equivalent impact per wear, to say nothing of the reduced impact on disposal." 



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GREEN JOBS

According to a European Commission document published last year, *A new circular economy action plan: for a cleaner and more competitive Europe*, the number of jobs considered to be linked to the circular economy across the EU's single market, the world's largest, increased by 5% to reach roughly 4 million between the years 2012 and 2018. Earlier, in 2019, the same organisation released the European Green Deal, which it described as a new economic development strategy intended to stimulate a fair, modern, resource-efficient, competitive and more circular economy, home to zero net greenhouse gas emissions by 2050 and "where economic growth is decoupled from resource use".

To achieve its vision of a climate neutral and circular economy over the next several decades, the Commission called for the full mobilisation of industry. "It takes 25 years – a generation – to transform an industrial sector and all the value chains ... decisions and actions need to be taken in the next five years," it said. At the time of the deal's publication, "linear" (ie, non-circular) sectors – broadly inclusive of parts of the textile, garment, leather and footwear (TGLF) value chains, plus others – accounted for 20% of the EU's total greenhouse gas emissions. Notably, the document points out that only 12% of materials used, industry-wide, have been recycled and therefore not newly extracted (and emitting) for the purpose of further production.

An updated EU strategy for sustainable textiles, specifically, including leather, is expected to be communicated during the third quarter of this year. A public consultation on the proposal as it currently stands is ongoing and accessible online, with the feedback period ending on August 4 at midnight Brussels time.

A new circular strategy for leather and textiles, soon to be released by the European Union (EU), promises to underscore the significant role leather continues to play in promoting a fair and closed-loop economy. World Leather takes a closer look at how the evergreen material relates to the EU's approach to sustainable employment so far.

Greening the labour market

On employment, the European Green Deal states:

The transition [to a circular economy] is an opportunity to expand sustainable and job-intensive economic activity. There is significant potential in global markets for low-emission technologies, sustainable products and services. Likewise, the circular economy offers great potential for new activities and jobs. However, the transformation is taking place at too slow a pace with progress neither widespread nor uniform. The European Green Deal will support and accelerate the EU's industry transition to a sustainable model of inclusive growth.



In last year's circular economy action plan, its most recent, the Commission went further:

For business, working together on creating the framework for sustainable products will provide new opportunities in the EU and beyond. This progressive, yet irreversible transition to a sustainable economic system is an indispensable part of the new EU industrial strategy. A 2018 study [by Cambridge Econometrics, the European Commission's Directorate-General for Environment, ICF and Trinomics] estimates that applying circular economy principles across the EU economy has the potential to increase EU GDP by an additional 0.5% by 2030, creating around 700,000 new jobs.

As per the 2019 green deal, for these new, more circularity-minded jobs to be inclusive of all workers, proactive reskilling and upskilling of the local workforce is therefore required, in order for what the Commission describes as the benefits of this "ecological transition" to penetrate throughout European society.

Hence, late November of 2020 saw the European Council publish its recommendations on modernised vocational education and training (VET) for sustainable competitiveness, social fairness and resilience, including discussion on "evolving" jobs, lifelong employability and social inclusion, among other factors, linked to the EU's covid-19 recovery and its transition to an increasingly green and digitised society. Later that same month, the Osnabrück Declaration, which framed the shift to green and digital work as a significant potential enabling force behind the EU's economic recovery from the ravages of the pandemic, was approved by the European member states, Commission, social partners and other relevant bodies.

Leather means (green) business

Unpacking what all this means for leather and leathergoods production is critical for the industry, particularly in terms of futureproofing its existing workforce, as well as boosting the vocational attractiveness of the sector for future, green-minded trainees. European fashion and leathergoods specialists at the luxury end of the spectrum, such as Hermès, LVMH (the parent company behind Louis Vuitton, Christian Dior, Loewe and Celine, for example) and Kering (Bottega Veneta, Gucci and Balenciaga, among others) are very aware of this and, understandably, dominate public perception of leathergoods due to their globally felt influence.

Last month, Hermès opened its eighteenth leather workshop, whereas the 75 luxury brands under LVMH's umbrella together signed an artisanship pact to better promote and preserve their vocational know-how within the creative, craft and sales experience trades in late July. Swiss group Richemont also recently acquired the world's oldest luxury leathergoods company, Belgium's Delvaux. This is perhaps the best signal of the continued business interest in luxury leather manufacturing and, therefore, its producers and artisans. Undeniably, luxury's stake in leather is incredibly positive for the material's reputation as a premium, naturally derived material in many respects, particularly as many of these brands publish far-reaching sustainability reports which spotlight the use and reuse value of leather as a secondary raw material. (*World Leather looked in-depth at Kering's circularity strategy as it pertains to leather and leathergoods in our last issue, for instance.*)

Yet, especially given the fact that several of the abovementioned companies have toyed with "alternative" materials of plant or other non-animal origin (while, at least in the case of Gucci's Demetra and Hermès' Sylvania, processing and finishing them much in the same way as genuine leather) in the recent past, touting the so-called eco-conscious credentials of these new fabrics, it is important to remember that the court of ever-fickle public opinion is easily confused. To continue to attract the best talent to fill its vocational positions, particularly as these evolve to meet the demands of an increasingly circularity-incentivised EU economy, at least, it would be wise for the industry to communicate its position as a well-established home for the ecologically and socially astute, in line with what has so far been said about the common market's green recommendations.

Display your credentials

As touched upon above, one example of this would be the Commission's emphasis on boosting industry's use of recycled materials. Leather not only inherently involves the upcycling of waste as an otherwise landfilled by-product of the meat and dairy industry, but its offcuts are also eminently recyclable. As shown by Kering recently, Gucci alone was able to recycle 27 tonnes of its leather scraps between 2018 and 2020, for example. In 2020, the same brand collected and reused 25 tonnes of leather offcuts as plant fertiliser. Smaller leather-making companies involved in similar, closed-loop recycling schemes also need to publicise their efforts, in order to both enhance the perceived "greenness" of existing sector jobs as well as better establish themselves as ongoing providers of competitive, resilient and potentially lifelong employment and training opportunities.

Beyond recycling, though, the EU has highlighted the need to reduce and reuse materials before they ever reach this stage. We have repeatedly shown in earlier issues how pre-owned leathergoods can be kept in circulation for longer thanks to resale, for instance, owing to tanned and finished leather's exceptional durability. Although the EU has privileged the repairability of electronics over that of leather in its communications thus far, the leather industry is already well aware of the material's suitability for repair. Pointing to the increasing viability – and visibility – of leathergoods repair as a future growth industry in its own right, luxury e-tailer Farfetch launched Farfetch Fix for products including leathergoods and footwear alongside London-based boutique repairs firm The Restory earlier in 2021.

Moving somewhat into the digital sphere (as we have seen, green and digital enterprise appear to be closely linked for the Commission going forward), the Green Deal further hinted at a potential e-passport for purchases, designed to inform consumers about a product's origin, composition, repair and dismantling possibilities, plus recommended end of life handling. In April last year, a coalition of social and environmental non-governmental organisations published what it called a civil society European strategy for TGLF industries ahead of the forthcoming EU recommendations for sustainable textiles, in which an electronic passport for materials including leather was stressed as a useful idea.

It remains to be seen how the Commission's forthcoming guidelines will take shape for the sector, but leather businesses will do well to stay alert to applicable VET incentives, especially as they relate to the proven value of leather to a contemporary, skilled circular economy. 🌱



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So far, specialist French leathersgoods start-up incubator Au Delà du Cuir (ADC) has been responsible for helping more than 60 new brands become active in the market. The programme, whose name means ‘beyond leather’, launched in 2009 under the auspices of research and testing organisation CTC. In 2012 it became more independent and set up its own studio in Paris.

Sophie Viot Coster, who took up the role of running ADC at the start of 2018, has been able to bring her own knowledge and background to the role, including her experience of launching, running and selling a start-up. She has been on the receiving end of the help that she now puts in place for the leather start-ups of the 2020s. After starting her professional life in consulting, she launched a company called Cireurs, the French word for shoe-polishers, in 2012. Recent comments about this on the On(Ward) Fashion podcast make it clear that the ADC director regards the Cireurs adventure as her “first steps in the leather universe”. She was committed to helping people keep their leather products in good shape for longer and she also placed great value on the business’s capacity for providing jobs for people in the communities in which Cireurs operates, jobs that, by the nature of the work, could not be outsourced to places with lower labour costs.

Help is at hand for leather-sector start-ups in France in the shape of incubator body Au Delà du Cuir (ADC). More than 60 small companies have received a boost from it already. As the industry seeks to rebuild after covid-19, thoughtful, knowledgeable input from a network of experts may be of greater value than ever.

Three years later, she sold the business and began to work as a consultant again. The team running ADC asked her to return and work with them, leading to her taking charge three years ago. And Cireurs, too, has gone from strength to strength. It began as a service to provide a high-quality polishing service for shoes; it now also offers a repair service for footwear and bags and has even begun to sell its own range of products.

Most of the start-ups that have come under ADC’s incubator umbrella until now have been footwear and accessory brands.

All credits: ADC



Select group

Most of the start-ups that have come under ADC's incubator umbrella in the course of nearly a decade now have been footwear and accessory brands, but among the current cohort of 18 start-ups, one is a tanner. The company in question is Ictyos, a Lyon-based operation that produces fish leather. Ms Viot Coster also points to Adapta, which finds buyers for excess leather stocks that have built up at tanneries and big leathergoods companies, as another exception.

It selects a new cohort each year in the autumn and takes the successful applicants under its wing for up to three years. Criteria for inclusion are that the companies have to be recent start-ups, and to have a turnover of more than €50,000 (to be part of the Emergence programme) or €250,000 (for the Growth programme). ADC says that they should make products that are "unusual, desirable and creative", preferably manufactured in France or another part of Europe. It also expects the people running each company to be able to show that they are ambitious and have the capacity to run a business and also be part of a team.

Outspoken chairman

Last year, for the first time, Paris-based designer Jérôme Dreyfuss was the chair of the selection panel for choosing the companies for ADC to work with. It is almost 20 years since Mr Dreyfuss launched his own brand. Comments he made in 2020, though, show that he still recognises how difficult it is to achieve success in the wider world of fashion. He also understands that, these days, there may be extra challenges for young designers who feel the appeal of leather and understand how well the material matches the mood that is driving a move to a circular economy. He issued a press release last autumn to counter negative messages about leather and to highlight the pitfalls that accessories brands often face in choosing substitute materials.

Mr Dreyfuss said he had decided to speak up because he was "tired of hearing about the supposed damage leather does to the planet". His brand, La Maison Jérôme Dreyfuss, which has four boutiques in different parts of Paris and supplies its products to another 300 boutiques, has long argued that one of the best things consumers can



Fish leather from Lyon-based Ictyos.



Adapta, also adopted by ADC, finds buyers for excess leather stocks.

do to lower the fashion sector's carbon footprint is buy fewer products. They should, however, choose things of quality and use them for a long time. Its position is that products made from responsibly produced leather lend themselves perfectly to this.

In the press release, Jérôme Dreyfuss said that synthetic substitutes that contain some bio-based materials may appear attractive, but that in reality most of them rely on plastic to give them "any sort of resistance". He added that, without plastic, "you could not use any of these materials to produce a tote bag or a pair of sneakers".

Covid response

The ADC director says she is very happy with the way the selection panel has worked, even in covid times. Mr Dreyfuss was joined on it by finance people, people representing industry bodies, others who know the exhibition sector and others who have a deep knowledge of finished products. "We met in July 2020," Sophie Viot Coster recalls, "and we realised that we could not ask small companies to apply to be part of our programme without first asking ourselves about the changes the pandemic is making. The health situation was hitting everyone very hard at that



The ADC permanent showroom in central Paris.

point; we were still emerging from the first lockdown.”

Companies of all dimensions and in all industries have suffered serious set-backs since the start of the covid-19 pandemic, but recent start-ups probably have less capacity to cope than most. This year, in addition to its work directly with the companies in its own programme, ADC has joined forces with similar incubator bodies in other parts of the fashion industry to share a series of talks and seminars with any company that wanted to listen. “We wanted them to learn as much as they possibly could under the circumstances about projects they are launching,” Ms Viot Coster explains, “to hear about good practice and to be able to benchmark themselves against what others have learned. So we opened up the seminars to everyone, charging just a small fee to let them take part.”

Skills preservation

Candidate companies for the 2022 ADC programme had until mid-July to apply. Sophie Viot Coster highlights the link between companies that make their products in France and the preservation of the artisan leather skills that France still has. Through ADC, new companies can avail themselves of the knowledge patrimony that exists. If they are able to grow and to be successful, they will keep producing in France and make a contribution of their own to keeping that heritage alive.

Following up on the comment about ADC preferring the companies on its programme to make products that are “unusual, desirable and creative”, the director adds that attractive, well made products are part of what she looks out for, but also ones that “make sense in terms of value for money”. This, she explains, is an indication that these brands are built on an economic model that will hold up. She continues: “To get your margins right is one of the big challenges when you are just starting out. You have to work this out so that you can make a living right away rather than at some point in the future when you are well known.”

She also thinks digital skills are going to become more and more necessary. “We have no way of knowing how long

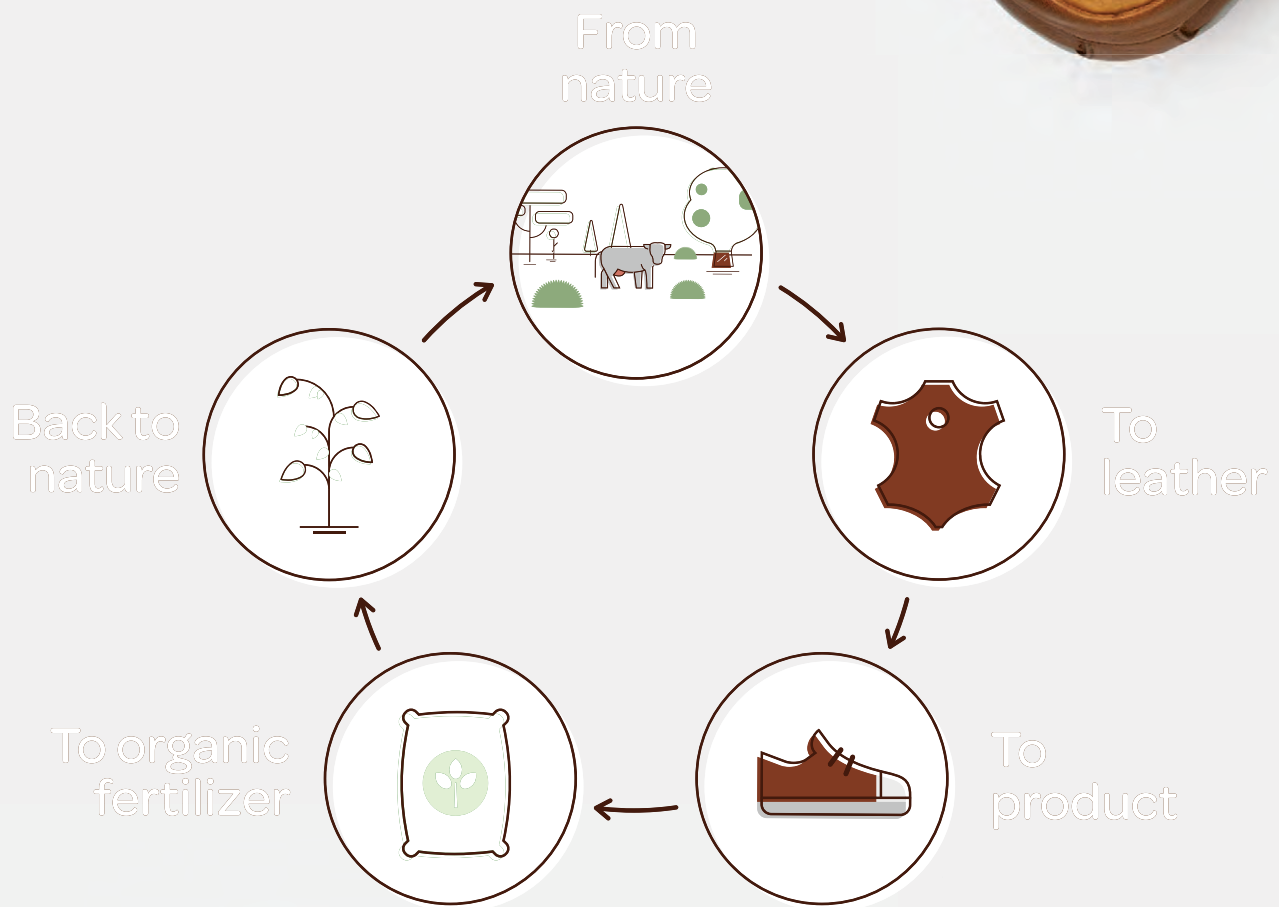
the present crisis will last,” she says, “but it seems to us at ADC that entrepreneurs are going to have to be comfortable using digital technology. There won’t be the same level of sales to tourists or in airport shops or in department stores the world over. It will be difficult to display products physically. I would say this will drive a desire to use digital technology better.” ☺



ADC director, Sophie Viot Coster, brings her own start-up experience to the role.

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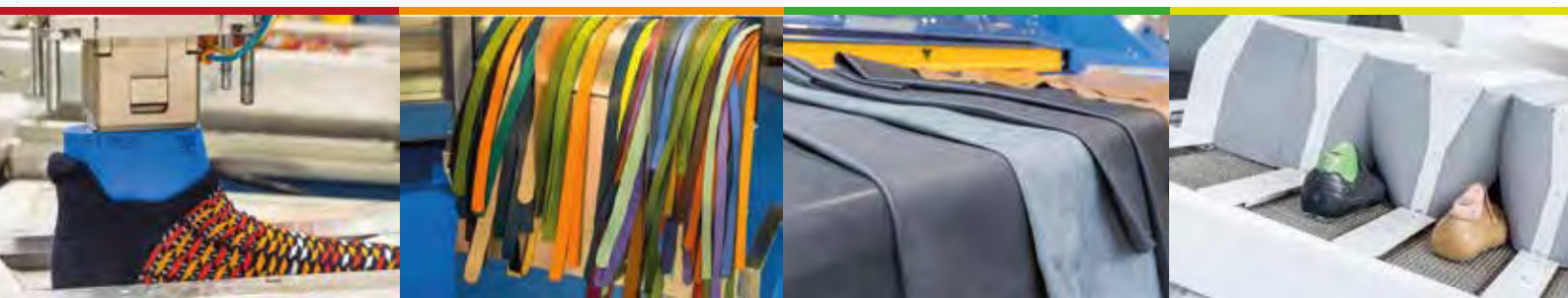
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All credits: Hanwag



A century of tradition



RENEWABLE



WASTE-FREE



LONG-LASTING



REPAIRABLE

Cows that spend a lot of time outside in a range of weather conditions, with access to good grazing pastures, healthcare and an absence of parasites, create some of the best quality skins, which is why Bavarian shoe brand Hanwag sources most of its leather from German tannery Heinen. The former Tannery of the Year finalist uses only domestic hides and has a close relationship with its merchants, tracking which slaughterhouses and farms the animals come from. The longstanding partnership is something Hanwag is “particularly proud of”, using Heinen’s branded Terracare leathers, made with “environmentally friendly, resource efficient and socially compatible” production methods.

It has also produced ranges made from yak leather, sourced from the Lhasa Leather Factory in Tibet. “We’re not able to produce enough of our yak models – we could sell far more than we do,” the company says.

This year marks Hanwag’s 100th anniversary, an achievement it partly puts down to its faithfulness to its construction methods. “We know how mountaineering boots were made 100 years ago,” says marketing director Christian Wittig. “That’s an advantage; it means we can be progressive without losing sight of our heritage.”

German outdoor brand Hanwag’s manufacturing techniques enable easy resoling for boots that are eminently durable, and it is proud of its longstanding partnership with German tannery Heinen.

Humble beginnings

Established in 1921 by Hans Wagner, a third-generation shoemaker, the company grew slowly, first from Mr Wagner’s own house, later taking on more apprentices and expanding into a workshop. Vierkirchen, near Munich, remains the company’s headquarters to this day.

Mr Wagner’s nephew Sepp joined in 1936, eager to learn the trade and to help grow the business. The factory was plundered at the end of the Second World War, but as the economy started to recover, so did the demand for ski and



mountain boots. Sepp took over the management in the 1960s, and began to expand internationally, securing partnerships in the US and being well placed for the climbing and hiking boom that took off in Germany.

A central tenet of the business is the construction – double stitching and cementing – as Hanwag claims it is one of the few remaining shoemakers in its category to employ such time-consuming and costly processes. “Nowadays, to make double stitched footwear, not only do you need experience of the method, you also need to have a feel for the machines,” says production manager Harmut Trabert. “We keep them running ourselves, as there is no longer any maintenance and repair service.”

While the company prides itself on traditional values, it was modern-minded when it chose the construction techniques so they would enable easy make resoling. Extending the useful life of shoes is something we are hearing more and more, as companies look to reduce waste and tap into ‘circular thinking’. Resoling is a popular service. “These boots are perfectly worn in; people don’t want to replace them. In fact, they’re often long-standing companions and the source of many happy memories,” says Mr Trabert. “We often receive boots to be resoled that have seen years and years of use. It’s something that makes us proud of our work.”

European footprint

As the company has grown, so has production, with manufacturing now taking place at facilities in Hungary and Croatia, as well as Germany. This enables shorter transport routes and reduces corresponding CO₂ emissions, compared with outsourcing to Asia, as many companies do. It claims the proximity also proved an advantage in 2020 when the pandemic hit, in terms of flexible production.

A finished Hanwag mountain boot consists of, on average, 180 separate parts around 120 processes – meaning employees are highly skilled and many remain with the company throughout their working lives. It cites some of the ‘Hanwag stories’ on its website: Franz Kreutner joined as a refugee shortly after the Second World War and stayed for 47 years, while head of research Adam Weger, who worked for Hanwag from 1968 to 2015, tested every shoe in the mountains.



One of the early ski boot designs, which became popular in the US.



Launched for the anniversary, the Hans Wagner Heritage Collection includes premium and heritage-inspired handcrafted models.

After the early death of his daughter, who was previously managing director of the company, Sepp Wagner sold the family-owned business to Swedish group Fenix Outdoor in 2004. The company diversified to make more styles and tap new markets, but stayed faithful to its manufacturing techniques.

Pared-down celebrations

During the 100th anniversary year, the company plans to make 400,000 pairs of boots and shoes and capitalise on the expected increase in walking and hiking as people make the most of nature following lockdowns and restrictions. The pandemic has brought new customers to the outdoors and introduced a more balanced gender mix, according to UK brand manager Christopher King. “Our business model means we are able to offer trade customers a more interesting colour palette, as well as a better fit offering, thanks to our wide range of lasts,” he tells *World Leather*.

The company had originally hoped to celebrate the centenary with a big global event but, due to the pandemic, events are now taking place on a local basis. In the UK, it will have a large presence at the Keswick Mountain Festival, which takes place this September. Hanwag is confident cementing old practices and modern materials will help it through the next 100 years. “Our approach is based on employing the best craftsman, the highest quality standards and selecting the best raw materials. As to whether it’s worth the additional cost? That’s simple: it’s the only way to make such high-quality boots.”

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ROADMAP TO
ZERO 



Sieme weaves leather waste network



LONG-LASTING



REPAIRABLE



SMEs

At the top end of the luxury goods market, the skills that are needed to make handbags, shoes and other accessories by hand are passed down through generations and take years to hone. Italy is home to hundreds of small factories, some no bigger than workshops, where artisans diligently and patiently work, cutting and stitching the finest leathers. But it is these skills that are under threat, on the back of a recession in Italy that saw at least 100 small leathergoods makers fold in 2019, creating problems that the pandemic has exacerbated. The demand for handbags diminished during lockdowns, with plummeting tourist numbers, and leathergoods manufacturers' association Assopellettieri suggests a nearly 40% fall in revenues in 2020.

US designer Cassandra Kane, who moved to Florence in 2017, felt there must be a way to help these small businesses and protect the skills. She had previously worked as an accessories designer in the US for fashion houses such as Zac

The founder of a new accessories brand predicts a more collaborative way of working that gives Italian artisans a bigger influence on design. She is also helping to boost ASPRI, a new association that gives fresh value to leathergoods manufacturers' offcuts, with the aim of creating a more circular way of working.



Ms Kane used the skill and knowledge of the artisans to help with the designs.

All credits: Sieme



Sieme's first products were scarf-masks, made with deadstock material.

Posen, finding a niche in leathersgoods and forming partnerships with manufacturers and tanneries during frequent visits to Europe. A desire to work with the high-end makers led to a six-month Italian stay being extended indefinitely, honing her knowledge by spending time in a modelleria (handbag atelier) and prototipista, where she helped turn brands' visions into beautiful accessories.

"The knowledge and precision is incredible, people have been working there for 40, 50, 60 years," she says, speaking as part of a Co-Lab Career Stories podcast. "But what also struck me was even at the highest level, there was still a massive problem with waste; these family-owned factories were throwing away so much leather with no way to dispose of it in a way that wasn't a financial burden. Leather is such a high quality, high value material – if we can't solve the problem here, with the best-quality materials, how can we expect to solve it in the rest of the industry?"

The realisation led to conversations with the makers, and a plan to tackle the issue in a number of ways: creating a leathersgoods brand, Sieme, that could use the offcuts; connecting artisans and small workshops with brands through consultancy services; creating an online platform for makers to sell directly to consumers overseas; and working with new association ASPRI, which collects offcuts and leather waste, creating a supply of material for young designers and creatives.

A force for good

ASPRI, the Association of Recycled Leather in Italy (Associazione di Pelle Recuperata in Italia), was launched at the start of last year and estimates 815,000 to 1.6 million square metres of finished-leather waste could be discarded each year (using data from tannery association UNIC and the European Commission). It collects this waste from manufacturers, offering financial incentives in the form of tax-deductible donations, and then repurposes the leather to local schools, emerging designers and artisans. The leather is also used for its education programme, through which young people, refugees and incarcerated people are trained in leather skills.

"Our hope is to create a structured system where we can collect this waste at scale, sort and repurpose it and resell it at discounted rates to students, independent designers, artisans and others looking to work with this valuable material while bringing awareness to circularity in our sector," Ms Kane, who looks after international relations for the association, tells us. "We need to reimagine what waste is as these are extremely high value materials and recycling should be the absolute last resort."



Sieme founder Cassandra Kane studied at school Scuola Del Cuoio in Florence.

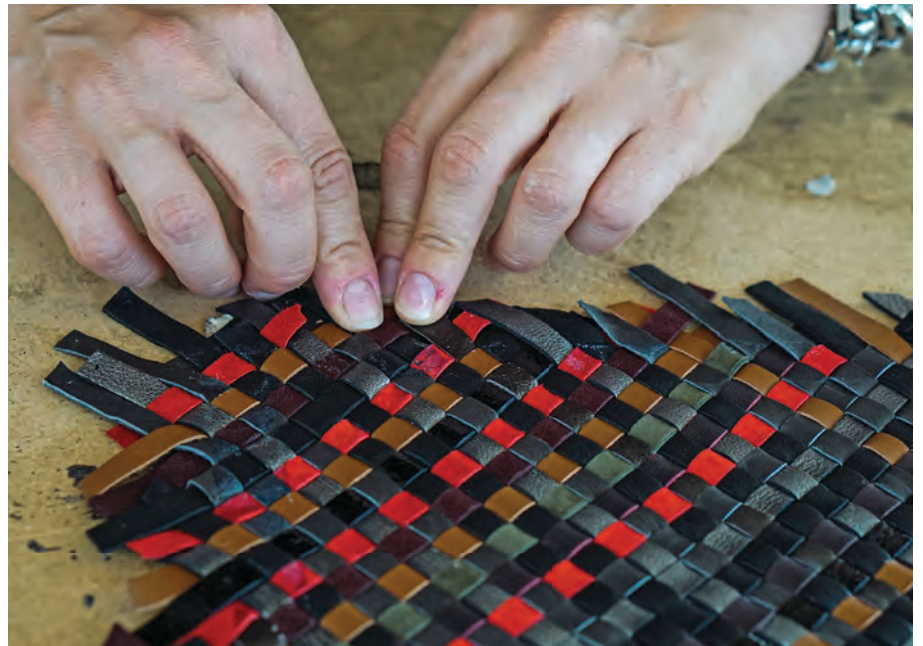
PPE pivot

At the start of the pandemic, the Italian government (like many others) ordered factories to stop production unless they could make personal protective equipment for the healthcare sector. Although it had not been her initial hopes for the beginnings of a brand, Ms Kane realised she could make the best of a bad situation by asking a factory in Prato to design mask-scarfs using Italian deadstock silks, linens and luxury fabrics. “You had all these highly skilled factories making 50-cent paper masks and it didn’t make sense – they weren’t automated factories, everything is made by hand. We could sell the scarves at a higher price, and support the factory and their skillset.” She launched Sieme to sell the scarves internationally, and went back to reorder as they became more popular. “I didn’t want to start with masks, but in the end was a great way to build the website, figure out the international logistics, and build the business infrastructure.”

The experience building the logistics – including working out the shipping and tax – gave her an idea to offer the platform to other makers, reasoning that if they are tirelessly working all day, they do not have the time to set up websites and deal with tariffs and post. Products are sold at near cost price through Sieme Sample Sales, then the goods are shipped together after a two-week period, to cut down on costs. This also helped her to offer new products without overproducing and “making new collections just to have something new on the website, as we’re trying to be a sustainable and circular brand”.

Woven with love

She believes one outcome from the pandemic will be a move towards co-creation models, where brands use their factory partners’ skills in the design of articles, rather than designing elsewhere and products simply made by factories. The rich experience in these ateliers means they understand how to get the best out of materials, and some brands might not have the resources to hire specialists, especially for more niche products. “It is also a really collaborative way of working, it allows the factories to lead with the product they are best at delivering, meaning lower development costs, increased speed to market, less waste and fewer production changes mid-process,” she explains. Her



The high-end leather offcuts are intricately woven into new material.

consultancy work helps to make those introductions. “There is so much knowledge and expertise that can get lost in translation, so to bridge that gap is something I enjoy.”

Sieme is almost ready to launch its original idea: leathergoods made with woven strips of high-quality leather offcuts. The bags will be ready in autumn this year and no two will be the same. “I’m not a leather artisan so the design was led by the factory partner that could really help me design the best way,” she says.

The next steps involve securing investments to expand, with the goal that a percentage of the profits will be donated back to ASPRI so it can continue to repurpose and recycle leather. ASPRI, in turn, now has 70 members and has received some “major commitments” from luxury brands. “We believe with collective partnerships and a little creativity, we can turn Scandicci, the leathergoods production capital of Italy, into a circular design hub that supports our local community,” she adds. 



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Few brands have kept pace with the times as well as the seemingly ever-present Dr Martens, which remains fashionably relevant following wave after wave of popular culture. *World Leather* catches up with the company's apprenticeship supervisor, Tanya Granaghan, to find out why a Dr Martens education is much sought after.

Doctor's orders

The role of people is central to Dr Martens' story. Not only does the wearer – the front-of-mind maker and follower of trends spanning punk to grunge and beyond – have a part to play, but so too do the back-of-house hands that continue to build its famously yellow-stitched boots and shoes deserve their time under the spotlight. Since 2004, the majority of Dr Martens manufacturing has taken place in factories across Asia, but around 1% of production today happens in England, at the brand's traditional Cobbs Lane facility in Wollaston, Northamptonshire. Notably, the company told the *Guardian* in 2019 that Dr Martens' manufacturing methods in Asia and England are identical, "all the way down to putting the lid on the box".

World Leather learns from Ms Granaghan that the business' plan has "always" been to expand its (slightly more expensive) Made in England footwear line. She explains that Dr Martens is operated with a long-term, custodian mindset and that "part of that means ensuring key skills are retained and passed down to

new generations of skilled shoemakers." Hence, a year-long traineeship in expressly British-style upper shoe production – including foot measurement, sizing, last types, pattern-cutting, clicking and closing – was launched by Dr Martens in April 2012. Since then, nine cohorts of Cobbs Lane-based apprentices have received a government-accredited qualification in footwear manufacturing upon completion of the scheme. (Class of 2022 applications closed on July 2.)

Prior to 2012, the only new employees joining the production team were either ex-Dr Martens personnel or those who had previously been trained at other factories in Northamptonshire, Ms Granaghan says. Thus, after identifying a lack of early career footwear professionals joining its ranks, the company formed its apprenticeship programme with the intention to "give young people a chance to train in the industry, alongside people who live and breathe the brand", she explains. For the existing production team, she tells us that passing on their skills to the next generation "fills them with pride". Ms Granaghan describes

Dr Martens' iconic cherry red leather boots with the distinctive yellow welt stitch has featured prominently since the 1960s.

ALL CREDITS: DR MARTENS





Trainees are immersed in the history of British footwear manufacturing at Dr Martens' Cobbs Lane site. The brand is committed to upskilling the next generation of shoemakers.

how the scheme fosters a sense of community at Wollaston, inspiring young people and building bridges from one generation to the next.

Successful completion of the twelve-month traineeship qualifies apprentices for a full-time position at Dr Martens, either in clicking, closing, lasting or in the shoe room. The work in the clicking team mainly involves operating the cutting presses to specified quality standards (and creating the least amount of wastage possible for leather), while those who work in closing will use sewing machines to complete a Dr Martens upper. In lasting, new recruits learn the process of shaping the shoe around a last and attaching the sole to the brand's yellow-stitched welt. Toe lasting, back part moulding, upper trimming, side lasting, inseam trimming, welt sewing, heat sealing, edge trimming and last slipping are also part of this work. The shoe room is where the team adds the final quality touches and where all footwear is cleaned and boxed ready for dispatch.

On average, around half of each year's apprenticeship intake stay on at the factory, where they are "heavily" relied upon throughout their initial training. Whereas some are retrained within other Dr Martens departments, such as sustainability, others may go on to pursue a career with another brand in the locality. "We still see this as a positive for British footwear manufacturing," the apprenticeship supervisor states.

Final results

2021 saw close to 200 aspiring shoemaking apprentices apply to Dr Martens – less than in previous years. Though perhaps easily attributable to the ongoing covid-19 health emergency, Ms

Granaghan does not suggest a reason for this, but rather says that it was surprising. The brand's class of 2021 commenced their learning in September 2020, "in the middle of a pandemic", which resulted in apprentices and their teacher-mentors adapting to virtual training sessions. This group is currently working on their final projects, which ordinarily would include hands-on assistance from the whole production team as necessary, although apprentice artisans are always "mainly" responsible for their showcase product. To enable assessment of what they have learned so far in the scheme, each trainee designs and makes their own pair of Dr Martens shoes, intended to result in a creative reflection of their personality.

Due to the programme's incorporation of brand and footwear history, in addition to practical know-how, apprentices are well-prepared for all sectors of the company, including sourcing, product development and design, Ms Granaghan tells *World Leather*. Previous apprentices, now employees, have had opportunity to travel or relocate to the company's factories in Asia. A digital cutting supervisor, apprenticeship training supervisor and an in-training internal maintenance mechanic, all former Dr Martens apprentices, are among those who remain working at the Northamptonshire plant. Further, ex-apprentices' feedback helps inform future training, the aim of which is the ongoing improvement of each year's course structure.

Having sold 12.7 million pairs of shoes and boots in the 12 months ending March 21 this year (an increase in volume of 14% compared to the previous business year), plus having reported a 15% year-on-year revenue boost, there is evidently no kicking back for Dr Martens – or its apprentices. 🍷

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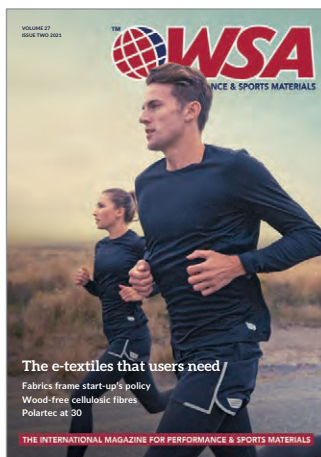
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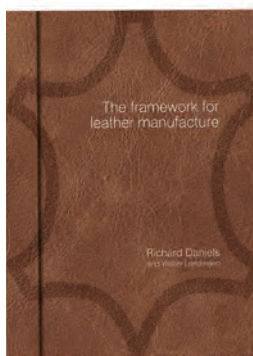
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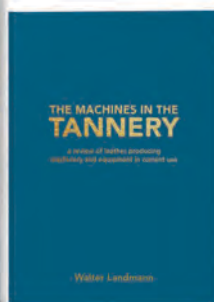
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A photograph of three lion cubs climbing a large, weathered tree trunk in a savanna environment. One cub is at the top, another in the middle, and a third at the bottom. The background is a blurred green landscape.

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