



New  
Zealand  
Leather  
and Shoe  
Research  
Association

## Deadly Ponies new Oases collection



The latest collection from [Deadly Ponies](#) has arrived in stores and online with the Fall '20 range full of stunning new shapes. Titled Oases, there's a decidedly reptilian feel about the collection with luxurious lizard-embossed leather a key feature. Hues of Sahara and Natural give a striking update to popular Deadly Ponies' styles Mr Mini Robin, Mr Boxette and Mr Mini Verne.

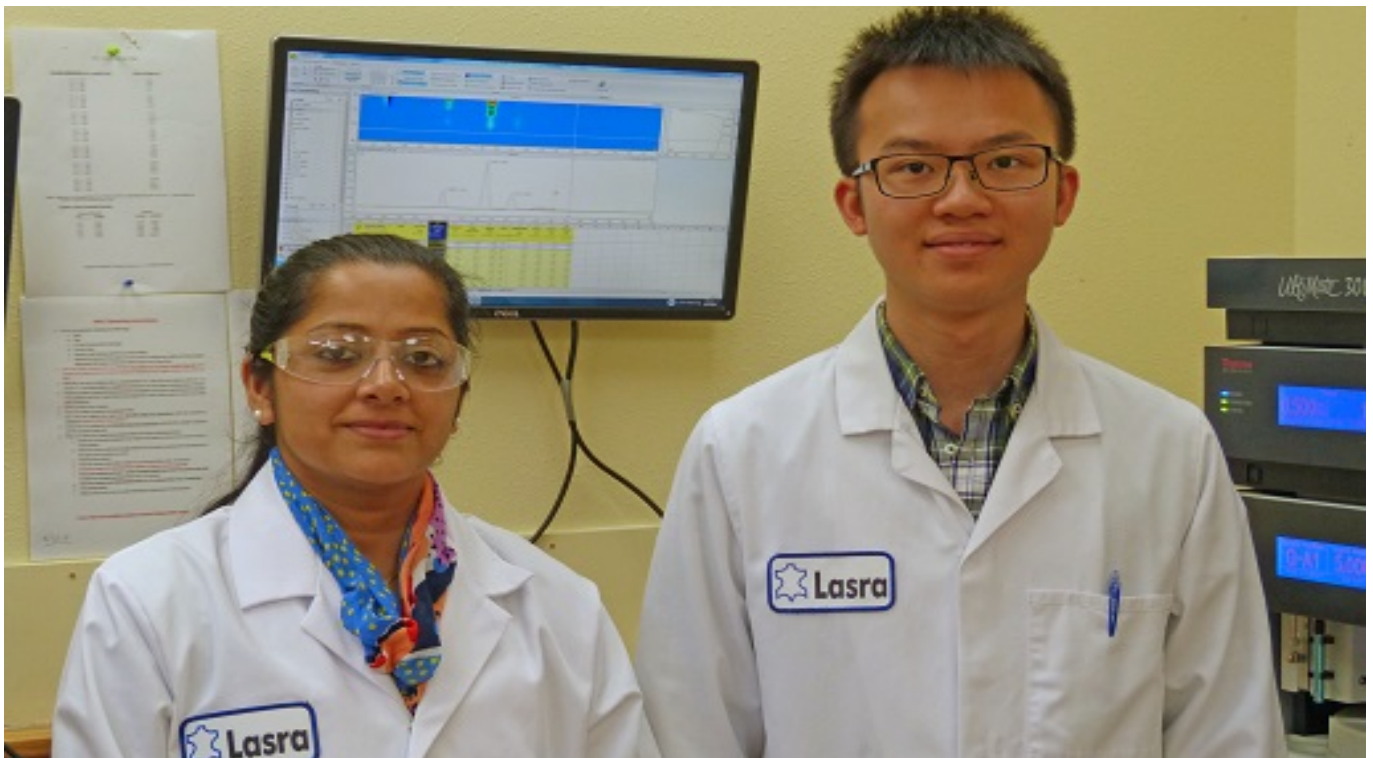
Softer shapes with just the right amount of slouch have emerged this season with Mr Octo and Mr Octo

Midi introduced to the family. The drawstring detailing and supple design have a languid effect in new hues of Clover, Forget-Me-Not and Flint. Shearling is a beloved Deadly Ponies texture and the short-hair Spanish wool in fun hues of Lotus and Caramel is perfect for Mr Molten Mini, Mr Siamese and Mr Fill N' Zip.

The brand's sell-out Pony Rider series has a new offering this season in the form of the Desert Rider which is based on the classic denim jacket and features eye-catching Lizard leather in Natural. The collection is also accompanied by matching belts in several of the key new season leathers. Deadly Ponies have mastered the art of making everything they create truly covetable.

From [fashionz.co.nz](http://fashionz.co.nz)

## Winners of three 2020 IUR research grants announced



The executive committee of the IULTCS have announced the winners of the 2020 research grants with this news release as below and we are thrilled that two LASRA staff are amongst the three winners. This is the third year in a row that LASRA has been a recipient of these awards.

The executive committee of the IULTCS is pleased to announce the winners of the 2020 IUR research grants to be awarded to three young scientists, under the age of 35. The monetary awards help support the work of young talent in the leather sector. This is the sixth year of the grants which have been generously supported by industry and IULTCS alike. The selection committee of the IULTCS Research Commission (IUR), chaired by Dr Michael Meyer, is pleased to announce the following recipients:

### ***Young Leather Scientist Grant 2020 Basic Research***

*Dr Megha Mehta, PhD, AMRSC from New Zealand Leather and Shoe Research Association (LASRA), Palmerston North, New Zealand. IULTCS has provided the monetary sponsorship for a single sum of*

€ 1,500 grant to Basic Research. The title of her project is 'Investigating the Structural Differences of Hides, Skins and Leather Throughout the Different Processing Stages'.

*Dr Mehta's project's main objective is the utilisation of two non-destructive techniques – Raman and ATR-FTIR spectroscopy - to investigate the structural profiles of hides or skins throughout the stages of leather processing. This will enable investigation of the changes that take place in the microstructure of leather. The structural basis of these changes at the level of collagen crosslinks is poorly understood.*

#### **Young Leather Scientist Grant 2020 Machinery Award**

*Nilay Ork Efendioglu, Ege University, Leather Engineering Department, Turkey. Machinery manufacturer ERRETRE has again generously provided the monetary sponsorship for a single sum of € 1,000 grant for machinery / equipment research. The title of the project is 'Determining Leather Properties Required for 3D Simulation Programs and Obtaining Realistic Visualizations'.*

*The major objective of this project is to apply or adapt the leather material options in 3D visualisation and simulation program as including many different properties of leathers, especially for the garment leathers. The benefit of this research will be to define a path to build up a leather material database for 3D simulation programmes. This will enable production of final realistic visuals of the leather garment in the form of a sample, or in the form of production variations, without mistakes. Also, visuals will be as per customer request at a point where the leather cost is not existing, which will increase the competitiveness of the leather apparel sector.*

#### **Professor Mike Redwood Young Leather Scientist Grant 2020 Sustainability/Environmental Award**

*Wenkai Zhang, also from New Zealand Leather and Shoe Research Association (LASRA) will be the beneficiary of the generosity of Leather Naturally, which has sponsored the € 1,000 grant for the project entitled 'Fate of Biocides used in Leather Industry and Their Environmental Impact'.*

*The objective of this project is to investigate the fate of biocides used in the leather industry and their degradation products. It aims to quantify the distribution of the applied biocides in the processing skin/leather, the pickling liquor and the processing float, to identify and quantify the degradation products of the biocides and to understand the condition at which the degradation happens during leather processing.*

*Dr Michael Meyer, the IUR chair of the Selection Committee, stated "All three project proposals show technological knowledge at a very high level and demonstrate the competitiveness of the leather industry with other industries worldwide." The IULTCS looks forward to seeing the outcomes of the projects and wishes all the Award recipients every success as they contribute to expanding our industry knowledge.*

Congratulations to all winners! Pictured L to R, Dr Megha Mehta and Wenkai Zhang

## **Tasman Tanning buys South Island tanning business**

Whanganui business Tasman Tanning has purchased New Zealand Light Leathers' Washdyke Tannery in Timaru. Tasman Tanning is New Zealand's largest producer of finished leather, and the purchase was made in December. It is strategic because it secures the future of the Washdyke site, which will trade as Tasman Tanning South Island Limited. The employees of New Zealand Light Leathers Limited have transferred to the new company. "The acquisition will also give Tasman Tanning access to South Island

wet blue hides to support growth in finished leather production at its Whanganui site", Tasman Tanning chairman Hunter Tait said.

Tasman Tanning's investment adds 60-plus years of experience in the leather industry and capital to the Washdyke site. This will enable it to expand its production capabilities and further enhance its development into a strategic South Island hub, processing hides, skins and pelts from its meat industry partners.

Tasman Tanning South Island's CEO David Cassidy said it was an exciting time for the operation. The new ownership would allow it to not only increase production but also make it the preferred supplier for hide and skin processing in the South Island.

From [nzherlad.co.nz](http://nzherlad.co.nz)

## Coronavirus hits China's leather industry

Su Chaoying, Honorary Chairman of the China Leather Industry Association (CLIA) has just published an article on [LinkedIn](#) on 19 February regarding the impact of the coronavirus outbreak on the China leather industry.

CLIA conducted a survey among some of its members, according to the survey, up to 16th February., 40% of surveyed said they have restarted their work but only part of their production lines is operating, which is generally below 30-40% of normal production capacity. The rest of the companies expressed that they will not restart their operations until the 17th February or the end of the month. Most shoe plants in Wenzhou, the shoe cluster in China, have not yet resumed or fully restarted their operations up to now.

This situation has caused the loss of orders. Some factories said they have had lost about 10% of orders from overseas due to suspending operation and delayed delivery of finished products. Some in China are concerned that the outbreak of virus may stimulate the transformation of orders or production from China to South East Asia.

A big problem faced by the companies who are planning to restart operation is a shortage of disposable mask which may further delay the date for restarting operations, making the current business and supply even more difficult.

Another key issue for tanneries and shoemakers is constrained logistics and travel due to travel restrictions, resulting in difficulty in delivering products, materials and components needed by those companies and a shortage of labour. According to the updated information, millions of workers have had trouble returning to their jobs after the holiday due to travel restrictions. It is estimated by officials that about one-third of migrant workers will still not have returned to work at the beginning of March.

About 90% of the factory buildings of small and medium sized tanneries, shoes and handbag makers are rented from tenants, adding a big burden to those companies because they are suffering from cash flow problems at the moment.

Usually the basic salary and social insurance should be paid to the employees even if they are staying home, and so this will add additional cost to the companies.

Hubei province, the centre of the outbreak, is one of China's manufacturing bases where auto

production accounts for 8% of the country's total. The outbreak and disruption of logistics will hit the auto industry seriously, which may impact the local tanneries processing automotive leather.

People are more likely to stay home, preventing them from travelling and shopping. This situation has caused a very weak demand for shoes, leather garments and finished leather products. One of China's big shoe brands has closed thousands of shoe shops across China. International luxury goods have also been hit. An international source reported that the British brand Burberry has closed over 20 stores in China.

China is not only the world factory for leather, shoes and handbags, but also the most important components and raw materials supplier. The outbreak of the virus has also caused supply chain disruptions. A big international shoe brand told local media, at least 60% of its products are made by its manufacturing contractors in China, while the figure for another famous international shoe brand is 48%. The delay and disruption of operations will definitely hit those brands' business and affect its supply chain. The disruption of supply chains also impacts the normal operations of tanneries, shoe and finished leather products manufacturers based in the Eastern Asia region, which are invested in by China's shoe and bag companies or have close relations with their materials suppliers in China. A handbag company based in Wenzhou said its factory in Thailand has stopped part of its operations due to lack of raw materials supplied by its China's partner.

Some tanneries and shoe makers expected that their sales for the whole year might drop by 10-20% below what they planned early this year. Both exports or imports of raw hides, leather and finished leather products for the first quarter may be much lower than last year due to the negative impact of the virus on China's leather industry, supply chains and consumer demand in the first quarter of this year. Some factories were also worried about the possible growth of inventory caused by weak demand from end consumers.

Last year, the volume of light leather produced by China's medium and large sized tanneries were 573.6 million square meters, a 4% increase than the previous year. The total number of leather shoes reached 3.94 billion pairs - a slight increase of 1.8% from the previous year, while leather garments were 65.6 million pieces, down 9.2% year-on-year.

The Chinese government has rolled out a series of tax measures in response to concerns over the virus' economic impact, including a reduction of interest rates and insurance fees. Officials have also announced the provision subsidies designed to help small and medium sized companies to survive.

To help the industries deal with the current difficulties, the China Leather Industry Association also called for a further reduction of import duties including cutting tax on raw hides from current 5% to 2%, while wet blue from 6% to 1%.

Some local media have suggested that rather than resorting to expansive fiscal and monetary policy, the government should instead focus on creating a better environment for companies to restart operations, especially by gradually removing restrictions on travel.

It is believed that China is more vulnerable to the crisis now than it was 17 years ago when SARS broke out. Since last year the trade tension with the US has brought a negative impact on China's leather and shoe industries. The growth rate of the industries has been slowing down, which makes the leather industry not easy to deal with in such a crisis.

According to the statistics, in 2019 the exports of leather, shoes and finished leather products to the US were USD18.1 billion, down 5.6% from previous year. Of which exports of handbags were USD12.2

billion, down by 17.8% year-on-year; footwear USD11.4 billion, down 3.0% from last year.

The updated situation is that the numbers of new cases of virus infection across China are gradually going down, so it is likely that the level of disruption will be manageable.

It's very hard to predict when the outbreak can be finally eased, but it is expected that if the number of new cases begins to consistently slow from now on outside the Hubei province and most of factories reopen in a few weeks, the hit on China's leather industry may be limited in the first half of the year, and then normal business activities of the industry could be gradually resumed.

It is believed that the coronavirus crisis cannot change the fundamentals of the Chinese economy including the leather industry. This is mainly because of the well-established production chain in China. We saw good news that China's Ministry of Finance has announced a series of measures and tax reductions on imports from the US including hides, leather and chemical products. This will help factories to reduce production costs further.

From *aplif.com*

## **Leather UK reacts to claims about 'vegan leather' in car interiors**

In a letter addressed to Autocar, Dr Kerry Senior, Director of Leather UK responded to an article titled; "Analysis: How veganism is changing the car industry" published on January 21. and refuted some of the claims made as inaccurate. He stated:

"Leather has long been synonymous with luxury in cars. In recent years, the automotive sector has been the largest area of growth for leather use, accounting for over 17% of the annual global production of leather. The volume of leather used in car interiors has increased from 253 million sq ft in 1990, to nearly four billion sq ft now, demonstrating that leather is increasingly popular for vehicle interiors. There is increasing demand from consumers for leather in cars and, with the shift to autonomous vehicles and the growing importance of comfort and luxury in the cockpit, it is reasonable to assume that this demand will grow.

However, leather has its detractors. Various agenda groups attack leather and leather manufacture, citing spurious, scientifically illiterate studies to accuse tanners of causing harm to people and the environment. The most common theme is the impact of the rearing of livestock, the source of 99% of the skins and hides used in leather manufacture, and in particular, its impact on climate change and water consumption. The quite staggering flaws in these arguments notwithstanding, the reality is that over 90% of the world's population eat meat, and that meat consumption is rising. While this is the case, in excess of seven million tonnes of hides and skins will be produced every year which will need to be dealt with. The most efficient and elegant solution to that problem is the manufacture of leather. Leather is unarguably a by-product of the meat industry.

Unlike the manufacture of synthetic alternatives from fossil fuels, leather production is sustainable, uses a renewable by-product as a raw material, and applies heavily regulated chemistries to produce a material that is versatile, durable and beautiful. Ironically, the opponents of leather see no contradiction in warning consumers about the use of chemicals in leather, while insisting that they should replace it with chemically-derived synthetic alternatives. This article itself offered apple skin leather as the future of vegan leather interiors, even though this material is largely comprised of plastic.

Consumers have an ever-increasing degree of choice of materials for their car interiors. Leather remains

the premium choice, bringing not only beauty, comfort and style to the interior, but also a material that is sustainable, renewable and biodegradable. Furthermore, this leather is produced by a sector that strives continuously to reduce its own environmental impact while reducing the impact of another. Leather is the solution, not the problem.”

To read the Autocar article, click [here](#).

From *Leather UK*

## **LHCA says 5.5 million US hides may have gone to waste in 2019**

Industry body the Leather and Hide Council of America (LHCA) has calculated that 5.5 million hides generated by the US livestock industry in 2019 failed to reach the leather value chain. Some may still be in warehouses, LHCA said, but “a large percentage” are likely to have gone to waste.

LHCA said it had put the number of wasted hides at 5.5 million based on public data from the US Department of Agriculture (USDA) and the US Census Bureau. The slaughter numbers of around 33 million head of cattle in 2019 are regularly published by the USDA and widely circulated (leatherbiz publishes these figures every Friday).

Next, LHCA compared this data with its own figures for the exports of wet-salted and wet blue hides, information it publishes every month using data from two primary public sources: US Customs and USDA. The total figure for 2019 was 23.6 million hides.

It then estimated the number of hides that are consumed domestically in the US, based on an average of previous years’ data, and came to the conclusion that the total number of US hides that went into leather production, domestically and globally, was 27.5 million.

“This means that about 5.5 million US hides, 17% of the total, never made it into the leather supply chain in one way or another in 2019,” said LHCA president, Stephen Sothmann, on releasing the figures.

Mr Sothmann added: “We, of course, have no way of knowing how many of those hides are sitting in warehouses versus how many of them ended up in landfills, but as we all know from anecdotal evidence, it is likely that a large percentage of those hides were discarded as waste.”

*leatherbiz.com*

## **Mixed results for Italy’s footwear makers**

The value of Italian footwear exports rose by 6.8% in 2019 compared with 2018 to more than €10 billion – a record amount – driven by the strong performance of luxury brands. However, production levels fell by 3%, reflected by a declining workforce and “a domestic market in the grip of recession”, according to Assocalzaturifici, the Italian footwear manufacturers’ association. Siro Badon, chairman of Assocalzaturifici, said: “To this we must add the major uncertainties for 2020, with the as yet unquantifiable consequences for the global economy from the coronavirus emergency, which broke out in one of the few areas of constant growth for our sector in the last decade. In this complex situation, our industry needs to focus on technological innovation and on training new professionals in order to manage the generational turnover process. “These are the drivers for improving the performance of a sector that - with its workforce of 75,000 people, trade surplus of almost €5 billion and production of 8

billion - is of crucial importance to the Italian economy.”

Exports to Russia fell 15.3% in volume in the first 10 months of the year, while those to Germany and the Middle East fell 9%. However, exports to France, the US, China and South Korea rose between 7% and 20%. Sales into the domestic market continued to fall, with only sports shoe sales seeing a slight increase.

At the end of December 2019, the sector had 4,326 companies (179 fewer) and 74,890 direct employees, 790 fewer than in the same month the year before.

From *leatherbiz.com*

## **JBS launch traceability product**

JBS Leather has launched the first Brazilian platform monitoring of leather production, JBS 360 ( [jbs360.com.br](http://jbs360.com.br) ), for access to information from the source on the farm to the final product. The tool will be used by the more than 1,300 customers of the Company, which produces around 35,000 hides per day, from more than 90,000 cattle suppliers in Brazil.

Each piece has an identification that allows, through the website, to track the group of farms where the raw material originated, date of slaughter, percentage of slaughter and the location of each farm, the slaughterhouses and their respective locations as well as the Tanneries where the leathers were processed. The initiative is in line with JBS Couros' focus on the sustainable operation throughout the chain.

The Company is the only one in the sector to have full control of the production chain, from the farm to the tannery. “We value transparency in communication and in negotiations with our suppliers and customers, ensuring that leather follows the main socio-environmental criteria required by the market”, points out Guilherme Motta, president of JBS Couros.

The JBS 360 adds the Kind Leather, an initiative launched by JBS Leathers earlier this year, which reinforced the Company's commitment to innovative and sustainable solutions. This type of leather is produced with 65% less CO2 emissions in transportation, a 46% reduction in water consumption and 42% in the use of chemicals. In addition, the complete production process reduces chip generation by 51% and electricity costs by 20%. Kind Leather is expected to account for 30% of JBS Couros' total production by the end of this year.

The Company works only with raw materials produced in accordance with the highest standards. This ensures that the leather comes from areas free of deforestation, invasion of indigenous lands, conservation units, working conditions analogous to slavery or violence in the countryside and agrarian conflicts.

From *aplif.com*

## **Global leather-sector exports worth €212 billion**

France's national leather industry body, the Conseil National du Cuir, has published a far-reaching statistical analysis of the global leather industry in 2018. It explained that the time it took to obtain data from all the countries it wanted to include meant it was only now able to publish figures for 2018. It said



China had one-third of global leather exports that year, Italy 11.9%, Vietnam 11.5% and France 5%.

It only gives a value for France's leather-sector exports, putting it at €10.6 billion, which would imply an overall value of global exports at €212 billion. Based on this, China's leather exports in 2018 would be worth €70 billion, Italy's at €25 billion and Vietnam's at €24.4 billion.

From *leatherbiz.com*

## **Simac Tanning Tech exceeds expectations amid market uncertainty**

Organisers of the tannery, footwear and finished leather goods machinery show, which was held February 19-21 at Fiera Milano Rho, said it closed with excellent attendance figures which "exceeded expectations", despite uncertainty prior to the fair caused by repercussions of the coronavirus outbreak and a lack of representatives from the Far East.

Simac Tanning Tech concluded with positive results, particularly with regard to the quality of attendants and demand, confirming the event's role as a key platform for production systems in the footwear, leather goods and tanning industries. "We're very happy with this edition's results," said Gabriella Marchioni Bocca, President of the National Association of Italian Manufacturers of Footwear, Leathergoods and Tanning Technologies (Assomac), the organiser of the show, "especially in view of the circumstances and the current economic trends and global medical emergency. We registered good attendance from all markets, with the understandable exception of China. Interest in sustainable innovations and solutions and the fact that the event was held simultaneously with Lineapelle, Micam and Mipel represented a strong draw for the industry".

A major focus of the latest technological innovations presented at Simac Tanning Tec was on sustainability in all its ethical, social and environmental implications, with 324 exhibitors from 25 countries having showcased their latest product launches at the show. "It has become essential for companies working in our field to commit to sustainability," said Marchioni Bocca. "This is what the market demands, for companies need sustainable technologies to limit their water and energy consumption and CO2 emissions, and it is part of our social responsibility as entrepreneurs and citizens of the world". The trade fair also offered an opportunity to sample the future of manufacturing in the Innovation Corner, a project developed by ITA Agency in collaboration with Assomac, showcasing the most innovative proposals for integration of Industry 4.0 solutions.

From *ILM*

## **CNC publishes white paper on responsible leather ethics**

As an extension of the Sustainable Leather Forum held in Paris in September 2019, the French National Leather Council (Conseil National du Cuir - CNC) has published a white paper dedicated to responsible and environmental leather industry ethics.

The CNC said the white paper is the result of collaborative and participative work and draws up, in full transparency, an inventory that recalls the challenges faced by the sector, while also dedicating an important section to the testimonies and feedback of field experiences put forward by stakeholders from the leather supply chain during the first edition of the Sustainable Leather Forum organised by the CNC. The event, which focussed on Corporate Social Responsibility (CSR) and good practices in the leather trade, brought together over 280 professionals from the leather, footwear, leather goods and gloves

segments.

“Professionals from the French Leather Industry have long been committed to a responsible approach for their activities. Reconciling economic reality, maintaining a traditional, artisanal know-how and excellence in the implementation of good practices that respect the environment are key priorities, and numerous solutions and initiatives have been revealed”, said the CNC. “By publishing this white paper from the work carried out during the first Sustainable Leather Forum, the National Leather Council assesses the situation and provides an objective insight into the questions that everyone, professionals and public alike, is entitled to ask about the challenges of this industry.”

The white paper centres around the following major themes; measuring CSR commitments through standardisation, environmental commitment, consumer information and safety, ethical responsibility and animal welfare, the value of human capital at the heart of the business and transmission of know-how.  
From *ILM*

## Agfa, TFL developing inkjet solution for leather



Agfa and TFL have entered into a strategic partnership, focusing on the development of Alussa, a dedicated inkjet printing solution to decorate high-quality genuine leathers used by the fashion, upholstery, automotive, aviation and nautical industries.

Agfa will develop the inkjet printer and dedicated inkjet inks, as well as the software to manage and monitor the printing process, while TFL will provide custom-developed coating chemistry.

Alussa enables the leather industry to decorate high-quality leather in such a way that it exhibits the excellent performance required in terms of flexibility and scratch resistance. It is the first industrial inkjet printing solution outputting decorated leather that can handle up to 100,000 flexes. Productivity amounts up to 80 m<sup>2</sup> per hour.

Alussa can print both white and full-color designs with photographic quality on diverse types of leather. As it is a digital printing solution, it is ideal for customizing and personalizing leather products, thus catering to a global trend. Also, it just as easily allows for the creation of one-offs (e.g. samples) as of large volumes.

From [www.inkworldmagazine.com](http://www.inkworldmagazine.com)

## Fantastical shoe designer Anastasia Radevich to visit NZ



Shoe School is thrilled to announce they will be hosting internationally renowned shoe designer Anastasia Radevich in their Wellington workshop in March 2020.

Anastasia will be teaching a rare '4-day Classic Pump' and a '1-Day Shoemaking Course for Film Industry' workshops at Shoe School 2-5th and 9th March.

Anastasia is a Montreal based third generation shoemaker and artist. Her fantastical and detailed designs draw from the natural world and are rich with symbolism. She is known for pushing the technical limits of her craft, and combines this with a sensibility for sublime beauty found in organic forms. She is excited to visit New Zealand and hopes to take inspiration home with her to inform her future creations.

A graduate of the London College of Fashion, Anastasia honed her sculptural skills at the iconic fashion houses of Alexander McQueen and Nicholas Kirkwood. She is a prolific maker and her work has been exhibited at museums and galleries throughout the world. For more information, click [here](#) .

From [scoop.co.nz](http://scoop.co.nz)

## Leather expert slices a pair of the RM Williams boots in half



A shoe expert has declared R.M. Williams pricey boots to be worth their hefty cost after cutting a pair open to examine their materials and construction. The shoe artisan, who works for American leather goods store Rose Anvil, [filmed himself](#) slicing the handmade \$595 boots down the middle. 'I bought a pair to cut in half to see if they live up to the hype and the price or if they are just a celebrity-sponsored, overpriced boot,' he said. Overall he was impressed, and commented that it's a really good boot. 'But there's a few things I wished were a little different. I wish there wasn't some composite material inside the heel stack... just being nit-picky. 'Other than that, it's a solid boot. I don't really have many complaints other than that it's so hard to tear apart, it took me two hours.'

R.M. Williams was founded in Adelaide in 1932 by the famed bushman of the same name. The company's iconic boots are a popular item both locally and overseas, and the brand has stores in New York, London, New Zealand and in Scandinavia.

From [dailymail.co.uk](http://dailymail.co.uk)

## MecMan presents IceWater system

Italian tannery machinery supplier MecMan has launched its patented IceWater system, an innovative alternative for the production of cold water, used during the leather drying step, that completes what is currently a modular system. The new system is used for the drying of leather hides or sides and is made up of three components: MecGiant, IceVacuum and the new IceWater. MecGiant is the world's largest vacuum drying machine for hides, with table sizes up to 9m x 3.4m that greatly increase productivity while maintaining operating costs of a traditional 7m drier.

IceVacuum, on the other hand, is a vacuum dryer equipped with a liquid ring pump that works with water instead of oil. The use of water offers multiple advantages both in terms of water/energy consumption

and easier maintenance. The double turbo vacuum generation system reaches a vacuum of 5m Bar, even if positioned far from the dryer, up to a distance of 50m.

The new IceWater system patented by MecMan maintains a constant water temperature of 7°C throughout the year, with a power consumption of only 4kw. It is considered revolutionary because of its constant temperature, ensuring a year-round high-performance drying of the leather. However, the company states that the system is not a chiller and the 4kw energy consumption offers significant energy savings compared with a traditional chiller, which uses up to 200kw of power.

IceWater applies innovative technology and was created to solve common problems of tanneries and subcontractors who work in countries where heat and humidity compromise performance and can slow down production. Especially where traditional drying machinery has to be constantly calibrated due to climatic and environmental influences.

“We believe that the IceWater system can be the definitive answer to the rigid parameters required by leather makers, especially those from the automotive sector, because it will ensure uniformity of drying regardless of external climatic conditions. With this new system, we want to offer our customers a wide range of solutions for the drying of the leather, with a top level performance at all times”, says MecMan.

From *ILM*

## **TFL colour trends for Autumn/Winter 2021 -2022**

The specialty chemical supplier has released its new TFL Colour Trends Catalogue for the Autumn/Winter 2021-2022 season, aimed at the leather garment, footwear, accessory and upholstery sectors.

As usual, TFL’s colour trends are divided into two sections within the publication; “Wearing”, which comprises inspirations and colour trends for garments, footwear and accessories, and “Living”, which features the colours dedicated to interior designs.

For the Autumn/Winter 2021–2022 season, “Wearing” unveils how the world of leather will increasingly be shaped by today’s digital world that requires hybrid finishing and printing solutions combining the technology of three-dimensional prints with satin-finished solutions featuring optical laser effects of glossy polyurethanes and shiny caseins. “Living” focusses on the desire of wellbeing at home, and how the evolution of digitalisation transfigures form and content. The constant search of softness influences the choice for a more natural leather, with light shades and tones. The fittings designed with these innovative soft and shiny leathers delude us into living in nature, from coverings in soft panels in vegetalised lambskin resembling a tobacco leaf, to water-repellent nubuck calfskin diamonds, to the finishing touches of vegetable tanned fittings.

In addition, the catalogue features TFL Micro Tec, an innovative technology for the finishing of leather articles, which can be used to obtain a more natural appearance without overloading the grain.

From *ILM*

## **What’s new February 2020: papers added to the Library**

**Raman and ATR-FTIR spectroscopy towards classification of wet blue bovine leather using**

## ratiometric and chemometric analysis

*Mehta, Megha; Naffa, Rafea; Maidment, Catherine; Holmes, Geoff; 2 Waterland, Mark LASRA@NZ Leather and Shoe Research Association; 2 School of Fundamental Sciences, Massey University, Palmerston North, New Zealand*

There is a substantial loss of value in bovine leather every year due to a leather quality defect known as “looseness”. Data show that 7% of domestic hide production is affected to some degree, with a loss of \$35 m in export returns. This investigation is devoted to gaining a better understanding of tight and loose wet blue leather based on vibrational spectroscopy observations of its structural variations caused by physical and chemical changes that also affect the tensile and tear strength. Several regions from the wet blue leather were selected for analysis. Samples of wet blue bovine leather were collected and studied in the sliced form using Raman spectroscopy (using 532 nm excitation laser) and Attenuated Total Reflectance - Fourier Transform InfraRed (ATR-FTIR) spectroscopy. The purpose of this study was to use ATR-FTIR and Raman spectra to classify distal axilla (DA) and official sampling position (OSP) leather samples and then employ univariate or multivariate analysis or both. For univariate analysis, the 1448  $\text{cm}^{-1}$  ( $\text{CH}_2$  deformation) band and the 1669  $\text{cm}^{-1}$  (Amide I) band were used for evaluating the lipid-to-protein ratio from OSP and DA Raman and IR spectra as indicators of leather quality. Curve-fitting by the sums-of-Gaussians method was used to calculate the peak area ratios of 1448 and 1669  $\text{cm}^{-1}$  band. The ratio values obtained for DA and OSP are  $0.57 \pm 0.099$ ,  $0.73 \pm 0.063$  for Raman and  $0.40 \pm 0.06$  and  $0.50 \pm 0.09$  for ATR-FTIR. The results provide significant insight into how these regions can be classified. Further, to identify the spectral changes in the secondary structures of collagen, the Amide I region (1600–1700  $\text{cm}^{-1}$ ) was investigated and curve-fitted-area ratios were calculated. The 1648:1681  $\text{cm}^{-1}$  (non-reducing: reducing collagen types) band area ratios were used for Raman and 1632:1650  $\text{cm}^{-1}$  (triple helix:  $\alpha$ -like helix collagen) for IR. The ratios show a significant difference between the two classes. To support this qualitative analysis, logistic regression was performed on the univariate data to classify the samples quantitatively into one of the two groups. Accuracy for Raman data was 90% and for ATR-FTIR data 100%. Both Raman and ATR-FTIR complemented each other very well in differentiating the two groups. As a comparison, and to reconfirm the classification, multivariate analysis was performed using Principal Component Analysis (PCA) and Linear Discriminant Analysis (LDA). The results obtained indicate good classification between the two leather groups based on protein and lipid content. Principal component score 2 (PC2) distinguishes OSP and DA by symmetrically grouping samples at positive and negative extremes. The study demonstrates an excellent model for wider research on vibrational spectroscopy for early and rapid diagnosis of leather quality. *Journal of Leather Science and Engineering* February 2020

## Identification and characterization of potential biocide-resistant fungal strains from infested leathers - A systematic study

*Sundar, Kavitha; Khambhaty, Yasmin; Kannan, CBN*

This study is aimed at identification of biocide tolerant/resistant fungal strains afflicting the leather industry. Fungal infestation occurs sometimes despite biocide treatment during leather processing. This persistent growth can be due to the development of biocide resistance which can lead to health hazards and economic loss. As no study has so far been reported to either confirm this or to identify such fungal strains, a systematic approach has been made in this study to address these aspects. Fungal strains were collected from infested leathers from tanneries to identify biocide resistant fungal strains afflicting leather industry. Phenotypic characterization revealed *Aspergillus* as the most dominant with 58% occurrence. Ten isolates were subjected to 18s rRNA sequencing and four strains were identified as

*Aspergillus niger*. An in-vitro susceptibility to four leather fungicides was assessed to identify the biocide tolerant strains. S-6 A. *niger* strain was found to be the most tolerant as evidenced by high MIC (7.81 µg ml<sup>-1</sup>) against the most effective biocide, 2-(thiocyanomethylthio) benzothiazole. In-vivo studies on chrome-tanned leathers also confirmed this finding. SEM studies revealed considerable morphological changes in S-6 compared to wild strain providing further evidence that it may have developed biocide resistance.

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### **Influence of benzenecarboperoxoic acid on chamois leather process**

*Sahu, Bindia; Alla, Jaya Prakash; Jayakumar, Gladstone Christopher; Raj, Ashok*

Stabilization of collagen against heat and enzyme is a key objective in the tanning process. In oil tanning, fatty acid present in the oil is oxidised mainly into aldehydes which interacts with amino groups of collagen to form stable covalent cross links. Conventionally, oil tanning consumes time from two to three weeks which primarily depends on the type of oil and oxidation method for completion of tanning. In the present research, the duration of oil oxidation is reduced using benzenecarboperoxoic acid (PBA). It has been observed that PBA significantly reduces oil tanning duration from two weeks to 4 days. Moreover, the water absorption capacity of experimental leather has also increased by approximately 48% (1% PBA) compared to control leather. Physical strength properties such as tensile and percentage elongation values have also found to meet the standard norms. In addition to this organoleptic properties are also on par with control leather. The present study focus on the acceleration of chamois process for making leather, using PBA as an oxidising agent.

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### **Limiting microbial activity as an alternative approach of bovine hide preservation. Part II**

*Arker, Majher I.; Yosief, Hailemichael O.; Liu, Cheng-Kung; Latona, Nicholas P.*

Wet salting of bovine hide commonly utilizes 95% saturated salt solution or 40-50% salt (w/w) on raw hide weight for preservation. The salt used for the hide preservation ends up being in wastewater and generates enormous environmental pollution. To minimize the environmental pollution problem associated with the traditional method of hide preservation, alternative formulations containing antimicrobial agents and less amount of common salt (35% saturated brine) have been developed. The alternative formulations were found to be more effective in deterring microbial growth than the traditional formulation as demonstrated by the total aerobic bacterial count of the preserved hide soaking liquor. The effect of the newly developed formulations on leather quality was assessed by analyzing the mechanical properties, scanning electron microscopic images, grain pattern and organoleptic properties of the finished leather. The quality analysis of the crust leather revealed that, the leather panels produced from the traditionally and alternatively preserved hides were comparable. The environmental impact of the newly developed formulations was also evaluated by monitoring the leather processing effluents for the pollution indicators such as total solids (TS), total dissolved solids (TDS), chloride content, Chemical oxygen demand (COD) and Bio-Chemical oxygen demand (BOD). Overall, the environmental impact of the newly developed hide preserving formulation was less severe than the traditionally used formulation. Since the newly developed formulations did not affect the quality of the leather produced and their impact on the environments is minimum, they could be considered as viable options for combatting pollution problems associated with the traditional salt curing method.

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## **The quality of leather estimated from airborne ultrasonic testing of hides**

*Liu, Cheng-Kung; Chen, Nusheng; Latona, Nicholas P.*

High-quality hides are paramount for competitiveness in both domestic and export markets. Currently, hides are visually inspected and ranked for quality and sale price, which is not always reliable when hair is present on the hides. Advanced technologies are needed to nondestructively and accurately characterize the quality of hides and enable one to estimate the qualitative and mechanical properties of leather. We were the first to carry out research for airborne ultrasonic (AU) methods to nondestructively characterize the quality of hides. The developed nondestructive method is based on measuring the AU waves transmitted through the hide samples. Research results demonstrated that the average amplitude distribution received from the ultrasonic wave transmitted through the hide samples yielded the best correlation with the AU test variables: gain, speed, and frequency. Observations showed AU parameters derived from the average distribution values for amplitude (AMPa) and time of flight (TOFa) have a correlation with the quality of leather. This study demonstrated that the fullness, overall characteristic, tensile strength, stiffness, elongation, and toughness of leather could be nondestructively estimated by the ultrasonic quantities obtained from AU testing of hides.

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## **Ecological evaluation of leather industry by neural network**

*Cheng Shuqiang; Luo Juan*

At present, the production process of the leather industry is gradually developing towards being green and pollution-free. Therefore, an ecological evaluation of the leather industry is particularly important. In this paper, an ecological model of leather industry was established by using a BP (Back Propagation) neural network, and the appropriate indicators such as wastewater, COD, BOD, SS, Cr, S<sub>2</sub>- were selected for evaluation. The evaluation method improves the quality of evaluation of the ecological leather industry, and provides a reference for the evaluation of the ecological chemistry industry, which is conducive to the better realisation of the green development of the leather industry.

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## **Clove essential oil – free and encapsulated for antimicrobial leather**

*Kopp, V.V.; Dos Santos, C.; Dos Santos, J.H.Z.; Gutterres, M.*

Essential oils have antimicrobial properties, with good potential to be used as natural biocides. Microencapsulation is a technological possibility to protect functional natural microbicides and to prevent chemical changes. The performance of the clove essential oil (CEO), free and encapsulated, against bacteria was evaluated. The emulsion extrusion technique was used for CEO encapsulation with alginate and the sol-gel technique was used for the encapsulation with silica. Samples were characterised for antimicrobial activity, size and functional groups present. Strong antimicrobial activity against *Staphylococcus aureus* and *Escherichia coli* was observed. FTIR showed the main peaks of the CEO and confirmed its incorporation into the alginate microcapsules obtained and of the silica nanocapsules. The chemical stability of the clove oil after encapsulation gives rise for its bactericidal use in leather manufacturing with advantages of maintaining its properties for more durability and controlled release in leather.



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### **Study of the chrome hexavalent content in commercial chromium salts**

*Bacardit, Anna; González. Maria; Mir, Teresa; March, Ricard; Corbera, Jordi*

Three forms of chromium are used in industry: Cr(0), Cr(III) and Cr(VI). While chromium metal and Cr(III) ions are not considered toxic, hexavalent chromium is both toxic and carcinogenic. In the leather sector, chromium (III) is used as a tanning agent; however, under specific conditions, chromium (VI) can be formed in the leather post-production. Due to this reason, the objective of this work is to determine the possible hexavalent chromium content in four commercial basic chromium salts and the tendency of these salts to originate hexavalent chromium when applied to leather. The chromium salts studied do not originate Cr(VI) when applied to hide under optimum working conditions. However, it is demonstrated that the appearance of chromium (VI) may be due to bad practices during the tanning and/or post-tanning processes.

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### **Thermophysical and functional-consumer qualities of shoe upper leather**

*Pervaia, Nataliia; Andreyeva, Olga; Maisternko, Lesia; Ocheretna, Larysa*

Nowadays, the production of shoes having certain functional-consumer qualities requires materials, which meet all final product requirements, are environmentally safe and do not overcomplicate the production cycle. In this paper the influence of conditions of using a polymeric material based on maleic acid prior to dyeing the bovine shoe upper leather was studied. According to the results of electron microscopic examination, as well as evaluation of the physico-mechanical and thermophysical properties of the leather it was revealed that the use of polymeric material contributes to the formation of structure and such important indices of the derma as tensile strength, grain strength, extension, water vapour permeability, apparent density, porosity, heat resistance and thermal absorptivity. On the basis of a generalised objective function, optimal processing variants were defined. Recommendations of leather production parameters taking into account the season of shoe exploitation (autumn/winter, spring/summer) have been made.

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### **Structure and properties of a novel collagen-soy protein isolate film via self-assembly: a comparative study**

*Ruirui Wang; Hongru Wang; Liu Pengjie; Yijun Yao; Wanli Ji*

A novel collagen-soy protein isolate (SPI) film formed via self-assembly was developed. This research investigated the structure and application properties of the collagen-SPI self-assembled film and the blend film. FTIR and XRD evaluation of structural properties indicated that the self-assembly method could effectively enhance the compatibility between collagen and SPI. The collagen-SPI self-assembled film presented a compact, smooth and continuous microstructure. The tensile strength (Ts) and elongation at break (EAB) values of the collagen-SPI self-assembled films (Ts:  $13.991 \pm 0.53$  MPa, EAB:  $84.57 \pm 6.21\%$ ) were nearly twice those of the blend films. The water vapour permeability (WVP) values of the collagen-SPI self-assembled film were more than  $2000 \text{ g}\cdot\text{m}^{-2}\cdot 24\text{h}$ . The maximum decomposition peak of collagen-SPI self-assembled films was located at  $313.2^\circ\text{C}$ . The collagen-SPI self-assembled films could achieve swelling equilibrium quickly within 2 hours, and the structural integrity of the film was

maintained for 24 hours. The collagen-SPI self-assembled film had excellent ultraviolet shielding and visible light transmission qualities. The collagen-SPI self-assembled film had better mechanical properties, optical properties, thermal stability and water resistance properties as opposed to blend film. As a clean and feasible method, the self-assembly method could improve the functional properties of the collagen-SPI film. The collagen-SPI self-assembled films could be used as novel wound dressings in the future.

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### **Factors influencing the wet properties of leather board**

*Yinghua Ma; Dongsheng Xin; Runtong Xia; Shaolan Ding; Fei Ma*

The bonded leather board was prepared by hot pressing. Waste chromed cow leather was used as raw materials and bonded with chloroprene rubber adhesive (CR adhesive). The effect of process factors on the surface wettability and the water absorption under complete immersion conditions of the finished product were studied in this article. The study found: When the amount of the CR adhesive was enhanced, the effect was to reduce the surface wettability and the 15 minutes and 24 hours water absorption of the bonded leather; when the temperature increased, the effect was to increase the surface wettability and reduce the 15 minutes and 24 hours water absorption of the bonded leather; the time has no effect on the wet characteristics of the bonded leather; when the pressure was increased, the effect was to reduce the surface wettability of the bonded leather, and the time has no effect on the water absorption. In general, the CR adhesive-prepared bonded leather is an hydrophobic material.

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### **Re-utilization of biomass resources: preparation and application of a bio-polymer retanning agent based on cattle hair hydrolysate\***

*Luo Jianxun; Ma Hewei; Feng Yanjuan*

In order to promote the development of clean production of leather-making and to re-cycle the cattle hair from a hair-saving process, the hair is hydrolysed and may in some circumstances find an application. But, because the cattle hair hydrolysate has a small molecular weight and poor properties in retanning of leather, it was modified with vinyl monomers by radical co-polymerisation using ammonium persulfate at 80°C for 3 hours to obtain a bio-polymer retanning agent. Comparing the viscosity and retanning properties of the bio-polymer retanning agent, the mol ratio of acrylic acid, acrylamide used was confirmed to be 4.0:1.0 and the consumption of acrylic acid, acrylamide is 80% based on the content of the hydrolysate. The structure of the bio-polymer retanning agent was characterised by FTIR. Application results of the bio-polymer retanning agent on the retanning of the shaved sheepskin wet-blue show that it has good retanning and filling properties. When the optimal consumption of the bio-polymer retanning agent is in the range of 6% and 8%, the retanned leather is full, more uniform than before and lacks any plastic feeling.

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### **Influences of drying methods on the thermal stability of leather**

*Ren Bianli; Fang Qi; Chai Yuye; Xu Xiaohong; Shen Xiaojun; Zou Xianglong*

The bonded leather board was prepared by hot pressing. Waste chromed cow leather was used as raw

materials and bonded with chloroprene rubber adhesive (CR adhesive). The effect of process factors on the surface wettability and the water absorption under complete immersion conditions of the finished product were studied in this article. The study found: When the amount of the CR adhesive was enhanced, the effect was to reduce the surface wettability and the 15 minutes and 24 hours water absorption of the bonded leather; when the temperature increased, the effect was to increase the surface wettability and reduce the 15 minutes and 24 hours water absorption of the bonded leather; the time has no effect on the wet characteristics of the bonded leather; when the pressure was increased, the effect was to reduce the surface wettability of the bonded leather, and the time has no effect on the water absorption. In general, the CR adhesive-prepared bonded leather is an hydrophobic material.

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## **Fashion spotlight: leather dominating Milan Fashion Week Fall 2020**

