Indian Leather

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Digest of Leather News

59th Year

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A Landmark FTA

Editorial

The United Kingdom and India has signed a historic Free Trade Agreement (FTA) on 24th July, 2025. The FTA was signed in the presence of Hon'ble Prime Minister Shri Narendra Modi and the U K Prime Minister Keir Starmer. The agreement has been finalised with an aim to enhance bilateral trade to $ 120 billion by 2030 effectively doubling the current trade volume between both the countries.

The deal will eliminate tariffs on approximately 99% of the tariff lines, covering almost 100% of the trade value. The UK will gain duty-free access for its 90% tariff lines that will cover 92% of existing merchandise imports from the country.

The FTA offers duty-free access to the UK's $23 billion market, giving Indian Micro, Small and Medium Enterprises (MSMEs) a strong advantage over other countries like Bangladesh, Cambodia, and Pakistan in labour-intensive sectors such as leather and footwear, textiles and clothing, gems & jewellery, furniture and sports goods.

The Council for Leather Exports (CLE), in its statement, has said that the leather & footwear industry has expressed gratitude and thanked the Prime Minister and Commerce & Industry Minister for the duty-free facility provided for export of Leather, Leather Products & Footwear to UK from India under India-UK Comprehensive Economic and Trade Agreement (CETA).

U K is the 3rd largest market for Indian Footwear and Leather Sector. India's export of leather, leather products and footwear to U K has increased from $ 400.77 mn in 2023-2024 to $ 437.94 mn in 2024-2025 registering a growth rate of 9.27 %. U K accounted for 9.07% share in exports from Indian Leather& Footwear sector during

2024-2025. UK's total import of leather, leather products and footwear during 2024-25 was $ 6749.80mn whereas India's export was only $ 437.94 mn during the same period, having a share of about 6.49%.

India is the fourth largest economy in the world and today's trade deal provides immense growth potential and opens up new opportunities for the industry.

The Council for Leather Exports (CLE) has listed the following benefits from the India-U K CETA

- **Duty Free Access :** Removal of import duties in UK in the range of 2% to 8% for leather products, 4.5 % for leather footwear and 11.9% for non-leather footwear.

- **Increased exports and Market expansion :** Will help in doubling exports of the footwear and leather sector to UK in the next 2-3 years and achieve the envisaged USD 1 billion export value.

- **Enhanced competitiveness :** Will increase the competitiveness of Indian footwear and leather sector in the UK market.

- **Collaborations :** Will facilitate increased tie-ups between the footwear and leather sectors in the UK and India in the areas of investments, technical collaborations and joint ventures.

- **Benefit to MSMEs :** Will facilitate market exposure of MSMEs.

- **Import of Leathers :** The duty free facility provided by India will facilitate duty free import of finished and crust leathers from UK, for making value added products in India.

LEATHER: Studies for Information and Self-Training

Richard Daniels

(The author – Richard Daniels – has wide technical experience of leather manufacture, other leather-related practices, within formal education and counterpart training. The third study in the series -Leather: the technology of manufacture - is presently undergoing edit)

Two studies are available for download free of any charge from the website www.indianleathermagazine.com

1] Leather: AN INTRODUCTION (Volume 1 of 3)

This has been created for people who need a better general understanding of what leather is, and for those who need a better understanding of how leather is made.

It describes the versatility of this unique material, its natural origins, how it is manufactured, and why its properties are so comprehensive. It enables comparisons with plastics, laminates and conglomerates of binders/natural materials - as long as their origins, composition and environmental profiles are similarly detailed.

2] Leather: AN OVERVIEW OF MANUFACTURE (Volume 2 of 3)

This second study is for people who wish to become leather technicians, and those who need more than the most basic understanding of leather and its manufacture.

It follows the processes and operations used, and their purposes, for making different leathers from bovine hides, sheep and goat skins.

This is a very comprehensive self-learning package in 10-parts. It has been created for ease-of-study, comprises 30,000 words, and supported by 300 technical images and diagrams. It is designed for use by the individual via smart phone, tablet and computer. However, it can be used for support within more formal training and education.

These studies have been subjected to review by leather making professionals. Also, it has been accredited and recommended by the UNIDO, IULTCS, ALCA and SLTC.

This is about making Leather !

II Application of Quantum Theory for Better Understanding Leather Technology II

Dr. Buddhadeb Chattopadhyay

My students know that for the past 40 years or so, I have been (according to them) quite obsessed with Quantum Mechanics. Quoting one alumnus that Lehninger's Biochemistry has little use, so is also the quantum theory, I can fairly guess. Might be I misjudged that a scientific mind of 21st century must not have dogma to be deterministic, which classical physics tells us. But classical physics is applicable well in dealing with macroscopic body/world. Which within minimal error is deterministic.

But when we are dealing with microscopic body/world quantum mechanics is only the tool to understand and it is indeed NON-DETERMINISTIC. We can predict the outcome with probability. Say for example example when we heat a metallic body, we know that after sometimes it would glow. At the same time, it is impossible to say, when will it start glowing.

Coming to Leather Science and Technology, we deal firstly with hides and skins. They are biological composed of various macro as well as micro molecules in definite pattern. We use lots of chemical molecules to process it as finished leather. What else can be the best tool to understand their structure, affinity and reaction pattern other than quantum mechanics ?

At the very instant I can site some examples amongst many others in support of my obsessive view and these are hereunder: -

1. We know tropo-Collagen forms triple helix but we do not know amongst various other options of folding, why it chooses Triple Helix, unless we can deeply understand protein folding through QM.

2. We know that leather auxiliaries interact through Collagen by Primary bonds like covalent, electrovalent and co-ordinate valent and host other secondary bonds like H-bonding, Van der Wales, dipole-dipole, induced dipole etc etc. but we cannot account for unless we know the structure of the molecule (only by QM) and also valance bond theory and molecular orbital theory, LOMO HUMO etc. all these needs Schrodinger's equation of QM to realise and appreciate.

3. Azo dyes forms colours due to n to Pi* transition but this transition cannot be accounted for without realising Perturbation theory of QM,

4. Furthermore the extension of conjugation between benzene ring and the nearby fused benzene rings through Azo bridge, which is conjugated itself, causes del E to be low and as a result wavelength absorption high falling in visible range of EM radiation giving intense colour. Why ? If we know the Particle-in-Box theory of QM, the matter would be more interesting.

5. Yellow colour of the Carrot, if you see the beta carotene (from Net), you will be astonished to note that, no n to Pi* transition, only a large conjugated bonds cause the width of the box larger, thereby lowering del E. Beta carotene is a hydrocarbon in the polyene family which is characterised by highly extensed conjugation (presence of alternate single bond and double bond).

6. Vibration of various bonds is seen like a cardiogram in the FT IR spectrum which not only can exhibit the nature and the bond forming partners. and from that with little intuition we can examine the film of the binders and can assess the monomers used to form that copolymer and also to certain extent what would be properties like on leather surface, glossy, hard, mellow or soft etc.

7. All the instruments like Uv-Vis, FT-IR, nmr, Ion Chromatograph, all kind of chromatograph are by and large exploit QM.

8. No chemical or physical reaction with the given Leather Auxiliary take place ignoring QM all together because after all they are mostly micro molecules.

9. If, we do not recognise the vibration of covalent bond as indicated in QM, how can we account for the glass transition temperature?

10. The diminishingly energy barrier for spinal rotation of bonds in fact brings the softness of the binders.

11. Cross-linking polymeric chain makes the covalent bridges which in turn not only make the binder hard by disallowing free rotation of some atoms in it, which causes a rise in energy barrier of free rotation across, that also increases not only the glass transition temperature bringing in rigidity, but also makes it insoluble to solvents. Because the first step of polymer solubilisation is separation of polymer chains, which are usually bind by secondary valance bond. The solution energy in this case is too low to outweigh the covalently joined polymer chains through cross-linkers.

All these understandings at the molecular level can be best understood by Quantum Theory. In my 40 years of odyssey, I have not pushed the boundaries; but I did push the limiting Leather Technology a little further and I have no regrets for that.

Self sufficiency - Best efficiency

- Vasan Suri
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(contd. from June issue)

In this series of article, in this month, we are going to talk about Chemicals (Wet- end, Retanning & Dyeing & Finishing). We have highly talented and efficient manufacturers of Leather Chemicals in our Country. Over the years, the quality of chemicals produced have upgraded, adhering to International standards like REACH, ZDHC, LWG etc., It is also the responsibility of the tanneries to support our "Make in India" mission of the chemicals manufactured within our Country.

I would like to share my own views and suggestions for our chemical industries, to explore new avenues, where they could extract more business.

Definitely, these manufacturers are already stalwarts but, their everyday firefighting and other compulsions might be limiting their thinking and the following suggestions could be helpful.

1. **Revolutionise** chemicals for the Beam House and wet-end. Enzymes in soaking, assistance in unhairing, reduction in liming, bating enzymes, and self basifying agents.

2. **Retanning & Dyeing -**

Single Fatliquor & Syntans or maximum two Fatliquor & Syntans, which are compounds to produce different types of leathers. Upper Leathers, Garment Leathers, Suedes, Nubuck, Embossed Leathers, Soft & Supple Leathers, Nappa etc., This has been a trend in China and they have put this in to practice.

Better management of water input, confirms lesser output and excellent exhaustion properties. These efforts have helped Chinese Tanneries in reducing the load, to the effluent treatment plants.

Liquid dyes should be used more for better penetrations and evenness of the colors. This will also ensure complete exhaustion and lesser solid wastes in to the effluent.

3. **Finishing -** Readymade finishing compound using acrylic, protein, Pu should be available for reducing the variety of products required while making the finishing season.

More water based yet, stronger wax and oil for specific applications need to be promoted. The whole idea is to have minimum inventory at the tannery level and also minimum range for the manufacturers. This will help in better financial management and cash flow.

It is also important that, Chemical manufacturers discourage paying TC to the technical people and concentrate more on quality. These payments have affected the market and brought down cheaper ways of competition among the chemical manufacturers.

Multi National chemical companies provide bigger budget for such payments and apparently make the product expensive.

Chemicals should be sold by quality and not by greasing the hands of the user. It is also the duty of the technical team to ensure minimum use of chemicals for the best results and this can be achieved only when the system is more transparent.

Though, the above issues are not related to all the technical people and with due respects to them.

A healthier leather industry is in the hands of all the stakeholders and let everyone unite to create a more healthy supply chain of leather chemicals.

Dependence on the domestic available chemicals reduces the outflow of foreign exchange and the risk of fluctuations to a greater extent.

Imagine the support rendered by all the domestic chemical manufacturers during the period of Covid when the whole World faced the toughest period and the freight rates have gone haywire. Chemical companies should make a proper marketing plan with developments of products keeping in mind the upcoming season, trends, colors and quality.

From my view point, Chemical companies should work towards proactive developments for the success of the tanneries by offering their best support in developing articles for the next season much in advance.

Days have gone from using a long list process for Drum and finishing and have shrunk to simple performance oriented recipe. Move on from creating general chemicals and concentrate on speciality chemicals which will make the tannery look up to the chemical manufacturers as the real partner in progress.

Leather or Leather Products buyers are insisting on open costing for mutual growth by offering retail consumers at a good price ensuring volume. Why not the same situation be followed with the chemical manufacturers as a supply chain.

The biggest complaint for the chemical manufacturers is about the undue credit enjoyed by the tanneries and this makes them or pushes them to resort to ways to make their ends meet.

Credit will never help in the long run for the health of any industry and the cooperation should be from all sides to ensure smooth functioning.

I have highlighted all the issues and have covered all the points for ensuring a trouble free supply chain and being self reliant and self sufficient.

Taiwanese, Vietnamese firms keen to invest in footwear sector in India

Council for Leather Exports Chairman RK Jalan said these Taiwanese and Vietnamese firms import products like shoe soles, moulds, machinery, and fabrics from countries like China

India's exports are growing at a healthy rate, and the council is aiming for $7 billion worth of shipments in 2025-26

Companies from Taiwan and Vietnam are keen to invest in India's non-leather footwear sector, and the government support is crucial to facilitate these investments, Council for Leather Exports (CLE) Chairman RK Jalan said recently.

Jalan said these Taiwanese and Vietnamese firms import products like shoe soles, moulds, machinery, and fabrics from countries like China.

"Vietnamese and Taiwanese firms are keen to invest in India. We need to support them so that they can import these goods smoothly into the country for their manufacturing facilities," he said.

The country's exports are growing at a healthy rate, and the council is aiming for $7 billion worth of shipments in 2025-26, he added.

The exports stood at $5.75 billion in 2024-25. The US was the top destination for Indian exporters with shipments worth $957 million (about 20 per cent share). It was followed by the UK (11 per cent) and Germany.

"We are expecting about 18 per cent growth this year. Promotion of manufacturing in the country will help further boost exports and job creation," Jalan added.

He said that a trade pact with the US will help increase the share in the American market. At present, this labour-intensive sector attracts 18.5 per cent duty in the US.

The two countries are major players in the global footwear sector. Vietnam is a major global hub for manufacturing and exporting footwear, while Taiwan plays a key role in the design, development, and production of footwear for leading international brands.

He also urged the government to roll out the focused product scheme for the footwear and leather sectors announced in the Budget to enhance productivity, competitiveness and exports.

The scheme will support design capacity, component manufacturing, and machinery required for the production of non-leather quality footwear.

Sharing similar views, Kanpur-based Growmore International Ltd., MD Yadvendra Singh Sachan said Taiwanese companies have already invested in firms in Tamil Nadu.

"They have the best technologies in the non-leather footwear sector. Their entry will help domestic firms in increasing quality production," Sachan said, adding huge opportunities are there for investments in Uttar Pradesh and Bihar because of the availability of affordable labour in these states.

He said that Growmore International is also looking for collaborations with foreign firms to enhance the productivity of leather articles.

(Business Standard)

Shanghai will host the 22nd UITIC International Technical Footwear Congress: AI and Sustainability at the Centre of Innovation

Shanghai is preparing to become the global hub of footwear innovation. **From 31 August to 3 September 2025**, the Chinese metropolis will be the venue for the **22nd UITIC International Technical Footwear Congress**, an unmissable event that promises to redefine the future of footwear under the crucial theme: **"Competitiveness and Sustainability in the Era of Artificial Intelligence".**

Jointly organised by **UITIC and CLIA** (China Leather Industry Association), in collaboration with **Assomac**, the congress aims to explore the profound transformations that Artificial Intelligence and sustainability are bringing to the industry.

Artificial Intelligence: A Turn in Design and Manufacturing

Artificial Intelligence (AI) is emerging as the driving force behind innovation in the industry. UITIC President Sergio Dulio points out: "More than half of the submitted papers are about AI, with mature and exciting projects. This is a breakthrough." This highlights the increasing adoption and experimentation of AI, particularly in the footwear product design phase. Companies are recognising AI as a strategic lever to rethink design processes, opening up unprecedented scenarios for creating innovative and competitive footwear.

Sustainability: From Obligation to Competitive Advantage

Alongside AI, sustainability is emerging as a key pillar. No longer just a regulatory constraint, but a decisive competitive factor for

companies in the industry. 'Today, companies recognise sustainability as a strategic element for competitiveness,' says Dulio. This paradigm shift underlines how sustainable footwear production has become an intrinsic value, essential for the long-term prosperity of the industry.

A Programme Rich in Content and Distinguished Speakers

The 22nd UITIC Congress will offer a high-profile programme, divided into four main thematic sessions: **materials and products innovation, sustainability as an opportunity for competitiveness, smart and AI empowered manufacturing and successful industrial stories**.

Among the most eagerly awaited speeches are **Nicoline van Enter**'s keynote speech on the application of AI in footwear development and **Liu Wei** of the Li Ning company. The concluding panel will be entirely dedicated to the future of AI in the footwear world, promising food for thought and vision. The quality of the interventions is guaranteed by authoritative speakers, as highlighted by Dulio.

The Growing Chinese Influence in Footwear Innovation

This edition of the congress marks an unprecedented Chinese participation. "There was an important participation of Chinese companies in the Call for Abstract with high quality proposals and briefs," reveals Dulio. This reinforces China's role as a key player in the development of innovative footwear technologies and strategies.

Innovation: The Key to Overcoming Industry Challenges

At a delicate time for the global footwear industry, investment in **innovation** is more crucial than ever. Emerging technologies, in particular artificial intelligence, represent a keyway to regain competitiveness. This is particularly true for manufacturing

companies that can no longer compete on volume but can distinguish themselves through process and product innovation.

An Unmissable Opportunity for the Entire Footwear Production Chain

The 22nd UITIC International Technical Footwear Congress is an essential event for the entire footwear value chain. From conception to production, from R&D to distribution, the event offers a unique opportunity for a fundamental update, constructive discussion and redesign with a view to the future. As Dulio emphasises, it is a crucial moment not only for manufacturers of finished shoes, but also for those who develop and supply the technologies that make them possible.

The Evolution of UITIC and Future Prospects

The congress is not only a point of arrival, but also a springboard for the future of UITIC. With the association wondering about its future evolution, important news can be expected for the next editions.

Don't miss the opportunity to be part of this transformative event. The 22nd UITIC International Technical Footwear Congress in Shanghai is the gateway to understanding and anticipating the profound transformations taking place, exploring how Artificial Intelligence and Sustainability can become the pillars of future competitiveness in the world of footwear.

For information: **UITIC** https://www.uitic.org/

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ALI JANAB MALACK MOHAMED HASHIM SAHEB
(01.09.1939 - 04.07.2025)

Chairman K H Exports India Pvt Ltd & Founder Chairman of Council for Leather Exports

A Star Disappears

Ali Janab Malack Mohamed Hashim Saheb, Chairman K H Exports India Pvt Ltd. and Founder Chairman, Council for Leather Exports, passed away on 4th July, 2025, at his home town in Melvisharam in Ranipet District, in Tamil Nadu. He was 86.

Mr Mohamed Hashim was perhaps, one of the very few leaders, who had distinguished himself in several branches of the leather industry and was also acknowledged as its champion. Mr Hashim, after graduation had his apprenticeship under his father, Janab Khizar Hussain Saheb, who had been the founder of the well known tannery, M A Khizar Hussain & Sons, in Ranipet. After the death of his father, Mr Hashim, took over the reins, and over the years, under his leadership, it blossomed into one of Asia's most reputed tanneries, specialized in Calf leathers. The K H Group is recognised as one of the top most exporters of finished leathers, shoes and leather products.

Mr Hashim was a forceful speaker and never minses his words and his outright criticism of government policies when they were framed against the interest of the leather industry had embarrassed many government officials and policy makers, but his sincerity and anxiety were never doubted. Mr Hashim was an enthusiastic supporter of the industry and maintained close relationship with the CSIR-Central Leather Research Institute and other institutions like, NEERI. He had the privilege of watching the industry blossom into an exporter of finished leather and value added leather products from E I Tanned hides & Skins. One cannot forget his strenuous efforts for the adoption of Cleaner Technologies in the leather industry and Zero Liquid Discharge (ZLD) Technology in the Common Effluents Plants in tannery clusters in Tamil Nadu.

Mr Mohamed Hashim had held the post of Chairman of Council for Leather Exports (CLE), since its inception for eight continuous years till 1992 and thereafter for another tenure of two years from 1999 to 2001, and also even before that, when it was known as the Leather Export Promotion Council.

Mr Mohamed Hashim was closely associated with many organisations and trade associations, like, All India Skin & Hide Tanners and Merchants Association (AISHTMA), Indian Finished Leather Manufacturers & Exporters Association (IFLMEA), Indian Shoe Federation (ISF), Chennai Environmental Management Company of Tanners (CEMCOT), Indian Leather Industry Foundation (ILIFO, Leather Sector Skill Council (LSSC) etc. holding key positions.

The Council for Leather Exports (CLE), recognising his immense contribution to the leather and footwear industry, conferred upon him with the distinguished title **"Doyen of the Leather Industry"** and the award was presented to him on 31st January, 2007 in Chennai. He was also presented **"Life Time Achievement Award"** by CLE on 4th August, 2018 in Chennai.

His contributions and services for the upliftment of downtrodden people in the society, by providing them with health and education facilities was laudable. He was the chairman of MMH Medical & Charitable Foundation which manages 150 bed Multi Specialty Apollo KH Hospital in Melvisharam, and also the chairman of KH Educational Foundation, which runs the KH Matriculation & Higher Secondary School in his own town Melvisharam.

With the passing away of the legendary Janab Malack Mohmed Hashim Saheb, a huge irreplaceable vacuum has been created in the leather industry.

Indian Leather conveys its heartfelt condolences to all the members of the bereaved family, and the staff of K H Group of companies, and prays God to give them enough strength to bear this irreparable loss.

May his soul rest in peace.

Back-to-School Column

Dr. N K Chandra Babu

Reaction of collagen matrix with chemicals / tanning agents / auxiliaries used in leather processing

In the previous column, we dealt with the structure and reactivity of collagen wherein we discussed about the possible chemical interactions collagen in skin matrix can have with chemicals and auxiliaries used in the leather industry. In the concluding paragraph, a mention was made that the reactivity with substances/ agents used in leather processing and their distribution across three dimensional skin matrix and their binding will also depend, to a large extent, on the diffusion related issues in general, pore size distribution and charge characteristics of skin matrix on one hand and the molecular/particle size, concentration, charge characteristics and the aggregation properties of the reacting substances on the other. Hence, a detailed discussion on these aspects is necessary to fully comprehend and understand the interactions at skin matrix level.

Diffusion related issues that are relevant for understanding

When we talk about the reaction of a substance with collagen in skin matrix having a three dimensional matrix, diffusion/penetration becomes very much important, and is the rate determining step in many reactions that take place during leather processing. Diffusion through skin matrix is governed by Fick's laws of diffusion. First law talks about the rate of diffusion through a membrane being directly proportional to the concentration gradient of the substance outside and inside the matrix. In the case of reactive substrate like skin

matrix, situation becomes complex as the diffusion and reaction can go together depending on the pH, temperature, and ionic characteristics of both collagen and reacting substances.

There is a chance for physical deposition depending upon the pH condition that influences the aggregation/precipitation of reacting substances. The following aspects related to both the substance and substrate (skin matrix) become relevant. If we understand these aspects very well, then the conditions may be manipulated in order to achieve optimum desired results in terms of the distribution of the substance and their ultimate fixing/bonding onto the fibre matrix.

Substance/chemical/tanning materials/auxiliaries

- Ionic characteristics of the material at different pH conditions to decide about the affinity
- Solubility characteristics – water solubility/miscibility, Emulsion/colloidal nature; if so, particle size distribution, pH effect
- Functional groups for reaction (including possible type of reaction) with collagen matrix
- Concentration of substance in solution and temperature of reaction

Skin matrix

- Ionic/charge characteristics as influenced by pH
- Pore size distribution across cross section (including intermolecular, interfibrillar, micro and macro pores at different levels of architecture of skin matrix)
- Thickness of the matrix

Skin matrix related aspects critical for understanding

Ionic characteristics of the matrix as dictated by pH conditions and various steps involved in leather processing including tanning and post tanning operations have been well described in the last column. The thickness of matrix will depend on species of animal and the final thickness required in the final leather depending on end use (relevant for post tanning reactions). To make diffusion easier and minimize wastage of chemicals and for reducing processing time, lime splitting is carried out with thicker hides in some countries especially in Europe. In this case, the barrier due to unremoved/ intact adipose layer is also removed making diffusion relatively more facile.

The other most important aspect, the pore size distribution across skin matrix, which will have a strong influence on the diffusion of the substances into the skin matrix require detailed discussion. The pores in the matrix may be classified into nanopores, micropores, pores and macropores (not everyone agrees to this classification). According to this classification, nanopores are related to the distance between helices in the same molecule (0.15nm) and intermolecular distances within microfibrils (<1.7 nm). Not many molecules can enter into these spaces except for ions like H^+ and OH^- and water.

Among the tanning materials, only formaldehyde can probably enter the spaces in the microfibril level. Micropores are upto 0.1micron, and refer to the distance between fibrils. Pores in the 1-3 microns and macropores are > 3 microns in size. Pores relate to distance between fibres and macropores are voids in the fibre network. According to one study, the macropores (>3 microns) account for about 50% of the total void spaces in the skin matrix. One has to remember that the pore size distribution is dependent to large extent on the level of swelling/plumping and opening up of fibre structure in the skin matrix achieved in the liming operation.

Some mistakes committed during leather processing can pose problems with diffusion of chemicals/tanning agents used in leather processing. Classic example is commencing pickling before complete deliming which leads to formation of calcium sulfate in the interstices which can act as a barrier for diffusion of even small entity like H^+ ion inside, thus getting uniform pickle pH across cross section becomes difficult, especially with thick and compact substrates. Similarly in vegetable tanning, case hardening can occur if the tanning is commenced without deliming or in highly acidic conditions.

Aspects related to reacting substances/chemicals/auxiliaries used in leather processing

Chemicals used in leather processing (tanning industry) may be broadly categorised into bulk chemicals, tanning materials, performance chemicals and chemicals used for enhancing the aesthetic value to the leathers. Bulk chemicals are chemically well defined basic chemicals such as lime, sodium sulfide, soda ash, ammonium chloride/sulfate, common salt, formic acid, sulfuric acid, sodium formate/bicarbonate and ammonia. Many of these chemicals are mostly used in pretanning stage of leather making.

Tanning materials are used for imparting permanent preservation of hides/skins against bacterial degradation, the actual conversion of skin into leather. Basic chromium sulfate tanning salt (popularly known as chrome tanning agent/salt), vegetable tanning materials from plant kingdom, aldehydes and their derivatives, phosphonium tanning chemicals etc., out of which, chrome and vegetable tanning materials are the most important.

Performance chemicals include post tanning/wet finishing chemicals such as fatliquors, retanning syntan etc., which are used for enhancing the performance of leather during usage. Many chemicals/ auxiliaries used in finishing are aesthetics improving chemicals. Unlike, the bulk chemicals, many substances/auxiliaries

are chemically well defined single molecules and many species/chemicals/components present in them. For example, chrome tanning salt has been found to contain more than 12 chromium (III) complexes varying in molecular size and charge characteristics. Vegetable tanning materials are polydisperse in nature with phenolic condensates of varying molecular weights and particle size. Similar is the case with much of the performance chemicals and aesthetic enhancing chemicals.

In fact, many of the auxiliaries are multi component systems, each component varying from the other in terms of chemical nature as well. Fatliquors may have emulsifying fatty components (formulators call them as 'main conc'), free oils, and other emulsifiers used in formulation to enhance the fine particle sized emulsions with improved stability.

Many acid and alkalis used are ionized to different extent depending on their dissociation constant (pKa) and the pH of reaction may have varying concentrations of H^+ and OH^- ions respectively. In the process, they tend to change the ionic characteristics of the collagen matrix. This was amply explained through Zwitter ion concept as described in the previous column. But what is more important to understand is that reactions with alkali (as in liming) or acid (as in pickling) can lead to swelling phenomenon as governed by Law of Donnan membrane equilibrium.

To put it simply in the context of leather processing, when a semi permeable membrane (collagen matrix) is immersed in solution containing diffusible ions (including binding ions like H^+ and OH^- and), at equilibrium, there will be difference in the ionic concentration between inside and outside as the bound ions on the collagen matrix (Zwitter ion) can increase in number but not diffuse outside, an osmotic pressure will be set up to make the ionic concentrations equal on both sides. As a result, the water from outsidesolution

barges inside due to this pressure to achieve the same, and in the process, swelling/plumping results.

This phenomenon, which is called osmotic swelling, is profitably exploited in liming operation to achieve fibre opening. On the contrary, acid swelling that happens due to addition of acid in pickling is not desirable, and hence has to be prevented by addition of NaCl in high concentration (2N solution for a pH of 2.5-3.0) to prevent swelling.

In liming, fibre opening is the primary objective which is achieved by osmotic swelling by the addition of alkali like lime (pH of ~13 in the pelt) whereas in the case of pickling, the main objective is to get to a pH of ~3.0 so that chrome tanning can be smoothly carried out but the undesired swelling that would have otherwise occurred due to acid addition is prevented by use of common salt in pickling.

The role of sulfide used in liming is to break the disulfide linkage stabilizing keratin molecule to achieve dehairing of hides and skins. It breaks the disulfide linkage through reductive process. Though, sulfide is a well defined chemical entity, concentration in solution decides about the rate of reaction and hence high concentration of sulfide is used in both hair burning (drum/paddle method) and in hair saving methods (paste/paint) to effect dehairing in shorter duration.

Liming is an important operation wherein, apart from the removal of hair and flesh, the desired extent of fibre opening is achieved depending on the final end use of the leathers. It is not an exaggeration to say ‘Leather is made or marred in lime yard’. But to achieve this, a ‘brute’ force is applied by going to a pH of ~13 after which, the pH has to be brought down to a suitable level for performing tanning (initially by deliming and pickling subsequently).

As explained in the previous column, the chrome tanning involves the complexation of Cr(III) with charged carboxyl groups of aspartic

and glutamic acid residues in collagen. Apart from the concentration and temperature, the pH plays an important role in the diffusion and ultimate fixing of chromium complexes in the matrix. pH conditions can have a very high influence on the chromium complexes both in terms of their molecular size, solubility and their reactivity. Based on the average molecular size of chromium complexes, diffusion into interfibrillar spaces and cross linking is possible.

Similarly, in the case of vegetable tanning, pH plays a crucial role in the diffusion of polydisperse tannin molecules, which in solution exhibit colloidal nature, inside the skin matrix by altering their aggregation properties extensively. At low pH ~3.5, it has been shown that the average particle size may increase to>20 microns in the case of wattle.

Even at their natural pH that aligns closely with the commencing pH of rapid method of tanning, the vegetable tannins can have particles in the micron range restricting their diffusion inside the skin matrix. The pore size distribution and charge characteristics of the skin matrix also play an important role in deciding about to what extent the vegetable tannins can penetrate and to what level in the skin architecture.

Vegetable tannins ultimately fix mostly by physical deposition (resulting in fullness in the leather) with hydrogen bonding to a large extent contributing to their subtantivity to skin matrix. But it is necessary to make sure tannins are distributed well across the fibre matrix (even if it is restricted to macro pores) prior to their fixing by deposition. In rapid tanning, pretanning type of syntans (having many solubilizing sulfonic groups per molecule) are used prior to addition of vegetable tannins which help in the diffusion by changing the surface charge characteristics on skin matrix as well as by dispersing the vegetable tannins in solutions. With the average particle size of nonaggregated tannins (sub micron level), they can

diffuse into interfibrillar level but with self aggregated vegetable tannins, they can enter only through macropores(>3 microns).

Aldehydes bring about tanning through covalent crosslinks by reacting with discharged side chain amino groups and hence higher pH (above average pKa of basic amino acid sidechains) favorable for fixing. The tanning has to be started at pH well below pKa to ensure diffusion and uniform distribution before the pH is raised to make discharged amino groups available in large number to complete tanning.

In the case of small sized formaldehyde, diffusion into intermolecular spaces for reaction/crosslinking is possible. In the case of dialdehydes like gluteraldehyde, the reaction can be very rapid at pH above 8.0 resulting in surface fixation with shrunken grain effect. With gluteraldehyde interfibrillar level cross linking is possible as in the case of chrome tanning.

The retanning syntans, especially the replacement type behaves in similar fashion to vegetable tannins (condensed type) in terms of both diffusion and fixation. But the syntans are mostly used in retanning of chrome tanned leathers (wet blue leathers lack fullness because of empty nature of chrome tanning system) to improve fullness, the highly cationic nature of wet blue leathers needs to be taken into account while designing retanning process.

The cationic characteristics of the wet blue leathers have to be initially regulated by carrying out neutralization to the desirable pH condition in order to distribute the syntans across cross section prior to fixing during which the aggregation of syntan molecules occurs with improvement of fullness of leathers. Compared to this, the resin type of syntans are used for preferential filling of looser areas like bellies and shanks and their self aggregation behaviour at different pH conditions is critical for achieving the preferential filling with this type of syntans.

Acrylic syntans are used for improving fibre cohesion between grain and corium by filling the void spaces and their behaviour at different pH is critical to achieving optimum results. Similarly fatliquors, most of which being anionic in nature require ideal pH for penetration into the interstices without breaking of emulsions to obtain desired degree of softness in the final leather.

Hence, neutralization pH is very critical to regulate initial affinity of chrome tanned leathers. Higher the neutralization pH, better will be the diffusion of fatliquors and ultimate softness of leathers. In the case of garment and glove leathers, one goes to pH of >6.0 to achieve fibre coating/lubrication at interfibrillar level as much as possible.

Needless to say, the choice of fatliquors with right kind of lubricating property and fine particle sized emulsions with stability is critical to achieve this. Similarly anionic dyes also behave the same way and hence the initial affinity of the substrate has to be moderated by choice of neutralization pH, order of addition of wet finishing chemicals and use of dye levelling agents to achieve the required diffusion and depth of shades. Generally for garments and glove leathers, tone in tone dyeing with high degree of levelness and uniformity is desired.

During fixing with formic acid, fatliquor emulsions breaks with coating of fibres with a thin coat of oil to impart softeness. During this process, the amino groups of collagen are recharged with the possibility of electrovalent linkage with sulfonic acid groups of fatliquors. There are special types of fatliquors available with functional groups built up for coordinate covalent or covalent type of bonding with leathers. In the case of retanning, in addition to electrovalent linkage, self aggregation of syntan molecules also occurs, thus imparting fullness to the leathers. Subtantivity is also enhanced by hydrogen bonding and dipole-dipole interactions.

In the case of dyes, fixation takes place through electrostatic interaction and in addition, the aggregation leads to depth build up. Further depth build up to get bright intense shades is often achieved by multistage dyeing (sandwich) by right choice of dyes to be used in different stages based on their penetration and exhaustion characteristics on the chosen substrate. A detailed discussion on the post tanning chemicals/auxiliaries will be dealt with later.

For any feedback, mail to babunkc@yahoo.com

Discover sustainable textile chemical management with SGS SMART Cares

'Digital chemical management for textiles with SGS SMART Cares' takes place on July 31

SGS, the world's leading testing, inspection and certification company, is delighted to host a complimentary webinar, 'Digital chemical management for textiles with SGS SMART Cares,' taking place on July 31, 2025, with sessions at 10:00 am and 4:00 pm (GMT +1:00). This event will be suitable for suppliers, such as wet processing plants using chemical formulations, and brands looking to adopt sustainable chemical management.

Chemical-intensive processes in the textile industry, including dyeing, finishing and printing, are under growing scrutiny from consumers, regulators and brands. Complying with evolving regulations and meeting stakeholder expectations requires robust, transparent and collaborative chemical management practices across the supply chain.

This webinar introduces SGS SMART Cares, a next-generation digital platform developed to streamline chemical data management. Presenters Daniel Zhao and Brenda Chiu will demonstrate how the platform enables users to:

- Build a comprehensive chemical database with supplier, inventory and usage records
- Screen chemical substances for restricted or hazardous content
- Develop substitution strategies and generate ZDHC Performance InCheck reports
- Facilitate collaboration between suppliers and brands

SGS is committed to providing one-stop chemical data validation and management services, delivering a more transparent and sustainable model for the textile and footwear supply chain. SGS SMART Cares is a key part of this mission, empowering safer working environments, simplified compliance and accelerated access to global markets.

For further information, please contact:

Email: jackie@sugarloafmarketing.com
http://www.sugarloafmarketing.com

Achieve seamless 2D to cutting workflows, leveraging on Romans CAD unique capabilities

Manual 2D patternmaking in footwear and leather goods can be very time-consuming, prone to errors, and increasingly unsustainable. Whether you're sketching by hand or eyeballing flattened 3D designs, the results often include misaligned parts, fit issues, and material waste. For pattern engineers, designers, product managers, innovation leaders, or CEOs, these inefficiencies slow down time to market, drive up costs, and compromise quality.

Romans CAD 2D, part of the Romans CAD 360° digital platform, solves this by putting speed, accuracy, and integration at the core of your pattern development process. From automated 3D flattening to cutting-machine compatibility and technical pack generation, RCS helps your teams work smarter, not harder. RCS 2D's automated patterning effortlessly turns intricate designs into production-ready formats, delivering exceptional precision and speed like never before.

How Romans CAD helps you optimize your 2D -> Cutting process

Romans CAD 2D isn't just a tool-it's a workflow accelerator for the entire product development team.

- For pattern engineers: automate flattening and grading.
- For designers: an idea that stays true from screen to sample.
- For product managers: a development process that stays on track.
- For innovation managers: a tool to leverage data, automation, and integration and lead your brand into the digital age.
- For CEOs: cuts on prototyping costs by up to 70% and reduced time to market.

ECHA launches revamped Classification and Labelling Inventory

ECHA's redesigned Classification and Labelling (C&L) Inventory is now available in the Agency's new chemicals database, ECHA CHEM.

The C&L Inventory includes information on more than 4 400 EU-level harmonised classifications and seven million classifications notified or included in REACH registrations. Altogether, the inventory includes data on around 350 000 substances.

The integration of classification and labelling information into ECHA CHEM follows the initial launch of the database in January 2024, which featured information on over 100 000 REACH registrations submitted by companies. The new inventory is designed to help users easily locate the classification with the highest agreement and to bring clarity on the source behind the classification information. It incorporates recent regulatory developments, such as the new CLP hazard classes and is built with stability and growth in mind.

In this first version, the classification information is accessible in a visual format per substance with complementary approaches, such as application programming interfaces (APIs), being explored in future releases.

Mercedes Viñas, Director of Submissions and Interaction, said:

"This is an important milestone in further developing a comprehensive database for all chemical data gathered by ECHA. The redesigned C&L Inventory comes with an enhanced user interface and simplifies access to classification information for users."

Mike Rasenberg, Director of Hazard Assessment, added:

"Hazard classifications are the cornerstone of regulatory risk management of chemicals. The redesigned C&L inventory improves the clarity on the current and upcoming mandatory classifications harmonised at the EU level, helping companies to prepare and implement the required safety measures."

EU Green Week: Leather - A Natural Choice for the Circular Economy

The process of transforming raw hides into finished leather deserves to be studied at Harvard as a business case of circular innovation. By upcycling less than 1% of the animal's economic value-skins and hides that would otherwise go to waste-tanners create a high-value, sustainable material that supports both economic and social progress. Leather is durable, repairable, and biodegradable, contributing directly to waste reduction and lower greenhouse gas emissions. The webinar offered the latest insights and data that highlight leather's unique circularity and environmental benefits.

The COTANCE webinar "Leather – A Natural Choice for the Circular Economy," held on June 11 during EU Green Week 2025, highlighted new scientific findings that we are now sharing exclusively through the METASKILLS4TCLF project.

Scientific Insights from Gustavo Defeo, CEO of Ars Tinctoria CTC

- Carbon-14 (C14) isotopic analysis demonstrated that leather-particularly vegetable-tanned leather-contains a bio-based content exceeding 95%, highlighting its predominantly natural origin. In contrast, many so-called “vegan” alternatives were shown to contain high proportions of petroleum-derived components, underscoring their synthetic composition and limited biodegradability.

Leather offers multiple end-of-life treatment scenarios, including:

- The transformation of leather waste into **fertilizers and biostimulants**, which can generate a **net-positive carbon impact**,
- **Energy recovery**, which offers a **carbon-balanced** disposal method,
- And the production of biochar, which enables **carbon sequestration** in soil systems-contributing to long-term climate change mitigation strategies.

Scientific Insights from Karl Flowers, Managing Director of Authenticae

- Leather, composed predominantly of bio-based carbon (as confirmed by C14 analysis), demonstrates superior biodegradability compared to petroleum-based synthetic materials, which often release microplastics and show minimal degradation. Vegetable-tanned leather, particularly when finished with protein-based agents such as casein or collagen, can achieve disintegration rates exceeding 60–80% over 90 to 180 days under ISO-standardised conditions. In contrast, many

so-called leather alternatives containing polymeric or wax-based coatings exhibited little to no meaningful biodegradation.

Practical Insights from Deborah Taylor, Managing Director of the Sustainable Leather Foundation

- **Transparency and traceability are essential for leather to function as a truly circular material**, covering the full life cycle-from raw material sourcing to end-of-life.

- She underscored the importance of **supply chain collaboration**-from farmers to brands-to reduce environmental impact. Case studies showed that **leather production can significantly lower water, energy, and chemical use** through continuous improvement.

The key takeaway: true material circularity requires durability, reparability, and safe biodegradation-all areas in which leather excels. When responsibly managed, leather exemplifies these qualities, contributing to a greener and more competitive economy.

Looking Ahead: Careers in the Leather Sector

Explore a career in the European tanning industry, where opportunities span across production, colour development, product design, research and innovation, quality control, customer service, environmental management, and corporate social responsibility.

As a first step, follow the **METASKILLS4TCLF** project, which is developing 36 micro-courses on the circular economy and digitalisation in the **Textiles, Clothing, Leather, and Footwear (TCLF)** sectors. These practical, flexible courses are a great way to begin your journey into the future of sustainable fashion-and who knows where this exciting path might lead?

(Source : Cotance)

Primeasia Launches 2024 Sustainability Report

Primeasia has recently launched its 2024 Sustainability Report. This report highlights the progress the company made in 2024.

This report also represents the first year of our *Consciously Crafted* sustainability strategy. This holistic strategy was unveiled in 2024 and sets targets across 4 key pillars: **Operational Excellence, Circularity, Climate Action**, and **Social Impact**.

Some of the key achievements mentioned in 2024 include:

1. **Taking steps to increase our Renewable Energy usage at our tanneries**, through starting rooftop solar installation in Vietnam, with the goal of completing the project in 2025 and entering into a power purchase agreement to buy wind and solar energy in China.

2. **Further embedding management systems** to monitor our performance under the Operational Excellence pillar, helping ensure we maintain our best-in-class standards and continuously improve. We have improved our internal traceability systems to further automate the process, as well as implemented a proactive audit lifecycle to manage compliance for key industry audits.

3. **Laying the groundwork for implementing our commitments to Living Wages and Worker Wellbeing**, a crucial step toward enhancing the social impact of our operations and across our global supply chain. This has included moving towards more transparent wage data disclosures and mapping our current working wellbeing programs within our tanneries.

Jon Clark, CEO commends *"this progress is a testament to the dedication of our global team, the trust of our customers, and the strength of the partnerships we've built with our suppliers."*

Portuguese footwear industry better than Italy and Spain

In the first four months of the year, the sector exported 26 million pairs, worth 576 million euros, which represents a growth of 6.2% compared to the same period of the previous year.

The Portuguese footwear industry "picked up the pace" at the beginning of 2025. In the first four months of the year, the sector exported 26 million pairs, valued at €576 million, representing a 6.2% increase compared to the same period the previous year. The Spanish industry stabilized its exports, while the Italian industry saw a 4.1% decline in foreign sales. At the European level (2.8% growth), Portuguese footwear is indeed the strongest performer.

"In a year of great uncertainty like this, the fact that Portuguese companies are continually investing in cutting-edge technology, which allows them to respond quickly to the market, is an unquestionable asset," emphasizes Luis Onofre. "The investments we have underway, within the scope of the RRP, in the order of €100 million, follow this line of reasoning," he explained.

Internationally, Chinese exports fell 8.3% through May. It should be noted that China accounts for over 50% of global footwear production. Only Turkey is worse off, having declined 14.6% at the beginning of 2025. Indonesia and Vietnam, two other key players, appear to be taking advantage of the international situation, increasing their foreign sales by 14.3% and 12.9%, respectively.

The President of APICCAPS notes that "in addition to the two international war scenarios, growing geopolitical tension is a major concern." Furthermore, "the business world is on tenterhooks, at least until August 1st, to understand the consequences of a new tariff positioning." For this reason, "although the American market is a major priority for Portuguese footwear, we are also investing in other geographies," admitted Luís Onofre.

Portuguese footwear heads to Korea

For a sector that exports over 90% of its production, conquering new markets with high growth potential has long been a strategic priority. Exports from outside the EU currently represent 19% of the total footwear sector, more than double the figure recorded a decade earlier. South Korea is proving to be one such example worthy of exploration. Therefore, from July 15th to 17th, 11 Portuguese companies will participate in the Portuguese Shoes Showcase in Seoul, an initiative by APICCAPS, in partnership with AICEP, and with the support of the COMPETE 2030 program.

"Although it may seem, at first glance, an unnatural market for Portuguese footwear, upon closer inspection, it emerges as an excellent opportunity," admits Luís Onofre.

According to the World Footwear Yearbook, South Korea imports over 250 million pairs of shoes annually, primarily from China (71% market share), Vietnam (17%), and Indonesia (7%).

With a population of 52 million people and a per capita GDP of $32,250 (compared to Portugal's $24,522), South Korea "deserves a closer look from Portuguese businesspeople," concluded the President of APICCAPS.

ABICALÇADOS
ASSOCIAÇÃO BRASILEIRA DAS INDÚSTRIAS DE CALÇADOS

Brazilian Footwear Industry

Footwear Exports Grow 8.8% in the First Half of the Year

Over the six-month period, 52.7 million pairs of shoes were shipped abroad, generating US$497.34 million in revenue

Data compiled by the Brazilian Footwear Industries Association (Abicalçados), based on figures released by the Foreign Trade Secretariat (Secex), show that the sector's exports increased in the first half of 2025. Over the six-month period, 52.7 million pairs of shoes were shipped abroad, generating US$497.34 million in revenue-an increase of 8.8% in volume and 3% in value compared to the same period last year. In the month of June alone, exports also rose, reaching 6.87 million pairs and US$70.17 million-up 24.5% in volume and 11.2% in value over June 2024.

Highlighting that June's export figures exceeded expectations for the month, Abicalçados' Executive President Haroldo Ferreira pointed to

the strong performance of international trade shows supported by the Association in the first half of the year, as well as the growing demand in the U.S. market for alternatives to Asian footwear amid the ongoing trade war between the United States and China. “The growth in exports was driven by the United States and also by Colombia, which accounted for nearly 18% of all shipments in June,” he noted.

Destinations

The United States, the main destination for Brazilian footwear abroad, imported 1 million pairs of shoes from Brazil in June, generating US$20.76 million in revenue-an increase of 39.4% in volume and 25.4% in value compared to the same month last year. In the year-to-date results, exports to the U.S. totaled 5.8 million pairs and US$111.8 million, up 13.5% in volume and 7.2% in value over the first half of 2024.

Ranking second among destinations for Brazilian footwear, Argentina imported 665,000 pairs in June, generating US$10 million in revenue. Colombia stood out in June, rising to third place among the top destinations for Brazilian footwear abroad. That month, the country imported 1.23 million pairs of Brazilian shoes, generating US$4.34 million in revenue

States

Rio Grande do Sul remains the leading footwear exporting state in Brazil, accounting for nearly 47% of the country’s total export revenue. In the first half of the year, the state shipped 15.96 million pairs abroad, generating US$232.7 million. This represents a 4.4% increase in volume and a 0.9% decrease in revenue compared to the same period in 2024.

Following Rio Grande do Sul among the top exporting states in the first half of the year are Ceará, with 17.46 million pairs shipped and US$104.28 million in revenue-up 14.2% in volume and 0.9% in value

compared to the same period in 2024; and São Paulo, which exported 3.65 million pairs, generating US$52.95 million-an increase of 20.5% in volume and 24.3% in value over the same interval last year.

Imports Remain a Concern

While the sector is pleased with the export performance, there is ongoing concern regarding footwear imports. In the first half of the year, Brazil imported 22.36 million pairs, amounting to US$271.84 million-an increase of 19.4% in volume and 21.3% in value compared to the same period in 2024. These figures are particularly worrisome considering they are based on an already high comparison base; last year, imports had already grown by more than 26% in volume.

The main sources of footwear imports in the first half of 2025 were China, with 7.6 million pairs and US$23.4 million-up 6.6% in volume and 4% in value compared to the same period last year; Vietnam, with 6.5 million pairs and US$127.8 million-an increase of 12% in volume and 20% in value; and Indonesia, with 4.3 million pairs and US$67.93 million-surging 73% in volume and 58.5% in value.

In Parts - such as uppers, heels, soles, insoles, and others - imports also increased in the first half of the year, totaling US$22.17 million, a 34.2% rise compared to the same period in 2024. The main countries of origin were China, Paraguay, and Vietnam. (Abicalcados)

Vietnam Registers Double Digit Growth in the first half of the year

Vietnam's National Statistics Office reports that during the first half of 2025, the country's leather and footwear industry had a more than 10% increase in exports. Handbags and associated goods brought in around $2.2 billion, up 11.6%, while footwear exports totaled over $12 billion, up 10.1%.

With 1.4 billion pairs produced annually, Vietnam ranks third in the world for leather and footwear production, behind China and India. With an annual shipment of 1.3 billion pairs worldwide, it ranks as the second-largest exporter. In addition to a low-cost worker force that makes between $181 and $200 per month on average, the business also benefits from 16 free trade agreements with important markets.

The industry produced $26 billion in 2024, a 10% increase over the year before, despite labor disputes, rising material costs, and pricing challenges. By 2025, the industry hopes to increase by 10% and export $29 billion.

To achieve this ambitious target, companies are accelerating the shift towards green and circular production models, enhancing environmental sustainability, and increasing the localisation rate of raw materials to meet increasingly stringent standards in key markets such as the EU and the United States.

Vietnamese footwear and handbags are exported primarily to core markets including the US, the EU, South Korea, China, and the UK. Among them, the US remains the largest importer, with 2024 export turnover reaching nearly $8.3 billion, a remarkable 15.6 % increase. Over the years, Vietnamese footwear has been subject to a 10% export tax when entering the US market. The US presence in Vietnam’s footwear manufacturing sector is notable, with many American brands operating production facilities in the country.

(Source: Leatherinsiders)

U.S And Vietnam Reach A Deal Ahead Of The Trade Deadline

Days before a halt on what he refers to as "reciprocal tariffs" is about to end, US President Donald Trump struck a trade agreement with Vietnam. Before the deadline of July 9th, other trading partners are also rushing to sign deals.

Yesterday, US President Donald Trump declared that he had reached a trade agreement with Vietnam. The agreement states that the US will pay no tariffs while Vietnam will apply a 20% tax on all commodities shipped to the US.

"I recently signed a trade agreement with Vietnam."Details to follow!" he exclaimed. Trump announced what he called a significant new trade deal with the Socialist Republic of Vietnam on his social media platform Truth Social. Trump claims that the agreement was finalized after direct discussions with To Lam, the general secretary of the Communist Party of Vietnam.

It's unclear if that number includes the previous global tariff of 10%. However, the number is far lower than the 46% the country experienced in April. Additionally, he threatened to impose a 40% tax on goods from foreign nations that pass through Vietnam. According to US media, the action is intended to combat the flow of Chinese goods through the nation. In return, he said Vietnam has agreed to give the US "total access" to its markets, and lower tariffs on American goods.

The US has the fourth-largest trade imbalance with Vietnam, after China, Mexico, and the European Union, according to data from the US Department of Commerce. With this agreement, Vietnam joins the UK and China as the countries to have reportedly secured a trade deal with the United States so far.

A 50% US Tariff Could Threaten The Boom In Footwear Exports

Earlier this month, the Brazilian Footwear Industry Association (Abicalçados) celebrated the 24.5% growth in exports in June, compared to the same month last year.

The United States, the main destination for Brazilian exports in the sector, was precisely the country that drove the increase, with growth of almost 40% in the same comparison. With the letter sent by Trump to President Lula, in which he announces a 50% tariff on all Brazilian products exported to the United States, Abicalçados reports surprise and concern.

Abicalçados CEO Haroldo Ferreira highlights the industry's concern about the announced tariff. "In the first half of the year, we were gradually recovering market share in the United States, despite all the instability. President Trump's announcement, with new tariffs starting August 1st, is a huge blow to the Brazilian footwear sector," he laments. Ferreira also emphasizes that "the United States, generally speaking, has a trade deficit, but with Brazil it has a surplus, which does not justify the measure."

The main destination for Brazilian footwear abroad, the United States, received 1 million pairs of Brazilian footwear in June, for which US$20.76 million was paid, representing growth in both volume (+39.4%) and revenue (+25.4%) compared to the same month last year. In the first half of the year, exports to the United States totaled 5.8 million pairs and US$111.8 million, increases of 13.5% and 7.2%, respectively, compared to the same period in 2024.

(Source: Leatherinsiders)

The 4th edition of BFSHOW, the biggest footwear tradeshow in Latin America, brought together 353 Brazilian brands

Record-breaking visitation and closed deals mark the 4th edition of BFSHOW

The 4th edition of BFSHOW, the biggest footwear tradeshow in Latin America, brought together 353 Brazilian brands from May 19 to 21 at the Anhembi District in São Paulo/SP. The event was marked by closed deals on-site. Exhibitors highlighted the effectiveness of the record visitation, with over 12,300 buyers attending, including 1,200 from 60 countries. The total transaction volume will be announced in the coming days. The tradeshow is organized by the Brazilian Footwear Industries Association (Abicalçados) and managed by NürnbergMesse Brasil.

The Executive President of Abicalçados, Haroldo Ferreira, emphasized that the event demonstrated the strength of Brazil's

footwear production, the fourth largest in the world and the largest in the Western Hemisphere. “Brazil is a major global showcase for footwear with design, innovation, and sustainability. BFSHOW, which featured companies responsible for more than 70% of national production, was a clear demonstration of this. Buyers, in addition to coming in large numbers, also closed deals,” Ferreira commented, adding that the “barometer” presented at the tradeshow offers optimism for the sector, which is expected to grow by more than 2% in 2025, reaching a production of over 940 million pairs of shoes.

The biggest tradeshow in Latin America

All the exhibitors expressed their satisfaction with the turnout of targeted visitors and buyers. They said the contacts were very qualified and fruitful.

“The event presented an important variety of 'finds' - leather shoes from smaller, more exclusive brands. We left here with all the purchases for our second semester,” the exhibitors said.

The next edition of BFSHOW

The next edition of BFSHOW will take place from November 10 to 12 at the Anhembi District in São Paulo/Brazil. The May 2026 edition will be held from May 18 to 20, at the same location.

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leatherworld
PARIS

Leatherworld Paris 2025
(15-17 September 2025)

Texworld Apparel Sourcing Paris 2025 (for Leatherworld Paris) will be held at Paris Le Bourget from 15th -17th September 2025

Texworld Apparel Sourcing Paris comprises the co-located shows of Texworld Fabrics, Texworld Denim, Leatherworld and Apparel Sourcing. The event showcases all types of fabrics, apparel, hi-tech & fashion, Denim fabrics & finished products and Leather textiles. Two key Industry

Councils, Cotton Textiles Export Promotion Council (TEXPROCIL) and The Indian Silk Export Promotion Council will be participating in the event

Leatherworld Paris will be Europe's dedicated leather industry trade show, featuring international and local tanneries, designers, suppliers, and manufacturers from around the world. An exclusive networking platform based in France,

Leatherworld Paris will be the epicentre of business and fashion for organisations wishing to grow their businesses in the region and beyond. At each edition, Leatherworld Paris highlights the know-how of leather producers and manufacturers in its dedicated trend forum.

Special Features

- ✓ **Increased Visibility** : Leatherworld Paris is a key European platform dedicated to the leather industry, attracting hundreds of professionals from around the world.
- ✓ **Wide Range of Products** : The show features a broad selection of products, from exotic leathers and tanneries to semi-finished and finished goods such as footwear, artisanal leather goods, fashion accessories, handbags, wallets, luggage, and leather stationery

- ✓ **International Networking Opportunities** : Exhibitors come from a variety of countries, including Bangladesh, South Africa, Tunisia, India, Pakistan, Lebanon, and China, offering valuable opportunities for collaboration and access to new markets
- ✓ **Part of Texworld Apparel Sourcing Paris** : Leatherworld is the only section entirely dedicated to leather sourcing within Texworld Apparel Sourcing Paris-an essential event that gathers over 1,200 fashion industry manufacturers and serves as a major buying and trend-spotting platform for European buyers.
- ✓ **Specialized Visitor Routes** : The show features specific routes like the "small quantity itinerary," aimed at designers and capsule collections, making it easier for exhibitors to connect with targeted buyers

For more details : Email: info@events.messefraankfurtindia.in
www.messefrankfurt.com

Euro Shoes Premiere Collection 2025 (27-30 August 2025)

Euro Shoes Premiere Collection, International Footwear Exhibition, the Bi-Annual trade event, dedicated to the apparel and clothing, fashion and beauty sectors, organised by Euroshoes Moscow will take place at the Expocentre in Moscow, Russia from 27-30 August, 2025.

The event provides a platform for industry professionals, showcasing the latest trends and innovations in footwear and fashion accessories and also, for brands to present their offerings to a diverse audience Around 150 exhibitors are expected to welcome over 15,000 trade visitors from across the world.

For more information: euroshoes@euroshoes-moscow.com
https://euroshoes.moscow

Leather Auxiliaries – A Review PART – II

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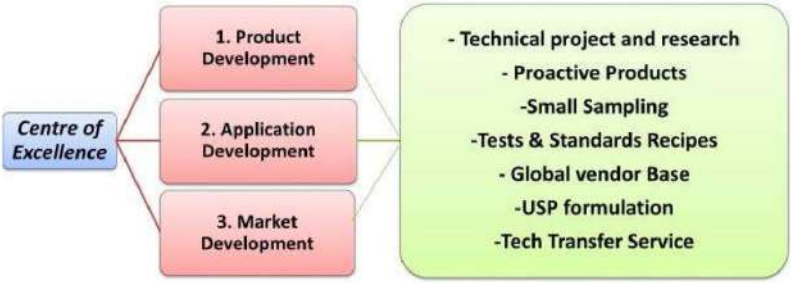
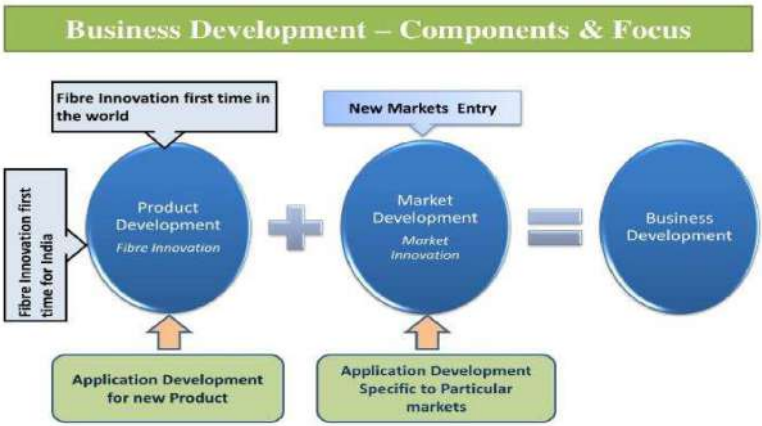
(Contd. from June issue)

3. Role of Centre of Excellence Figure – 3 A



3. 1 Business Development – Components & Focus Figure – 3 B



Reference : Figure – 3 A & 3 B. Raw Materials for Technical Textiles by Manohar Samuel Birla Cellulose, Exhibition cum Conference organized by FICCI + Birla Cellulose

4. What Is a Center of Excellence (CoE) ? [4]

At some point in time, most companies find it beneficial to develop a Center of Excellence (CoE). The priorities of a CoE span several areas, with different sponsors, and are expected to change over time. Nonetheless, the fundamental principles of the CoE group should be clear and consistent, as these are critical to the CoE's continuous success and evolution.

A Center of Excellence is a (typically small) team of dedicated individuals managed from a common central point, separate from the functional areas that it supports within a practice or organization. Sometimes referred to as a competency or capability center, the CoE is often the team leading the way in exploring and adopting new technology tools, techniques, or practices.

This group operates across areas within the practice or organization, with a focus on: Providing thought leadership and direction, Establishing and promoting best practices, Research and development, to provide appropriate recommendations, Support and education, Performing other similar functions in specific focus areas considered critical to the success of the overall organization or practice that the CoE supports.

4. 1 Keys to a Successful Center of Excellence

Keys to a Successful Center of Excellence Table – 4 A
As a key to success, every Center of Excellence should have a set of clearly and concisely defined guiding principles that will provide its direction and focus. We suggest these five areas as a startingpoint for establishing and successfully evolving a CoE:
1. Standardization2. Leveraging assets3. Measuring performance
4. Guidance and governance5. Balance and subject matter experts

Specific approaches to implementing a Center of Excellence will vary based upon each organization's needs, industry, resources, and level of maturity within their technical or functional space.

Reference : 4. & Table – 4 A. Five Guiding Principles of a Successful Center of Excellence Perficient, PERFICIENT. COM/INSIGHTS

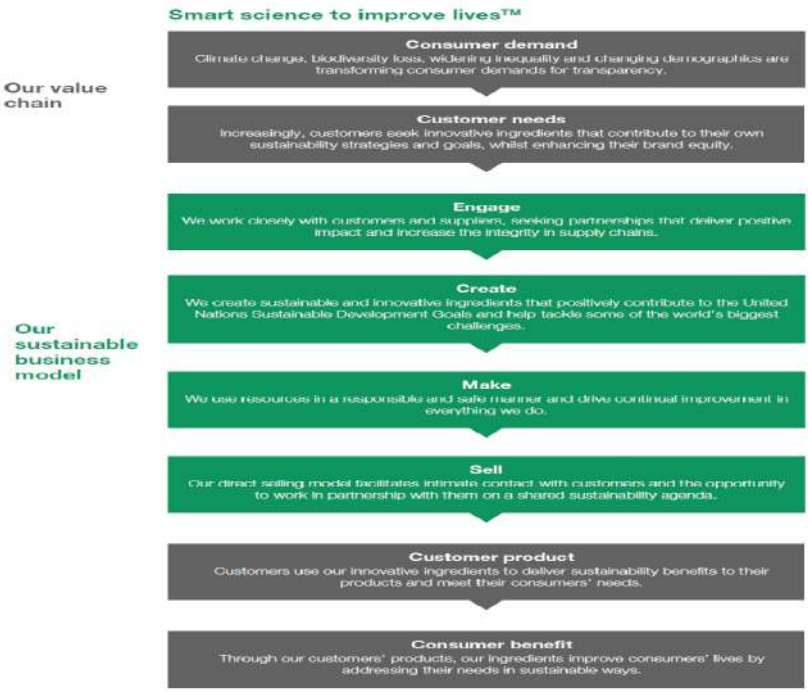
5. Application and Fashion Centres - TFL

Application and Fashion Centres – TFL Table – 5 A
In order to be close to the customer and provide an optimum service locally, TFL has customer service centres, application centres and laboratories in Italy, India, Brazil and China. All centres are equipped with state-of-the-art machinery. The aim of those training and application centres is two-fold: to ensure that the TFL technicians´ knowledge is always up to date in order to be able to provide the excellent service the company is renowned for to its worldwide customers. The other role is being able to offer tailor-made trainings to customers.
TFL Global Fashion Centre in Italy The TFL Global Fashion Center Italy covers a 2700 sqm area. It is strategically located in the leather manufacturing hub of Castelfranco/Santa Croce sull'Arno, which is world-famous for the production of vegetable-tanned and fashion leathers, a historical tradition of the Tuscan area, for footwear and for fashion accessories. **TFL Application Centre Italy** The TFL Application Centre Italy covers a 5600 sqm area. It is located in Montebello Vicentino, in the Arzignano area, one of the biggest leather centres in Italy. The ground floor hosts the Beamhouse, wet end and finishing laboratories. The first-floor hosts meeting rooms, offices and our show room, where our guests can see and touch the leathers tanned with TFL products. Close to the show room is the conference room, where workshops for our customers take place. **TFL Application Centre China** On Oct 18th, 2004, the Application Centre China (ACC) started its business. The centre occupies an area of 2000 square meters, provides all the facilities for leather making, and test equipment for leather in common use. The centre supports TFL customers with technical service, scientific R&D, leather testing and practical training on specific articles.
TFL Application Centre Brazil The modern centre, built in 2005, is located in São Leopoldo, south of Brazil; it occupies 1. 500 square meters and is fully equipped with state-of-the-art machinery. The ground floor hosts the wet-end and finishing laboratories, the

Application and Fashion Centres – TFL Table – 5 A
physical testing room, the showroom and the conference room; and the first floor hosts the offices of our technical/commercial team. **TFL Application Centre India** The Application Centre India (ACI) has been established in the TFL Quinn India plant in Ranipet, Tamilnadu. The centre is well equipped with modern machinery in both Wet-end and Finishing. Technical workshops are conducted in the Application centre for TFL technicians as well as for the customers regarding technical novelties in all production processes.

Reference : Table – 5 A. Application and Fashion Centres TFLwww. tfl. com

6. Smart Science to improve lives – Croda Table – 6 A



Reference : Table - 6 A. Smart science to improve lives. Croda International Plc. Sustainability Report 2020.

7. Certification, Collaborations & Memberships

Certification is the formal attestation or confirmation of certain characteristics of an object, person, or organization. This confirmation is often, but not always, provided by some form of external review, education, assessment, or audit. Accreditation is a specific organization's process of certification. [7]

Brands at the end of Leather or Textile value chains increasingly demand that the products they buy display their social or environmental credentials, in the form of certifications or audits. Operational transparency and environmental impact are an important part of purchasing decisions.

Although the fashion industry is recognizing the need for standardized measurement and verification of responsible production, there is currently no single independent certification standard. Many certifications focus primarily on just one step of the production process: either how the raw material was produced, or the environmental management of the mill or tannery where the raw material is transformed into fabric or leather, learning more about the environmental certifications that independently verify that our products were made responsibly, and which stage of the production process that certification aligns with.

Certification can be a useful tool to add credibility, by demonstrating that your product or service meets the expectations of your customers. For some industries, certification is a legal or contractual requirement.

8. Certification and Accreditation[8]

Certification and Accreditation Table - 8A
Certification – the provision by an independent body of written assurance (a certificate) that the product, service or system in question meets specific requirements.
Accreditation – the formal recognition by an independent body, generally known as an accreditation body, that a certification body operates according to international standards

Reference : 8 & Table- 8A. Certification and Conformity, ISO, www. iso. org

In first-party certification, an individual or organization providing the good or service offers assurance that it meets certain claims. In second-party certification, an association to which the individual or organization belongs provides the assurance. Third-party certification involves an independent assessment declaring that specified requirements pertaining to a product, person, process, or management system have been met.

In this respect, a Notified Body is a third-party, accredited body which is entitled by an accreditation body. Upon definition of standards and regulations, the accreditation body may allow a Notified body to provide third-party certification and testing services. All that ensures and assesses compliance to the previously-defined codes but also to provide an official certification mark or a declaration of conformity. [7]

9. What is ISO?[9]

The International Organization for Standardization is a worldwide autonomous body for setting various global standards for quality management. It comprises of representative standardization organizations from various nations. Established in 1947, the ISO frames and promotes worldwide industrial and commercial standards.

9. 1 Broad Categories of ISO Certification Standards [9]

Broad Categories of ISO Certification Standards -Table 9 A
ISO 9001 ensure company product & services meets customer expectations and enhance customer satisfaction. ISO 9001 certification (for Quality) This is the basis for most management systems. Consequently, its main benefits have been identified with the general benefits referred to earlier. It'll also help you continually assess and improve what you do and result in fewer returned products and complaints about your services. The ISO 9000 family of quality management systems (QMS) is a set of standards that helps organizations ensure they meet customer and other stakeholder needs within statutory and regulatory requirements related to a product or service. [1] ISO 9000 deals with the fundamentals of QMS, [2] including the seven quality management principles that underlie the family of standards. [2][3][4] ISO 9001 deals with the requirements that organizations wishing to meet the standard must fulfil. [5]

Broad Categories of ISO Certification Standards -Table 9 A
ISO 14001 maps out a framework that an organization can follow to set up an effective environmental management system. ISO 14001 certification(for the Environment) is a systematic way to discover and control the effects your company has on the environment. It'll help you detect ways to minimise waste and dispose of it more effectively as well as learning how to use energy more efficiently. ISO 14001 verifies that you comply with current legislation and makes insurance cover more accessible.
OHSAS 18001 allows a company to show their customers that company has effective health and safety management system. **ISO 22000** allows a company to show their customers that company has effective food safety management. ISO 20000 allows demonstrating excellence and prove best practice in IT & improvement in the delivery of IT services. **ISO 27001** describes a best practice of company who involves in the information security management system (ISMS). ISO 27001 certification (for Information Security) demonstrates that you've addressed, implemented and controlled the security of all the important information you need to run your business. It'll help you safeguard your valuable data and intellectual property and avoid the financial penalties and losses associated with data breaches. This provides comfort to your customers, employees, trading partners and stakeholders – in the knowledge that your management information and systems are secure.
CE Marking on any brand is a manufacturer's affirmation that the product has complied with the necessary requirements of the applicable European health, safety, and environmental protection benchmark. **ISO 50001** describes best energy management practices which outline using energy efficiently helps organizations save money as well as helping to conserve resources and tackle climate change. **ISO 45001** certification (for Health & Safety) Will make you more confident about meeting the requirements of Health & Safety legislation. The setting of targets through a Health and Safety policy, together with the ongoing measurement against it, also ensures a process of continual improvement. Downtime due to incidents and ill health will be reduced.

Reference : 9 & Table - 9A. About ISO Certification- start up, start-up India, comodo secure, DutchUncle Tech Solutions Private Limited

10. Relevant certification and audit bodies active in the leather industry [10]

Relevant certification and audit bodies active in the leather industry Table – 10 A
Leather Working Group The objective of this multi-stakeholder group is to develop and maintain a protocol that assesses the environmental compliance and performance capabilities of leather manufacturers and promotes sustainable and appropriate environmental business practices within the leather industry. **ICEC - Institute of Quality Certification for the Leather Sector** The Code of Conduct and Social Accountability, a tool provided by UNIC Italy, is a basic instrument to widespread the principles regulating business activity. In this document the principles of conduct and social accountability characterizing the leather manufacturers are officially defined.
Brazilian Leather Certification of Sustainability (CSCB) Brazilian Sustainability certification standard that applies the tripod of sustainability concept in which a tanning industry's results are considered in economic, environmental, and social terms. **Zero Discharge of Hazardous Chemicals (ZDHC)** By managing chemical inputs, ZDHC wants to ensure safer products, cleaner water and fresher air. The initiative focusses on leather and other materials and maintains a Manufacturing Restricted Substance List (MRSL) and Waste Water Guidelines. Chemicals can be approved according to different conformance and are published on the ZHDC Chemical Gateway
LEATHER STANDARD by OEKO-TEX® LEATHER STANDARD by OEKO-TEX® is an internationally standardised testing and certification system for leather and leather goods at all production levels, including accessory materials. The certification supports companies along the supply chain with the implementation of high human-ecological product safety.

10. 1. Certification and audit bodies active in the leather industry Figures – 10 B

Reference : 10. & Table 10 A & Figure 10 B. info@leatherworkinggroup. comhttps://www. leatherworkinggroup. com/

icec@icec. it: http://www. icec. it/en/certifications/environmental-sustainability/eco-leathers-certification

CONTACT@CSCB. ORG. BR, : https://cicb. org. br/cscb/en

support@zdhc. org https://www. roadmaptozero. com/?locale=en

info@oeko-tex. comhttps://www. oeko-tex. com/en/our-standards/leather-standard-by-oeko-tex

SOCIAL & ENVIRONMENTAL REPORT 2020. THE EUROPEAN LEATHER INDUSTRY. www. euroleather. com

11. Benefits of Standards [11]

Benefits of Standards Table -11 A
For businesses, the widespread adoption of International Standards means that suppliers can develop and offer products and services meeting specifications that have wide international acceptance in their sectors. Therefore, businesses using International Standards can compete on many more markets around the world. **For innovators of new technologies,** International Standards on aspects like terminology, compatibility and safety speed up the dissemination of innovations and their development into manufacturable and marketable products.
For customers, the worldwide compatibility of technology which is achieved when products and services are based on International Standards gives them a broad choice of offers. They also benefit from the effects of competition among suppliers. **For governments**, International Standards provide the technological and scientific bases underpinning health, safety and environmental legislation.
For trade officials, International Standards create guideline for all competitors in the markets. The existence of divergent national or regional standards can create technical barriers to trade. International Standards are the technical means by which political trade agreements can be put into practice. **For developing countries,** International Standards that represent an international consensus on the state of the art are an important source of technological know-how. By defining the characteristics that products and services will be expected to meet on export markets, International Standards give developing countries a basis for making the right decisions when investing their scarce resources and thus avoid squandering them.

Reference : 11. & Table 11 A. Standardization – COE Approach. DKTE, Center of Excellence in Nonwovens, Prof. Dr. A. I. Wasif

12. Certifications of Manufacturers of Leather Auxiliaries

12. 1 TFL - Certifications & Memberships[12]

TFL is a globally operating company producing specialty chemicals for the leather industry and related industries. TFL offers its innovative products and solutions to tanneries, leather processing companies and coaters, always striving to introduce fresh ideas to the market.

Our business activities comprise the development, production and marketing of specialty chemicals such as tanning agents, dyestuffs and finishing products, which enable our customers, mainly tanneries, to create an attractive end article such as leather automotive interior.

TFL - Certifications & Memberships Table – 12 A
• ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 • ETAD Membership Certificate 2019
• Leather Working Group LWG • Leather Naturally Membership Certificate • ZDHC
• REACH & GHS • Registration, Evaluation, Authorisation and Restricition of Chemicals • Test Methods for the Colour Fastness of Leather
• Declaration, confirmation and/or information about the compliance of • TFL chemical products with applicable rules and regulations concerning hazardous and/or restricted substances. • International Material Data System- an electronic form and is integrated into the International Material Data System (IMDS).

Reference : 12 &Table - 12 A. TFL www. tfl. com

13. Colourtex - Certifications & Memberships[13]

Colourtex is the largest dyestuff company in the Indian subcontinent, manufacturing various classes of dyestuffs including Leather Dyes & Auxiliaries.

Colourtex - Certifications & Memberships Table - 13 A
• ISO-9001:2015, ISO 14001:2015 and ISO 45001:2018 certified management system. • Member of Ecological and Toxicological Association of Dyestuff Manufacturers (ETAD)
• Products are GOTS approved, Oekotex compliant. • bluesign system partner. • A Responsible Care company.
• IMO- Approved dyestuffs and textile auxiliaries for the global organic textile standard • A technical associate of the BLC • Member of The Leather working group • Commitment to the Zero Discharge of Hazardous Chemicals Restricted Substance List
• ECO BOOKLET - Eco friendly Dyes from Colourtex and related topics on ecology in textile and leather • Provides Material Safety Data sheets

Reference : 13 &Table - 13 A https//Colourtex. co. in/sustainability

14. Certifications of Quimser- Leather Auxiliaries Manufacturer Figure-14 A

Reference : Figure -14 A. Quimser, Spain www. Quimser. com

15. Partnerships & Certifications – Smit & Zoon Figure – 15 A

Reference : Figure -15 A. Smit & Zoon www. smitzoon. com

15. 1. Industry Associations - Smit & Zoon

Industry Associations - Smit & Zoon Table -15 B
Industry Associations **MVO Nederland, Leather Working Group, Leather Naturally, ZDHC, Textile Exchange, TEGEWA,** **UNPAC, Federchimica, CLE**
Regular meetings and joint activities with the mentioned organizations - MVO Nederland is the movement of entrepreneurs in the New Economy - Leather Working Group takes an active role in implementing best practices in the Leather value chain:

Industry Associations - Smit & Zoon Table -15 B
Industry Associations **MVO Nederland, Leather Working Group, Leather Naturally, ZDHC, Textile Exchange, TEGEWA,** **UNPAC, Federchimica, CLE**
Smit & Zoon takes an active role in the Supplier Subgroup and in the Tannery of the Future Subgroup - Leather Naturally is an industry member association that focuses on education and the promotion of leather. - Smit & Zoon is a financial contributor of the association and the METCHA Leather marketing campaign and provides the Chair - ZDHC's mission is to protect the planet by reducing the industry's chemical footprint. Smit & Zoon takes an active role in different Task Teams and will have all its products and production facilities in accordance with the highest conformance levels - Textile Exchange's mission is to advance responsibility and continuous improvement in the global Leather value chain through leadership, science, and inclusive multi-stakeholder engagement and collaboration. Smit & Zoon supports the development of the Leather Impact Accelerator - TEGEWA, UNPAC, FEDERCHIMICA, are industry associations for chemical companies focussing on the Leather industry - CLE India: focussing on export promotion activities and development of the Indian Leather industry

Reference : Table -15 B. SmitZoon-CSR-Report-2020-DEF

16. Stahl- Certifications Figure – 16 A

The Zero Discharge of Hazardous Chemicals Foundation (ZDHC)
In 2011 a group of major apparel and footwear brands and retailers (called ZDHC Foundation) made a shared commitment to help lead the clothing industry towards zero discharge of hazardous chemicals by 2020.

bluesign® system partner
In 2017 Stahl achieved bluesign® system partner status. The bluesign® system helps its partners to properly manage chemicals and to replace hazardous chemicals with safer alternatives in the manufacturing of textile and related products.

Solidaridad
Solidaridad is an international solution-oriented civil society organization working through nine regional expertise centers on transforming markets to make them more inclusive and sustainable.

The Leather Working Group
The objective of this multistakeholder group is to develop and maintain an audit protocol that assesses the environmental compliance of tanners and to promote sustainable practices in the leather processing industry.

Cooperation with universities
Stahl cooperates with over thirty different universities and colleges around the world, on a wide range of projects, e.g. Technical University of Wageningen and University of Northampton.

TEGEWA
TEGEWA is a group of chemical manufacturers supplying the leather, textile and paper industries. Stahl is an active participant in the group, especially on topics related to chemicals management and the safety and health of workers who may be handling chemicals in the garment and footwear supply chain.

BLC
BLC is the leading leather testing and technology center dedicated to leather, footwear, chemical and leather product testing, to ensure fast and accurate solutions to leather related problems.

Cooperation with HP
The joint technology platform created by Stahl and HP offers creative freedom and unlimited aesthetic options in durable printing. The water-based HP Latex Inks preserve the flexibility of material, while Stahl EVO® coating solutions ensure the highest surface performance is achieved.

Joint R&D with Piñatex®
In 2018 Stahl and Ananas Anam announced their intentions to cooperate to enhance the performance and sustainability of Piñatex®, a natural textile made from pineapple leaf fibre. This joint R&D will represent a breakthrough in the sustainable, innovative new materials that are at the forefront of the needs of the 21st century.

Reference : Figure -16 A. stahl-corporate-responsibility-and-sustainability-report-2018

17. Archroma – Certifications Figure – 17 A

Reference : Figure – 17 A. Sustainability report Fiscal year 2020. THE ARCHROMA WAY TO A SUSTAINABLE WORLD. ARCHROMA. www. archroma. com

(To be Contd.)

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