Indian Leather

Vol.59 June - 2025 No.04 Annual Subscription Rs.500

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Digest of Leather News

59th Year

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Welcome Policy Editorial

The Directorate General of Foreign Trade (DGFT), Ministry of Commerce & Industry, has issued a Notification No. 15/2025-26 dated May 26, 2026 removing key procedural restrictions applicable to the export of value-added leather products. This step is expected to reduce compliance burden and improve ease of doing business for exporters.

Port restrictions have been withdrawn, allowing export of Finished Leather, Wet Blue Leather, and El Tanned Leather from any port or Inland Container Depot (ICD). Earlier, these exports were restricted to specific notified ports.

The mandatory requirement for testing and certification by the Central Leather Research Institute (CLRI) for export of Finished Leather, Wet Blue Leather, Crust Leather, and El Tanned Leather has also been dispensed with.

These procedural requirements were originally instituted to monitor export of value-added leather products and distinguish them from raw hides and dutiable items. However, with the removal of export duties on such leather categories and the clear physical distinction between processed and raw leather, the existing checks were considered redundant.

The decision follows consultations with stakeholders, including the Council for Leather Exports, Leather Exporters and Central Leather Research Institute (CLRI). It is expected to streamline

export procedures, reduce transaction costs, and benefit MSME exporters in particular.

The reforms also support India's efforts to enhance export competitiveness in the global leather value chain while maintaining transparency and quality standards under general customs provisions.

It is to be noted that the Government has, for the sustainable growth of the leather industry, made many policy and tariff changes on export and import of leathers and also for the promotion of value added products.

The export duty on wet blue and crust leathers was reduced from **40% to 20%** in the last year's budget, and in the current budget **20%** export duty on crust leathers and **10% import duty** on wet blue leathers was subsequently removed

The leather & footwear industry is targeting a turnover of US$ 36 billion in the domestic industry and US$ 14 billion on exports, in total US$ 50 billion by 2030.

At present the figures stand at US$ 23.82 billion (domestic industry US$ 19 billion + Exports 4.82 billion)

The Government's firm commitment to promoting sustainable growth through various initiatives and policy announcements for the leather industry is laudable and most welcome.

CSIR-CLRI Celebrates National Technology Day & World Environmental Day 2025

CSIR-Central Leather Research Institute (CSIR-CLRI), Chennai, commemorated National Technology Day and World Environment Day 2025 with a joint celebration held on June 4, 2025. The event brought together leading scientists, academicians, environmentalists, and industry professionals to highlight the role of science and technology in fostering sustainable environmental practices.

Dr. K. J. Sreeram, Director, CSIR-CLRI, extended a warm welcome to the distinguished guests and participants and addressed the gathering. In his address, he emphasized the significance of annually celebrating these important days, underscoring CSIR-CLRI's continued efforts in developing environmentally sustainable technologies for the leather and allied sectors. He also highlighted the institute’s recent contributions in the areas of leather products, sustainable fashion and alternate materials.

Dr. S. Ganesh, Senior Principal Scientist, HEAD, Knowledge Portfolio Management Unit at CSIR-CLRI, provided an insightful overview of the origins and importance of National Technology Day and World Environment Day, setting the tone for the day's discussions.

The event was graced by Dr. Atul Narayan Vaidya, Vice-Chancellor, Laxminarayan Innovation Technological (LIT) University, Nagpur. Dr.Vaidya delivered the keynote address on “Beating Plastic Pollution: Environmental and Technological Perspective”. He stressed the urgent need for technological innovation in science and engineering to tackle environmental challenges, particularly plastic pollution. Dr. Vaidya advocated robust monitoring systems, heightened public awareness, and the practical application of lab-developed technologies at the field level to tackle growing plastic pollution. He concluded by outlining best practices in plastic pollution management as a sustainable path forward.

As part of the celebrations, certificates were awarded to inventors involved in successful technology transfers to industry partners, recognizing their contributions to applied innovation.

UNIDO delegates visit FDDI, Noida Campus

United Nations Industrial Development Organization (UNIDO) delegation consisting of eight-members namely, Mr. Bogale Feleke Temesgen, Mr. Wondu Legesse Gizaw and Mr. Seble Daniel Solomon from UNIDO, Mr. Zulfikar Abajihad Ababushen and Mr. Dagnew Negasa Urgesa from LLPIRDC, Ms. Sintayehu Befekadu Gossa from Ohio Environmental Protection Agency (OEPA), Mr. Neway Alemu Bekele from Modjo City Administration and Mr. Dagnachew Abebe Amea from Ethiopian Leather Industries Association (ELIA) visited FDDI, Noida Campus on 10th May 2025.

Discussion in progress between Mr. Vivek Sharma, IRS, MD, FDDI and UNIDO delegation

The purpose of the delegation's visit was to explore opportunities for development in non-leather products and laboratory testing. While Ethiopia possesses a rich base of leather raw materials, the delegation emphasized the need to diversify into the non-leather segment, which constitutes 70% of global consumption.

In this regard, the UNIDO delegation met Mr. Vivek Sharma, IRS, Managing Director (MD), FDDI to strengthen business ties & to forge linkages further. On this occasion, Colonel Pankaj Kumar Sinha, Secretary, FDDI, Ms. Manju Maan, Executive Director - FDDI, Noida Campus, Mr. Sharad Srivastava and Mr. Deepak Choudhary, officials of FDDI and Mr. S.K. Verma, Executive Director - Indian Footwear Components Manufacturers Association (IFCOMA) were also present.

The need for a cluster-based approach to drive sectoral growth was emphasized by the MD, FDDI and the delegation was invited to visit the Bahadurgarh cluster in Haryana to gain insights into its development and impact.

The ongoing Twinning project, a collaborative initiative with Ethiopia, was discussed, highlighting its positive impact since 2010-particularly through benchmarking efforts that have significantly enhanced the performance of Ethiopia's leather and footwear sector.

The delegation visited the International Testing Center (ITC), which houses fully equipped Chemical and Physical Laboratories specializing in the testing of leather, leather products, footwear, footwear components, textiles, plastics, and related materials.

The delegation also visited the Non-Leather Center covering Virtual Modelling, Knitting & UV Lab and Pilot Plant. They were briefed on the integration of advanced machinery and the application of CAD/CAM-based design support systems including 3D Printing, UV and Laser Applications in footwear manufacturing.

Self sufficiency - Best efficiency

- Vasan Suri
A Passionate Leather Lover & Professional
Hi-Tech Consultancy
Tel: +91-9871504980/9999735293

(contd. from May issue)

To be self sufficient, efficient management of supply chain will be the key.

1. Raw Material (Raw Hides & Skins)

We need to derive a system and plan the operation to get raw materials at a time, when the market is slow.

There is always news in the Leather Forum that due to low demand, the raw hides & skins get dumped.

We need to keep our eyes and ears opened and utilise those situations to our advantage.

As the Government of India is extending a big support for the growth of the Leather & Leather Products Industry, it will be the best option for the industry to utilise it to the best possible.

Coordinate with International Meat Packers for such low demand period and get all those hides and skins and distribute it with interested tanneries and the remaining could be converted as wet blue, vegetable tanned or wet white, as the case may be on job work system.

The Tanners Association like AISHTMA could lead this from the front for the benefit of the Industry as a whole.

Earlier, they used to get Mimosa Powder and Wattle Extract in bulk and sell it to Tanneries to support them from any fluctuations of price or exchange rates.

The same system could be applied here.

This will allow the Indian tanneries to plan their sales and marketing with back up of stocks and confirmed prices.

There will be no fluctuations in the price and shortage of stock.

Even for the footwear & other accessories factories, this allows a better planning for their shipments without the risk of going for air shipments against sea shipments.

The same rule could be applied even for all the Indian raw material sources so that, the demand and supply situation is kept in good check for the benefit of the leather Industry as a whole.

Imagine a situation for the tanneries or the leather products manufacturers going in to International Exhibitions with total backing of raw material and confirmed price. This allows them to flex their muscles to make business workable.

The production planning and the shipment time is well coordinated and makes the customers comfortable to receive their orders well in time.

Such timely shipments will motivate the customers to get more and more orders and the entire supply chain will get benefitted.

For some, this may look like a far fetched dream. But, there is every possibility to make this a reality.

For a tannery or the leather products manufacturer, the stock of raw materials at their disposal will act as a big boon to promote business.

It is important that, we all come together and make this possible, with the support of the Government.

Such requests might sound better as this could throw back a decent profit for the Association, as well.

Instead of requesting Grants, Incentives and subsidies to the Government, such practical solutions might make them come forward to work closely with the Industry.

Though, this system will be good when activated and at the same time, requires a transparent approach on the part of the team involved.

The mission should be focused on #"India First". "Leather First".

Let us all grow together being self sufficient.

Global Leather Industry News

Brazilian Footwear Industry

According to the data prepared by the Brazilian Footwear Industry Association (Abicalçados), based on figures released by the Foreign Trade Secretariat (Secex), indicate that, between January and May, footwear exports grew both in volume (45.83 million pairs and growth of 6.8%) and in revenue (US$ 427.18 million and growth of 1.7%) compared to the same period in 2024. In May, exports totaled 6.77 million pairs and US$ 78.16 million, a 7.6% drop in volume and a 2.7% increase in value compared to the corresponding month last year.

In May, the main destination for Brazilian footwear abroad was once again the United States followed by Argentina and Paraguay. Abicalçados CEO Haroldo Ferreira highlights that the data reflect the instabilities caused by the tariff war between the United States and China.

“Although the trade war is causing American buyers to seek alternative suppliers to China, China continues to increase its exports, now to Brazil itself and to important markets for Brazilian footwear, such as Latin American countries,” he explains.

According to him, in the four-month period, footwear exports from China grew by more than 19% to South American countries. “This unfair competition, with very cheap products, is taking market share away from Brazil in neighboring countries.” (L I Dt 11/6/25)

Bangladesh Govt to allow Rawhide Exports Despite Tanners' Objections

In recent years, a large portion of the huge amount of Bangladesh raw hides produced during the holy Eid-ul-Azha (Muslims festival) period has been wasted due to lack of processing. So, on the occasion of the upcoming Eid-ul-Azha 2025, as per the decision of the first meeting of the "Committee to Ensure Proper Management of Sacrifice-Related Matters" formed by the Cabinet on 13 May 2025, the conditions for the export of raw hides and wet blue hides (to all countries) will be relaxed by the Government of Bangladesh for a period of three months.

However, Bangladesh Tanners Association (BTA) President Shaheen Ahmed stated to be opposed to the government's decision to allow the export of raw hides as they are a value-added product for Bangladesh, meaning they can be processed domestically into higher-value goods rather than being exported in raw form. This opposition is mainly due to the Tk 10,000 crore ($818.23 million) that has been invested in domestic tanneries, which will be at risk of being left without enough raw hide if the government allows exports. Currently, 140 out of 154 tanneries are operational at the Savar Tannery Industrial Estate (STIE), where the inventory of unsold hides remains a problem.

The association stated that, this year, more than 85 lakh cows (8.5 million) and goats may be slaughtered across the country, nearly 15 lakh (1.5 million) fewer than last year due to the current economic situation.

(Source: Leatherinsiders)

Footwear sector slows down but maintains growth trajectory worldwide

The footwear sector is expected to grow by 7.6% in 2025 worldwide

The footwear sector is expected to grow by 7.6% worldwide in 2025, according to the World Footwear Survey, carried out by APICCAPS. This performance is still below previous growth forecasts (8.4%). Donald Trump's new tariff policy is a major contributor to this. Most industry experts expect this to have a "predominantly negative" impact on the sector overall over the next two years. Respondents in North America "are less pessimistic than their counterparts in other parts of the world".

Globally, experts anticipate a 14.9% increase in footwear consumption in Africa and 7.5% in Asia. More modest increases are

projected for North America (+3.9%) and Europe (+2.0%), and declines are expected in South America (-0.5%) and Oceania (-3.3%).

In the 12th edition of a survey that analyses several variables such as the economic context, the health of businesses, the level of employment or the main difficulties experienced by companies, and to which more than a hundred professionals in the sector responded, the estimated growth in the price of footwear this year stands out.

According to the World Footwear Survey, although the International Monetary Fund predicts global growth of 2.8% by 2025, "notable regional variations" are expected, ranging from 6.2% growth in the Indian economy to 0.8% in the eurozone, 4% in China and 1.8% in the US economy, due to the uncertainty generated by trade tensions, high tariffs and political uncertainty. For the footwear sector, "these differences mean that market opportunities and risks will vary markedly by geography.

Despite these varied circumstances, the general sentiment is optimistic", with the majority of respondents expecting increases in both sales volumes and prices. The overall health of the business "is expected to remain strong" and employment levels are expected to evolve "positively", indicating "continued confidence in the robustness" of the industry.

According to the survey, 58% of business owners expect "strong" or "very strong" sales growth over the next six months, compared to 12% who anticipate difficulties. As for employment, 46% of respondents point to stabilization, but 42% believe they will increase their workforce.

As for prices, despite inflation continuing to fall, 37% of respondents predict a moderate increase (1.5% to 5%), 21% expect a strong increase (5% to 20%) and 17% even believe that prices will rise by more than 20%.

In terms of volume, 63% of businesspeople expect sales in their country to grow, with 30% expecting moderate growth, up to 5%, and 21% expecting it to reach 20%.

In terms of the main difficulties experienced, the cost of raw materials remains the biggest concern, followed by insufficient demand and competition in the domestic market. The issue of taxes and tariffs only appears in fourth place, in a table that includes issues such as the lack of human resources, financial difficulties, obstacles to international trade and the lack of suitable equipment.

For the APICCAPS spokesperson, the data from this most recent World Footwear survey “being generally positive, should be analysed with great caution”, especially given that the sector’s strategic markets, the USA and Europe, “expect relatively modest growth”. On the other hand, the 7.5% growth forecast in Asia “serves as encouragement, at a time when the sector is investing in countries such as South Korea and Japan”. “The footwear sector started the year on a good note, growing by more than 5% in foreign markets in the first four months of the year, but we must admit that the climate of uncertainty at an international level continues to condition export activity”, he concluded.

Source: APICCAPS

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9-11 JULY 2025

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The 25th International Shoes & Leather Exhibition - Vietnam

Incorporating

IFLE - Vietnam

The 25th International Shoes & Leather Exhibition - Vietnam (Shoes & Leather - Vietnam 2025) will incorporate **the 25th International Footwear & Leather Products Exhibition** on the 9-11 July 2025 at the SECC, Ho chi Minh City, Vietnam. This trade fair is one of the most important and leading events for the shoes and leather industry in the **ASEAN** regions.

Expected: 800+ Exhibitors
& 15000+ Visitors

9-11 July 2025 in Ho Chi Minh City

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Sourcing Finished Products and Beyond

The 25th International Footwear & Leather Products Exhibition will be on the 9-11 July 2024 in SECC, Ho Chi Minh City, simultaneously with Shoes & Leather - Vietnam 2025. It will exhibit finished products, footwear and leather goods, like stylish bags, shoes, suitcase, fashion accessories and various type of leather products. If you are interested in showcasing your products, please contact us here or email our team.

Footwear Machinery Expo

Build for Tomorrow

The Shoes & Leather - Vietnam 2025 and IFLE - Vietnam 2025 will mainly consist of shoe machinery show, leather & material trade fair as well as finished footwear and leather products sourcing expo. Following the success of the 2024 edition, the Shoes & Leather - Vietnam 2025 will continue to stimulate market recovery by offering a unique opportunity to connect with large number of new potential customers. Exhibitors from all over the world have the opportunities to re-establish and strengthen the relationship with visitor as well as buyers, and to boost their global business network. To find out more about the exhibitor and visitor profile.

Leather & Material Fair

Comprehensive

The Shoes & Leather - Vietnam 2025 will present a wide range of quality exhibit collections, covering the supply chain of the footwear and leather industries. International exhibitors will present the latest footwear machinery, materials, leathers, synthetic leathers, components, hides, chemicals, dye and many more. If you are interested in showcasing your products and services, please get in touch with us.

Technical Seminars

Color Trend, Material Tech, ESG to Cutting Solution

Technical seminars will be taking place during the Shoes & Leather - Vietnam 2025. International speakers will present their latest market technologies and fashion trends, which will be extremely helpful for the business planning and decision making. In 2024, our speakers presented topics included History of the Gabs Project and Analysis of the Probability of Success of a Similar Project in 2024, How Does a Footwear Factory Implement The ZDHC Program, Shaping the Future of Leather and Footwear and SATRA Timeline – Production Efficiency Platform. More seminars details will be posted in early 2025.

For more information contact : info@toprepute.vn

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Indian Leather covers all important news of Leather, Footwear & Allied Industries and regularly publishes informative articles, the news/reports of the International events/fairs in Leather & Footwear industry

Indian Leather has a wider readership: Tanners, Manufacturers of Chemicals & Auxiliaries, Manufacturers of Footwear, Components & Accessories, Leathergoods, Garments, Trade related Associations, Institutions etc.


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Assomac: the leather, footwear and leather goods technology sector closes 2024 at -12%

- **President Mauro Bergozza: "Deep crisis but Made in Italy can become a protagonist again with vision, supply chain and targeted investments".**
- **The current contraction involves both the domestic market - penalised by the slowdown in investments in the fashion supply chain - and exports.**
- **Despite the difficulties, Italy confirms its leadership in the segments with the highest technological value, maintaining a 30% share of world exports in the sector by 2024.**

Quality, skills, technology. It is on these pillars that the Italian footwear, leather goods and tannery machinery sector is called upon to build its relaunch. The occasion to take stock was the **General Assembly of Assomac**, hosted on 20.06.2025 at the Kilometro Rosso Innovation District in Bergamo, from which a certainly complex picture emerged: according to the 2024 preliminary results, **the sector has recorded a 12% drop in turnover**, with an estimated closure of around 575 million euros.

This is a significant contraction, which involves both the domestic market - penalised by the slowdown in investments in the fashion supply chain - and exports, in a global context characterised by geopolitical instability, inflation, shrinking consumption and tightening

trade barriers. "*Our sector is going through a phase of deep, but not irreversible suffering* - said **Mauro Bergozza, President of Assomac** - *The quality of our technologies, the solidity of Italian know-how, and the innovative drive that distinguishes us must once again become a driver of competitiveness. To achieve this, we need investments in digitisation, automation, sustainability and above all a shared vision between companies, institutions and the education and research system. We must be ready to play a system game, otherwise we will remain on the sidelines of the global market."*

Despite the difficulties, **Italy is confirmed as the technological leader in the high-end segment at international level**, maintaining a **30% share of world exports** in the sector in 2024. In particular, it holds 52% of the global export of tannery machinery and 35% of that of leather goods machinery. More penalised is the footwear segment, which stands at 12%, in a competitive context dominated by the growing Chinese presence: Beijing has strengthened its industrial role in the Asian region.

The Assembly was also a moment of wide-ranging discussion on the future trajectories of the supply chain. Under the title "Growth, Collaboration and Innovation for the European Fashion Industry", the event was attended by institutional and academic speakers, including **Maurizio Tarquini**, Director General of Confindustria, **Maurizio Forte**, Managing Director Export Promotion Department of Italian Trade Agency, and **Giuliano Noci**, Professor of Strategy and Marketing at the Milan Polytechnic.

At the heart of the debate: the need to ensure technological neutrality in order to preserve and valorise medium technology, a key element to give continuity to the sustainable transition of European fashion; the strengthening of synergies between companies and institutions; and the urgency of joint action at European level to defend and relaunch the manufacturing identity of our continent.

Among the priorities that emerged: greater access to subsidised finance tools - starting with the funds provided by Industry 5.0 - support for exports in key markets such as Africa, India, South-East Asia and South America, investment in technical training and acceleration of digital innovation processes. The competitiveness game, it was emphasised, cannot be played alone: it is necessary to network between players in the supply chain, the fashion system, research bodies and associations, to create a solid industrial ecosystem, with a unified voice in Europe.

"Aggregating to compete is no longer an option, but a necessity - President **Bergozza** concluded - *We have to build a system in which companies are supported not only in terms of technology, but also in terms of infrastructure, industrial policies and international relations. Italy can and must become a protagonist again, but to do so we need cohesion, investment and a long-term vision. The time to act is now".*

European Parliament Becomes the Stage for Explaining Leather: Industry Declares - Leather is Not a Driver of Deforestation!

The European Parliament became the global stage for the European leather industry to deliver a clear and science-backed message: **leather is not a driver of deforestation**.

Hosted by MEP Salvatore De Meo (EPP, Italy) in close collaboration with COTANCE and UNIC, the high-level workshop titled “EUDR: Is Leather a Driver of Deforestation? – Bringing facts to the European Parliament” brought together over 50 in-person stakeholders from across the globe. Participants included diplomatic representatives from the United States, Argentina, Turkey, and Australia, alongside officials from EU Member States (Italy, Poland), the European Commission, Members of the European Parliament, international

organisations, industry experts, and representatives from leading companies and tanneries.

The event marked a major milestone in the industry's advocacy efforts and reinforced the importance of evidence-based policymaking in the revision of **Annex I of the EU Deforestation Regulation (EUDR)**.

The high-level event showcased the findings of the study conducted by the Sant'Anna School of Advanced Studies (University of Pisa), offering a comprehensive review of academic literature and available data on whether leather contributes to deforestation or not. The workshop also served as the missing impact assessment on leather - filling a critical gap in the ongoing review of Annex I of the EUDR under Article 34.

Mr Luca Boltri, Vice-Director of the Italian Tanners' Association - UNIC, said : "We are grateful to Italian MEP Salvatore De Meo (EPP), who listened to our concerns and gave us this opportunity to bringing to the European Institutions the facts of the impact of a piece of EU legislation which is totally disconnected from the realities of the leather industry."

"I am happy to stand up for an industry that is the pride of Italian fashion and that is unfairly stigmatized in the EUDR. We all want to curb deforestation, but it is not helping the credibility of EU legislation if it sets up measures that have no real effect on the environment while they stifle the competitiveness of EU industry" - said Salvatore De Meo, MEP (EPP/Italy).

Key Workshop Points:

No Direct Link to Deforestation: The study, supported by an extensive academic analysis (94 million+ records, 29,200+ active serial titles, and 330,000+ books) and 28 stakeholder interviews, found no direct link between leather and deforestation. No denial that

Leather is derived from cattle, but cattle is raised for meat and dairy, not the hide, which arises as a residue. Hence, its production does not incentivise cattle farming.

Severe Economic Impact: There is hardly any extra-EU country that can implement EUDR's mandatory traceability requirements. As 40% of EU leather raw materials needs come from extra-EU, their loss could severely disrupt the European cattle hide supply chain. Moreover, without the inclusion of products downstream to leather production, EU businesses are put in a critical situation, which risks resulting in significant job losses across the industry's value chain.

Environmental Risks of Alternatives: The study warns that short-circuiting the European leather industry and replacing leather with synthetic alternatives like polyurethane leather-like materials (PU LLM) could increase environmental damage, in terms of higher emissions and resource use. Diverting cattle hides to landfills or to countries with weaker environmental standards would undermine the Green Deal's goals.

"The Pisa study and recent public consultation on the review of EUDR Annex 1 sent a powerful message to the European

Commission. Stakeholders across Europe and from third countries-SMEs and citizens alike-emphasise that complying with the EUDR is not in their hands. Extra-EU supply chains will not set up costly cattle traceability systems just for a residue of meat production. Is the EU really expecting that a handful of EU tanners drive EUDR-type cattle traceability at global scale? Will EU policymakers acknowledge the evidence and listen to the voice of the leather industry?" - stated Gustavo Gonzalez-Quijano, Secretary General of COTANCE, during his presentation.

As the European Commission prepares to review the scope of the EU Deforestation Regulation, COTANCE and its partners evidenced the growing international concerns for the future of the leather industry in the EU and strongly urged policymakers to exclude hides, skins, and leather from Annex I.

References:

Sant'Anna School of Advanced Studies (University of Pisa)

University of Montana - Brazil

University of Montana - USA

Back-to-School Column

Dr. N K Chandra Babu

Structure & Reactivity of Collagen – Relevant to Leather Technologists

The previous column on raw material (Part-II) has given an introduction to chemistry of collagen, the skin protein which is the major structural component in skin matrix as well as leather. This section will discuss in detail the structure and reactivity of collagen, which are relevant to students of leather technology and more so the practicing leather technologists. There are many good books on collagen, including the one by Prof G N Ramachandran, who unravelled the triple helical structure of collagen. As a student of leather technologist, I learnt the collagen chemistry through book by Gustafson.

Here I am not going to dwell on all the aspects related to the subject but only on issues which are more relevant to students of leather technology. In some areas, one may notice over simplification of some critical issues but this has been done consciously to make it simple for the students to understand. Students and technologists who would like to get deeper insight into the subject are encouraged to read text books on the subject including the above mentioned ones as well as numerous review papers and research articles on the topic.

Amino acid Composition and important sequences in skin Collagen

Amino acids are the building blocks of all proteins but the composition and sequence of amino acids in the polypeptide chains constituting the molecules are responsible for the structural conformation and other important properties exhibited by them. As discussed earlier, the

triple helical structure of skin collagen and consequently its fibrous nature is mainly due to presence of high amount of glycine and proline/hydroxyproline contents/residues in the molecule. Similarly, the high stability of hair/wool is attributed mainly to disulfide bonds between polypeptide chains due to high concentration of the amino acid, cystine in the keratin molecule. We will dwell more here on the composition and sequence of amino acids and their contribution to structure and properties of Type I collagen, the major component of skin matrix.

Collagen, like all other proteins, is built by linking of amino acids by –CO-NH- groups (by condensation of carboxyl group of one amino acid with amino group of another (the bond is called amide or peptide bond) to form polypeptide chains. Type I collagen has three polypeptide chains present as left handed helices with 2 identical alpha-1 chains (with the same amino acid composition and sequence) and 1 alpha-2 chain with differing amino acid composition and sequence. Each of these helical chains is formed by a little over 1000 amino acids. These three helices are wound over one another in a right handed direction to form the molecule with the famous triple helical structure with an overall rod shape and a length of ~300nm and a diameter of ~1.5nm.

The molecule has also non-helical portions/regions called teleopeptides at N and C terminal ends of the chains. To be more precise, entire collagen molecule has an N-teleopeptide domain at the beginning, a triple helical domain in the middle and C-teleopeptide region in the end. Teleopeptide domains play an important role in stabilizing triple helical structure by formation of covalent linkages between chains through catalytic modification of lysine by the enzymes, lysyl hydroxylase and lysyloxidase during the biosynthesis stage. A detailed discussion on this aspect is beyond the scope of this article.

Nearly 19 amino acids in varying amounts and sequences are involved in the formation of the triple helical structure of collagen. The

most repeating unit of the polypeptide chains is GPR (or PGR) where G represents glycine, the smallest amino acid, P stands for proline or hydroxy proline, the cyclic amino acids (strictly they should be called imino acids) and R stands for any other amino acid. Proline is believed to mostly succeed glycine whereas hyroxyproline precedes glycine in sequence.

Glycine accounts for nearly one third of the amino acid residues and combined contents of glycine, proline or hydroxy proline account for a little over 50% of the total amino acids in collagen. In some regions, GlyProHypro tripeptide also exists (with an occurrence of >11%) as well. Gly-Pro-Alanine and Gly-Alanine-HyPro sequence are also common with a frequency of about 8.9% and 6.2% respectively.

Alanine is the nonpolar amino acid with a small side chain -CH_2-, and is the second smallest amino acid after glycine. Acidic amino acids (with a –COO- in the side chain) should appear at ninth position based on the % content but they appear rather in clusters. In some regions, tripeptides of sequence Gly-Asp-Asp) also occurs where Asp is aspartic acid, an acidic amino acid. The same is the case with basic amino acids which also appear as clusters than in the predicted position based on the % content in the molecule.

Glycine, being the smallest amino acid with no side chain, facilitates the helical formation and the stability/rigidity is provided by cyclic amino acids. The three strands of polypeptide chains are held in triple helical conformation by interchain hydrogen bonds between amide groups of glycine in one chain and carbonyl group of other amino acids (sharing of hydrogen in NH with oxygen of carbonyl) in the adjacent chain. This happens throughout the helical region as permitted by steric factors. As already stated, some regions in polypeptides have been found to be rich in acidic and/or basic amino acids and these regions are believed to play an important role in fibre formation by providing sites for intermolecular and interfibrillar crosslinks. The charged amino acids are also involved in leather

processing by providing active sites for crosslinking (tanning) and reactions/binding with wet finishing chemicals.

Hydroxyproline is unique to collagen and hence is used for the quantitative estimation of collagen content in a given skin/tissue sample. In fact there is a direct correlation exists, as shown by Gustafson, between the hydrothermal stability and hydoxyproline content in native skins of different fish varieties found in different climatic conditions. Apart from these three amino acids, many polar and nonpolar amino acids are also involved in the formation of collagen. The polar amino acids include the basic and acidic amino acids with additional amino group and carboxyl group respectively as a part of their side chains.

The basic amino acids are arginine, histidine, lysine and hydroxylysine, and acidic amino acids are aspartic and glutamic acids. There are other polar amino acids present in collagen and they include amino acids having OH groups in their side chains such as serine, threonine, hydroxy lysine and hydroxyproline, and tyrosine (very little in collagen) has a phenolic OH in its side chain.

These polar functional groups along with many peptide bonds, numerous -CO-NH-, which forms the back bone of the polypeptide chains contribute to various forms of intra and inter molecular crosslinking (involved in the stabilization of triple helical structure and fibrils formation) and reactivity towards chemicals and auxiliaries used in leather processing.

Architecture of skin corium from Triple helix molecules

As stated earlier, three alpha chains (2 identical alpha-1 chains and 1 alpha-2 chains) with ~ 0.29 nm per amino acid residue and ~3.3 amino acids per turn, and the helix is stabilized by hydrogen bonds in which intramolecular water molecules are also believed to be involved. The molecule has a molecular weight of ~300000 D and is often referred to as tropocollagen. In the fibril formation, starting from

these tropocollagen molecules, microfibril formation involving 5 molecules (some believe 8 molecules are involved) are believed to be the first intermediate stage. Microfibres are mainly stabilized by hydrogen bonding resulting in supramolecular structures. At the next hierarchical level, microfibrils then assemble into supramolecular complexes of fibrillar collagen. Collagen microfibrils are arranged in rows laterally staggered by a quarter of their length up to an average diameter of 100-130 nm (depending on water content) and grow longitudinally continuously with a gap of 40 nm between molecules to form the fibrils. The supra molecular structure of type I collagen conformation in skin has an overlapping bands at 67nm and this along with length of molecule and a gap of 40nm is used to characterize the banding pattern of collagen fibrils in scanning and transmission electron microscopic studies.

The fibrils grow to form elementary fibres, and then to fibral strands and fibres. The fibres then form fibre bundles which are interwoven to form the fibrous network. The fibre thickness and weave angle can be measured by optical microscope. These vary according to the skin type and the species, breed, age etc of the animal. The thickness of fibre bundles vary approximately from 140 and 200 microns and the interfibrillary distances vary between 150 to 250 microns.

Therefore, collagen consists of several structural elements with a well defined architectural hierarchy. Up to the fibrils formation level, the structure constitutes microstructure of collagen. From the elemental fibres onwards, it becomes macrostructure.

The reactivity of collagen with other substances during leather manufacture

-Electrovalent, coordinate covalent and covalent interactions of collagen

The reactivity of collagen with other materials, chemicals and auxiliaries is mainly contributed by the side chain carboxyl and amino

groups. The charged carboxyl and amino groups can participate in electrovalent bonding with oppositely charged ions respectively in the reacting chemicals/substances. The pH has a major influence on the number of amino and carboxyl groups available in ionic form for interaction and from the pK of these groups, one can get an idea about this. The charge characteristics of collagen as dictated by pH conditions will be explained in the next section on collagen Zwitter ion. The distribution and fixation of many of the wet finishing chemicals such as dyes, fatliquors and to certain extent retanning agents happen through electrovalent linkages.

The charged side chain carboxyl groups are involved in reaction with chrome tanning complexes by forming coordinate covalent linkages. This is a special type of covalent bond in which the pair of electrons needed for bond formation comes from oxygen in charged carboxyl group and the electrons are shared between chromium (III) and carboxyl groups. Since the carboxyl groups should be in ionized form to facilitate this complexation reaction, pH is a critical parameter.

Side chain amino groups in collagen react with aldehydes forming covalent bond/crosslinks., the amino group should be in unionized form in sufficient number. Here again pH is a critical parameter,

- Hydrogen bonds

Hydrogen bonds, as the name suggests, are formed by sharing of a proton/hydorgen between two electronegative atoms. The classical example is the sharing of hydrogen atom between two oxygen atoms as in water and between nitrogen and oxygen atoms in many molecules. Though there are many theoretical possibilities for hydrogen bond formation in collagen, it is mostly decided by the accessibility which may be limited by steric hindrances and distance. Strength of the bonds also varies depending on the distance between reacting groups. The side chain OH groups (e.g., serine, threonine, hyproline and hydroxylysine) mainly contribute to the formation of

strong hydrogen bonds with other reacting substances. In reaction with vegetable tannins, this type of interaction is implicated.

- Dipole-dipole interactions mainly involving the backbone peptide groups of the triple helical chains

Dipoles with small positive and negative charges (often denoted as $delta^+$ and $delta^-$ are created all along the chain due to difference in the electronegativity between carbon, nitrogen and oxygen in the peptide bond. Hence many dipole-dipole interactions are possible between collagen and reacting substances with matching dipoles. Classical examples of such materials include vegetable tannins and syntans. But many researchers argue that the chance for this type of interaction may be limited due to extensive participation of backbone amide groups in intramolecular crosslinks by hydrogen bonds.

Hydrophobic coatings through non-polar side chains in the amino acids like alanine, phenyl alanine, valine, leusine, iso-leucine may also contribute in a small way especially to bind some materials like polymers via fibre surface coating along with other weaker secondary valence forces.

The typical amino acid composition (important from structure and reactivity point of view) in Type I collagen is presented in the following table.

Amino acids	% content	Number of residues/molecule
Glycine	33.53	1056
Proline	11.97	377
Hydroxy proline	11.18	352
Aspartic acid	3.07	97
Glutamic acid	2.57	81
Lysine	3,17	100

Amino acids	% content	Number of residues/molecule
Hydroxylysine	0.4	13
Arginine	5.04	159
Histidine	0.5	15
Serine	3.46	100
Threonine	1,7	52
Alanine	10.5	319
Phenylalanine	1,3	40
valine	1.9	58
Leucine	2.5	76
Methionine	0.7	21

Considerable amount of aspartic (40residues/molecule) and glutamic acids (79residues/molecule) are present in collagen in their amide forms, aspargine and glutamine respectively. They will become converted to their respective amino acids during liming process. Tyrosine content in collagen is vey low (6residues/molecule). Other important functional group is peptide bond -CO-NH- which is present in large number (3147/molecule) throughout the molecule, which plays a vital role in the stabilization of triple helix by hydrogen bonds between polypeptide chains as discussed earlier.

Zwitter ion concept to understand the ionic nature/charge characteristics of collagen at different pH conditions

The ionic nature of collagen as well as the reactivity of collagen at different pH conditions encountered during leather processing can be better understood by expressing the collagen molecule as a Zwitter ion carrying both positively charged $-NH_3^+$ and negatively charged $-COO^-$ groups. Obviously, these carboxyl and amino groups are

contributed mainly by side chains of acidic and basic amino acids respectively and in a small measure by the end carboxyl and amino groups. For our discussion, we will limit our discussion only to those contributed by side chains. As mentioned earlier, aspartic and glutamic acids are the acidic amino acids and lysine, hydroxylysine, arginine and histidine are the basic amino acids. pKa of the side chain carboxyl and amino groups of these amino acids will give a fair idea about the ionic nature of the collagen Zwitter ion at different pH conditions. pKa is the pH at which the functional groups will be present in equal amounts in both ionized and unionized forms. The pKa of the side chain functional groups for these amino acids are set out in the following table.

pKa of side chain carboxyl groups in acidic amino acids and amino groups in basic amino acids

Amino acids	**pKa at 25° C**
Acidic amino acids	
Aspartic	3.9
Glutamic	4.07
Basic amino acids	
Lysine	10.4
Arginine	12.48
Histidine	6.04

One should remember that these values have been determined from solutions of individual amino acids in water. But in a protein molecule, in this case collagen, microenvironment around the functional groups can have a profound influence on pKa of these groups. For examples, the side chain carboxyl groups of aspartic and glutamic acids can range from 3.4-4.4 according to Gustafson. Below pKa, carboxyl

group will be mostly in the unionized//protonated form and above pKa, the balance will be tilted towards ionized form (-COO^-). Conversely, in the case of basic amino acids, below pKa, side chain amino group will be mostly in ionized/protonated form (–NH_3^+) and above pKa, amino group will be in more of unionized form. For example, lysine side chain amino groups will become protonated more and hence carry positive charge below pKa of 10.54 whereas as one goes up above this pH, more and more of amino groups will become deprotonated and will become unionized. The side chain amino group of histidine has a low pKa of ~6.0 and hence is believed to play a critical role in protein-enzyme interactions. However, collagen has only a small amount of this basic amino acid (~15 residues/molecule)

From the above discussion, it is clear that at neutral pH, both the side chain carboxyl and amino groups will be mostly in ionized form. Below pKa of side chain carboxyl groups of aspartic and glutamic acid for example, at a pH below 3.0, the collagen will be highly cationic and conversely, at a pH above 12.5, anionic charge will dominate. The pH at which the net charge on collagen is zero is called isoelectric point. At this point, number of positively charged amino groups is equal to number of negatively charged carboxyl groups and hence is electrically neutral. For native collagen, the isoelectric point has been reported to be around neutral pH.

Change in charge characteristics of collagen during leather processing

In native form, collagen Zwitter ion will be close to neutral as we are near the isoelectric point. Then the skin collagen undergoes liming process during which the pH goes above 13 and hence the net charge will be highly anionic. Then we do deliming and bating at the end of which pH is around 8. In this condition, the net charge will be still negative. During pickling, one goes down below 3.0, which is much below the pKa of side chain carboxyl groups, and hence they are mostly in unionized form and the amino groups are also largely charged making the charge on collagen highly cationic.

The primary objective of doing pickling prior to chrome tanning is to discharge carboxyl groups by protonation so that the complexation with chromium (III) does not take place leading to surface fixation before chrome is distributed uniformly throughout the cross section. The complexation of chromium with carboxyl groups takes place by coordinate covalent bond, which involves sharing a pair of electrons from oxygen in $–COO^-$ with chromium for bond formation.

High cationic charge on skin matrix also helps with the diffusion of chrome by charge-charge attraction with sulphate anions in chrome, which is believed to act as driving force for the penetration of chrome into the interstices. Pickling also prevents sudden spurt in basicity of chrome enhancing its reactivity with collagen substrate leading to surface fixation.

However, this issue is beyond the scope of current discussion, and will be dealt with during detailed discussion on chrome tanning. In chrome tanning practice, once the uniform penetration of chrome is ensured, basification is commenced wherein the pH is increased to close to pKa of side chain functional groups, i.e., 3.8-4.0 such that sufficient number of carboxyl groups will be available for complexation with chromium. Increase in pH also increases the reactivity of chromium by increase in basicity of chrome.

Further increase beyond 4.0, though may increase chrome fixation by increasing the availability of more carboxyl groups in ionized form, but many times this leads to chrome patches due to undue and sudden spurt in basicity of chrome resulting in precipitation. Chrome tanned leather, also called wet blue, is highly cationic in character as anionic carboxyl groups are unavailable due to complexation with chromium and amino groups are largely protonated with positive charge.

The chromium complexes used in chrome tanning being cationic in nature also contribute to cationic nature resulting in the increase of the overall cationic charges on the leather. This cationic characteristic is helpful in post tanning/wet finishing process for increasing the affinity

for wet finishing chemicals/auxiliaries, dyes, fatliquors and retanning agents/syntans which are mostly anionic in nature.

However, such high cationic charge will lead to surface fixation of dyes (resulting in patchy surface dyeing) and retanning agents and premature breaking of fatliquor emulsion leading to tinny leathers with surface greasiness. Hence, the initial affinity between chrome tanned leather and wet finishing auxiliaries are moderated through a process called neutralization. Neutralization employs mild alkalis to reduce the cationic charge on leather by deprotonating charged amino groups. The extent of neutralization varies depending upon the type of leathers. Finally after ensuring distribution of the wet finishing chemicals across cross section, fixing them is achieved by addition of weak acids like acetic and formic acids wherein the positive charge on amino group is achieved so that they are available for reaction with the chemicals (mostly electrostatic interaction).

The structure of collagen discussed in this column is in principle the same for all types of hides and skins used in the leather industry as far as the molecular and fibrillar microstructure and reactivity are concerned. But, at macrostructure level, considerable differences exist depending on the species, breed, origin, age, sex etc. There exists considerable difference in the non-collagenous constituents at matrix level as well. In fact there exist differences in the macrostructure and other components distribution in different locations within the same hide or skin.

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.

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EXPO RIVA SCHUH AND GARDABAGS EVOLVING IN A CHANGING WORLD

With 8,000 attendees from over 100 countries, the 103rd edition of Expo Riva Schuh and Gardabags came to a close. Attendance grew from Poland, the UK, Africa and the USA, while numbers from Germany remained steady. The event, which kicked off the Spring/Summer 2026 season, featured the debut of the renewed Gardabags format – a launch met with excellent success. There was strong participation in the numerous events designed not only to drive business, but also to promote networking and innovation. It was also announced that, over the next three years, the expansion works on the exhibition centre will be completed.

“The big fashion brands understood that the sneaker had to change – and they succeeded in changing it. We now have a sports shoe that’s a ballet flat, and a ballet flat that’s a sports shoe.” This was one of the insights shared by Maria Cristina Rossi, teacher at Arsutoria School, with the large audience attending trend talks in the Highlights Area at Expo Riva Schuh and Gardabags.

Her observation captures, in simple terms, the much broader and more complex transformations affecting not just fashion, but the entire market. But how can we respond to a shifting landscape? The key concept is "Knowing How to Become". “Knowing How to Become” refers to the ability of individuals and organisations to continually learn and adapt to ever-changing contexts, environments and situations.

It is the most fitting way to describe the work carried out by Expo Riva Schuh and Gardabags since the early 2000s: “We began by focusing on internationalising the exhibitor base – the fair that moves the world.

More recently, we’ve evolved the event into a must-attend opportunity for the entire footwear and accessories community. A place for doing business, of course, but also for staying informed and connecting intelligently – through a rich program of events, the Business Scout services, and the app that enables direct contact between exhibitors and buyers,” as **Alessandra Albarelli, General Manager of Riva del Garda Fierecongressi**, explained.

KEY FIGURES FROM THE 103RD EDITION

The **103rd edition of Expo Riva Schuh and Gardabags**, welcomed 8,000 attendees from over 100 countries, meeting organisers’ expectations and reflecting broader market trends.

Roberto Pellegrini, Chairman of Riva del Garda Fierecongressi: “Once again, the summer edition has proven to be stronger than the winter one. Visitor numbers remained largely stable – a solid result considering the many complications currently affecting global markets, as well as the military conflicts that, during the fair itself, escalated and prevented several countries from participating.”

Buyer attendance grew from the UK (+5%) and Poland (+15%), with Germany holding steady and Italy showing a slight decline. Non-EU inbound attendance was also positive, with India up by 13.6%, and both Africa and the United States registering a +10% increase.

That buyer quality – often more important than quantity – continues to drive order placements is confirmed by the consistent demand for more exhibition space to welcome new exhibitors and allow existing ones to enlarge their stands. “We will meet these demands by expanding the exhibition centre. Over the next three years, we plan to complete works that will make the fairgrounds even more welcoming: we will add another 20,000 m2, building new halls for a total investment of around €50 million. This will ensure an even greater international reach and exhibitor diversity,” revealed Roberto Pellegrini.

This diversity is indeed one of the event’s greatest strengths, as confirmed by Antonia Reading of Hotter, a major UK retail chain with its own manufacturing company, who visited the fair for the first time: “I was amazed by the variety of the offering – both in terms of the

chance to meet suppliers from literally all over the world and the different levels of quality I could choose from."

THE EVOLUTION OF GARDABAGS... AND BEYOND

Undoubtedly, the most talked-about transformation at the June edition was **the revamp of Gardabags**. Social media lit up with photos of the new halls entirely dedicated to the event, which doubled in both floor space and collection offering. A stylish, fashion-forward atmosphere defined the three new zones designed for interaction between exhibitors and buyers – the pillars of the new Gardabags format: **Sourcing, Sourcing4Bridge, and Brands**, not to mention the strong presence of exhibitors specialising in travel goods.

Having successfully redefined the Riva event as the essential hub not only for footwear trade, but now also for bags, backpacks and travel accessories, Riva del Garda Fierecongressi is already looking ahead. The next step: the progressive **evolution of Expo Riva Schuh itself,** beginning with the unveiling of a new visual identity – a reflection of the fair's continued innovation, adaptability, connection to its local roots and commitment to networking.

The **new logo** – featuring a clean and immediate design – complements the renewed identity of Gardabags and clearly conveys the message of a modern, functional and service-oriented trade fair. Every detail of the new design has been carefully analysed to communicate Expo Riva Schuh's commitment to keeping pace with the times, while maintaining strong and consistent brand recognition.

INNOVATION

Alberto Mattiello – futurist, author, Head of Innovation Retail Hub, and member of the Scientific Committee of Expo Riva Schuh and Gardabags – also addressed the profound changes

shaping the world during his opening speech at the Startup Competition: “Artificial Intelligence remains the central theme when it comes to innovation. After being used to streamline processes and save us time, it has evolved into a wide array of specialised, customisable and controllable tools capable of ‘reasoning’. Now, it’s reaching a third evolutionary stage. We’ve entered the era of Massive Automation: within a few months, we may all become programmers – not because we’ve learned to code, but because machines will do it for us, creating applications tailored to our needs.”

The ever-growing panel of judges, composed of leading buyers and industry experts, selected **Irisphera** (Romania) as the best solution among those presented during the June 2025 edition of the **Innovation Village Retail**, an initiative organised in collaboration with Retail Hub, which – across its eight editions – has showcased 68 startups from 19 countries.

Thanks to their win, Irisphera will have the opportunity to exhibit at the next edition of the event, scheduled for January 2026, further strengthening its presence on the international stage.

The company will promote its platform, which uses artificial intelligence and 3D technology to help consumers find clothing tailored to their bodies, offering personalised suggestions on size, colour and style. The result is a significant reduction in returns, an enhanced shopping experience and valuable analytics for retailers.

Other events throughout the four-day fair also drew large crowds: the **Highlights Area**, where attendees explored consumer trends and gathered reliable insights to inform purchasing decisions; the **Market Focus sessions**, a prime opportunity for buyers to discuss their local markets and meet suppliers suited to their specific needs; and the **Expo Riva Nights**, where connections were built beyond business in a festive, relaxed atmosphere.

Once again, the 103rd edition of Expo Riva Schuh and Gardabags demonstrated its ability to truly "Know How to Become" what the industry needs – and it will continue to do so in future editions, starting with the next, which will take place **from 10 to 13 January 2026.**

TARIFFS AND GLOBALISATION: NOTHING CHANGES, BUT EVERYTHING DOES

International tariffs on footwear will not stop globalisation, but they will redirect its course. Global production chains are structured in such a way that around two-thirds of the footwear consumed is produced in countries other than those where it is purchased. The idea of deglobalisation is, therefore, a misleading narrative. Rather, we are witnessing a reconfiguration of global trade towards a form of regional globalisation. In this shift, logistics and geopolitics are becoming increasingly important, overtaking the traditional competitive advantages based solely on cost.

The debate on the impact of tariffs in the footwear industry is more relevant than ever. To fully understand the dynamics at play, it is essential to consider the global context of production and consumption. According to the Expo Riva Schuh & Gardabags Research Centre, Enrico Cietta, economist and Chairmain of the exhibition's Scientific Committee, points out that globalisation is evolving but remains an unstoppable process.

The resilience of globalisation and the impact of crises

Contrary to what some may believe, the introduction of new tariffs will not trigger an "avalanche that overwhelms globalisation. Our globalised footwear production system cannot simply be switched off," says Cietta. Globalisation is changing shape, but it will not revert to a model in which each country independently manufactures its own shoes.

Recent data reveals a clear disconnect between declining consumption and production and the comparatively stronger resilience of exports.

In 2023, there was a significant drop in consumption – around one billion fewer pairs sold compared to 2017, and 1.3 billion fewer than in 2022.

Production saw a similarly steep decline, with 1.1 billion fewer pairs than in 2017 and 1.4 billion fewer than in 2022.

However, the fall in exports was far more modest: just 0.3 billion fewer pairs than in 2017 and 1.1 billion fewer than in 2022.

This is a crucial point: crises tend to impact consumption and production more than they do exports. The reason is structural: “Two out of every three pairs of shoes we consume are produced outside the country where they are ultimately purchased.” Exports demonstrate significantly greater resilience to economic crises, highlighting the difficulty in halting the globalisation of footwear production.

Tariffs and the reconfiguration of global trade

Tariffs will have an impact, but “more than reducing the volume of trade flows, they will redirect the routes those flows take.” At this point in time, it would therefore be inaccurate to speak of “deglobalisation”. Instead, what we are experiencing is a form of “globalisation that is evolving and taking on different characteristics different from the past.” We are witnessing a reconfiguration of global footwear trade that is moving towards a “regionalisation of globalisation.” This term refers not only to geographical proximity, but also to variables linked to logistics and geopolitics. Compared to the past, when globalisation was driven primarily by cost-based competitive advantages, new variables are now at play.

Reshoring: an unrealistic ambition?

The idea of bringing footwear production back to importing countries – so-called “reshoring” – is described as “unthinkable”. **Footwear manufacturing is highly concentrated: exporting countries account for 67.8% of global production and 79.8% of global exports, acting as “world factories” that produce “not for their own domestic markets, but for global consumption.”** Consumer countries, which account for roughly 16% of global demand, are

unlikely to be able to relocate such a well-established and efficiently structured production system within their own borders. As a result, the reshoring effect "will be seen in only a very small share of production, and will likely concern specific niche segments."

Geopolitical spheres of influence and the future of the industry

Cietta identified five spheres of influence:

- US and Western sphere of influence: This bloc dominates consumption and imports (United States, Canada, Mexico, the European Union, the UK, Japan, South Korea and Australia).
- Chinese sphere of influence: This bloc controls production and exports (China, Hong Kong, much of Asia and certain African nations dependent on Chinese investment).
- Emerging, non-aligned countries: These are producers that consume much of their own output and act as a balancing force between the two major blocs mentioned above (India, Indonesia, Vietnam, Brazil and South Africa – the BRICS area).
- Russia and Iran: Countries particularly penalised by international trade restrictions.
- Neutral countries: Small trade hubs that maintain open relations with all (Singapore, Switzerland, United Arab Emirates).

The 2 main blocs – producers and importers – will continue relations

This is nothing new, but it's worth repeating to those forecasting the sudden collapse of supply chains: The US and Western bloc accounts for 75.1% of global imports, while the Chinese sphere represents 75.9% of exports and 66.5% of global production.

These figures, along with insights into the evolving nature of globalisation, underline a key point: the two worlds – the Western

consumer markets and the Asian production/export hubs – will inevitably need to continue engaging and trading. New opportunities may arise in other countries, but the global scenario remains “clearly divided”. The mutual dependence between these two blocs will likely shift gradually, but it is highly unlikely to disappear any time soon.

A transitional landscape

We are, without doubt, operating in a transitional landscape. We have come from two decades in which “prices remained relatively stable,” whereas today we are navigating a world marked in some cases by deflation (driven by massive overproduction), and in others, significant price increases (also due to restrictions and tariffs). It is plausible to expect a shift from a scenario dominated by a “highly concentrated production hub centred on China” to a “more fragmented” landscape. However, “production will remain largely based in Asia.”

What emerges is a future defined by slow but inevitable transitions. “Globalisation is changing shape, but it’s not reversing,” says Cietta. Changes in tariffs and trade policies will therefore affect geographical trade routes and production structures, leading to fragmentation and new regional balances – but without undermining the core foundations of globalisation itself.

The summary offered by Enrico Cietta highlights that the footwear industry is heading towards a process of continuous transformation, driven more by strategic realignments than sudden changes.

International trade fairs

It is precisely in this kind of environment – where market complexity and ongoing evolution exist alongside certain well-established pillars – that distinctly international trade fairs, such as Expo Riva Schuh and Gardabags, play a crucial role. These are must-attend events for anyone seeking to understand how sourcing routes are shifting and to identify partners who best align with their business needs.

MICAM CELEBRATES ITS 100TH EDITION UNDERTHE SIGN OF INNOVATION

100 days to go: registrations and the social media campaign open as MICAM prepares for its 100th edition, taking place from September 7 to 9 at Fieramilano Rho.

The countdown has officially begun: with 100 days to go until the opening of MICAM, registrations and the social media campaign are now live. This will be a truly unique edition, celebrating the milestone of the 100th edition of the international footwear trade show, scheduled for September 7-9.

Over 1,000 footwear collections from around the world are expected, showcasing new trends for Spring-Summer 2026. The spotlight will be on 50 years of MICAM's history-marked by Made in Italy excellence, know-how, innovation, and vision- elements that have helped establish the event as a global benchmark for industry professionals.

"MICAM 100 will be an extraordinary opportunity to celebrate the culture of footwear manufacturing," says Giovanna Ceolini, President of MICAM and Assocalzaturifici. "We will present a brand-new schedule of events and insights curated by a top-tier partner. Expect fashion shows, trend talks, and a strong focus on new technologies applied to retail, along with a vibrant dialogue between aesthetics and innovation- driven by the original visions of emerging designers. It will be a dynamic mix of inspiration, language, and experimentation that reflects the evolving identity of a constantly transforming sector."

2025 is also a special year for Assocalzaturifici, celebrating 80 years of supporting Italian footwear companies. This dual anniversary will make the upcoming edition of MICAM even more memorable, projecting the event into a new century of success.

MICAM for Game Changers is ready to offer an even more immersive and inspiring experience in its 100th edition.

ILM Edition #162: order platform, innovation driver, meeting point for the industry

From 30 August to 1 September 2025, international purchasers and industry experts will be getting together in Offenbach for ILM Edition #162. Around 300 brands from 28 countries – from established labels to newcomers – are set to present their collections for Spring/Summer 2026 there.

This demonstrates that ILM is still the world's major, not-to-be-missed order platform for bags, luggage, leather goods, accessories and school satchels.

FORWARD-LOOKING VARIETY – GATHERED ALL IN ONE PLACE

With its wide-ranging exhibitor portfolio, ILM offers a market-oriented overview of the most important product lines in the industry unlike any other trade fair. "We can observe remarkable continuity as far as international demand is concerned. The high esteem in which ILM is held amongst exhibitors and purchasers around the globe fully confirms this. With good cause:

There is no alternative anywhere in the world with anything like as wide and diverse a range of offers," Arnd Hinrich Kappe, Managing Director of Messe Offenbach, explains.

"ILM is more than just a marketplace; it is a must-attend for the industry. It draws together people who actively shape the market, creating space for them to dialogue. As such, we offer the only platform where innovative strategies can be developed and partnerships established on an equal footing," Kappe continues.

SIDE EVENTS WITH ADDED VALUE – KNOWLEDGE, EXCHANGE AND FRESH STIMULI

A practically-oriented accompanying programme corroborates ILM's role as an innovation forum. Lectures on trends,

discussion forums and the established cooperation with course graduates in Accessories Design from Pforzheim University provide profound input and creative perspectives for business with bags and accessories.

Following its successful start at the last ILM Edition, the curated exhibition “GROW – The Future of Leather Goods” by Melina Bucher will be entering the next round, presenting a wealth of bio-based material innovations – a topic of growing relevance for the whole industry.

Last but not least, ILM also extends an invitation to engage in personal exchange after the close of the trade fair: The popular afterwork parties offer a perfect opportunity – especially important in these digital times – to socialise and establish new contacts “for real”.

FORTHCOMING ILM DATES AT A GLANCE:

Edition #162: 30 August to 1 September 2025

Edition #163: 7 to 9 February 2026 (at the same time as Ambiente Frankfurt) Edition #164: 29 to 31 August 2026

Further information and tickets at: https://www.ilm-offenbach.de/en/

BOOKS FOR LEATHER

NOW AVAILABLE

1. Five Decades of Leather
   - S. Sankaran
   (only a few copies available)
2. Vegetable Tanning Materials of India
   - Dr. V Sundar Rao

ILTA Publications

3. An Introduction to the Principles of Leather Manufacture - S.S. Dutta
4. Analytical Chemical of Leather Manufacture (For Beginners) - P.K. Sarkar
5. Treatise of Fatliquors and Fatliquoring of Leather - Dr. Samir Dasgupta
6. Synthetic Tanning Agents - Dr. Samir Dasgupta

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Leather Auxiliaries – A Review PART – I

NSK SRINIVASAN [1] & HASMUKH SHAH [2]

UMTA Management & Texstyles Academy, Vapi, Gujarat, India [1 & 2]

nsk_sriya@yahoo.com[1] textiles.vapi@gmail.com [2]

(Contd. from May issue)

16. TFL - 300 years of experience [16]

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

TFL was founded in 1996 when Ciba-Geigy's leather business unit merged with the leather departments of Röhm and Stockhausen – both member companies of the Degussa-Hüls Group.

This merger brought together over 300 years of experience in leather making were accomplished and TFL has the full array of knowledge, as well as the complete range of products for leather processing.

Moreover, since the foundation in 1996, a great deal of additional finishing know-how has entered the company through the acquisitions of Deacolor and Novaria in Italy, Wilmington in the USA and QUINN in India. These synergies are the basis for additional innovations that have come continuously onto the market. In 2013 TFL was bought by Black Diamond Capital Management, L.L.C.

Ever since, we have continued to intensify our closeness to our customers and have established good relationships on a global scale. Being in the market for the market is one of our success factors and local service plays a key role in the marketing of our services. Thus, customers benefit from TFL innovations quickly and in the most efficient way.

In August 2020, TFL agreed to acquire the organic leather chemicals business of LANXESS.

17. Royal Smit & Zoon [17]

Royal Smit & Zoon develops and produces sustainable chemical solutions for the leather industry and has, since the start in 1821, grown into a worldwide renowned player. Smit and Codyeco, two of our subsidiaries, are household names in wet-end and finishing. Since 2020 Royal Smit & Zoon is also providing sustainable tanning solutions, under the new subsidiary Nera. Ambition is to create a more sustainable leather value chain together.

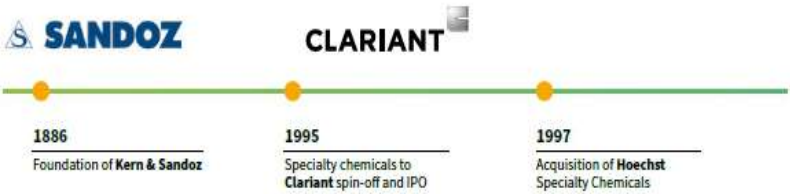
BRANDS & PROCESSES -The corporate brand Smit & Zoon has three separate brands in its portfolio: Nera, Smit and Codyeco

Royal Smit & Zoon - manufacturer of sustainable chemicals for leather manufacturing. Provide solutions for tanning, wet-end, finishing and beamhouse with three main brands Smit, Codyeco and Nera. Leather Tanning Chemicals | by brand Nera. Wet-End Chemicals | by brand Smit. Leather Finishing Chemicals | by brand Codyeco.

18. ARCHROMA IN A NUTSHELL [18]

Archroma is a global, diversified provider of specialty chemicals Through this direct lineage, Archroma has accumulated a knowledge and expertise of specialty chemical manufacturing spanning more than 130 years.

ARCHROMA IN A NUTSHELL Figure -18



Reference : Figure - 18. Sustainability report Fiscal year 2020. THE ARCHROMA WAY TO A SUSTAINABLE WORLD. ARCHROMA. www.archroma.com

19. Dystar [19]

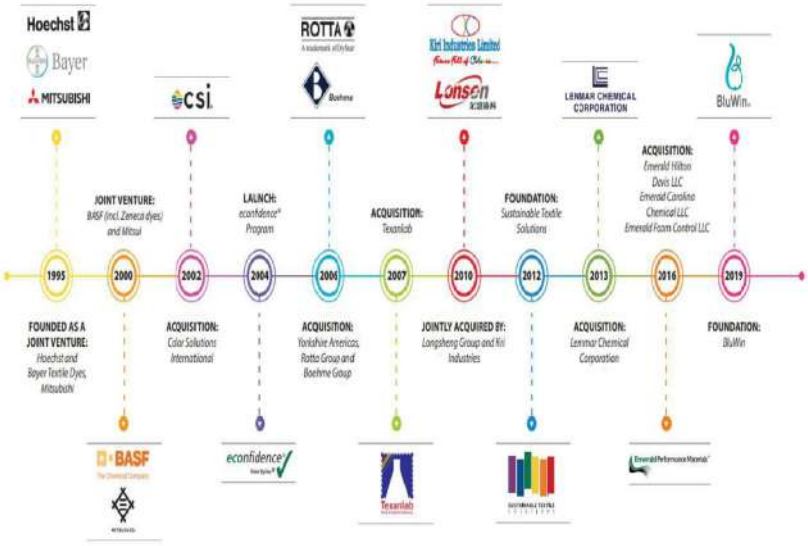
Building on a heritage of more than 150 years of experience of textile dyes, DyStar now offers customers a full range of dyes, auxiliaries and services. Our diversity, creativity and innovative strength are the cornerstones of our success and will ensure we remain a reliable partner for our customers in the future.

DyStar, founded in 1995, started as a joint venture company comprised of Hoechst AG, Bayer Textile Dyes, and Mitsubishi. Adding to the family, DyStar integrated the textile dye businesses from BASF including ICI/Zeneca Dyes and Mitsui into the company, establishing DyStar as a coloration specialist.

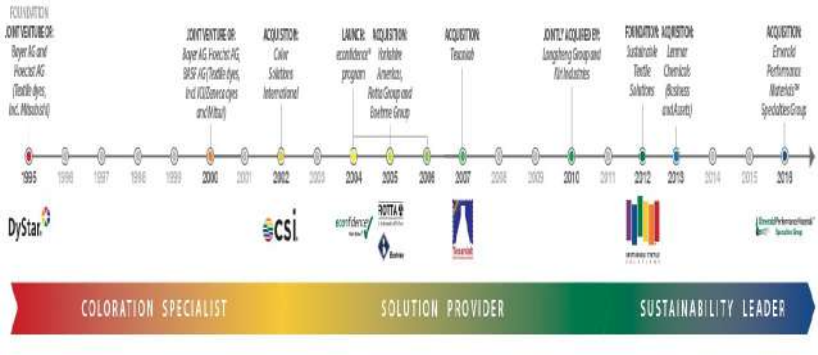
In 2002, DyStar acquired Color Solutions, which became the first of many services DyStar offered to its customers. Following Color Solutions were Yorkshire Americas and the launch of the Econfidence program in 2004, the acquisitions of the Rotta and Boehme Groups in 2005 and 2006 respectively, and the addition of Texanlab in 2007.

In 2010, influenced by the great need to evaluate and improve the industry's impact on the environment, DyStar embarked on a journey to sustainability and released its first Sustainability and Carbon Footprint report in 2011. Aiming for greater heights in sustainability, DyStar founded the Sustainable Textile Solution division, designed to assist brands, retailers and their industry partners with supply chain auditing and to recommend sustainable solutions for improvement.

19.1 Dystar - Building on a heritage of more than 150 years of experience Figure -19 A



Reference : Figure -19 A. Integrated Sustainability Report 2020-2021. Dystar www.dystar.com



Reference : Figure -19 A. Dystar www.dystar.com

20. Leather Supply Chain Figure – 20

Reference : Figure – 20. The framework for sustainable leather manufacture, Second edition - Jakov Buljan, Ivan Kraľ – 2019. the United Nations Industrial Development Organization

21. Different Types of Leathers and Description Table – 21

LEATHER	DESCRIPTION
Aniline	Aniline leather is the most natural leather with unique surface characteristics of the hide remaining visible. This leather is coloured with dye and not with a surface coating. A light surface coating may be applied to enhance its appearance and offer slight protection against spillages and soiling.
Semi-Aniline	Semi-aniline leather is more durable than aniline, maintaining a natural appearance. The application of light surface coating containing a small amount of pigment usually increases stains resistance.
Pigmented leather	Pigmented leather is the most durable leather and is frequently used in furniture and car upholstery. A polymer surface coating containing pigment confers a higher durability.
Full grain pigmented leather	Leather with surface coating applied in the intact grain surface. Any imperfection existent on hide (e.g. veins, cuts) will be visible in the finished leather.
Corrected grain pigmented leather	Leather with a decorative grain pattern embossed into the grain surface. The procedure "correcting the grain" can be used to correct/minimize the visual effect of scar marks, wire scratches and growth marks. This procedure contributes to higher leather surface usage (otherwise higher amount of waste could be generated during the footwear production).
Finished split leather	Leather of the middle or lower section of a hide with a polymer coating applied and embossed to mimic a grain leather.
Antique grain (two-tone or rub-off)	Leather with a special surface effect created to mimic the unique "worn" appearance of traditional leathers. A contrasting top-coat is applied unevenly or partially rubbed off to reveal a paler underlying colour.
Pull-up/waxy/oily pull-up	Leather with a natural appearance with lightens in colour when stretched during wear to produce unique worn-off effect with time.
Nubuck	Aniline dyed leather which has been lightly abraded on the grain surface to create a velvety finish or nap.
Suede	A split which has been abraded to create a distinctive nap.
Nappa	Full grain leather drummed to give a soft and comfortable feel.
Patent	Patent leathers have a surface coating of PVC or polyurethane to give a very gloss finish.
Waterproof	Leather with water resistance properties
Transfer Coat	A foil is hot pressed (pressure and temperature) onto leather surface and a coating transferred to the leather surface.
Engraved leather	Laser machines could be used to engrave leather materials surface and produce very aesthetic and fashionable materials.
Printed leather	Printing machines could be used to print on leather materials surface.

Reference : Table -21. UNIT 2 - Sustainable Materials and Components for Footwear. *www.step2sustainability.eu*

22. Leather Industry Association and Trade Groups [22]

Many trade groups and industry associations have been established around the world to help and grow the leather industry. Some are regional or country-specific, while others are overarching associations of associations that help guide more global initiatives. Some of the most popular ones have been listed below.

Leather Industry Association and Trade Groups Table - 22			
Abbreviation	**Name**	**Country**	**Website**
AHSLEA	Australian Hide, Skin and Leather Exporters' Association	Australia	http://www.ahslea.com.au/
BTA	Bangladesh Tanners Association	Bangladesh	http://www.tannersbd.com/
CLE	Council for Leather Exports	India	http://leatherindia.org/
CNC	Conseil National du Cuir	France	https://conseilnationalducuir.org/
COTANCE	Confederation of National Associations of Tanners and Dressers of the European Community	Belgium	https://www.euroleather.com/
ICHSLTA	International Council of Hide, Skin & Leather Traders Associations	Hong Kong	http://www.ichslta.com/

Leather Industry Association and Trade Groups Table - 22			
ICT	International Council of Tanners	United Kingdom	https://leathercouncil.org/
IULTCS	International Union of Leather Technologists and Chemists Societies	United Kingdom	http://www.iultcs.org/
LIA	Leather Industries of America	United States	https://www.leatherusa.com
LWG	Leather Working Group	United Kingdom	https://www.leatherworkinggroup.com/
PTA	Pakistan Tanners Association	Pakistan	http://www.pakistantanners.org/
SLTC	The Society of Leather Technologists and Chemists	United Kingdom	http://www.sltc.org/
UNIDO	Leather and Leather Products Industry Panel	Austria	https://leatherpanel.org/
USHSLA	U.S. Hide, Skin and Leather Association	United States	https://www.ushsla.org/

Reference : Table 22. The leather industry - An Overview of Fascinating Facts, © 2021 LIBERTY LEATHER GOODS

22.1 Leather Panel- Links, leatherpanel.org [22 A]

In Leather Panel (leatherpanel.org), a provision has been provided to access existing sources of information or services which are helpful to potential users.

Organizations and institutions are divided in following categories:

- Trade associations related to leather-based industries
- Leather and leather products related R&D Institutions
- Fashion education and/or training institutions
- Leather-related professional education and training institutes
- International organizations dealing with leather-based industries

23. References

1.1.& Table -1 B. Leather Chemicals Market Size By Product (Beamhouse Chemicals [Soaking, Liming, Deliming & Bating], Tanning [Chrome, Non-chrome], Dyeing [Water-based, Non-water based], Finishing Chemicals [Polyurethane, Acrylic, Silicone]), By End-user Industry (Footwear, Furniture, Automobile, Garments, Gloves), Industry Analysis Report, Regional Outlook, Growth Potential, Price Trends, Competitive Market Share & Forecast, 2019 – 2026. Global Market Insights, Inc. sales@gminsights.com

1.Table – 1 D. Indian Leather, Vol.55, February 2022, No.12 and Leather Age November 2018 and Leather Chemicals Market Size By Product (Beamhouse Chemicals [Soaking, Liming, Deliming & Bating], Tanning [Chrome, Non-chrome], Dyeing [Water-based, Non-water based], Finishing Chemicals [Polyurethane, Acrylic, Silicone]), By End-user Industry (Footwear, Furniture, Automobile, Garments, Gloves), Industry Analysis Report, Regional Outlook, Growth Potential, Price Trends, Competitive Market Share & Forecast, 2019 – 2026. Global Market Insights. Source : www.gminsights.com

2.Figure- 2 A Pigments Market by Type (Azo, Phthalocyanine, Quinacridone, Titanium dioxide, Iron Oxide, Cadmium, Carbon Black, Chromium Oxide, Complex Inorganic, Classic organic, Metallic, High Performance, Light Interference, Fluorescent, Luminescent, Thermo-chromic) - Global Opportunity Analysis and Industry Forecast, 2014 – 2022 Allied Market Research, 2020. alliedmarketresearch.com

2B. Verbund BASF2020

3.Figure – 3 A Leather Chemicals Market Size By Product (Beamhouse Chemicals [Soaking, Liming, Deliming & Bating], Tanning [Chrome, Non-chrome], Dyeing [Water-based, Non-water based], Finishing Chemicals [Polyurethane, Acrylic, Silicone]), By End-user Industry (Footwear, Furniture, Automobile, Garments, Gloves), Industry Analysis Report, Regional Outlook,

Growth Potential, Price Trends, Competitive Market Share & Forecast, 2019 – 2026. Global Market Insights. Source : www.gminsights.com

3.Figure -3 B. Global Leather Chemicals Market – Industry Trends and Forecast to 2028. Data Bridge Market Research. www.databridgemarketresearch.com

3. Figure – 3 C. Leather Chemicals Market Size, Share & Trends Analysis Report By Product (Biocides, Surfactants, Chromium Sulfate, Polyurethane Resins, Sodium Bicarbonate), By Process, By End Use, By Region, And Segment Forecasts, 2020 – 2027. Grand View Research Inc www.grandview research.com

4. India Leather Chemicals Market By Type (Basic & Specialty), By Process (Beam House, Wet-End & Finishing), By Chemical (Lubricating Agent, Chromium Sulphate, Lime, Dyes, Auxiliary Chemicals, Ammonium Sulphate, Formic Acid, etc.), Competition Forecast & Opportunities, 2012 – 2026. MarketResearch.com

4 A. India Leather Chemicals Techno-Commercial Market Report 2019: Market is Projected to Grow from 406 KTPA in 2018 to 965 KTPA by 2030. Research and Markets. ResearchAndMarkets.com

4 B & 4C. Figures 4 B & 4 C. Indian Leather February, 2020. Volume 53 & No. 12.

5. 5.& Table 5A. Stahl, stahl.com

5 B & 5 C. Figures 5 B & 5 C. Chemicals for Sustainable Leather Manufacture 53rd LERIG Prasanna Maduri, Campus Manager, 29 January 2020

6. & Table – 6 A. Leather chemicals. Products Catalogue. Quimser, www.quimser.com

6 B & 6 C. Tables – 6 B & 6 C. Eco-leather portfolios. Quimser www.quimser.com

7 A & 7 B & 7 C. Tables 7A & 7 B & 7 C. - Leather Chemicals - Project Planning & Business Development, CSIR-Central Leather Research Institute Adyar, Chennai, Tamil Nadu, India - 600 020 https://www.clri.org

7 D & 7 E & 7 F. Tables – 7 D & 7 E & 7 F. Leather Processing. Project Planning & Business Development, CSIR-Central Leather Research Institute Adyar, Chennai, Tamil Nadu, India - 600 020 https://www.clri.org

8. 8. & Tables – 8 A & 8 B & 8 C & 8 D & Figure – 8 E. Green Technologies for the Leather Production 45th Leather Research Industry Get Together (LERIG) 29 January 2011- Clariant

9. 9.& Tables – 9 A& 9 B & 9 C. Green Technologies for the Leather Production 45th Leather Research Industry Get Together (LERIG) 29 January 2011- Clariant

10.10.& Table 10 A. KEMIA TAU, Italy info@kemiatau.com

11.Tables – 11 A & 11 B & 11 C. Royal Smit & Zoon https://www.smitzoon.com/

12. & 13. Figure -12 & 13. The framework for sustainable leather manufacture, Second edition - Jakov Buljan, Ivan Kraľ – 2019. the United Nations Industrial Development Organization.

14.Figure -14. Integrated Pollution Prevention and Control (IPPC) Reference Document on Best Available Techniques for the Tanning of Hides and Skins February 2003EUROPEAN COMMISSION

15.Figure -15. Stahl, stahl.com

16. TFL www.tfl.com

17. Royal Smit & Zoon https://www.smitzoon.com/

18. 18.& Figure - 18. Sustainability report Fiscal year 2020. THE ARCHROMA WAY TO A SUSTAINABLE WORLD. ARCHROMA. www.archroma.com

19.Dystar – Our History. www.dystar.com 19 A. Figure -19 A. Integrated Sustainability Report 2020-2021. Dystar www.dystar.com

20.Figure – 20. The framework for sustainable leather manufacture, Second edition - Jakov Buljan, Ivan Kraľ – 2019. the United Nations Industrial Development Organization

21.Table -21. UNIT 2 - Sustainable Materials and Components for Footwear. www.step2sustainability.eu

22.Table 22. The leather industry - An Overview of Fascinating Facts, © 2021 LIBERTY LEATHER GOODS. 22 A. Leather Panel- Links, leatherpanel.org

Leather Auxiliaries – A Review PART – II

Leather Auxiliaries – A Review PART – I, II & III	
Part- I	**Part- II**
Introduction, Salient Features, Growth Drivers, Leather Auxiliary Industry in India, Manufacturers of Leather Auxiliaries - Global & Indian Scenario,	Quality Assurance and Customer Support, Key functions, Centers of Excellence, Stahl, Role of Centre of Excellence,
Strategies for Growth & Development, Global Market – Leather Auxiliaries, Indian Market, The demand for leather chemicals in India, Projected Requirements of Leather Chemicals,	Business Development – Components & Focus, Keys to a Successful Center of Excellence, Application and Fashion Centres - TFL.
Product Range & Solutions, Stahl Sustainable Technology in Leather, Product Range * Solutions – Quimser, Leather Chemicals & Leather Process Technologies – CLRI,	Smart Science to improve lives – Croda, Certification, Collaborations & Memberships, Broad Categories of ISO Certification Standards, Relevant certification and audit bodies,
Green Technologies for the Leather Production – Clariant, Product Range - KEMIA TAU, Italy, Smit & Zoon – Leather Solutions,	Benefits of Standards, Certifications of Manufacturers of Leather Auxiliaries, TFL, Colourtex, Quimser, Stahl, Archroma, Trumpler, DyStar,
Overview of the main tanning systems, International expansion to meet global demand – Stahl, TFL - 300 years of experience,	Greenwashing, Licence to Greenwash, Certification Labels - Sustainability Certification Schemes,
Royal Smit & Zoon, ARCHROMA IN A NUTSHELL, Dystar - Building on a heritage of more than 150 years of experience,	Innovation, Trends, Strategy, Challenges encountered by Leather Industry,
Leather Supply Chain, Different Types of Leathers	Product & Process Innovation, Some Potential Innovations in Leather,

Leather Auxiliaries – A Review PART – I, II & III	
Part- I	**Part- II**
and Description, . Leather Industry Association and Trade Groups,	Smit & Zoon - Milestones 2020- Reducing the Footprint & TOWARDS CIRCULARITY
Leather Panel- Links, leatherpanel. org References.	CLRI – Technology - Leather Processing, Leather Chemicals, Enzymatic Products, Environmental Technology, Health care products, References.

Leather Auxiliaries – A Review PART – I, II & III
Part- III
Responsible chemistry and Life Cycle Assessment (LCA), Vision, Twelve Principles, The 9 LCA impact categories explained,
Cleaner production, CLEANER TECHNOLOGIES, Green Chemistry, The 10 Green Chemistry Principles Applied,
Responsible Care, Sustainable Chemistry, ESG, ESG Landscape - Environment, social & governance report-2019, Stahl Group, Dystar's New Materiality Matrix, Economic, Social, Environment and Governance – Dystar,
Creating Sustainable Value through Business Model, Product Stewardship across Value Chain- Dystar, Product stewardship at Archroma focuses on three strategic areas,
Archroma – Products Launch, SUSTAINABLE SOURCING, CONSUMER PRODUCT SAFETY, STAHL BETAN : LEATHER SOLUTIONS FOR RESPONSIBLE TANNERIES,
Services – DyStar, The ZDHC Programme, ZDHC V2. 0 MRSL, From RSL to MRSL, Input Stream Management,
Chemical Management System, ZDHC- What does ZDHC's Manufacturing Restricted Substances List (MRSL) mean for leather makers

Leather Auxiliaries – A Review PART – I, II & III
Part- III
The ZDHC Toolbox, Zero Discharge of Hazardous Chemicals (ZDHC) Certification and Testing Programs, Worldwide Responsible Accredited Production (WRAP), Going Forward, References

1. Quality Assurance and Customer Support

Quality Assurance and Customer Support are key functions of the organization in Leather Auxiliaries Industry. They have intense interactions with Manufacturing, Marketing, Commercial functions within organization, Customers as well as Industry Organizations, Sustainable Textile Standards and Organizations, Global Corporate Sustainability Organizations and Local Chapters.

They play an important role in providing sustainable products meeting consumer expectations relating to quality- Characteristics, Performance & Fastness Properties, consistency, durability, sustainability and conformance to ecology norms.

Quality control is a procedure/set of procedures carried out to ensure that a manufactured product/performed service adheres to a defined set of criteria/standard values, before, during and after manufacturing, to ensure customer satisfaction and conformance with statutory regulations. The raw materials, manufacturing process and finished products undergo stringent QC checks as per the standard protocols. [1]

Quality is about meeting the needs and expectations of customers with respect to functionality, design, reliability, durability, & price of the product. An organization uses Quality Assurance to ensure that the product is designed and implemented with correct procedures. This helps reduce problems and errors, in the final product.

Reference :1. A presentation on QUALITY CONTROL IN THE PAINT INDUSTRY By Mrs. Adetoun Tijani Head, Quality Control Laboratory, Portland Paints & Products Nig. Plc.

1. 1. Key functions of Quality Assurance and Customer Support in Leather Auxiliaries Industry

In most of the organizations inLeather Auxiliaries Industry have manufacturing & service centres in more than one location for meeting the Customer need & completing the product range.

Growing competition, Meeting the changing expectations, Environmental Challenges and Providing Solutions to User Industry have become key areas requiring more focus for survival, growth and development.

Quality Assurance Table – 1 A
Quality control of inputs, in process controls and Finished Product Testing, Standard Maintenance, Complaint Handling.
Key Role in maintaining Quality Systems – Quality Management System, Environment Management System, Occupational Health & Safety Management System.
Sustainable Chemical Management System – ZDHC(MRSL), RSL, MSDS, Eco Booklet & others

Customer Support - Table – 1B
• Trials & Demonstrations at Customer Place for Product performance and • Product Differentiation, • Technical Discussions for Product Selection and approvals. Organizing Seminar & Customer Awareness Meet.
• Generation of Technical Information. New Product screening and approval. • Interactions with Educational Institutions, & Research Organizations.
• Application Research at Factory and at Customer centres with lab and pilot plant facilities

Customer Support - Table – 1B
• for enhancing the Customer Base, product different ion, Dissemination of Technical Information leading to Retaining Customers, and Value Realization.
• In Leather Industry most of the Dyes Chemicals, Auxiliary & Colourant manufacturers have their own Service Centres in key locations of Tanning Centres around the globe.
• Their major activities are – Colour matching including Modeurope fashion shades; Imparting product knowledge; Offering tailor made solutions, leather testing and practical training on specific articles; organizing conference and seminar on various key challenges and industry and trade related requirements; Cleaner production, RSL (Restricted Substance List), MRSL (Material Restricted Substance Lists) and Environmental challenges and related activities.

2. Centers of Excellence, Stahl

Activities in the areas of Leather Finish, Shoes & Leather Goods, Edge Dyes, PerformanceCoatings, PowderCoatings, Leather Furniture Upholstery, Apparel& Home Furnishing, Automotive.

2. 1Services – Stahl

Services – Stahl Table – 2 A
Services - Stahl
• A one-stop-shop covering the entire value chain of everyday materials.
• Working directly with leading luxury brands and OEMs.
• Offering global services for our clients: Stahl Campus, Stahl Design Studio, Brand services, Expert services, Centres of Excellence.
• Promoting good practices and transparency
• Going to partners for the newest trends and latest technological possibilities
• Training all kinds of stakeholders
• Training & education- Safety, Health & Environment (SHE) training,

Services – Stahl Table – 2 A
Compliance e-training • International Management Training Program, Stahl Campus.

Reference : Table – 2 A Chemicals for Sustainable Leather Manufacture 53rd LERIG Prasanna Maduri, Campus Manager, 29 January 2020 Stahl

2. 2 Center of Excellence, Stahl

Center of Excellence, Stahl Table – 2 B
Centers of Excellence for leather and performance coatings offer leadership, best practices, research, support and training to our clients and industry partners. We have centers within both our Leather Chemicals and Performance Coatings & Polymers divisions. These meet the demand for high performance products and solutions with a better environmental impact.
Stahl Centers of Excellence and their areas of expertise A Stahl Center of Excellence is a team, shared facility or entity and focuses on a global industry specialism or serves as a generalist knowledge hub for a region. Every center can draw on the expertise of every other Stahl Center of Excellence.
China, Guangzhou | Leather Finish Shoe, garment, leather goods and upholstery – internal and external training – collaboration with our Italian Center – China **China, Suzhou | Performance Coatings** Automotive – packaging film – packaging paper – synthetic materials – coated fabrics – textiles – specialties (medical, supportive gloves) – China **France, Graulhet | Edge Dyes** Customized edge dyes for leather – manufacturing processes – sustainability – customer co-creation – global **Germany, Leinfelden | Leather Furniture Upholstery** Product development – customer trials – application development – showroom for technologies and trends – global

Center of Excellence, Stahl Table – 2 B
Italy, Castelfranco di Sotto | Shoes & Leather Goods
Customized solutions for leather production – raw hides to aftercare – technology development – inhouse training – global
Mexico, Léon | Leather Finish
Footwear, fashion, automotive and tanneries – raw leather to finished leather and aftercare – testing laboratory – Americas
Spain, Parets del Vallès | Leather Dyes and Apparel & Home Furnishing
Performance coatings – leather chemicals technology – polymer technologies – tailor-made solutions – research – global
The Netherlands, Waalwijk | Center of Excellence for Automotive
High-performance car interiors – sustainable interiors – smart surfaces – special haptics – customer trials – global

Reference : Table – 2 B www. stahl. com

Stahl India opened Global Center of Excellence for Shoe Finish. The Centre had been built within the compound of Stahl India Pvt Ltd's manufacturing complex in Ranipet.

STAHL had opened a Center of Excellence in Kanpur, India. The center focuses on sustainable leather technologies. The mission of the Center of Excellence is to support the introduction of environmentally friendly technologies and processing methods and to train staff in best practices for leather manufacturing. It creates the possibility to demonstrate new technologies, and train tannery staff to apply more sustainable practices. And thus, work together on a cleaner Ganges.

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 !

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