Indian Leather

INDIA INTERNATIONAL LEATHER FAIR (IILF) SPECIAL ISSUE

Vol.58 January - 2025 No.11 Annual Subscription Rs.500

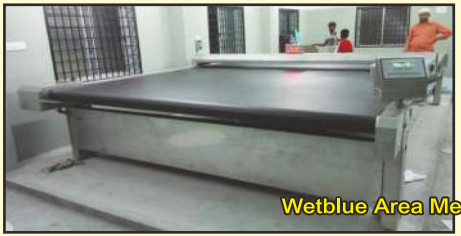
LEATHER FINISHING MACHINES


Conveyor Type


Table Delux Type


Table Type

Auto Spray With Dryer

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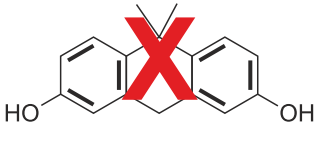

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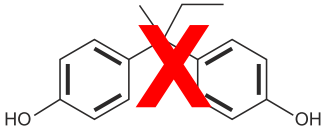
Bisphenol F



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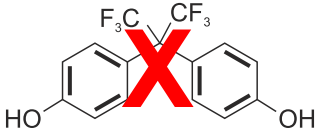

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Digest of Leather News

58th Year

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Indian Leather wishes the participants at IILF 2025 All Success

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Welcome to IILF 2025

The 38th edition of the India International Leather Fair, organised by the India Trade Promotion Organisation (ITPO), in association with the Council for Leather Exports (CLE), with the support of apex bodies of leather and leather products industry, is being held at the Chennai. Trade Centre, Nandanam, Chennai from 1-3 February, 2025. Over 400 exhibitors which include 70 overseas participants mainly from Brazil, Italy, Germany and France, occupying nearly 11,000 sq.mtrs exhibition space, including the New Convention Centre, present their innovative and newly developed products, processed technologies, needed for leather, leather goods and footwear industry.

On the eve of IILF 2025, Indian Finished Leather Manufacturer & Exporters Association (IFLMEA) and the Indian Shoe Federation (ISF) are organising at Hotel ITC Grand Chola, a unique event namely, **"Symposium of Emerging Brands"** which focuses to create a dedicated space for emerging brands to connect with the leading customers and others in the organised Retail Arena. Pan India 15 Emerging Brands will be showcasing their products like Leather Garments, Bags, Shoes and Accessories for Men & Women.

The **8th Designer Fair,** organised by the Council for Leather Exports will run concurrently with IILF at the Fair Venue. The exclusive event will future 38 internationally acclaimed designers

from countries including Brazil, the USA, Mexico, Italy, Australia, Philippines, Turkey, Portual and India.

The Indian Finished Leather Manufacturer & Exporters Association (IFLMEA) is organising **Leather Fashion Show 2025** at the Hotel ITC Grand Chola on 1st February evening the show will focus the leather industrys attention on the latest expressions of styles and designs in the world of leather fashion.

LERIG Conclave 2025, this year is being organised by CSIR-Central Leather Research Institute (CSIR-CLRI) at the New Convention Centre in the Fair venue on 2nd February 2025. The day long program includes a series events: Technology Talks on Specialty Chemicals, from CSIR-CLRI, Carbon Footprint Assessment Software focussing sustainability, Prof. S.S. Dutta Memorial Lecture, Industry Research Panel Discussion. Experience sharing on cost reduction and production improvement and Leather Ambassador meet.

IILF will continue to play its important role as a premier sourcing point for all kinds leather and leather products by attracting a huge number of exhibitors and visitors from India and abroad.

We are sure the trade & industry will be immensely benefited and updated with the latest developments in fashion trends and technology.

Indian Leather wishes all the Participants in IILF 2025 a Grand Success.

Council for Leather Exports
Sponsored by Ministry of Commerce & Industry, Government of India

CLE National Export Excellence Awards of Leather & Footwear Industry for FY 2023-24

The Council for Leather Exports (CLE) had organised the National Export Excellence Awards for 2023-24 distribution ceremony on 18th December 2024 at Vanijya Bhawan, New Delhi. The event celebrated top performers in various product segments Finished Leather, Leather Footwear, Non-Leather Footwear, Leather Goods & Accessories, Leather Garments, Harness & Saddlery, Footwear Components, Industrial Leather Products, Fashion & Sports Gloves etc.

Shri Piyush Goyal, Hon'ble Union Minister of Commerce & Industry, Government of India has attended the event as Chief Guest. Shri Santosh Sarangi, IAS, Additional Secretary & Director General of Foreign Trade (DGFT) has graced the occasion as Guest of Honor. During the event, Hon'ble Minister has honoured the National Export Award Winners in the Leather and Footwear industry for the FY 2023-24 by presenting them with the awards.

Shri Rajendra K. Jalan, Chairman-CLE was present in the function and delivered welcome address and presented floral bouquet and shawl to the Hon'ble Minister.

Hon'ble Minister has addressed the event and conveyed that India's footwear and leather industry is not only a significant contributor of Indian Economy but also a symbol of our skilled craftmanship and innovation. He added that these Export Awards reflect the dedication of our manufacturers and exporters and their efforts in making India a global leader in Leather and Footwear products industry.

Indian Leather congratulates all the Award Winners.

LIST OF AWARD WINNERS

OVERALL - EXPORTS OF LEATHER, LEATHER PRODUCTS AND FOOTWEAR

1st Place : **APACHE FOOTWEAR INDIA PVT LTD., TIRUPATI**

2nd Place : **MIRZA INTERNATIONAL LIMITED, KANPUR**

3rd Place : **SUPERHOUSE GROUP, KANPUR**

Above Rs.300 Crores:

LEATHER FOOTWEAR

1st Place : **FENG TAY INDIA, TIRUVANNAMALAI**

2nd Place : **APACHE FOOTWEAR INDIA PVT LTD, TIRUPATI**

LEATHER GARMENTS

1st Place : **BHARTIYA INTERNATIONAL LTD, GURGAON**

LEATHER GOODS

2nd Place : **A. V. THOMAS LEATHER & ALLIED PRODUCTS PVT. LTD., CHENNAI**

Above Rs.200 Crores & Up to Rs.300 Crores:

LEATHER FOOTWEAR

1st Place : **TATA INTERNATIONAL GROUP, RANIPET**

2nd Place : **LEINER SHOES PVT. LTD., AGRA**

FINISHED LEATHER

1st Place : **PRARA LEATHERS GROUP, CHENNAI**

LEATHER GOODS

1st Place : **KHEMCHAND HANDICRAFTS, JODHPUR**

2nd Place : **ALPINE APPARELS PVT. LTD., FARIDABAD**

NON-LEATHER FOOTWEAR

1st Place : **APACHE FOOTWEAR INDIA PVT LTD., TIRUPATI**

Above Rs.100 Crores & Up to Rs.200 Crores:

LEATHER FOOTWEAR

1st Place : **RAHMAN INDUSTRIES GROUP, KANPUR**

2nd Place : **ROGER INDUSTRIES GROUP, AGRA**

FINISHED LEATHER

1st Place : **MODEL TANNERS, KANPUR**

LEATHER GARMENTS

1st Place : **S.M. LULLA INDUSTRIES WORLD WIDE, CHENNAI**

2nd Place : **GEMINI ENTERPRISES, CHENNAI**

LEATHER GOODS

1st Place : **JAK GROUP PVT. LTD., GURUGRAM**

2nd Place : **STICHWELL EXPORTS PRIVATE LIMITED, KOLKATA**

NON-LEATHER FOOTWEAR

1st Place : **RELAXO FOOTWEARS LTD., DELHI**

FOOTWEAR COMPONENTS (SHOE UPPER)

1st Place : **HABEEB TANNING COMPANY, CHENNAI**

2nd Place : **LEGERO UNITED SHOES INDIA (P) LTD., VELLORE**

INDUSTRIAL LEATHER GLOVES

1st Place : **RAMA OVERSEAS LIMITED, KOLKATA**

Up to Rs.100 Crores

LEATHER FOOTWEAR

1st Place : **FUZAIL SHOES PRIVATE LIMITED, CHENNAI**

2nd Place : **SUPER TANNERY LIMITED, KANPUR**

LEATHER GARMENTS

2nd Place : **APOLLO FASHION INTERNATIONAL LIMITED, NOIDA**

LEATHER GOODS

1st Place : **KARENN INTERNATIONAL PVT. LTD., KANPUR**

2nd Place : **ASG KOMPANERO LIMITED, KOLKATA**

FINISHED LEATHER

2nd Place : **MODEL EXIMS (INDIA) PVT. LTD. KANPUR**

FOOTWEAR COMPONENTS (SHOE UPPER)

1st Place : **B B K SHOES, RANIPET**

2nd Place : **COMPETENCE EXPORTS PVT. LTD., KANPUR**

NON-LEATHER FOOTWEAR

1st Place : **NEXGEN FOOTWEARS PVT. LTD., DELHI**

2nd Place : **WALKAROO INTERNATIONAL PVT. LTD., COIMBATORE**

HARNESS & SADDLERY (LEATHER)

1st Place : **MIREEN INDUSTRIES PRIVATE LIMITED, GURUGRAM**

HARNESS & SADDLERY (NON LEATHER)

1st Place : **SUPERHOUSE GROUP, KANPUR**

2nd Place : **TEXT HORSE, KANPUR**

INDUSTRIAL LEATHER GLOVES

1st Place : **ACKNIT INDUSTRIES LIMITED, KOLKATA**

2nd Place : **VINIT GLOVES MANUFACTURING PVT. LTD., KOLKATA**

FASHION /SPORTS LEATHER GLOVES

2nd Place : **HIJAZ KURODA GLOVES COMPANY PRIVATE LIMITED, CHENNAI**

FOOTWEAR COMPONENTS (OTHER THAN SHOE UPPER)

OTHER COMPONENTS

1st Place : **SPERENE COMPOUNDING PRIVATE LIMITED, GREATER NOIDA**

2nd Place : **WILHELM TEXTILES INDIA PRIVATE LIMITED, GURGAON**

FOOTWEAR COMPONENTS (OTHER THAN SHOE UPPER)

SOLES

1st Place : **SUOLIFICIO LINEA ITALIA (INDIA) PVT. LTD., PONDICHERRY**

2nd Place : **VERSATILE OPERATIONS, AGRA**

BEST WOMEN ENTREPRENEUR AWARD 2023-24

1. Ms. **Seema Bhatia, Director** of M/s. **Prits Leather Art (P) Ltd., Noida** for Leather Garments

2. Ms. **Saniya Misbah, Proprietor** of M/s. **Zenith Impex**, **Kolkata** for Leather Goods.

3. Ms. **Meenakshi Kalsi, Partner** of M/s. **Metro & Metro**, **Agra** for Leather Footwear

4. Ms. **Deepa Suresh, Partner** of M/s. **Bab Leather Products International**, **Chennai** for Finished Leather

5. Ms. **Jasmeet Kaur, Partner** of M/s. **Panache Exports**, Kanpur for Harness & Saddlery (Non Leather)

BRAND CREATION AWARD 2023-24

1. Brand Creation Award for "**LEMAITRE, PERF, SAFETIX**" to **M/s. Rahman Industries Group, Kanpur** for **Leather Footwear**.

2. Brand Creation Award for "**Welcome Pure**" to M/s. **Welcome Footwears, Bahadurgarh** for **Non-Leather Footwear**

3. Brand Creation Award for "**Art n Vintage**" to M/s. **Vintage Lineage, Noida** for **Leather Goods**

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"ENVIRONMENTAL RISK IN CONTINUED USAGE OF SODIUM SULPHIDE IN LEATHER PROCESS AND NECESSITY OF ITS ELIMINATION FOR SUSTAINABILITY OF LEATHER SECTOR"

Dr. S. RAJAMANI
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Introduction

Continued usage of sodium sulphide in beamhouse process is a major environmental challenge and threat for the sustainability of leather tannery sector especially in India. Only 10% of tanneries having link with slaughter houses adopt green fleshing process. Another 10% of tanneries reduced the sodium sulphide usage from about 2.5% to the level of 1-1.5% in liming process by partly replacing with degradable chemicals such as enzymes. More than 80% of the tanneries continue to use sodium sulphide in liming and unhairing process and the entire sulphide is discharged as waste along with fleshing, effluent and sludge.

The increased risk and major challenges of sulphide usage are: serious occupational health &safety issues in tannery premises, emission of H_2S and toxic fumes, high cost and energy to reduce sulphide in the effluent, fleshing become unfit for conversion into useful by-products, oxidation of sulphide into sulphate in aerobic condition and reversal of sulphate into sulphide/H_2S in anaerobic condition in sewer line, causing failures in anaerobic treatment / digestion such as bio-methanation plant implemented with huge investment for the mixture of sulphide containing fleshing and sludge. Many accidents and deaths continued to occur in operation & maintenance of sewer lines, manholes and collection tanks due to the emission of H_2S.Due to the major seriousness of this issue, the

environmental authorities in India and other countries planning to ban the usage of sulphide in leather process in addition to other banned chemicals by European Union. This technical paper deals with the risk and safety issues due to continued usage of sulphide in tanneries processing from raw hides and skins.

Conventional Beamhouse Process

More than 80% of Indian tanneries processing raw hides and skins adopt conventional beamhouse processes such as soaking, sulphide liming, deliming with using ammonium salt and only less than 10% tanneries adopt green fleshing. The sequence of sectional / batch operations usage of chemicals and their discharges in the form of liquid and solid waste are shown in the process flow diagram given below:

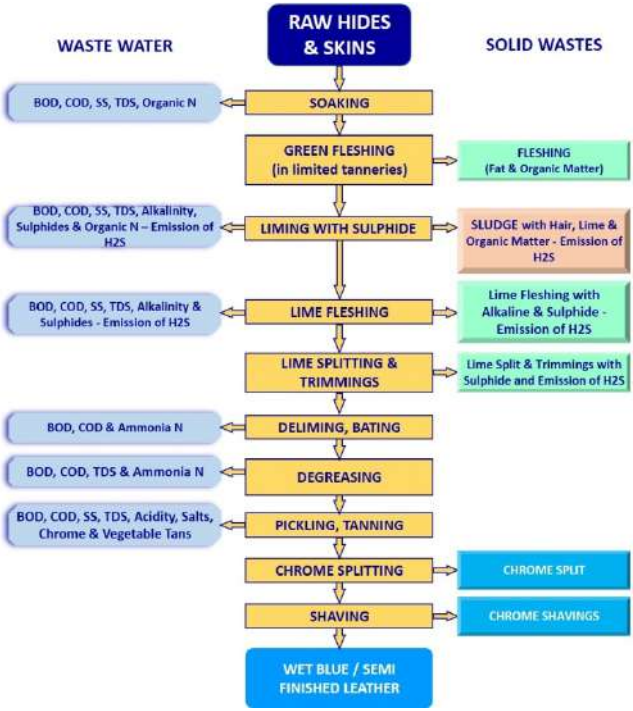

Fig.1: Anaerobic Reactor for digestion of lime Sulphide fleshing & Sludge (Unsuccessful)

Major Environmental Challenges

The toxic chemicals such as sodium sulphide used in the beamhouse operations are only aided chemicals and totally discharged as waste in the form of effluent, solid waste and sludge. The effluent discharged from beamhouse operations contains high BOD, COD, Suspended Solids (SS), Sulphide, etc. and becomes anaerobic condition in few hours of time and start emitting H_2S in the collection tank, wastewater conveyance system to the ETP / CETP.

Major accidents and deaths continued to happen due to the emission of H_2S during the cleaning and maintenance of the collection wells and conveyance system. One of the high-risk factors is the human being can sense the odour of H_2S emission if it is within the low limit and cannot sense if it exceeds 300ppm and the death will be fatal.

The removal of sulphide in the effluent to the required level of less than 2 ppm from the high levels (i.e. more than 150-400 ppm) during the physiochemical treatment is very complex and require high level of oxygen and energy. The residual sulphide level after physiochemical treatment is always more than the permissible level and causes problems in biological and tertiary treatments.

With a view to manage the large quantity of waste limed fleshing & sludge from the effluent treatment plants, anaerobic digestors were designed and implemented for the generation of bio-energy and fertilizer with huge investment under international co-operations. Due to the high presence of sulphide in the fleshing, generation of H_2S from digestor, inability to reduce the H_2S to required level for bio-energy generation, the projects have become unsuccessful.

Now a days, these fleshing become unviable for conversion into authorized useful products and being dumped/buried in an unsafe condition.

Fig.2:Anaerobic Reactor for digestion of lime Sulphide fleshing & Sludge (Unsuccessful)

Technical upgradations to address toxic chemicals & colour in the effluent

Many aerobic biological treatment plants are not performingas per the design due to the presence of residual sulphide (i.e. more than 10 ppm) in the pre-treated effluent.

Due to high Sulphide concentration in the raw effluent with high pH, conventional chemical treatment with aeration is not successful in the removal of sulphide and H_2S control. In view of this

in addition to diffused aeration, liquid oxygen was tried at high cost and risk for aerobic biological treatment. Liquid oxygen treatment is also not sufficient enough to achieve the level of treatment and control of sulphide, ozone is being introduced in CETPs. For sustainability, many tannery clusters forced to discontinue the beamhouse operations as per directions of pollution control authorities.

Fig.3:Addition of liquid oxygen & Ozone at high cost for control of Sulphide& survival of aerobic biomass

Conclusion

The occupational health and safety of the workers inside the tanneries processing raw to semi-finish by adopting conventional beamhouse operations using sulphide is a major challenge. The operation and maintenance of the effluent conveyance system, ETPs and CETPs are also becoming more difficult to meet the environmental discharge guidelines for the effluent discharge from the raw to semi-finishing operations. It is observed that the huge amount of penalty was imposed by the loss of ecology authorities mainly due to the high pollutional discharge made from the beam house and tanning operations.

The tanneries in clusters such as Pallavaram discontinued the raw to semi-finishing process. Pallavaram CETP implemented the advance oxidation treatment system for removal of residual colour and adopted the sustainable Total Dissolved Solids (TDS) management system by mixing the treated tannery effluent with treated domestic sewage in Sewage Treatment Plant (STP).The adoption and maintenance of Zero Liquid Discharge (ZLD) system for the tanneries processing conventional beamhouse operations is a major challenge.

Due to the major seriousness of these issues, the environmental authorities in India and other countries planning to ban the usage of sulphide in leather process in addition to other banned chemicals by European Union.

India and Italy: Crafting Excellence Together in the Leather Trade

Italy and India share a longstanding relationship in the leather trade, a bond built on tradition, craftsmanship, and mutual economic growth. As two global leaders in the leather industry, both countries have cultivated a partnership that exemplifies excellence in design, quality, and sustainability.

The India International Leather Fair (IILF) is set to be one of the most significant global events for the leather industry in 2025. Taking place in Chennai, this prestigious trade show will bring together the best of innovation, craftsmanship, and cutting-edge technology from around the world. Among the exhibitors, the Italian Pavilion organized by the Italian Trade Agency (Trade Promotion Section of the Embassy of Italy), will be a key highlight, showcasing the legacy, quality, and technical expertise of Italy's leather industry. A total of 18 prominent Italian companies will feature in the Italian Pavilion, each bringing their unique contribution to the world of leather production.

Italy’s Long-standing Legacy in the Leather Industry

Italy has long been synonymous with excellence in leather craftsmanship. From the fine leather bags of Florence to the luxurious shoes of Milan, the Italian leather sector is globally renowned for its unmatched quality, design, and innovation. The country’s expertise spans various segments of the leather industry, including tanneries, machinery manufacturers, and accessories. Italian leather products are highly sought after not only for their luxurious feel but also for their durability and timeless style.

Italian Companies at IILF 2025: A Diverse Showcase of Innovation

The Italian Pavilion at IILF 2025 will be home to 18 leading Italian companies, each specializing in different aspects of the leather value chain. From tanneries that produce premium raw materials to

machinery manufacturers that provide the latest production technologies, the Pavilion will offer a comprehensive look at Italy's extensive contribution to the global leather industry.

As the demand for eco-friendly processes continues to grow, Italy is at the forefront of developing sustainable solutions that maintain high-quality standards while minimizing environmental impact. Companies involved in the production of unmatched technology, advanced spare-parts, sustainable dyes & solutions, and eco-conscious manufacturing processes will share their expertise with Indian partners and industry players.

Italian machinery is renowned for its precision, efficiency, and ability to enhance product quality while reducing waste. By adopting these technologies, Indian leather manufacturers have improved their production processes, making their products more competitive in global markets.

At IILF 2025, Indian manufacturers and designers will have the chance to explore the latest advancements in leather production technology, gaining insights that could enhance their operations.

Italy and India: Strengthening Trade Ties

India, with its robust leather industry, is a key trading partner for Italy. As one of the world's largest producers and exporters of leather and leather goods, India offers a dynamic market that perfectly complements Italy's expertise. The Indian leather industry employs over 4.42 million people and contributes significantly to the country's exports. States like Tamil Nadu, Uttar Pradesh, and West Bengal serve as hubs for leather manufacturing, further enhancing India's appeal to international businesses.

In 2024, considering the period from January to October, Italy stood as the 2nd largest supplier of leather machinery to India, having a market share of 20.8%. India imported leather machinery worth € 14.62 million from Italy, posting an increase of 42%.

Speaking about the thriving collaboration, **Antonietta Baccanari,** Italian Trade Commissioner to India remarked, "*Italy and India are natural partners in the leather sector, blending the rich heritage of Indian craftsmanship with Italian innovation and design. By combining Italy's advanced technology and design expertise with India's skilled workforce, we are shaping future defined by quality, sustainability and shared success*."

The Future of the Italy-India ties in the Leather sector

Italian pavilion at IILF 2025 signifies a broader trend toward collaboration & cooperation in our bilateral trade relations. The event will serve as a unique opportunity for industry stakeholders to explore emerging trends and build lasting partnerships. With Italy's reputation for quality craftsmanship and India's growing leather sector, the future of this collaboration looks bright, paving the way for a new era of innovation in leather production, design, and technology.

The Indian government has been instrumental in supporting the leather industry, introducing schemes like the *Indian Footwear and Leather Development Programme (IFLDP)* to encourage modernization, training, and sustainability. This proactive approach aligns with Italy's objectives to collaborate with Indian partners in creating a value chain that combines traditional craftsmanship with cutting-edge innovation.

For visitors to the Italian Pavilion, IILF 2025 will be an unmissable opportunity to explore the latest in Italian leather technology, craftsmanship, and design, and to engage with key players shaping the future of the global leather industry.

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 !

23rd Sanjoy Sen Memorial Lecture

The 23rd Sanjoy Sen Memorial Lecture was organised by the Indian Leather Technologists' Association, Kolkata, on the 14th January, 2025 at the Seminar Hall, Science City, in Kolkata. Mr. Harsh Kumar Jha, former MD, Tata Metaliks Ltd. & former Chairman, Tata Metaliks Kubota Pipes Ltd. delivered the lecture on the topic, **"*Competitiveness – An Enigma*"**. The lecture which lasted for half an hour was most informative and highly contemporary.

Earlier, Mr Susanta Mallick, General Secretary, ILTA, delivered the introductory address, which was followed by the dignitaries, offering floral tributes to the departed legend. Mr Arnab Jha, President, ILTA, Mr Tapas Chouddhury, Mr Prabir Kr Dasgupta, Mr Prabir Choudhury (Senior Life Members of ILTA), Prof (Dr) Sanjoy Chakraborty, OIC, GCELT, Mr Bibhas Chandra Jana, Joint Secretary, ILTA on behalf of CSIR-CLRI & Mr Gholam Mohammad, from the Industry were some of the dignitaries present on the occasion.

Mr Arnab Jha, President, ILTA, in his welcome address, elaborated the eventful life of Late Prof Sanjoy Sen and his vital role as the President of ILTA, during his tenure of three decades. He thanked the Speaker, Mr Harsh Kumar Jha, for choosing a serious contemporary topic as the subject of his lecture. Thereafter, Prof Sanjoy Sen Memorial Medal was presented to the following students who secured the topper position in B.Tech (Leather) examination from different institutes.

Mr. Diwakar Kumar from Muzaffarpur Institute of Technology, Muzaffarpur, Bihar in 2024 **Mr Prakhar Shukla** from Harcourt Butler Technical University, Kanpur, U.P. in 2024

Mr. Debjit Sen was awarded the Sanjoy Sen Memorial Gold Medal for topping B.Tech Leather Technology examination as Composite Topper of 4 years in 2023 from GCELT, Kolkata The following students received the Dr Prafulla Kumar Basu Memorial Scholarship.

Miss Jui Kundu, Mr. Arnab Bhunia and Mr Anudhyan Dutta.

The event came to a close with Mr Susanta Mallick proposing the vote of thanks.

Over 120 people participated in the programme.

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COLOUR MATCHING IN LEATHER DYEING – SOME CRITICAL ASPECTS

LECTURE NOTES BY N K CHANDRA BABU
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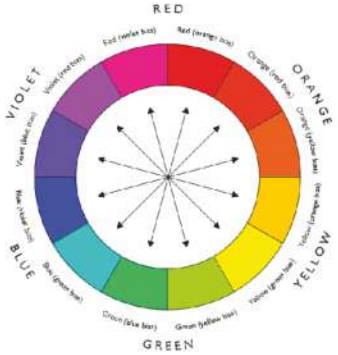
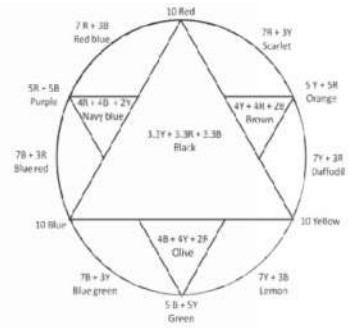
A material looks coloured when it absorbs light in the visible range of 400-700 nm. There is a relationship between the part of the light absorbed and the part of the light reflected when the light falls on a coloured substance. They are said to be complimentary to one another. For example, a red coloured substance will absorb at around 490-500 nm (absorbed spectral colour is blue-green) and the reflected spectral colour is red what we perceive.

Hence, blue-green and red are called complimentary colours. If all the light rays are absorbed, the substance appears to be black and if all reflected, we see white. Some of the complimentary spectral colours are given in the following table.

Range of wavelengths in nm	Absorbed spectral colour	Reflected/complimentary colour
400-435	Violet	Yellow-green
435-480	Blue	Yellow
480-490	Green-blue	Orange
490-500	Blue-green	Red
500-560	Green	Purple
560-580	Yellow-green	Violet
580-595	Yellow	Blue
595-605	Orange	Green-blue
605-700	Red	Blue-green





The colours we see can be plotted in the form of colour triangle or chromatic triangle and this can be an easy representation of colours that can be very much useful in colour matching. Similarly, colours can be represented in terms of primary colours as given in the following colour wheel. This is called the dyer's colour wheel. This colour wheel uses red, yellow, and blue as primary colours.

This is used for mixing dyes. A dye is a coloured substance that imparts its own colour to the substrate with which it is chemically treated with. In contrast, the pigments, another class of colorants used in leather industry in finishing impart colour to the substrate not by chemical reactions but by superimposition and the colouration is restricted to the surface alone but with dyes we get diffusion (penetration) into the fibre matrix as well.

Selection of dyes for colour matching in leather dyeing

Selection of dyes has to be done carefully in order to get good results in colour matching. There are different classes of dyes used in leather dyeing. The main classes of dyes can be classified based on the application into the following;

- Acid dyes
- Direct Dyes
- Basic dyes
- Metal complex dyes
- Sulfur dyes

Out of these, the use of sulphur dyes is restricted to light and pastel shades, whereas basic dyes are always used in top dyeing to get richer/darker shades, especially in blacks and dark browns on a substrate dyed with Anionic dyes. Acid and direct dyes are anionic in character but they differ in terms of the size of the molecule and the number of sulfonic acid functional groups present per molecule. Acid dyes are smaller in molecular size but have more number of sulfonic acid groups per molecule.

As a consequence, the direct dyes are less soluble in water and tend to aggregate more in acidic condition resulting in darker but surface dyeing. Acid dyes as a class penetrate well but give relatively lighter shades compared to direct dyes. Since the functional groups are more in the case of acid dyes, they tend to be relatively more reactive to the leather resulting in better fastness characteristics and at the same time give a better penetration into the fibre matrix.

The only way to differentiate a direct dye from an acid dye is to carry out dyeing with cotton. Acid dyes will have least affinity to cotton, whereas direct dye has good affinity for cotton giving a permanent colour. Though, the acid dyes as a class have good penetration, level dyeing and fastness characteristics compared to direct dyes, each acid dye may differ from the other acid dye quite considerably in their performance.

Metal complex dyes are usually anionic dyes reacted with a transition metal ion and are usually referred to as amphoteric dyes due to the presence of cation in the molecule. There are two classes of metal complex dyes differing in their solubility, dyeing performance and fastness characteristics. They are 1:1 and 1:2 metal complex dyes depending on whether they have 1 or 2 metal ions per dye molecule.

The 1:1 metal complex dyes are water soluble, give better fastness characteristics compared to acid dyes, they produce only light/pastel and chalky shades on leathers. 1:2 metal complex dyes are seldom water soluble but some modified dyes that are water soluble can

produce medium to dark shades with excellent fastness characteristics especially wash and dry cleaning fastness but due to limited solubility may not give a through and through dye penetration.

When a range of dyes is sourced from supply houses, the information regarding their penetration and exhaustion characteristics, level dyeing as well the depth of shade apart from fastness characteristics should be obtained and documented. The shade card of the dyes on the substrate to be dyed should be obtained and kept in the records. Vital information required is about the spectral purity of the dyes.

Only homogenous dyes should be used in quality dyeing, as far as possible as a mixture of dyes, it is very difficult to predict how they will behave when used in combination in leather dyeing. The easiest way of finding, if a dye is a homogenous or heterogenous one is to run a spectrum or to allow the dye solution to blot through a filter paper. Multiple and well separated peaks in the visible spectrum will indicate heterogeneity whereas in the case of filter paper blotting, we will see the movement of different dyes to different extent on the filter paper resolving into many colours indicating the heterogeneity. With the heterogenous dyes, the problem of patches especially in the belly and shank area is very common and even if no problem occurs within the same piece, this may lead to quite a large piece- to- piece variation in a lot of leathers.

The first thing to be considered in the selection of dyes for colour matching is to check if they belong to the same class, as using a different classes of dyes in combination may behave in an unpredicted way. Though, it is common to use a combination of let us say, acid and direct dyes to produce dark shades with reduced percentage offer, considerable experience may be necessary to fix the proportions of the dyes to be used in combination. Allowance should be given for the amount of dye that may be found more on the surface (direct dye) and corrections to be made to take care of this factor. But nevertheless, the problem of piece- to- piece variation

and in worst cases, patches are sometimes observed on leathers in such an approach.

Another aspect to be considered is the compatibility of different dyes selected for use in combination, even if the dyes belong to the same chemical class.

As far as possible, the dyes that have same level of penetration and exhaustion characteristics should be used in colour matching for easy prediction of shades to be produced. This will also lead to better lot uniformity of shades produced on leathers. Compatible dyes are the ones that have similar reactivity and at the same time do not interfere with one another's performance; in other words, they behave as if the other dye is absent. Such highly compatible dyes are exploited in the tri-chromatic colour matching concept.

In this approach, it is possible to match all the spectral colours using three dyes in primary colours, red, yellow and blue assisted by a brown and black and thus reducing the inventory of dyes one should have in the factory. However, the range of colours with varying depth/intensity is seldom possible in tri-chromatic colour matching.

From the fastness point of view, a shade requiring a wet rub fastness rating of 4 let us say, a dye with a fastness of 2-3 cannot be used in combination as it is found to affect the overall fastness of the shade to be produced.

Another issue which is not given due importance generally but being stressed upon increasingly in the recent times in the quality conscious market is the differing way the colour looks in different lighting conditions. In real life, we see many colours looking different under sunlight, fluorescent light or tungsten light.

This is called 'metamerism' and for a good quality dyeing, the colour has to be least metameric, meaning the colour difference in different lighting condition should be the least. Though, the metameric colour matching can be easily perceived by human eye and yet this property can be quantitatively measured by using a reflectance

spectrophotometer interfaced with a computer with the required software, in terms of a number called metameric index.

Colour Matching in leather dyeing

Having strictly followed the above selection procedure, it is time to consider the actual practice of colour matching. Before embarking on this important exercise, it is necessary to understand some of the terminologies used in the colourists' parlance. Red, blue and yellow are called **primary colours** and the colours obtained by equal quantities of two primary colours (of equal depth) are called **secondary colours**. The secondary colour obtained by mixing red and yellow is orange and the range may vary from lemon yellow to scarlet depending upon the amount of yellow or red in the mixture.

Similarly, with yellow and blue, we get the secondary colour; green and the range of colours obtained vary from yellow-green to blue-green. With red and blue, we have purple and violet depending upon which primary colour is dominant. All the above colours mentioned fall on the sides of the equilateral triangle shown in the above figure. Apart from these secondary colours, there are **tertiary colours**, which have all the three primaries in different proportions. Browns and olives fall under this category and they are located inside the colour triangle. The significance of this colour triangle is that one gets to know what colours to be mixed to cut what shades and these colours are said to be complimentary to one another.

The equal mixture of two primary colours is the complimentary colour of the third primary colour. For example, green is the complimentary colour of red, orange to blue and purple to yellow. The knowledge about the primary colours is important in colour matching. Apart from the spectral colours we have discussed about, we also deal with colours, which are called **achromatic colours**. Black, greys and white fall under this category.

Though shade cards for dyes are given by the supplier, it is still necessary to get an idea of the shade in solution by preparing a

stock of 1% solutions of the all the dyes in inventory and having the shade on a filter/blotting paper and keeping the samples of the shades on the paper in the record. Whenever, to get an idea about how the dyes will behave in combination for producing a shade, the dye solutions in different proportion can be mixed and the colour transferred onto the filter paper to see whether we get a shade closer to the swatch. While judging, it is necessary to take into account the substrate colour in the overall scheme of things. This step is tricky and requires sufficient experience in colour matching.

Another issue in colour matching is to select the dyes of right depths to produce a particular shade. To produce a shade of good depth, it may not be worthwhile to use dyes with low colour yield as we may have to use higher offer levels of dyes to get the shade which may not be economical; in many cases, the required hue may be there but the shade may lack the depth required.

If a swatch of leather is given for colour matching, it is first of all necessary to assess the dominant hue in the colour and look for a dye that would give the shade on the chosen substrate by looking at the shade card on the same substrate from the supplier. Having chosen the dye closer to the swatch, look at other dyeing characteristics including the rate of penetration, exhaustion and fastness characteristics and homogeneity and check the suitability from the buyers' requirement especially for fastness ratings.

Having chosen the major dye, it is time to choose the minor dyes to be used in the combination. Now by comparing the swatch with shade card, look for the differences in the shade in terms of more/less amount of major hues, red, yellow or blue in the swatch compared to the colour on the shade card. Now let us say, the dye produces a shade more red than we require, we have to decide about the dye to be used in combination. Here, the colour triangle is very much useful. The colours opposite to one another in colour triangles are called complimentary colours and can cut/kill each other when used in combination.

The colour complimentary to red can be found both from the triangle as well from the spectral table discussed earlier. It is blue-green and it is common to jump to the conclusion that we use a blue-green dye to cut the component we do not want in the final shade but there is a problem in practical colour matching in dyeing; such an approach may work well in the colour matching with pigments as the colorants are going to be in the surface whereas in dyeing, the diffusion and reactivity are also important factors to be considered. Selection of blue-green to be used to cut undesired red component in leather dyeing may lead to piece-to-piece variation in a lot of leathers.

But now what is the best possible approach? The golden rule in colour matching is to use dyes which are closer to one another in colour triangle to produce uniform dyeing. That means instead of choosing a blue-green dye to cut extra red in a brown sample, it may be prudent to use another brown with a greenish tint in it sufficient to cut the undesired extra red.

The most difficult aspect of colour matching is about deciding the allowance to be given for the background colour of the leather. Unlike many of the textile substrates, we do not start with a white colour and hence, this factor brings in a new dimension in colour matching. The fatliquors, retanning agents used in processing bring about their own influence on the background colour apart from influencing the dyeing characteristics of the leathers; in wet blue dyeing, retanning agents, and fatliquors are usually used in the dye bath.

Even in crust dyeing as in the case of suedes and nubucks, fatliquors are used in the same bath along with the dyes. Here, experience comes to the help of the dyers. For a beginner, it may be necessary to do a blank processing with a sample of the leather by using all the ingredients in processing except the addition of the dyes. This will give him a fair idea about the allowance to be given for the background colour in overall colour formulation.

Antifungal Screening of Plant Extract: An Approach towards Development of Biological Antifungal Agent for Application in Tanning House

KritikaVagmi[1], Ivy Kanunugo[2], Debosmita Sikdar[3], Biswajeet Mondal[4], Goutam Mukherjee[5]

Government College of Engineering and Leather Technology, Kolkata

ABSTRACT

The Conventional anti-fungal agents comprise various drawbacks in terms of environmental sustainability, toxicity, cost etc. This work is focused to evaluate the antifungal property of three plant extracts i.e., drumstick, curry leaves and China rose, aiming to validate the antifungal property for leather processing.

Antifungal bioassay of the methanolic leaf extracts of the selected plants indicated significant fungal growth inhibition including fungal-infected leather. These results indicated that Drumstick, China roses, and Curry leaf extracts might be remarkable substitutes or biological control of leather fungal pathogens having the possibility to be used as a leather fungicide. This might also pave the way for limiting the overdependence on chemical fungicides. The presence of various phytochemicals in the extract gives a future perspective towards cleaner, greener, environmentally friendlier, economical and sustainable leather processing techniques.

Keywords - Antifungal, *Murrayakoenigii, Moringaoleifera, Hibiscusrosasinesis*, Minimum inhibitory concentration.

INTRODUCTION

Leather industries are facing numerous problems & recurrent fungal outgrowth on semi-finished and finished leather products.Synthetic fungicidesare harmful to both environment and humans [1]. It is a key concern for a long time back. Conventional antifungal agents

used rapidly by workers using handling leather productsare causing different degrees of health as well as environmental hazards. The replacement of these xenobiotics commercial industrial grade fungicides with bioactive agents having fungicidal properties became a major concern in recent eras.

The present work explains the use of three leafextracts of plants like Curry, Hibiscus and Drum stick as an antifungal agent for leather application. India is commonly known forits huge biodiversity of medicinal plants. Among them, *Murrayakoenigii*, *Moringaoleifera*, and *Hibiscus rosasinesis* have a lot of bioactive values due to which plant hasbeen proven as the medicinally important plant but least or no contemplation recognized by the scientist.

Although, several reports on the fungicidal activity of the selected leaf extracts are available additional analysis is required to understand the effect of curry, hibiscus and drumstick leaf extracts. The phytoconstituents in these extracts denote the presence of anti-oxidants and several factors which are responsible for inhibiting the growth of fungi.The fungicidal activity was assayed on the mixed fungalpopulation grown on the leather sample, *Rhizopusstolonifer*, *Aspergillusniger* etc. The fungicidal efficacy of methanolic plant extract was evaluated on fungal-infected leather for its possible future leatherapplication.

Since there is a growing demand for the biological anti-fungal agent, leaves extract acting as an anti-fungal agent will give a new direction to a greener process. The present study gains its significance in view of this. This will give us faster ways to solve many environmental troubles as well.

MATERIALS AND METHODS

Raw materials

Curry leaves, Hibiscus leaves, Drum stick leaves.

Apparatus and equipment

Test tube, pipette, aluminium foil, measuring cylinder, conical flasks, centrifuge, mortar and Pestle, beaker, spreader, Petriplate, hot air oven, incubator, UV-Vis spectrophotometer etc.

METHOD

Collection of samples

The fresh curry, hibiscus and drumstick leaves were collected from the Government college of Engineering and Leather Technology campus in Kolkata, West Bengal.

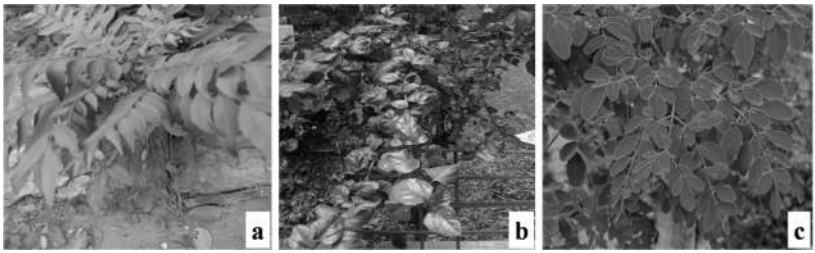


Fig. 1.Selected plants (a) Curry, (b) Hibiscus, (c) Drumstick

Preparation of plant material

After collection, the leaves were thoroughly washed 2-3 times to remove debris and then kept for drying at 40±1^{o}C in a hot air oven for 7 days. After being completely dried, the samples were crushedinto small pieces and pulverized into a coarse powder, followed by storing in air-tight containers for furtherusage and to keep it free from moisture content [2].

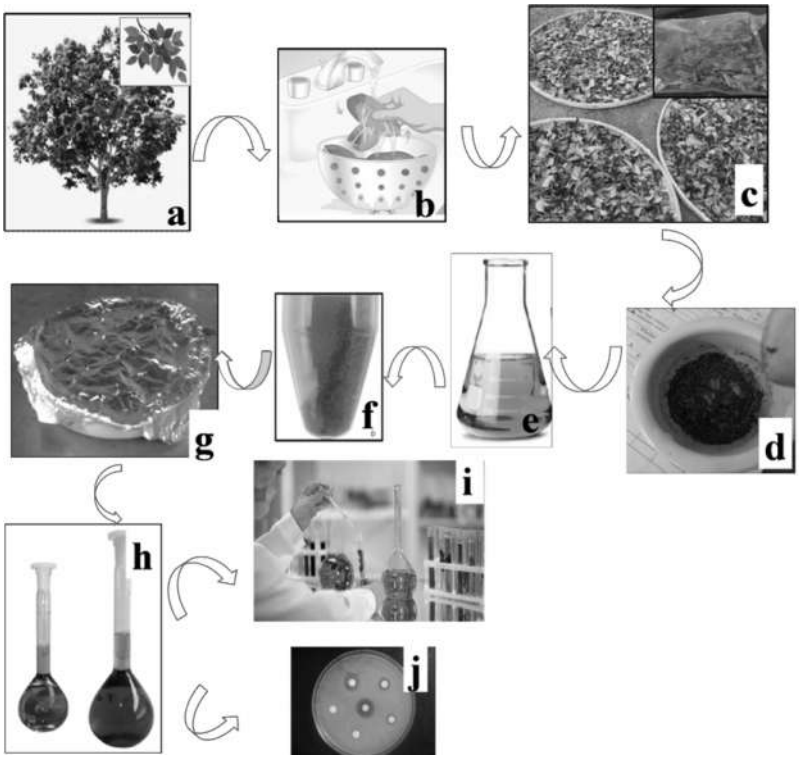


Fig. 2. Processing of leaves and preparation of plant extract for analysis (a) Fresh leaves of the selected plant ; (b) Washing of leaves; (c) Temperature and humid controlled drying of collected leaves (inset: Dried leaf in an air-tight packet); (d) Pulverization of dried leaves; (e) Methanolic extraction of leaves; (f) Centrifugation of leaf extract; (g) Evaporation; (h) Concentrated plant extract; (i) Phytochemical analysis; (j) Biological activity analysis: Antifungal assay

Extraction of bioactive components from leaves

1g of pulverized air-dried leaves was soaked in 100%, 80%, 60%, 40%, and 20% methanol-water mixture. Each mixture was allowed to withstand for 4 to 5 hours. This soaking process was repeated for4-5 times for each mixture with the same sample to facilitate multistep

extraction of phytochemicals from the leaves. The supernatant of each mixture was collected after centrifugation at 8000r.p.m. for 15 min.Finally, all the samples were placed on evaporating dishes covered with pierced aluminium foil at a controlled temperature of 30°C to obtain concentrated methanolic plant extract from eachspecimen. The volume of the extracted compound of each sample was fixed at 6 mL for further analysis.

EVALUATION OF BIOLOGICAL ACTIVITY

Determination of antifungal activity

The antifungal activity of the selected leaf extracts was determined using agar well diffusion method. 100µL of (10-10 dilution) of diluted fungal suspension was poured over the media and spreaduniformly on the surface by a spreader. Later when the surface was a little dried, wells of 8mm were punched in the agar with stainless steel borer and filled with 300 µl of plant extracts. Control wells containing noextract (negative control) were also run parallel in the same plate. The plates were incubated at 37°C for 72 hours and the antifungal activity was assessed by measuring the diameter of the zone of inhibition at theinterval every 24 hours. The antifungal activity of the different extracts was evaluated [3].

Determination of antifungal activity on infected leather strip

Extracts of selected plants were screened for their antifungal activity against fungi grown on leathersurfaces to validate the anti-fungal properties of plant extract for future industrial applications.

The fungal-infected leather was punched to generate the leather pieces of 5 mm diameter. These punched leathers were soaked in the methanolic plant extract for 3hours. These soaked leather specimenswere put in the centre of the agar plate containing potato dextrose medium and subjected to incubation.The zone of inhibition

for assessing the antifungal activity of the extract on leather strips was checkedusing the same procedure as mentioned above.

Minimum inhibitory concentration (MIC)

Plant extracts of 0.313, 0.625, 1.25, 2.5, 5, 10, and 20 mg/mL were used for measuring minimum inhibitory concentration. Each mL of inoculum was poured into a Petri plate and allowed to set after the agar was also poured. A 3 mm sterile cork borer was used to make wells. The serial freshly prepared dilutions of extracts were poured into these wells.

The plates were incubated at 37˚C for 24 h. Finally, the growth of microorganisms was observed and compared with a clear zone. The least concentration of plant extract that inhibits the growth of microorganisms is considered as minimum inhibitory concentration (MIC) [4].

RESULT

Measurement of zone of inhibition of fungal colony

Extracts of selected plants were screened for their antifungal activity against mixed as well as pure fungal culture of infected leathers using agar well diffusion method. *Aspergillus niger* and *Rhizopusstolonifer*, isolated from fungal infected leathers were selected for this work. The results revealed that the extract of selected plants are efficiently suppressing the growth of fungal pathogens and with variable potency.

The zone of inhibition of different concentration of methanolic extract of selected plants was measured (Fig.3) and tabulated in table 1. As stated in Table 1 and Fig. 3, 100% methanolic extract of curry leaves had the maximum zone of inhibition against *Rhizopusstolonifer* (38.6 mm), whereas zone of inhibition against *Aspergillus niger* (26.2 mm).

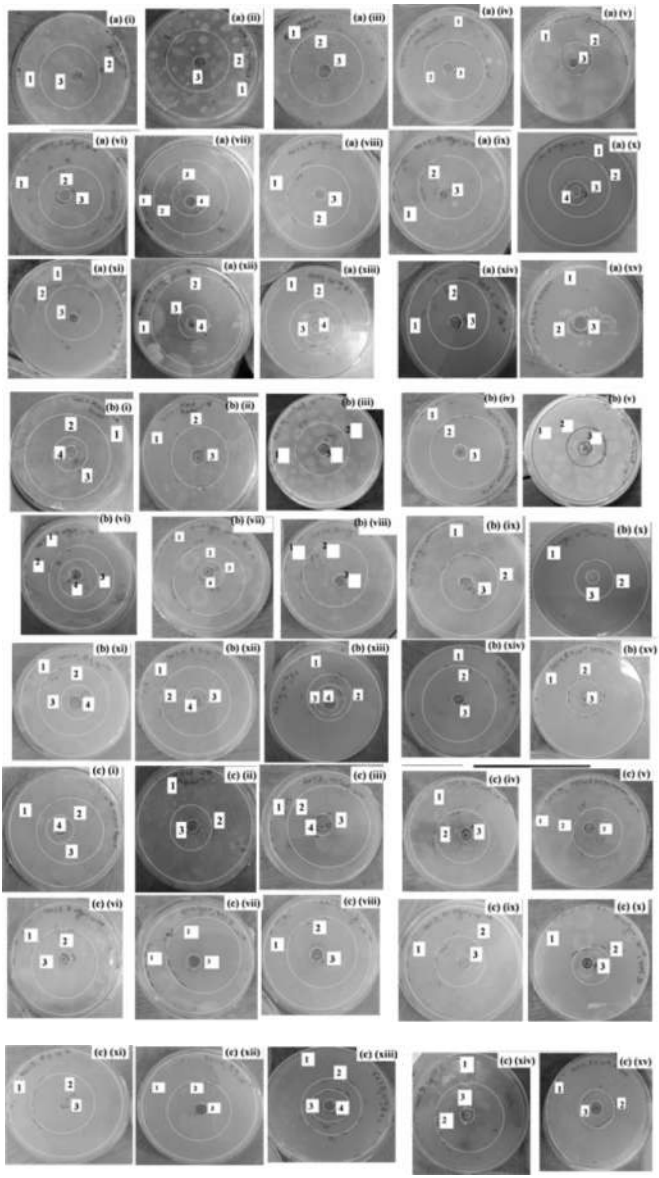


Fig. 3. Anti-fungal assay of (a) curry leaves extracts (i)-(v): Mixed population in 100% methanolic extract (i), 80% methanolic extract (ii), 60% methanolic extract (iii), 40%

methanolic extract (iv), 20% methanolic extract(v), (vi)-(x) : *A. niger*in 100% methanolic extract (vi), 80% methanolic extract (vii), 60% methanolic extract (viii), 40% methanolic extract (ix), 20% methanolic extract(x), (xi)-(xv): *Rhizopusstolonifer in* 100% methanolic extract (xi), 80% methanolic extract (xii), 60% methanolic extract (xiii), 40% methanolic extract (xiv), 20% methanolic extract (xv); (b) hibiscus leaves extracts (i)-(v): Mixed population in 100% methanolic extract (i), 80% methanolic extract (ii), 60% methanolic extract (iii), 40% methanolic extract (iv), 20% methanolic extract(v), (vi)-(x) : *A. niger* in 100% methanolic extract (vi), 80% methanolic extract (vii), 60% methanolic extract (viii), 40% methanolic extract (ix), 20% methanolic extract(x), (xi)-(xv): *Rhizopusstolonifer*in 100% methanolic extract (xi), 80% methanolic extract (xii), 60% methanolic extract (xiii), 40% methanolic extract (xiv), 20% methanolic extract (xv); (c) Drum stick leaves extracts (i)-(v): Mixed population in 100% methanolic extract (i), 80% methanolic extract (ii), 60% methanolic extract (iii), 40% methanolic extract (iv), 20% methanolic extract(v), (vi)-(x) : *A. niger* in 100% methanolic extract (vi), 80% methanolic extract (vii), 60% methanolic extract (viii), 40% methanolic extract (ix), 20% methanolic extract(x), (xi)-(xv): *Rhizopusstolonifer*in 100% methanolic extract (xi), 80% methanolic extract (xii), 60% methanolic extract (xiii), 40% methanolic extract (xiv), 20% methanolic extract (xv)

Fungicidal effect on leather: zone of inhibition on leather surface

Extracts of selected plants were screened for their antifungal activity against fungi grown on leather surface. For this the leather strip of 5mm was cut and put into the selected plant extract and soaked for 3hours& put into potato dextrose medium containing plate and incubated. The zone of inhibition of different concentration of

methanolic extract of selected plant were measured and tabulated in Table 1. From the table it is clear that Hibiscus leaves has maximum zone of inhibition, after that drum stick leaves and least in curry leaves. Also, the zone of inhibition is decreasing towards the decreasing methanolic concentration of given extracts. From this, it can be told that increasing methanolic concentration of extract leading to higher phytoconstituents of that plant is responsible for killing fungus which is infecting the leather. The zone of inhibition of various methanolic extracts are shown in Fig.4.

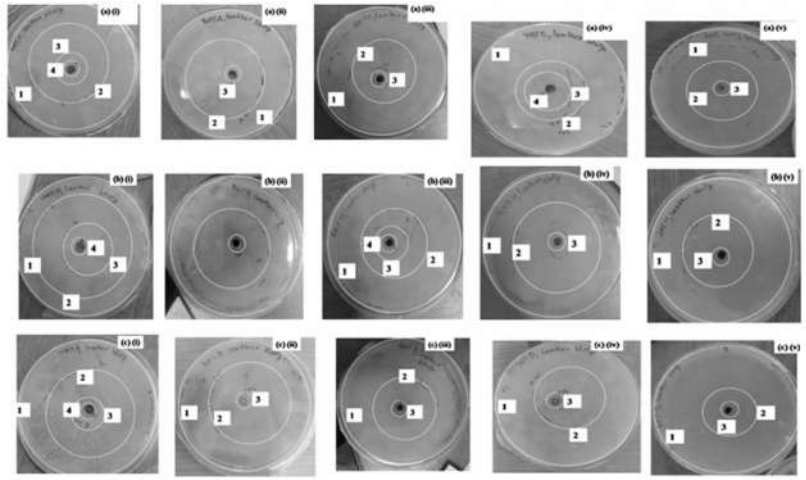


Fig.4. Anti fungal assay of (a) curry leaves extracts on (i)-(v): leather strips in 100% methanolic extract (i), 80% methanolic extract (ii), 60% methanolic extract (iii), 40% methanolic extract (iv), 20% methanolic extract. Antifungal assay of (b) hibiscus leaves extracts (i)-(v): leather strips in 100% methanolic extract (i), 80% methanolic extract (ii), 60% methanolic extract (iii), 40% methanolic extract (iv), 20% methanolic extract .Anti fungal assay of (c) drum stick leaves extracts (i)-(v): leather strips in 100% methanolic extract (i), 80% methanolic extract (ii), 60% methanolic extract (iii), 40% methanolic extract (iv), 20% methanolic extract

Measurement of minimum inhibitory concentration (mic)

The MIC was determined as the lowest concentration of the antifungal agent i.e., selected plant extract preventing growth fungal colonies by a standard agar well diffusion method. The 10, 20, 30,40, 50 µl of each extract were used. Results showed that 20 µl of extract was able kill the fungi. So, it was taken as minimum inhibitory concentration. The zone of inhibition in 20 µl of extract is shown in Fig. 5.The results revealed that the methanolic extract of selected plants are efficiently suppressing the growth of fungi.

According to the data obtained it can be concluded that curry leaves had the maximum zone of inhibition in all culture media (*Rhizopusstolonife*r, *Aspergillus niger*& mixedculture) and 100% methanolic extract of all extract viz. Curry, Hibiscus & Drum stick leavesexhibited higher zone of inhibition and 20% methanolic extract exhibited least zone of inhibition. From this it can be concluded that the antifungal effect of curry, hibiscus and drum stick leaves mayvary according to solvent concentration.Above table shows that Hibiscus leaves has maximum zoneof inhibition, after that drum stick leaves and least in curry leaves. Also, the zone of inhibition is decreasing towards the decreasing methanolic concentration of given extracts.

From the Table 1, it is observed that that selected plant leaves have the capacity to inhibit the growth of the selected fungal strains. Curry leaf- extract shown maximum zone of inhibition for the pure strains as well as the mixed fungal population grown on petri plates.

All these extracts also show zone of inhibition when fungal infected leathers are placed on petridishes. Higher percentage of methanolic extracts shows larger diameter for the zone of inhibition, implying that higher methanolic extracts have larger number of bioactive agents which are responsible for inhibition of fungal growth.

All these extracts exhibit strong fungicidal effect for all the samples. Highest diameter of zone of inhibition in the case of curry leaves extracts implies that highest inhibition of fungal growth was provided by the curry leaves extracts. In case of fungal infected leathers, Hibiscus leaves extract is most efficient antifungal agent. This may be due to the fact that hibiscus leaf extract has more capability to inhibit the growth of those very strains of fungus that was grown on leather surface.

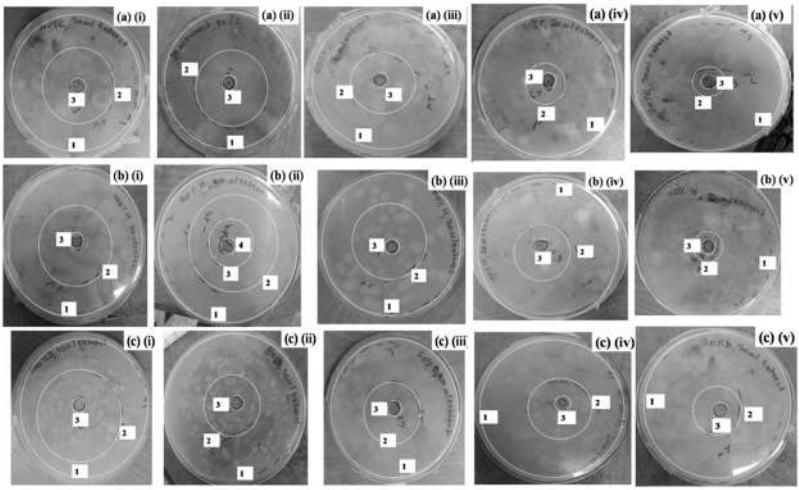


Fig. 5. Zone of inhibition for MIC (a) curry leaves extracts; (b) hibiscus leaves extract and(c) drum stick leaves extracts

Zone of inhibition (cm)		METHANOLIC PERCENTAGE														
		100%			80%			60%			40%			20%		
		C	H	D	C	H	D	C	H	D	C	H	D	C	H	D
Rhizopusst olonifer	R1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	R2	3.8	3	2.3	2.5	2.8	2.1	2.5	2.5	2	2.3	1.5	1.2	0.6	1.2	1.5
	R3	0	1.2	0.5	1.5	0.5	0	1	1.2	1	0.5	0	0	0.2	0	0.5

Zone of inhibition (cm)		METHANOLIC PERCENTAGE														
		100%			80%			60%			40%			20%		
		C	H	D	C	H	D	C	H	D	C	H	D	C	H	D
	R4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aspergillus niger	R1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	R2	2.6	2.3	2.1	2	2	2	2.5	2	2	2	2	2	2	1.5	1
	R3	0	1.3	0	0.5	1.2	0	0	0	0	0	0	0	0.5	0	0
	R4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mixed population	R1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	R2	2.8	2	2.8	2	1.2	1.6	2.2	1.5	1.3	2	1	2	1.4	1	1.4
	R3		0.7	1.6		1.8		2.5	0	1	0		0	0	0	0
	R4		0	0		0				0	0		0	0	0	0
fungal infected leather	R1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	R2	2	3	2.5	2	2.2	2.1	1.5	2	2	1.3	2.5	1.5	1	2	1.5
	R3	0.2	1	0.8	0	0	0	0.5	1	0	1	0	0	0	0	0.5
	R4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 1. Antifungal assay: Measurement of zone of inhibition (C, H and D represent curry leaves, hibiscus leaves and drumstickleaverespectively)

CONCLUSION

The plant kingdom is a rich source of active components with a wide range of biologicalactivities. The present investigation was planned to determine antifungal activity of plants commonlyfound in India. The plants selected for this purpose are *Murrayakoenigii*, *Hibiscusrosa-sinensis*and *Moringaoleifera*. For determination of

fungicidal activity of these plants extracts and to exploreits industrial application, fungal strains were isolated from fungal infected leather surface.

The result of the present study reveals that methanolic extracts of plant selected for the studyhave strong antioxidant capacity on fungal growth whichhave been demonstrated by the inhibition of fungal growth. This activity is high enough for theplant to be a new and natural source of fungicide for use in leather processing chain.

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* * * * *

Leather Industry - "To Be or Not to Be"

- Vasan Suri

A Passionate Leather Lover & Professional

"We will bounce back. We all will win and gain back the superiority of Leather"

"Leather will be the Winner"

"DLS - Durability, Longevity, Sustainability"

Leather Industry is going through the worst phase possible. I hope it has already hit the bottom and nothing more deeper. Time to bounce back. This time with care and discipline to avoid any future shocks.

Troubles faced by everyone in the Industry:

1. Negative campaign by the Non- Leather, Fossil based Industries with the support of PETA.

2. Cash Flow Constraints

3. Huge Inventories

4. Future looking gloomy.

I. Solutions to Negative campaign:

1. Let us all come together and raise the voice about the other good points of Leather against the Fossil Products & other Leather like Products or Vegan Products.

2. They have just been able to confuse the consumer and it is all short lived.

3. Leather is having the following characteristics which remains unmatched.

a) Natural Product

b) Recycled Product of the waste of the meat Industry.

c) Eco-friendly tanning systems with controls by LWG, ZDHC, etc.,

d) Totally BIO-DEGRADABLE

e) Sustainable

f) Decomposable

g) Reusable

h) Recyclable

Leather can only talk about good character and not like other alternatives which are slow poison for the environment and future generations.

II. Cash flow constraints -

Non-moving Stock of Leathers

Can anyone could guess as to what would be the non-moving stock of leathers within India and then, all over the World. This could be a huge inventory which the Leather Industry is carrying. How about utilising them at throw away prices (as it is, it has no value and will lose its character remaining as stock) and converting them as interesting products. Non-leather sneakers are selling in the market from Rs.1000/- to Rs.3000/- very colorful and trendy. The leather industry should come up with the idea of utilising the non-moving stock and convert them as sneakers and comfort shoes. Chemical Companies could come up with one top finish which could improve or change the lighter colors to darker colors. Already some exist. Sole manufacturing Companies business would increase in these tough times as well as the last makers. Overall, could bring lot of activity

Why not give it a good effort?

We could also utilise lot of other non-moving stocks like the laces, insoles etc., Create a magic, with your imagination and it may be a big hit when you have the prices as close to Non-leather .We utilise the leather stock, utilise the other material, grinderies stock and make a nice shoe out of it. How about creating one pair with two colors? The trend is already there.

Why not create comfort sneakers two different colors in one pair and promote it.

"When the going gets tough, the toughest gets going".

Fashion, trends, colors could ignite anyone's interest and with price, we may rock the market. Similarly, we could create a new trend in Bags, SLG & Garments. Belts require some indepth working.Importantly, this should be addressed as an Industrial upliftment project and adopt the policy "Live and Let Live".This is step is very critical and crucial to bring the cash flow in to the system which otherwise is getting murky and stacked up.

III. Huge Inventories -

Every factory is holding huge Inventories as ready goods which were either rejected, late for delivery, or for any other reason. How to bring them in to real value. Recent news about Walmart promoting sale of "Used Luxury Brand" Products, is an eye opener. As we discussed earlier about the non-moving leather stock, it will be important to know about the unsold, rejected or excess of Leather Products lying all over the World.

How do we bring them back in to utilisation which is also an important form of upcycling or recycling. Shoes, Bags, Belts, Gloves, Garments, Home accessories, Wallets, Purses and Small Leather goods are all the main products that is available for stock clearance or recycling.

We discussed about the opportunities that can be created in footwear. Here, we discuss about bags.

Bags unsold and leather non-moving stocks can be combined to create something fashionable. Motifs, patchwork, decoratives, charms are some of the areas where we could create some innovative designs and add value to the bags. Bags with different color in the body and a contrast color or subtle contrast color flaps would definitely make a difference.

Fashion has no boundaries and the creation has to be innovative and quench the fashion thirst of the young generation. Embossing, debossing, subtle metallic effects to make the colors brilliant could be some options to make the bags interesting. Since, these are non-moving or stock lots convert them in to school bags, back packs, career women bag, luggage bag which could be helpful.

Make them attractive with embellishments and other innovative ideas with attractive prices to induce the retail customers. Industry requires

our innovative steps to shake up the otherwise slow market conditions. It is now or never and let us all come together to bring life to the market. It requires one good effort and the market will change for good. Trials & experiments could become successful or we could learn a new concept for the future.

IV. How to make a gloomy looking future, bright.

This is in our hands. We cannot keep blaming someone else.

Invent, Re-invent, Learn, Unlearn - best words to remember during tough times.

Innovation should never stop. Like our mobile phones, television sets, washing machine, at the basic level, it is all doing their main job perfectly. How they were able to made interesting is through innovative ideas which were made as improvements.

A mobile phone which was first introduced as a replacement for the fixed line phone, became a camera phone, internet, email, and many other functions and becoming smarter and smarter. Same goes with the television and other electronics which are becoming smarter every month practically just to woo the consumers to keep buying. Similarly, we must look at innovations to make leather products smarter by its utility, comfort, durability, longevity, fashion statement etc.,

Let us not wait for the International markets to open up rather, let us make them look towards us.

We have such a huge market and huge stock of raw material. Convert them in to automotive leathers (seat covers, steering wheel covers, dashboard etc., including the car interiors). Use them in our home furnishings. A product which was once felt to be expensive could be offered cheaper and with trendy looks. Sofas, Poof, Ottomans, Tables, Chairs, Table tops, and many other articles can be made. Make it affordable for everyone. Make your house first, show it to your neighbours, convert their furnitures. Move on to the society, Street and there is no limit.

Please not to allow negative sentiments to kill our creativity.

I would love to work in details with any like-minded team for improving the Leather Industry & its business.

Sometimes, things may look very good and easy in paper and may be tough. Similarly, what looks difficult could be a "game changer" for the industry.

★★★★★

Leather Chemical Industry to be supportive to the Leather Industry - Live and let Live.

Leather tanning & finishing can never be done without the right type of chemicals. Starting from the stage of raw material preservation, soaking, beamhouse, tanning, neutralization, retanning, Fatliquors, Dyeing, finishing - chemicals play an important part. Unfortunately, over the years greed has grown more faster along with the variety of chemicals.

Every chemical manufacturing company have come up with the same type of chemicals and not brought in much specialisation. Everyone trying to push in the maximum range of chemicals in to a tannery from their stock, is the reality. World is fast changing and the consumer taste is fast evolving and leather chemicals have remained in the same old conventional methods and systems.

When the whole Universe is talking about Fast Food, Quick meal, Fast Cooking, Quick Delivery - why not leather industry adopt itself to fast and rapid tanning methods and quicker finishing methods.

Reduce the list of chemicals to the lowest minimum in the retanning stage and finishing stage for quick turnaround.

We are in super competition with Non-leather Fossil Products which bring in bright colors and designs by every hour and even now, we cannot be talking about primitive methods and conventional methods which consumes time and allows excuses.

There are many brilliant products that have come in from Italy and Spain but, we have remained more loyal to toe the lines of multinationals and their systems of selling maximum chemicals for one process.

Shamefully, most of our technical people have got sold to the greedy practices of these multinationals. Days have gone when chemicals were sold by quality and today they are sold by offering inducements. Chemical representatives have started feeling that the

urge to receive by some technical people have gone above all the limits.

Let us move our thinking from individuals to Industry. If the Industry will have to survive, we all need to be more committed to reduce chemicals used to help reduction of water and at the same time, the processing time and saving other Natural resources. We need to give more support to the investors and the cash strapped industry to get more faster turnaround of the investment.

Rapid system in tanning, rapid system for dyeing and rapid system for finishing is all available.

Let us embrace all the new technologies and apply our own way of innovative technologies to make leathers look better and better.

Reduction of input of water helps in better performance of chemicals and in lower per centage. This also reduces the time of processing and thereby saves on electricity, labor and wear and tear of the machine.

Input water reductions helps in the reduction of output to the common treatment plant and thus saves time and money at the effluent treatment plant.

Let our minds be open to embrace newness in everything. Mobile upgrades, Zoom & other meeting platforms help in connecting people from all over the World, and we have the AI ruling everything.

Why not the chemical companies revolutionise by bringing in quick performance products with better results.

Even if they bring, are we in the mindset to accept and take it forward. This is the need of the hour and we all need to co-operate.

Tanneries, Product Factories and Chemical Manufacturers should sit together and understand the ever changing requirement and challenges of the market and bring in products which will make leather the first and best choice of all times.

We have many Indian manufacturers of chemicals and let us give all the support for them to move away from the bulk list of chemicals to performance chemicals.

Time to perform. Time to bring in freshness in all our products to challenge our competitors and make our ever loyal leather consumers quench their thirst for fashion, fancy, trendy, pricey and above all purely sustainable.

Please not to get strapped by Big Names when we want to source chemicals for our leather tannery & products manufacture. We need better solution providers who will toe our line.

Consumers tastes have changed in to good quality, trendy, fast fashion and ever servicing Brands.

Let us pull up our socks and be practical in our approach.

"Live and let Live" should be the cooperation between chemical manufacturers & tannery.

Lesser inventory will provide better cash flow at all levels. Specialisation will allow better patronage and support between each other.

Further, the International chemical companies should make it a discipline to introduce 6 new international names of customers every season and it is up to the tanneries to perform and get the business. And if the chemical companies intend to co-operate, it is always a big welcome.

Better pricing is another aspect. There are many Indian based manufacturers who are 10-22% cheaper than the multinationals and there are also manufacturers from other countries, who provide better result oriented products for lower prices.

The bigger these multi national grows the bigger is the expenditure and the costs get built on to the product. We must realise this.

International customers, when they look for sourcing in India not only for big names but also look for second line of names for their price advantage. Why don't we do the same thing while we buy.

Let the inducements and indulgence to please some to ruin the industry, be stopped and it is high time, we all work towards bringing back the glory days of leather.

★★★★★

Reviving Leather Garments Industry

As we have been dealing with very important subject of stock clearance and utilising the leather stocks around the World in Footwear and Bags, we now discuss here about the Leather Garments.

To give it a immediate start and spark, let us look at the Indian market possibility.

We have a huge population of 1.4 billion people in our Country and blessed with varying climatic conditions. We have extreme, moderate cold regions and warm, extremely hot regions in our Country.

How do we make our own people realise the value of Leather Garments of all seasons?

India has the most percentage of young people in the World. This is another important point.

What is required to be done is to create a spark in the Fashion World of Garments for the young people in India and it can catch and spread like a wild fire.

Let us start from the basic design of vests or waist coat, purely as a fashion statement.

Use a very soft goat suede and with very less reinforcement to maintain the weight less nature of the product.

Affix decorative buttons to it. On the back side, use a cotton or linen fabric and finally comes out a trendy vest.

This is purely a fashion statement worn above the shirt or kurta. This could be unisex and just modify the style of cutting to create designs.

Introduce motifs like the Sundance effect to change color or absorb the other color stocks.

As the weather moves towards Autumn the same suede gets replaced with a Nappa with some nice lining and with warmer lining as we move towards Winter.

Imagine that a vest could easily consume minimum of 6-8 sqft. and if one million vest gets sold, it is a lot of leather and work for the stitchers.

With such a big pool of talent of fashion designers, this could be a big selling product, provided heart and soul is put in to it.

Let us give our best efforts to utilise the stock comfortably and bring out the interest of the customers with attractive prices and glory days of leather, will be back soon.

#Unutilised stock leathers in to every day life#

Motorcyclists are increasing in a Country like India.

In particular, the tier 2 & 3 cities and towns.

Cycling has become a healthy life style and you find early morning cyclists in the metro cities. Why should not we promote elbow guard, half finger gloves, sun screen & protection guard for working women and men, safety guard for men and women. Motorcycle gloves & accessories including water bottle holders, safety guards is a huge business. Success will be to keep the price affordable. Beat the competition of Non-Leather. Within India, we could create a big demand and fashion for these accessories. Just need to think and act differently. Nappa leathers can come in to play a big role in creating these articles.

Stretch leather technology could well be used here as the next skin. Gatherings on the leather, Pleats on the leathers could be made as added attraction to sell these products.

It starts to combine with the daily life as a protective gear from the fingers up to the elbow.

We could design specific guard for the shoulders even. Making it colorful and attractive with affordable prices, will make the customers use leather in their daily life. It also serves as a fashion statement for the young generation.

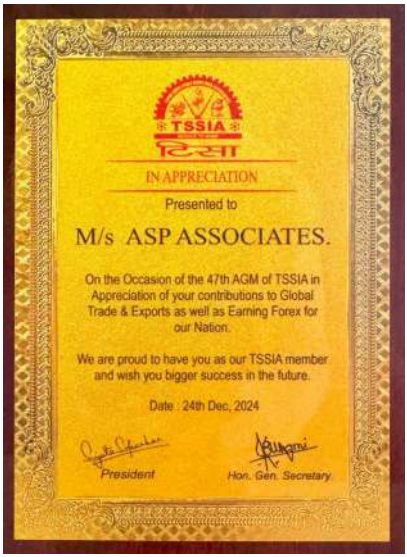
My intention is to ignite the spark and everyone can use their own imagination and create opportunities.

Always happy to assist anyone in such projects as it is important that, Leather is used, respected and lived with.

★★★★★

ASP Chemisch receives distinguished recognition from TSSIA

ASP Chemisch is feeling honoured to announce that it has received distinguished recognition from the Thane Small Scale Industries Association (TSSIA) during their 47th Annual General Meeting, where the company was felicitated on behalf of the **Government of India** for exceptional performance towards its **"Excellence in Forex Earning"** for the year 2024. This accolade further extends the acknowledgment previously bestowed upon ASP during the **Azadi ka Amrit Mahotsav**, a testament to the company's ongoing contributions to India's economic growth.



In a remarkably short period, **ASP Chemisch** has achieved remarkable milestones, owing to its unwavering commitment to adapting and thriving in an ever-evolving global business landscape. Like many others, the company has successfully navigated through some of the most challenging global events, including the unprecedented disruptions caused by the **COVID-19 pandemic**, geopolitical conflicts, interruptions in shipping routes through the **Red Sea**, and the persistent devaluation of the **Indian Rupee**. Despite these challenges, ASP has managed to mitigate the rising costs of raw materials and continue its trajectory of growth, demonstrating resilience, adaptability, and excellence in its operations.

This prestigious recognition would not have been possible had **ASP Chemisch** not dedicated itself to introducing innovative solutions across all segments of the leather tanning industry. During its Journey, ASP also feathered its cap with some high end certifications to get acknowledged as quality product manufacturer & exporter. Highlighted Certificates are as below:

- **ISO 9001:2015** Certificate by SGS
- **ZDHC level 3** Certifications for 124 products
- **AEO Certification** to ease custom clearance in various countries.
- **2 STAR ** Export House,** awarded by Ministry Of Commerce & Industry under Govt. Of India

Further, at the heart of **ASP's** strategy is a steadfast focus on providing high-quality products at competitive and affordable prices, ensuring that customers derive maximum value from their use. This approach not only makes their product selection easier and more cost- effective but also helps them remain confident and comfortable in their choice, knowing they are getting optimal performance and value from their investment.

The company's continuous efforts to develop and bring new products to market have significantly strengthened its relationships with its esteemed global clients, earning their trust and confidence. In addition to these innovations, **ASP** has been unwavering in its commitment to maintaining the consistency and high quality of its existing product range, which forms the foundation of leather processing,

ASP's series of new developments comprise of its below high-quality products / segments:

- **Bisphenol free range of Phenol / Sulfone based products:** Offering Zero Bisphenol products.

- **Lubrotan** A Liquid Tanning Agent that binds strongly to collagen reactive sites, resulting in stable, well- tanned leather. Its tanning effect remains intact even during the retanning process.
- **Lubrozyn** A Polymeric Fatliquoring Agent designed for low shrinkage temperature (Ts) tanned leather, where traditional fatliquors fail to adhere. This agent controls softness, firmly bonding to collagen in chrome-free tanning systems, and also enhances the fullness of the tanned leather.
- **Lubrofill** A Reactive Metal-Free Filling Agent that enhances inner softness and fills loose areas, creating a uniform fiber matrix throughout the hide or skin after tanning. It also ensures thermal stability during shaving and splitting processes.
- **Lubrofiber** A Cross-Linking Polymer that stabilizes residual tanning components in the bath by binding with collagen fibers. It also aids in managing the final tanning pH, reducing the need for additional formic acid.
- **Indian Origin Vegetable tannins** ASP supporting global tanning industries with its customized range of Indian Origin Vegetable tannins to balance the gradual scarcity of Latin American & African range of premium vegetable tannins

*While **ASP Chemisch** is deeply honored by this prestigious recognition, ASP view it as just the beginning of our ongoing commitment to the nation, which we revere as our mother, and to the distinguished global and Indian tanning industry. This award marks the first step in a long journey of contribution, one that will be driven by the same unwavering spirit of dedication and excellence.*

We remain committed in our mission to continue fostering innovation, sustainability, and growth, both within the leather industry and in our enduring support for the country that has provided us with the foundation to flourish. The road ahead is long, but our passion for progress and our commitment to quality will guide us every step of the way.

All Royal Smit & Zoon facilities awarded highest level of ZDHC certification

Royal Smit & Zoon has announced that, as of December 2024, all of its production facilities are certified Level 3 (the highest Confidence Level) by ZDHC (Zero Discharge of Hazardous Chemicals). It is a considerable milestone in the Dutch family business' efforts to help make the leather value chain more sustainable.

Indian production facility rewarded

With the certification of Smit & Zoon India Pvt Ltd, last December, all of Royal Smit & Zoon's production facilities across the world are now certified Level 3. In addition, the Smit group has over 1,000 products registered on the ZDHC Gateway platform. Both achievements underscore the company's efforts to help make leather production more sustainable.

Royal Smit & Zoon and ZDHC

By joining ZDHC as a contributor, Royal Smit & Zoon sends a clear signal to the fashion industry that leather can be a responsible and sustainable choice of material, with regards to use of chemicals and waste water.

Giulia Nencioni, Product Regulatory Affairs Manager, shares her excitement about the milestone of having all production facilities certified level 3: "By having all of our production facilities certified with the highest attainable Confidence Level, Royal Smit & Zoon demonstrates we take our responsibilities seriously and are dedicated to our corporate mission. Having an independent organization like ZDHC confirm that the company is taking all of the necessary actions to limit use of hazardous chemicals to zero, is further proof."

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- **Technology Talks on**
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- **Prof. S.S. Dutta Memorial Lecture**
- **Industry - Research Panel Discussion: Experience Sharing on Cost Reduction & Production Improvement**
- **Leather Ambassadors' Meet**

" The program combines technical discussions, industry insights, and networking opportunities focused on advancements and sustainability in the leather and allied industries "

&

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Italy positions as the 2nd largest supplier of Leather Machinery posting 42% increase in 2024 (till October) to India and 4th largest supplier of Leather Articles, posting an increase of 25% in 2024 (Till October).

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79 YEARS OF EXCITING JOURNEY IN LEATHER PROFESSIONAL EDUCATION

Prof. Dr. Sayeed Sadulla
Former Scientist 'G', CSIR-CLRI, Chennai
&Former Head, Department of Leather Technology, Anna University, Chennai
Email: sadullams@hotmail.com

(Alagappa College of Technology, a constituent Unit of Anna University, celebrated its 80th Year Anniversary on 20th Dec 2024. The College was established in 1944 as a constituent unit of University of Madras offering post-graduate (post-B.Sc) programme in Chemical Engineering in the first year of inception and in Leather Technology and Textile Technology from the subsequent year 1945. In this article, Prof. Dr Sayeed Sadulla, a Distinguished Alumnus of the College takes us through the evolution and incredible growth of leather technology education in Chennai to stellar heights, in his own inimitable style, highlighting the contribution of Department of Leather Technology (housed at CSIR - Central Leather Research Institute) to the development of global leather sector --- *Editor*)

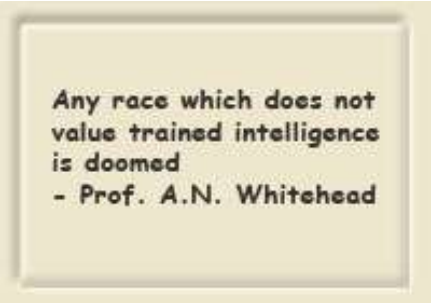
Preamble

Although leather craft is considered as old as man, modern leather technology can be traced to the last decades of 19th century when H.R. Procter started applying chemistry to tanning at the Leeds University, UK in 1891 and Cathereiner, Vignon, Von Schroeder and Eritner on the mainland Europe. Science has amazingly brought in exciting changes in the process of leather making and the modern leather technology throws open many exciting and challenging problems and careers to the minds willing to take them.

The Indian leather industry which too remained for centuries in the holds of traditional crafts has been transformed in the last seven

decades or so into vibrant export oriented industry now occupying an eminent position in the country's economy because of its potential in economy (foreign exchange earnings), employment generation and empowerment (of people). The significant achievement of the leather sector is due to the progressive, proactive and collective initiatives and efforts of R & D, industry and the government. The role of Human Resource Development (HRD) on this nation building activity is in a significant measure, which every alumnus can proudly take pride of.

Emergence of Leather Institutes



Though leather craft is time immemorial, the imparting of formal training in leather and leather products is of relatively recent origin. In India, prior to Independence, there was no significant organized tanning activity but for a few British controlled tanneries. It was World War I that was indirectly responsible for setting up schools of tanning for the training of technicians who were essential for the supervision of bulk production of the British army's requirements of leather.

The British set up the first tanning school at Madras (present Chennai) in 1914. Later other schools sprang up at Kanpur (1916), Calcutta (present Kolkata) (1919), Jalandhar (1934) and in many places later post-Independence. The beginning of technical education in leather thus corresponds to the period when leather manufacture on an organized industrial scale commenced. The dawn of Independence saw the launching of the professional degree programme inleather technology.

With the munificent donation of Rs.5 lakhs (this amount in '40s) from Dr. Alagappa Chettiar, the great philanthropist of the times, the

premier University of Madras established the Alagappa Chettiar College of Technology (fondly called A.C. Tech by its students and alumni) at Guindy, Chennaiin 1944 to offer courses in technology. The College was under the direct management and administrative control of the University.

The College started offering Chemical Engineering programme in the first year. Leather Technology and Textile Technology were offered from 1945 onwards. Launching of professional degree programme in leather technology, a non-conventional field of engineering and technology was a bold and far-sighted step taken by the educationists of yester years which has paid rich dividends.

These programmes were of two years duration after a basic science degree leading to B.Sc (Tech) degree. Thus these programmes were indeed post – B.Sc / Post graduate ones. The first batch of leather technology graduates passed out in 1947.

The Year 1944 also witnessed another significant initiative, this from Delhi, at that time the capital of British India. At the instance of Dr. S. S. Bhatnagar, the then Director, the Council of Scientific and Industrial Research (CSIR) appointed in 1944 a Leather Research Committee with Shri. B.M. Das as the Chairman and Messrs K. Seshachalam Choudhary, P.T. Quy, G.M. Mansuri and Dr. B.C. Guha as members.

The Committee examined the possibilities of research in leather manufacture and recommended financial assistance for specific research through (i) a block grant of Rs.60,000 per annum to the Department of Leather Technology (of A.C. Tech) of the University of Madras and (ii) a grant for a five year programme of work at the Bengal Tanning Institute, Kolkatta in order to ensure the benefits of new discoveries in Science and technology for the Indian leather industry and to promote the early establishment of Central Leather Research Institute (CLRI).

This recommendation was strongly supported by the Industrial Research Planning Committee and accepted by CSIR. It was

decided to locate CLRI at Chennai and the Government of Madras gave as a gift the present site covering 84 acres.

In 1948, CLRI started functioning in Coral Merchant Street, George Town, Chennai. Shri. B.M. Das was appointed Officer on special Duty on Sept.26, 1951 and the planning, construction and equipping of the institute commenced and CLRI started functioning in its premises in 1952 when the construction of the Tannery Block was completed. Shri. B.M. Das was appointed as the first Director on Jan 15, 1953 when the new Campus was officially declared open.

Though the Leather Technology programme commenced in 1945, the A.C. Tech buildings were not ready yet and the classes for leather subjects were held in the Institute of Leather Technology (ILT) premises at Washermanpet, Chennai.

Mr. Seshachalam Choudhary who was the Principal of ILT was also the Honorary Head of Leather Technology, A.C. Tech. With the public transport system so sparse those days the students used to trek the distance from the College to Saidapet to catch a train to Fort from where they travelled by tram and finally walked the last distance to reach ILT.

In 1950, A.C. Tech buildings were commissioned. The Department of Leather Technology moved from Washermanpet to Guindy in June 1951. On the death of Prof. Seshachalam Choudhary at this time, Mr. Siviah Choudhary, Principal of ILT was appointed to act in the vacancy in the position of the Head of Department of Leather Technology. Dr. A.L. Sundara Rao, Planning Officer, CLRI helped in conducting the classes.

The 1950 – 52 batch was the first batch to have practical training in the freshly commissioned tannery building of CLRI in 1952. By now, University of Madras decided to site the Department of Leather Technology at CLRI. Indeed another far-sighted step. This results in a successful three way partnership of academy-research-industry developing into a good role model for engineering education in a specialized sector like leather.

Ph.D Programme

The Ph.D programmes too commenced early in the Fifties itself. It is indeed a meritorious feat that the first Ph.D in Leather Technology (Dr. E.C. Mathews) came in 1955 itself. Till the introduction of M.Sc (Tech) by research programme, B.Sc (Tech) graduates were allowed to register for Ph.D programme straightaway. Dr. M.S. Olivannan's Ph.D thesis of 1972 was adjudged as the best one to receive the Chancellor's Gold Medal that year, by the University of Madras. Dr. P. Thanikaivelan's Ph.D thesis bagged the prestigious best thesis award of Indian National Academy of Engineering. The doctorate programme is gaining visibility from the global research domains.

M.Sc (Tech) by research programmes

M.Sc (Tech) by research programmes too commenced after 1955. During 1956 – 65, 20 M.Sc (Tech) by research degrees were awarded.

4 year B.Sc (Tech) programme

4 year B.Sc (Tech) programmes were introduced in 1957 after one year pre-professional programme in the college which itself was

after Pre-University course. The 1961-65 was the last B.Sc (Tech) (4 year) batch.

5 year Integrated B.Tech Programme

Then commenced in 1961, 5 year Integrated B.Tech programme which was offered after one year Pre-University course.

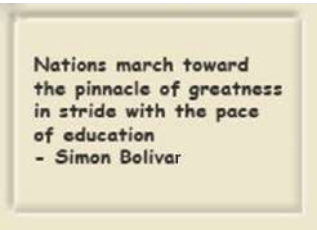
M.Tech (Leather Tech.) programme

M.Tech (Leather Tech.) programme (2 years duration) commenced in 1963.

Birth of Anna University

On 4th Sept. 1978, Anna University was established. A.C. Tech becomes part of Anna University.

4 year B.Tech Degree Programme



In 1980, due to academic reforms, 4 year B.Tech Degree programme was introduced replacing the 5 year Integrated programme with the result two batches of leather technologists passed out in the year 1984.

M.Tech (3 semester) programme

Based on Nayudamma Committee report, another major change in P.G. education in professional courses takes place. From 1983, M.Tech (3 semesters) programme in Leather Technology commences.

P.G. Programmes in Footwear Science & Engineering

Due to the initiatives of the Dept., P.G. Programmes - 3 semesters M.Tech Programme and 2 semester P.G. Diploma programme in Footwear Science & Engineering were introduced by the University

in 1987. After 5 batches, P.G. Diploma programme was discontinued. The entry level for the M. Tech programme, now renamed as Footwear Engineering & Management, as of now ,is B.E/ B. Tech (4 year UG Programme Degree)in Leather Technology Mechanical Engineering., Industrial Engineering, Production Engineering / Technology , Manufacturing Engineering, Biomedical Engineering , Polymer Technology , Materials Science &Engineering and B.E/ B.Tech/ B. Des(4 year U.G.Programme) in Footwear Technology .

M.S (by research) programmes

M.S (by research) programme in Leather Technology Commenced in 1997. The programme is equivalent to M.Tech degree but the curriculum consists of about 50% of the course content of M.Tech programme with the entire duration of studies devoted to research in leather science & technology with research methodology and thesis evaluation by two external examiners and (public) viva voice examination built into the system. The minimum duration of the M.S. programme i.e. 3 semesters in the introductory years get extended to 4 semesters since 2002.

B.Tech (Part Time) Degree programme

Year 2000 witnessed the launching of 7 semesters B.Tech (Part Time) (Evening) Degree programme in Leather Technology. This met the demand of the aspiring technicians in the industry with Diploma qualifications in Leather Technology.

Reorganisation of P.G. education

The M.Tech programme in its earlier years almost corresponded to the M.S. programmes available at IITs with much importance attached to Project Work / thesis. The students had to take only a few theory courses and had solid two years for Project work studies. Over the years, with the periodic revision of P.G. Curriculum, the

M.Tech programmes were loaded with a lot of course work (theory) with much reduced time available for project work. The last two semesters available for project work were found inadequate for any fruitful research activity. Hence after due deliberations, the M.Tech programmes across the country revert back to 4 semesters. Since 2002, the 4 Semester M.Tech programmes in Leather Technology and Footwear Science & Engineering are offered. Since the last few years, M.Sc (Chemistry) & B.Tech (Biotechnology and Chemical Engineering) graduates are also admitted in M.Tech (Leather Technology) programme. They will be undergoing a bridge course in Leather Technology during their studies.

Curriculum Changes

In tune with emerging trends in science and technology, periodic revision in curriculum and syllabi of the various programmes has been undertaken. The Board of studies, A.C. Tech / Anna Univ. is entrusted with the responsibility.

Leather Education Gains Visibility& Strength

A perceptible change in quality and quantum of admission in B.Tech and M.Tech programmes of Anna University is noticeable. From a mere 10 in '70s, the B.Tech admission now stands at 60 with best of the talents (top 10% of the aspirants for engineering

education) opting for Leather Technology.

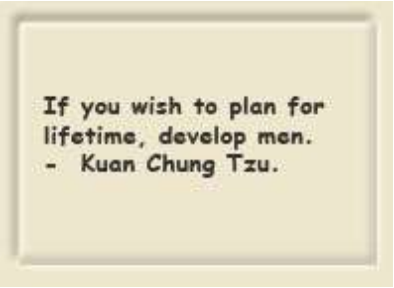
The Department of Leather Technology has grown in stature gaining strength, thanks to the guidance and individual care showered by the successive Heads of the Department of Leather Technology viz., Prof.Seshachalam Choudhary, Mr Sivaiah Choudhary, Prof. B.M. Das, Dr. Y. Nayudamma, Dr. M. Santappa, Dr. N. Ramanathan, Dr. G. Thyagarajan, Dr R.B.Mitra, Dr. K.V. Raghavan , Dr. T. Ramasami, Dr S.Sadulla , Dr. B. Chandrasekaran Dr J.Raghava Rao and present Director, Dr. K.J. Sreeram and several Area Leaders of the Education &Training Division at CLRI, including Dr. E.C. Mathew,

Shri. P.S. Venkatachalam, Shri. T.S. Krishnan, Dr. R. Selvarangan, Dr. J.B. Rao, Dr. C. Koteeswara Rao, Dr. M.S. Olivannan, Dr. K.Satish Babu, Dr.S.Sadulla, Dr. V.S.Sundara Rao, Dr. B. Chandrasekaran, Dr. J. Raghava Rao, Dr Swarna V.Kanth and endless number of Hon. Faculty of the Department of Leather Technology drawn from different R & D divisions of the Institute.

The mentorship of M.Tech students in the initial two decades of PG programme of Leather Technology by the much revered Dr D. Ramaswamy, the then Head of Chemical Lab, CLRI is gratefully acknowledged.

Not only Indian leather industry benefits but industry overseas also gains by utilizing the expertise made available. Nearly 35% of the global supply of leather experts is being added though Department of Leather Technology/ CLRI every year.

Leather Technology Education Destination of the World



The Department of Leather Technology has emerged as the dependable partner for developing countries in their intellectual pursuits and training. Links with Leather & Leather Products Industry Research Development Centre (LLPIRC), Addis Ababa, Ethiopia, Sudan University of Science & Technology, British School of Leather Technology, University of Northampton, UK, University of Juba, Khartoum, Sudan, Common Market for East & South Africa (COMESA) / Leather & Leather Products Institute (an Inter – Regional Training Centre in Africa), Addis Ababa, Ethiopia, Universitat Polytecnica de Catalunya, Spain, Ege University, Izmir, Turkiye and

Marmara University, Istanbul, Turkiye have been strengthened. The Department, with its international cooperation and networking strategies,is emerging as a global leader in leather engineering education and training.

Industry Cooperation

The Department has always been fortunate enough to get the enthusiastic encouragement and sustaining support in its academic endeavours. Be it industrial visit, intern training, extending facilities in the factories for the students to carry out their project works in real-work situations, the support from the industry was overwhelming. Their interaction with the students keeps the student community highly inspired. Institution of Scholastic awards such as Mecca Haji Abdul Majeed Sahib Endowment Awards, Leather Chemical Manufacturers Association (LCMA) Award and BD Bhaiya Award has encouraged students to turn out Best Project Works.

Uniqueness of Department of Leather Technology

Leather Technology courses of Anna University are unique and distinctive courses conducted under a research and consultancy ambience at a world-renowned leather research institute, CLRI with a synergetic relationship between Academy and Research which has matured into now well quoted Academy- Research- Industry Trinity Partnership. In this set-up, the students grow under excellent academic and scientific grooming. They have access to the excellent State -of- the Art infrastructure for R&D. They are exposed to invigorating and inquisitive ideas by rubbing shoulders with visiting scientists, industrialists, international experts at many a seminar at the Institute and international students getting trained at CLRI. The students are encouraged to participate in seminars organized by other colleges and institutions such as Indian Institute of Chemical Engineers as well as International Seminars abroad.

A M. Tech student, Ms V. Punitha, participated and presented her research work in Euro Congress 2006(International Union of Leather Technologists and Chemists Societies -IULTCS) held at Istanbul, Turkiye. A Ph.D scholar, Mr R.Aravindan, presented his research findings at IULTCS Congress held at WashingtonD.C, USA in 2007.

The Leather Technology programmesat A.C. Tech/CLRI remain unique and strong, unmatched, specially designed to suit careers in industry, entrepreneurship and research.

Student Activities

The students have their own “Association of Leather Technologists” activities. They conduct seminars, meetings, career guidance meetings periodically, inviting scientists, industrialists and entrepreneurs to address them. They take part in the deliberations of the Annual Leather Research Industry Get-Together (LERIG) held at CLRI, involving the active participation of all the stakeholders of the industry and get to know and understand the pulse of the industry first hand. The visit to the prestigious India International Leather Fair (IILF), in February, showcasing the trends in the wider global leather industry enlarges the world leather industry perspectives.

The students’ organizational skill and acumen comes to the fore with the much awaited annual ”Crosslinx“ event, comprising symposium (getting an international status with the participation of overseas students present in the CLRI Campus at that point of time), scientific and technical paper

presentations, quizzes, design workshops, business plan presentations etc by the students and motivational lectures by peers and senior alumni, cultural events and so on.

Placement

At present, the placement record of the Department is exhilarating. None of the leather technology graduates are unemployed. Many of them occupy pivotal positions in the industry and Government organizations. Many have developed into entrepreneurs and technocrats and reached the pinnacle of their careers as Directors, Chief Executives, Heads of Depts / Divisions etc. This rosy picture is quite in contrast to the situation in the 1960's. (Late) Prof. Y. Nayudamma, the doyen of leather technology education in India observed in his article "Education in the field of Leather Technology – scope for the future" in ALTECH (1962 – 63), a journal of A.C. Tech: We find that the majority (of the personnel so far trained by institute at that point of time) are placed in public sector departments, very few of which are run on an industrial basis. Hence all the technical training imparted to such personnel has failed to reach the industry". At another place, in the same article, his observation was "unfortunately, the leather industry has never taken kindly to degree holders, probably because the tanner has never felt the need for one so far. But today with the immediate prospect of the development of the finished leather industry, the tanner is entering into a more competitive market. Hence there will be a growing demand within the trade for trained technologists". And his vision that "the technologists can look forward to a bright future" has turned true.

Trends in Placement

The trend, noticed in placement of leather graduates in the last decade, of losing most of its talents to IT sector been reversed in the case of leather technology stream. The credit for this reversal should go to the industry and ALFA (A.C.Tech Association of Leather & Footwear Alumni)who have helped the Department conduct

placement interviews by renowned companies. The alumni and the industry have played a great role in this by mentoring and motivation. A quick review of the placement statistics in the recent years indicate, 28% of the graduates were absorbed in leather footwear industry, 27% in leather processing,11% in leathergoods and garments and 5% in leather chemicals industries. 19% graduates opted for/ settled in other pastures.

At the same time, it is also worthwhile to note many an alumnus with their acquired expertise in various disciplines/ domains acquired at the Department/ CLRI have pursued careers in domains like polymer, biotech, environmental engineering, chemistry and chemical engineering etc even in earlier decades, and have made monumental impact and the younger generation choosing new domains of interest to it has not lagged behind.

Many alumni occupy pivotal positions in Industry, Research and Academy, not only in India but overseas too and made lasting contributions not only in leather field but also in other domains. They have enabled the industry meet the ever-growing challenges and go far many fold capacity enhancement leading to wealth and employment generation. The alumni have excelled in governance and public service too.

ACTech Distinguished Alumni

AC Tech celebrated its Silver Jubilee In 1969 and the Platinum Jubilee in 2019.Since 2019, AC Tech started felicitating Distinguished Alumni during Anniversary Celebrations.47 alumni have been honoured with DistinguishedAlumni Award, till now. The awardees from Department of Leather Technology include Dr B. Vijayendran(1963Batch), Dr T. Ramasami and Dr S. Sadulla (1969

Batch), Dr P.V.Sambasiva Rao and Mr D.Senthil Murugan (1979 Batch), Dr B. Chandrasekaran(1983 Batch), Mr V. Raja Sreenivasan and Dr J. Raghava Rao(1984 Batch) and Dr K.J. Sreeram (1994 Batch).

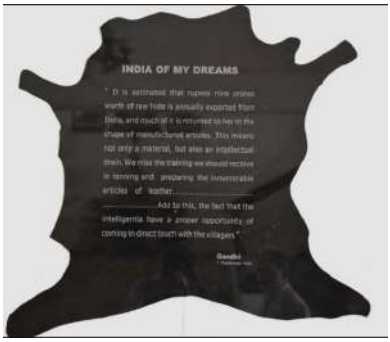


National Honours

Dr T. Ramasami was honoured with India's National Civilian Award Padma Shri(2001) and Padma Bhushan (2014).

Dr P.V. Sambasiva Rao was honoured with "Elder of the Order of the Golden Heart "- highest Civilian Award by Kenya in 2017.

Long way we have come



Mahatma Gandhiji, Father of our Nation, once observed in his regular columns in a magazine in 1934 itself: "It is estimated that about Rupees nine crore worth raw hides is annually exported from India and much of it is returned to her in the shape of manufactured articles. This means not only a material, but also an intellectual drain. We miss the training we should receive in tanning and preparing the innumerable articles of leather we need for daily use".

The Free India addressed this problem nicely. R & D infrastructure was created. Training centres were established. Leather sector got modernized. Gandhiji's dream gets realized. The Indian leather

industry today occupies a prominent position in the country's economic and social growth. Such a growth for the leather sector can easily be attributed to the progressive policies framed by the Government and meticulous performance of the industry. Strategic R&D output by CLRI and Human Resources Development through academic and vocational training for the leather sector have played a key role for the success and the current status.

Every alumnus can take pride for being part of this national building exercise and for laying down a strong platform for the future generations of professionals to build up further in all spheres of activities.

ALFA

The need for an alumni association was felt for a very long time. In 1987, the foundation for A.C. Tech Leather and Footwear Alumni Association (ALFA) (presently renamed as A.C.Tech Association of Leather &Footwear Alumni)was laid with just four alumni joining hands and floating the Association with Dr. K.S. Jayaraman as the Founder President, Dr. M.S. Olivannan as the Founder Secretary and Dr. S. Sadulla as the Founder Treasurer. Now ALFA is strong and it has grown in stature too.



It has become a professional body to be reckoned with. ALFA works in tandem with Department of Leather Technology in the cause of Leather Technology Education. ALFA has blossomed into a professional association of stature and is now an IULTCS(International Union of Leather Technologists and Chemists

Societies) supporting member, a milestone in ALFA's efforts as an international professional body.

ALFA conducts seminars, workshops and annual Get-Togethers for the benefit of its members as well as students. ALFA arranges ALFA Oration Award Lectures delivered by eminent alumni of AC Tech and recognises and honours members with Best Teacher Award, Best Entrepreneur Award, Lifetime Achievement Award. The Life Time Achievement Awardees list includes Dr C. Kotteswara Rao (1958 Batch),Mr P.T.Mallesam (1963 Batch), Mr G. Muhammad Thaj (1966 Batch),Mr G.K. Devarajan (1967 Batch), Mr NR Jagannathan (1968 Batch) and Dr S.Sadulla (1969 Batch). ALFA organized creditably the Diamond Jubilee Celebrations of the Department of Leather Technology in a befitting manner in 2005.

LOOKING FORWARD

The Council for Leather Exports (CLE)'s Vision Document 2030 sets a target of reaching the total turnover of around US Dollar 47.1 billion(consisting of domestic turnover of US Dollar 33.4 billion and export turnover of around US Dollar 13.7 billion) from the current combined Indian exports and domestic market turnover of US Dollar 19 billion. Expansion of the leather industry in India and elsewhere in days ahead raises issues relating to sustainable development encompassing the structure of the industry, ecology and environment, technological dynamics, market forces and so on.

The alumni of the Department of Leather Technology, of Anna University can look forward to play a pivotal role in the significant

development and “nouveau” transformation of the domestic as well as global leather sector.

EXCITING JOURNEY INDEED

LEATHER EDUCATION
Marching towards 100

The journey in this leather technology education during these seventy-nine years had been exciting, interesting and stimulating. The journey ahead towards the century mark promises to be more exciting, interesting and stimulating. Let all the stakeholders right from the student community to the policy makers make the journey enjoyable.

A Win-Win situation for all, indeed.

FOOTWEAR DESIGN & DEVELOPMENT INSTITUTE (FDDI)

Footwear Design and Development Institute (FDDI) was set-up by the Ministry of Commerce and Industry, Government of India in the year 1986 for the development and promotion of Footwear and Allied Product Industries.

Over the years, FDDI expanded into education in fashion, leather products, and retail & fashion merchandise and has been playing a pivotal role in facilitating Indian industry by bridging skill gaps in the areas of footwear, leather, fashion, retail and management with its specific curriculum, state of the art laboratories, world class infrastructure and experienced faculty.

FDDI was given the status of 'Institution of National Importance' as per FDDI Act, 2017 for its contribution towards nation building by producing industry ready professionals and is serving as a 'One stop solutions provider' for footwear, leather and allied industry.

FDDI is imparting skill base training and education through its four schools namely, School of Footwear Design & Production (FDP), School of Fashion Design (FD), School of Leather Goods and Accessories Design (LGAD), and School of Retail and Fashion Merchandise (RFM).

Through these Schools, FDDI is conducting the following long-term programmes at its 12 well-designed campuses located at Noida, Fursatganj, Chennai, Kolkata, Rohtak, Chhindwara, Guna, Jodhpur Ankleshwar, Banur, Patna and Hyderabad:

Master Degree Programmes (PG Programmes)		
Sr. No.	**Name of Programme**	**Duration**
1.	Master of Design - Footwear Design & Production - (M.Des.- FDP)	2 Years (4 Semesters)
2.	Master of Design - Fashion Design - (M.Des.-FD)	2 Years (4 Semesters
3.	Master of Business Administration - Retail & Fashion Merchandise (MBA-RFM)	2 Years (4 Semesters)
Bachelor Degree Programmes (UG Programmes)		
1.	Bachelor of Design - Footwear Design & Production - (B.Des.- FDP)	4 Years (8 Semesters)
2.	Bachelor of Design - Leather Lifestyle & Product Design – (B.Des.- LLPD)	4 Years (8 Semesters)
3.	Bachelor of Design - Fashion Design- (B.Des.- FD)	4 Years (8 Semesters)
4.	Bachelor of Business Administration - Retail & Fashion Merchandise- (BBA-RFM)	4 Years (8 Semesters)

Besides the long-term programmes, for the Technological Upgradation & Competence Building of the Sector, the Institute conducts short-term Industry Specific Certificate Programmes also.

FDDI has crossed the national boundaries and created a niche for itself in the area of Training and Consultancy in Asian countries like Sri Lanka, Bangladesh and many African countries like Ethiopia, Botswana, Nigeria, South Africa etc.

FDDI got recognition as ‘Assessing Agency’ and ‘Awarding Body’ by National Council of Vocational Education and Training (NCVET) through which it is poised to play a pivotal role in shaping the future of vocational education, training and skilling in India.

FDDI’s International Testing Centre (ITC) has laboratories at Noida and Chennai for physical & chemical testing equipped with state of art testing facilities where testing of leather products, footwear, footwear components, textile products and miscellaneous articles made up of plastics is carried out. These centres have been restructured and equipped with state-of-the-art advanced testing machines to ensure that the industry receives reliable, precise, and timely results, thereby supporting the manufacturing and production processes with world-class quality assurance.

To meet the cutting edge technologies requirement such as additive manufacturing, AI application in design and data analysis, latest software’s, and augmented reality application, digital enterprise, FDDI has initiated the processes of Industry 4.0 application through upgradation of seven of the existing campuses of FDDI into ‘Centre of Excellence’ (CoEs). These CoEs which are having the best available infrastructure and skills to not only aid research and development, but also to address concerns of the industry like product development, technological assistance and centres for incubation and entrepreneurship development.

These CoEs have been operationalized in different areas such as FDDI Rohtak – Center for Non-Leather Footwear, Products & Accessories, FDDI Jodhpur – Center for High Performance/ Specialized Footwear & Products and Start Ups, FDDI Kolkata - Center for Leather Goods, Garments & Accessories, FDDI Chennai – Center for Design, Development & Fabric Interface, FDDI Hyderabad – Center for Design, Development & Fabric Interface for Leather Products & Accessories- Extended and FDDI Patna - Center for Leather Finishing Innovation & Product Retailing.

FDDI's collaborations with industry and academia have strengthened significantly. MoUs and MoAs have been signed with NIFT, Patna (under the Convergence of Institutes) for institutional collaboration in education, research outreach programmes, student exchange programme, faculty exchange; with AIIMS, Hyderabad to Redefine Healthcare Footwear through research and innovation benefitting both healthcare professionals and patients. Similarly, with Sharda University and with Muzaffarpur Institute of Technology (MIT), Muzaffarpur, Bihar to work together for promotion of quality education, research & development with LCGC Resolute Group of Companies for IPR Training and Industrial Design Filing Facilitation Services to create a strong IP culture in the institution and appreciate new innovations and designs and seek timely registration of IPs.

MoU was signed between FDDI's CoE and with M/s. Horizon Performance Polyurethane Pvt. Ltd., to jointly develop innovative footwear and accessories and to conduct collaborative research and development on material development, prototyping, and commercialization, with shared responsibilities and costs. Another MoU was signed with Pt. Deendayal Upadhyaya National Institute for Persons with Physical Disabilities (Divyangjan) (PDUNIPPD) that offers a comprehensive approach to advancing orthotic technologies in footwear. The key areas include joint research on biomechanics and materials, product development with FDDI's design expertise, and educational programs to disseminate best practices. To promote entrepreneurship education, training, policy research and incubation, MoU was signed between FDDI and Entrepreneurship Development Institute of India (EDII), Bhat, Gandhinagar, Gujarat.

These partnerships underscore FDDI's commitment to fostering innovation, research, and technological advancements that address global challenges and contribute to make Leather & Footwear Sector a US$ 50 Bn industry by 2030.

Indian Footwear Components Sector: Current Trends and Future Prospects

Sharad Kant Verma,
Executive Director, IFCOMA

The Indian footwear components sector has witnessed significant growth over the past few years, driven by the increasing demand for footwear, both domestically and globally. The sector has emerged as a key player in the Indian economy, with a turnover of over ₹10,000 crore (approximately $1.3 billion USD) in 2020-21.

Current Trends:

1. Increased Focus on Quality and Design:

With the growing demand for high-quality footwear, the Indian footwear components sector is witnessing an increased focus on quality and design. Companies are investing in research and development to create innovative and stylish components. The world is moving rapidly on the design aspect . The Indian companies need to meet the new challenges adhering to the Global Standards.

2. Adoption of New Technologies:

The sector is witnessing the adoption of new technologies, such as 3D printing, computer-aided design (CAD), and computer-aided manufacturing (CAM). These technologies are helping companies to improve efficiency, reduce costs, and enhance product quality.

3. Growing Demand for Sustainable and Eco-Friendly Components:

With the increasing awareness of environmental issues, the Indian footwear components sector is witnessing a growing demand for

sustainable and eco-friendly components. Companies are developing components made from recycled materials, biodegradable materials, and other eco-friendly materials.

4. Increased Focus on Exports:

The Indian footwear components sector has been increasingly focusing on exports, with a growth rate of over 10% in the past year. The sector is targeting new markets, such as Europe, North America, and Southeast Asia.

Future Prospects:

1. *Government Initiatives*: The Indian government has launched several initiatives to promote the footwear industry, such as the Indian Footwear and Leather Development Programme (IFLDP). These initiatives are expected to boost the growth of the footwear components sector.

2. Increasing Investment : The sector is witnessing increasing investment from both domestic and foreign players, with companies like Bata, Relaxo, and Liberty Shoes expanding their operations and investing in new technologies.

3. Growing Demand for Athletic and Sports Footwear : With the increasing popularity of sports and fitness activities, the Indian footwear components sector is witnessing a growing demand for athletic and sports footwear. Companies are developing specific components that cater to this demand. This is a huge niche market that has grown leaps and bounds in the past five years.

Challenges:

1. Competition from Global Players: The Indian footwear components sector faces intense competition from global players, particularly from China, Taiwan, Spain and Southeast Asia.

2. Quality and Technology: The sector needs to focus on improving quality and adopting new technologies to remain competitive in the global market. IFCOMA has proposed to the Indian Govt to develop and build a new Design Studio of world class standard. This is likely to take shape very soon.

3. Regulatory Framework :

The sector requires a supportive regulatory framework to promote growth and investment.

In conclusion, the Indian footwear components sector is witnessing significant growth, driven by the increasing demand for footwear, both domestically and globally. International Brands and Companies are looking at India as a potential industrial investment hub as a China+1 policy.

The sector is adopting new technologies, focusing on quality and design, and investing in research and development to remain competitive in the global market. However, the sector also faces challenges, such as competition from global players, quality and technology issues, and regulatory framework.

LEATHERTECHBANGLADESH 2024 SHOWCASES CUTTING EDGE TECHNOLOGY FOR LEATHER, FOOTWEAR & LEATHERGOODS SECTOR

The 10th edition of the International Technology Tradeshow LEATHERTECH BANGLADESH on LEATHER, FOOTWEAR MACHINERY, SHOE MATERIALS,CHEMICAL & ACCESSORIES for FOOTWEAR & LEATHERGOODS Sector, organised by ASK Trade & Exhibitions Pvt Ltd., held on 21 - 23 NOVEMBER 2024, at the Expo Zone at International Convention City of Bangladesh(ICCB), Basundhara in Dhaka, concluded showcasing cutting edge technology for the sectors attracting 4653 visitors.

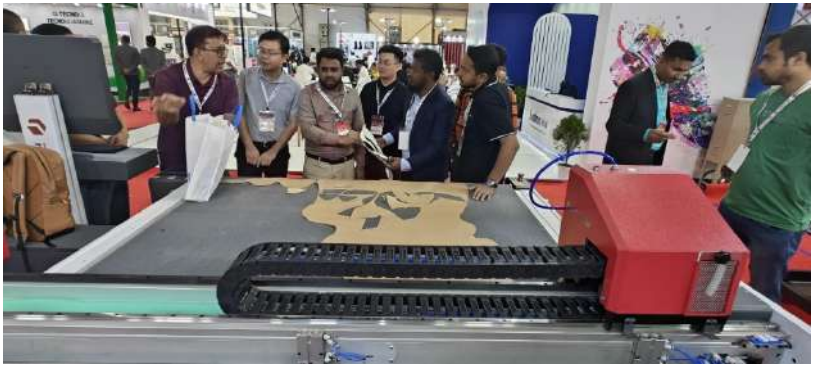
Shah Mohammad Mahboob, an executive member (additional secretary) of the Bangladesh Investment Development Authority, highlighted the significant export potential of the leather sector. He

expressed optimism about increasing the country's export earnings by fully leveraging the capabilities of the leather and leather products sector.

Nanda Gopal, director of the organising team, noted a substantial revival in participation from Chinese exhibitors, indicating the growth prospects for the footwear and leather products industries in Bangladesh. He emphasised the exhibition's role as a vital platform for local industries to connect with global leaders and explore new opportunities.

The opening ceremony attracted notable industry figures, including AKM Mushfiqur Rahman Masud, president of the Leather Engineers and Technologists Society of Bangladesh and Mohiuddin Ahmed Mahin, chairman of the Bangladesh Finished Leather, Leather Goods and Footwear Exporters' Association.

Nearly 200 exhibitors from 10 countries participated in this edition. Over the years the event has become the most preferred technology platform to explore for the Bangladesh Leather, Footwear and Travel goods sector, and this edition proved to be no exception. Absence of Indian Contingent due to the political turmoil and apprehension to visit, proved to be a void and it turned out to be a missed opportunity as the enquiries for components and leather was seen from the business visitors.



With Bangladesh Leather and Leather Products sector is growing and expanding, Manufacturers wanted to know about the updated technology and various solutions which addressed quality, efficiency, and environmental concerns. New players who were planning to enter the sector said that they visited LEATHERTECHBANGLADESH to understand the machinery

needed, investment estimation, possible ROI and selection of product line etc.,

Recent quarter has seen non leather footwear exports hit 5-year high which augurs well for the sector after prolonged period of suffering since the pandemic with new orders flowing in. Despite the economic slowdown in some markets, local exporters say they are receiving increasing orders from overseas thanks to Bangladesh's competitive labour costs, which makes "Made in Bangladesh" shoes more affordable.

The lead support to the event was offered by Leathergoods & Footwear Manufacturers & Exporters Association of Bangladesh (LFMEAB), along with Bangladesh Tanners Association (BTA), Paduka Prostutkarak Samiti and Leather Engineers & Technologists

Society Bangladesh. Leather Age, Indian Leather, BD Fairs.com, Leather Footwear & HIVE and Footwear Today, were the Media Partners and Footwear Exchange are the Knowledge Partners..

The Bangladesh Leather and Forward Linkage Sectors (domestic as well as export) are poised to leap frog given the quality and the capability of the Bangladesh Factories to manufacture high quality products. The sector is in anticipation of LWG certification post which the markets are bound to expand and exports higher. Bangladesh is working towards consolidating its position as a reliable supplier. The sector is back on track in exporting across the world overcoming the temporary slowdown in production due to political turmoil which has become a thing of the past.

LEATHERTECH Bangladesh - a Industry Networking Forum

LEATHERTECH Bangladesh began its journey ten years ago as a technology platform created to bring technology related to manufacturing footwear, travelgoods and allied products from across the world closer to the doorsteps of end users.

In the last 10 years it has grown to become the "Networking Platform of the Leather Sector " in the country. Decision makers to startups make it a point to visit the show to witness Leather Machinery, Components, Chemicals & Accessories showcased by leading suppliers from across the world. Leather Processors & Exporters, Manufacturers and Exporters of Footwear & Travelgoods, Importers

Besides, a cross section of the traders, from important production clusters across the country, visited the show.

It is important for one’s business to stay updated and cater to the demands of the buyers. Keeping a watch on the emerging technology is important for modernising and expanding business.

LEATHERTECHBANGLADESH 2024 proved to be an ideal platform for the technology leaders to showcase their latest product offerings. A visit to the show provided an opportunity to witness emerging

technology in action as well as to spot the new innovations which would improve the productivity, quality, diversity and efficiency.

About Organisers :

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ASK Trade & Exhibitions Pvt Ltd is one of the leading International B2B Tradeshow organisers in Bangladesh, with "Bringing Business to do Business BB2B" as their motto. They have so far organised over 150 tradeshows across 10 verticals since 2002.Through these events, they have enabled hundreds of companies to gain market entry, exposure, get visibility, enhance brand value, add contacts, increase revenue, thus facilitating trade and economy through tradeshows across multiple industry sectors in India and Bangladesh.

For additional information write to info@asktradex.com

64th ANPIC attracts over 8 thousand buyers

International breath and launch of the MUSA ANPIC DESIGN FEST 2025 for the major sourcing fair for the footwear and fashion industry, took place from 23 to 25 October in Mexico.

There is great satisfaction for the conclusion of edition number 64 of Anpic, the most important sourcing fair for the footwear and fashion industry, which took place from 23 to 25 October 2024 at the Poliforum of León, in the State of Guanajuato, Mexico. The event, which brought together more than 800 stands representing over 200 brands from 19 countries, is expected to generate up to 275 million pesos in sales, consolidating itself as a key platform for innovation, sustainability and industry trends. On show: machinery and equipment, chemicals, tanning, textiles, components and accessories.

On the visitor front, more than 8,000 buyers from different geographical areas confirmed the leadership of this event in Latin America. Foreign visitors accounted for 13%, coming from strategic markets such as Argentina, Brazil, Spain, Italy and the United States.

Particular attention was paid to sustainability and innovation, also through in-depth discussion of these topics in seminars and workshops that focused on topics such as Artificial Intelligence in footwear design, Trend Forecasting, and the global footwear market.

The October edition also saw the launch of ‘MUSA ANPIC Design Fest’, an exclusive space dedicated to creativity, innovation and business interaction: ‘MUSA ANPIC DESIGN FEST 2025 wants to be more than an exhibition platform, it is a space to inspire and connect the protagonists of fashion, footwear and related sectors. We want ANPIC Autumn-Winter to be even stronger and more global, and MUSA will be a key pillar to achieve this,’ the president explained. The event will take place from 26-27 March 2025 at the Poliforum León, where 85 selected companies will present innovative and trend-setting materials.

EXPO RIVA SCHUH & GARDABAGS GAINS MOMENTUM

The Riva del Garda event concludes with 9,000 attendees, consistent with January 2024 figures, from approximately 100 countries. Exhibitor satisfaction exceeded expectations, with 1,100 participants from 36 countries reporting excellent outcomes, while the 19 business-oriented events enjoyed a large turnout.

A bright future is anticipated for the event, marked by the announcement of a new Gardabags format and plans to expand the exhibition centre.

When navigating sharp turns, it's crucial to avoid braking to maintain your trajectory, then accelerate confidently as you exit. A principle well understood by the organisers of Expo Riva Schuh & Gardabags, who on the 14th January, 2025 **wrap up an edition marked by strong results** despite challenging market conditions. While the global economic downturn has posed difficulties, the event showcased its strength in **fostering a thriving community**. Riva del Garda continues to be a hub where commercial partnerships and enduring human connections flourish, **transcending cultural differences**.

Expo Riva Schuh & Gardabags remains a vital platform for facilitating business opportunities, connecting supply with demand, offering insights into consumer trends, exploring major international markets and presenting retail innovations.

Most importantly, it **continues to invest in and anticipate the future**. This June will see the launch of an innovative Gardabags format, while the next two years will see the start of works to expand the exhibition centre.

A BUSINESS AND COMMUNITY HUB

The number of attendees remained stable, matching January 2024's **9,000 visitors**. Buyers had the opportunity to explore collections from **1,100 exhibitors**, including companies and brands.

A total of **19 events** provided industry professionals with essential insights into market trends, business opportunities and developments.

Figures that underscore how Expo Riva Schuh & Gardabags serves as an indispensable benchmark for the footwear and accessories industry and beyond. According to **Alessandra Albarelli, General Manager of Riva del**

Garda Fierecongressi, "being the first to **open the Winter 2025/26 season** is undoubtedly a winning strategy, highly valued by buyers. Even in this 102nd edition, the extensive array of international collections, coupled with suppliers offering both private label and branded production – in a variety of quality and price ranges – has proven to be the key to success."

A sentiment echoed by buyers, such as **Tracy Tao from Yifu Garment in China**: "I represent the largest clothing retailer in China with 3,500 stores. Last year, we expanded into Western markets with three stores in Paris and one in New York. Here in Riva del Garda, we are seeking high-quality European-made fashion accessories, shoes and bags at competitive prices – a key requirement. Our goal is to increase the average transaction value for our customers and offer complementary accessories alongside our clothing collections in Chinese stores."


GARDABAGS


Innovation Village Retail


Favorire economia
e turismo del territorio


HIGHLIGHTS


Where things


BEST ON TRENDS !


ST ON TRENDS !
Glam
Expression

INTERNATIONAL APPEAL

Benvenuto Candiani Arantes from Andacco (Brazil) highlights another defining characteristic of Expo Riva Schuh & Gardabags: “For us, the fair has always been a key sales event, particularly for penetrating the European market. But it also continually proves its international stature; for example, this year, we met a new buyer from Argentina, right here in Riva del Garda, despite the proximity of our countries.

Further validating Expo Riva Schuh & Gardabags’ role as a global hub for footwear and bags are its impressive figures. **Roberto Pellegrini, Chairman of Riva del Garda Fierecongressi**, explains: “The fair continues to attract industry professionals from all over the world. **Exhibitors** hail from **36 countries**, while **visitors** represent around **100 nations** – 80% from Europe, 12% from Asia, with attendance from the Americas and Oceania remaining stable, and a notable increase in visitors from Africa.”

THE SOLUTION TO NAVIGATING MARKET DYNAMICS

The many events held during the fair, were all met with an excellent turnout. The **Highlights Area** was bustling with activity, offering insights into consumer trends for men's and women's shoes, bags and sneakers.

Engagement was high in the **Market Focus** sessions, too, showcasing their full potential in connecting buyers and sellers beyond the exhibition stands. Equally popular were the presentations at the **Innovation Village Retail** and the grand finale of the **Startup Competition**, which concluded with a victory for **Cloov**, recognised for its ability to merge technological innovation with environmental sustainability in a project set to revolutionise the industry. Cloov is an app that offers an all-in-one solution for renting, buying and selling.

The **Expo Riva Night** was similarly a success, providing a festive opportunity for the Expo Riva Schuh & Gardabags community to strengthen connections – not only business-related but also personal. The evening’s special performance by artist Amii Stewart made for an even more exciting and classy event

Expo Riva Schuh & Gardabags once again demonstrated how a trade fair can be more than just the ideal setting for placing orders; it is also a vital opportunity to gain knowledge and create an invaluable **network of relationships**. Above all, it is the best way to tackle the challenges of an increasingly complex market, as confirmed by **Jerick Sobie of Lucky**

Feet (USA): “Our chain of stores specialises in comfort footwear. We came to Expo Riva Schuh to find reliable partners who can provide quality products at more competitive prices, as we are preparing to address the possibility of rising costs caused by potential import tariffs.”

ANNOUNCEMENTS AND NEW DEVELOPMENTS: A NEW FORMAT FOR GARDABAGS AND EXPANSION OF THE EXHIBITION CENTRE

The January 2025 edition of the Riva fair also served as the stage for several important announcements.

First and foremost, the introduction of **a new format for Gardabags**, which, starting in June 2025, will occupy Halls A2 and B2 of the fair. These halls will be divided into three areas, tailored to align with buyers’ searching habits, making it easier to connect supply and demand. A new concept that will feature stylish, fashion-inspired set-ups. Another major development is the **doubling of the exhibition offerings**, with collections from up to 100 companies and brands.

On the **investment and development front for the exhibition centre**, work is set to commence soon. The expansion of Hall B1 will be inaugurated as early as June 2025, and by 2028, a brand-new, two-storey structure will see the light.

This will provide even more space to showcase the most extensive and diverse selection of footwear, bag and accessory collections on the global stage.

Expo Riva Schuh & Gardabags is gearing up for a promising and high-speed path in the years to come. The next chance to witness this momentum will be from **14 to 17 June 2025** with Expo Riva Schuh and Gardabags.

50th KASTORIA INTERNATIONAL FUR FAIR

The 50th KASTORIA INTERNATIONAL FUR FAIR will be held on April 9-11, 2025, marking 50 years of its operation. 50 years of consistency in the institution's identity and value code, deeply rooted in its tradition and principles; 50 years of relationships of trust and mutual respect with exhibitors, international visitors and associates; 50 years that confirm the scope of its role in the development the global fur industry.

KASTORIA INTERNATIONAL FUR FAIR was founded in 1976 on the initiative of the Kastorian Fur Association 'The Prophet Elias', its original name being Fur Manufacturers' Exhibition. It was Greek furriers' first concerted effort to promote their products abroad, exchange know-how and strike business deals. This exhibition became a symbol of Kastoria's identity and the pinnacle of the Greek fur industry.

KASTORIA INTERNATIONAL FUR FAIR became an institution, substantially contributing to the development of the fur sector and the economic status of the city of Kastoria. It responded to the pressures of international competition and established itself in the buyers' consciousness as a fur exhibition with a huge range of products, high quality of fur-making and top-notch customer service quality.

Since 2013, KASTORIA INTERNATIONAL FUR FAIR has been permanently hosted in the state-of-the-art International Exhibition Center of Kastoria (IECK), boasting an area of 13,000 m^2 (approx. 140,000 ft^2) and owned by the Kastorian Fur Association..

Since October 2017, KASTORIA INTERNATIONAL FUR FAIR has officially held the title of an international event, having been certified by the Global Association of the Exhibition Industry (UFI) as a UFI Approved Event, which placed it on the global firmament of major exhibition events.

Today KASTORIA INTERNATIONAL FUR FAIR is a recognized institution in the global exhibition scene, a meeting point for exhibitors, opinion leaders and trade visitors from more than 47 countries (including the USA, Canada, Turkey, Russia, Ukraine, Asia (South Korea), Europe etc.), specializing in Ready-to-wear fur garments, Fur skins, Raw materials, Dressing & Dying companies, Auction houses, Accessories, Machinery, Services, Trade press.

Following the strategy of Glocalization (Thing Globally, Act Locally), in its 50 years of operation, KASTORIA INTERNATIONAL FUR FAIR has consolidated its position on the world map because it:

- Efficiently brings together industry professionals from the same field who want to develop partnerships, take advantage of business opportunities, share their expertise, and promote their products


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11th Edition

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Indian Leather

Digest of Leather News
ESTD: 1967

58th YEARS of PUBLICATION

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INDIAN LEATHER takes part in International Leather Fairs held in India and copies are distributed to the participants and distinguished visitors of the fair, thus reaching the cream of the industry and trade.

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Growth & Development of Indian Leather Industry - Promising Future

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Growth & Development of Indian Leather Industry – Promising Future
Introduction, A Vision Document-2030 for the leather and footwear industry, INDIA'S EXPORT OF LEATHER & LEATHER PRODUCTS, Key Insights,
Strategies for the Indian Leather Industry to Achieve $50 Billion Target by 2030, Leather exports drop 10% in FY24 on weak US, Europe demand, How to Boost Leather Exports from India, Expert Tips Best tips,
Market Size of the Leather Industry, Global Perspective, Indian Leather Industry, Global Leather Market Dynamics,
Trends in the Leather Market, Leather Market Dynamics, Growth Hampering Factors in the Leather Market, Strategy for Growth and Development,
Strategies for Enhancing the Competitiveness of Leather Industry in India, Government initiatives for the leather industry - Indian Footwear and Leather Development Programme (IFLDP),
Strategies for Reducing Waste and Maximizing Efficiency in Leather Production, Investing in Technology and Innovation,
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1. Introduction

India is a prominent player in the worldwide leather industry, exporting a diverse range of leather products. Also, India exports several leather products, including footwear, accessories, leather bags, wallets, garments, and home décor, which are in high demand on the global market

However, India's leather industry is a major export powerhouse, best known for its footwear and leather products. With a strong presence in footwear and a developing reputation for textiles, India is a major player in the global leather business.

Leather exports from India have the potential to be very profitable, but it requires a smart strategy. High-quality leather, a thoroughly researched target market, and efficient manufacturing procedures are all essential.

Balancing these elements with considerations like global economics and trade policies is critical for maximizing profit margins. Finding a market niche, whether through a specific product category or consumer emphasis, is also a viable technique. By adopting sustainability and constantly innovating with design and production techniques, leather exporters can set themselves up for long-term success in this dynamic industry. [1]

Changing self and changing self-leading to Global Change are small steps taken to attain Sustainability. This directs that the Sustainability is the responsibility of everyone. Over the years, the subject of sustainability reporting has gained prominence in industrial contexts.

Previously, the need for sustainability actions and reporting was borne out of the need to meet legal and regulatory compliances. Now, business stakeholders such as suppliers, customers and investors are the main drivers for the communication of sustainability credentials. Energy efficiency, waste management and reduction of greenhouse gases emission were the most occurring environmental sustainability practices.

The Futuristic Vision of Leather Industry lays emphasis on -

- Growth & Development, Sustainability, Circular Economy, Innovation, Certifications,
- Strategies & Policies, Negative Publicity About Leather Done & Counter Measures,
- Harmonious Living – Leather and Synthetics, Environmental Impact,
- Greener Products and related initiatives and scenarios.

2. The Council for Leather Exports (CLE) and the Leather Export Promotion Council have prepared a Vision Document-2030 for the leather and footwear industry [2]

The document outlines the global outlook of the industry, current status in India, global benchmarking and best practices, market and industry pulse analysis, policy, regulatory and infrastructure landscape, overview of multi prolonged action agenda to achieve the vision for 2030, domestic market vision and export market vision for 2030.

The Vision Document aims to increase production and exports in the next 5-7 years and reach the total turnover (industry size) of around USD 47.1 billion by 2030 against the present USD 17.26 billion turnover[1]. These target figures include both, domestic sales and export.

- The present industry size is USD 17.3 billion comprising Domestic turnover of USD 12 billion and Export turnover of around USD 5.3 billion.
- From here the industry is looking to increase the Industry Size to USD 47.1 billion consisting of Domestic turnover of USD 33.4 billion and Export turnover of around USD 13.7 billion.
- It is also pertinent that out of USD 47.1 billion target the share of footwear sector (both Leather & Non-Leather) is around 50%. Which shows the importance of Footwear sector in accelerating production and exports.

3. INDIA'S EXPORT OF LEATHER & LEATHER PRODUCTS Value in US $ Mn Table - 3 A

INDIA'S EXPORT OF LEATHER & LEATHER PRODUCTS Value in US$ Mn Table – 3 A							
Product	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020- 21**
Finished Leather	**1329.05**	**1046.45**	**888.39**	**874.24**	**721.73**	**524.15**	**378.23**
Leather Footwear	**2278.18**	**2147.98**	**2128.87**	**2193.86**	**2195.47**	**2081.64**	**1485.55**
Footwear Components	**361.29**	**284.34**	**298.69**	**335.24**	**319.1**	**261.67**	**197.59**
Leather Garments	**604.35**	**553.11**	**518.96**	**518.96**	**468.48**	**429.11**	**295.56**

INDIA'S EXPORT OF LEATHER & LEATHER PRODUCTS Value in US$ Mn Table – 3 A							
Product	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020- 21**
Leather Goods	**1452.83**	**1370.04**	**1365.22**	**1365.79**	**1434.24**	**1340.56**	**944.31**
Saddlery & Harness	**162.7**	**146.38**	**155.88**	**155.97**	**159.35**	**151.44**	**186.18**
Non-Leather Footwear	**306.44**	**306.74**	**296.68**	**296.91**	**392.63**	**281.97**	**194.16**
Total	**6494.84**	**5855.06**	**5646.79**	**5740.97**	**5691**	**5070.55**	**3681.58**
% Growth	**9.37%**	**- 9.85%**	**- 3.56%**	**1.67%**	**- 0.87%**	**- 10.90%**	**- 27.39%**

As per officially notified DGCI&S monthly export data, the export of Leather and Leather products for the period April 2020 – March 2021 touched US $ 3681.58 Mn as against the performance of US $ 5070.55 Mn in April 2019 – March 2020, recording a decline of 27.39%.

The root cause analysis of this declining performance and strategy for remedial measures including innovations and action plans in the value chain are the need of the hour for growth and development.

Source : Table - 3 A. COUNCIL FOR LEATHER EXPORTS (CLE), Highlights of Product Segments of Indian Leather and Footwear Industry https://leatherindia.org/indian-leather-industry/

3.1 INDIA'S EXPORT OF LEATHER & LEATHER PRODUCTS 2022-23 vis-a-vis 2021-22 Table - 3 B

INDIA'S EXPORT OF LEATHER & LEATHER PRODUCTS 2022-23 vis-a-vis 2021-22
(Value in Million US $)

CATEGORY	APR-MAR 2021-2022	APR-MAR 2022-2023	% VARIATION	% Share 2021-22`	% Share 2022-23
FINISHED LEATHER	456.10	430.93	-5.52%	9.36%	8.19%
LEATHER FOOTWEAR	2047.08	2377.23	16.13%	42.01%	45.20%
FOOTWEAR COMPONENTS	249.87	289.81	15.98%	5.13%	5.51%
LEATHER GARMENTS	342.38	353.07	3.12%	7.03%	6.71%
LEATHER GOODS	1287.06	1301.34	1.11%	26.41%	24.74%
SADDLERY AND HARNESS	276.10	222.17	-19.53%	5.67%	4.22%
NON-LEATHER FOOTWEAR	214.11	284.98	33.10%	4.39%	5.42%
TOTAL	4872.70	5259.53	7.94%	100.00%	100.00%

Source : DGCI &S

Source : Table - 3 B . INDIAN LEATHER INDUSTRY – OVERVIEW, EXPORT PERFORMANCE & PROSPECTS

3.3 Export Performance of Leather, Leather Products and Footwear During April – June 2024-25 Vs April – June 2023-24 Table – 3 C

CATEGORY	APRIL-JUNE 2023-24	APRIL-JUNE 2024-25	% VARIATION	% SHARE IN 2024-25
FINISHED LEATHER	117.09	120.41	2.84%	9.75%
LEATHER FOOTWEAR	511.44	483.26	-5.51%	42.59%
FOOTWEAR COMPONENTS	74.81	61.86	-17.31%	6.23%
LEATHER GARMENTS	88.62	78.87	-11.00%	7.38%
LEATHER GOODS	301.58	309.19	2.52%	25.11%
SADDLERY AND HARNESS	43.72	45.22	3.43%	3.64%
NON-LEATHER FOOTWEAR	63.67	53.46	-16.04%	5.30%
TOTAL	1200.93	1152.27	-4.05%	100.00%

(Source: DGCI & S)

Source : Table 3 C, Leather Age September 2024 issue.

From the Tables 3 A & 3 B & 3 C, it is inferred that

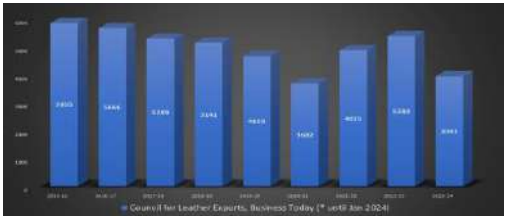
- the export of Leather Footwear is higher than the export of Non- Leather Footwear.
- the export of Leather Footwear is higher than the export of Footwear Components.
- the export of Leather Footwear is higher than the export of Finished Leather.

4. Leather exports from India: Key Insights [4]

India is the world's second-biggest exporter of leather clothing, third-largest exporter of saddlery and harnesses, and fourth-largest exporter of leather products. As per leather export data, the garment sector accounted for 7.65% of total leather exports from India in 2023-24 (April-January).

However, the footwear industry accounts for the majority of total leather and leather products exported from India, with exports valued at US$ 3,941.04 million between April and January 2023-24. Footwear (Leather Footwear, Footwear Components, and Non-Leather Footwear) accounts for 42.6% of the overall leather and leather product exports, reaching $1,679.94 million.

4.1 Leather exports from India from 2015-16 to 2023-24 Figure – 4 A



Also, the top importers of leather and leather products from India include the United States, Germany, the United Kingdom, Italy, France, Spain, the Netherlands, China, Belgium, the United Arab Emirates, Australia, Poland, Hong Kong, Denmark, Canada, Vietnam, and Portugal.

Source : 4. & Figure – 4 A . How to Boost Leather Exports from India: Expert Tips India Export Data 10-May-2024.

5. Strategies for the Indian Leather Industry to Achieve $50 Billion Target by 2030 [5]

In recent times, the Government of India and the Council for Leather Exports have set an ambitious target of achieving a $50 billion turnover for the Indian leather industry by 2030.

Looking ahead, these are the ambitious targets that have been set by various stakeholders:

- Mr. Jalan, the current Chairman of Council for Leather Exports (CLE) has projected a $13 billion target by 2030.
- Mr. Sanjay Leekha, the former Chairman of Council for Leather Exports (CLE) envisions a $47 billion milestone by 2030.
- Mr. Piyush Goyal, The Union Minister of Commerce & Industry, aims for an impressive $50 billion by 2030.

These are the compound annual growth rates (CAGR) required to meet these goals are substantial:

- CAGR $5.26 – $10 Billion in 7 years – **10.46%**
- CAGR $5.26 – $13 Billion in 7 years – **13.80%**
- CAGR $5.26 – $47 Billion in 7 years – **36.73%**
- CAGR $5.26 – $50 Billion in 7 years – **37.95%**

Despite the doubts, our focus should remain on striving towards these targets.

6. Leather exports drop 10% in FY24 on weak US, Europe demand [6]

India’s leather exports, including sports goods, dropped by nearly 10% to $4.28 billion in FY24 due to weak demand from major markets like the US and Europe.

Export of leather and leather manufacturers, including sports goods, from India declined by nearly 10 per cent to $4.28 billion for the fiscal ending March 31, 2024 as against $4.75 billion in the previous fiscal. The drop was mainly due to poor demand from major markets like the US and Europe.

Tamil Nadu, the largest exporter of leather products, was the worst affected with export of leather products declining by 18 per cent to $1.66 billion in FY24 as against $2.04 billion in FY23, says Central Government data. The decline in exports from Tamil Nadu, follows the trend witnessed across India. The decline was due to poor demand from major markets like the US and Europe, said Israr Ahmed, Vice President, FIEO.

Recession in the US, UK and Russia /Ukraine war, having greatly affected the Eurozone are the primary reasons for decline. The US alone has seen a 35 per cent decline in exports, said M Abdul Wahab, Regional Chairman, Council for Leather Exports, Southern Region.

“However, in the current fiscal, we are witnessing good positive trends in exports picking up. Along with newer investments in the Southern Region especially sports footwear, we are confident to bounce back strongly,” he said.

On the decline in export of leather products, a senior official in the Tamil Nadu Government too, was optimistic that the Taiwanese company would help the State bounce back strongly in the next two years.

Taiwan rules in TN

- Pou Chen Group signed an MoU in April, 2023 to invest ₹2,302 crore to manufacture non-leather footwear over a span of 12 years, especially for youth and women, in and around Kallakurichi. Around 20,000 jobs are likely to be created.
- Long Yin Investment plans to set up a greenfield unit in Tamil Nadu to manufacture non-leather footwear industry with an investment of ₹1,500 crore and create 22,000 jobs.
- TKG Taekwang plans to set up a greenfield unit to manufacture non-leather footwear with a proposed investment of ₹1,250 crore to create 9,000 jobs.
- In April, 2022, Hong Fu had inked a pact with the State Government to set up a footwear manufacturing facility at an investment of ₹1,000 crore in a three to five-year period. Land has already been allotted to the company at Ranipet.

7. How to Boost Leather Exports from India, Expert Tips Best tips to export leather products from India [7]

India's tradition of leather craftsmanship uniquely positioned it to dominate the global export market. However, in order to fully realize this potential, innovation and adaptability are required. Here are some expert recommendations for Indian leather goods exporters, as well as essential research and data resources:

7. Best tips to export leather products from India Table – 7 A

7. Best tips to export leather products from India Table – 7 A
1. Do extensive market research
Before getting into the leather export business, do extensive research on your target markets. Identify potential clients, learn their preferences, and understand market trends. Analyze the competition and create efficient pricing plans to strategically position your products.
2. Efficient Shipping Logistics
Select dependable shipping solutions that are specific to your product type and target markets. Collaborate with skilled goods forwarders or shipping brokers who specialize in managing leather goods. To avoid delays or issues, ensure that shipping schedules, documentation, and customs clearance processes are all coordinated in an efficient manner.
3. Discover Reliable Suppliers
Establish relationships with reliable tanneries, leather manufacturers, and suppliers in India. Determine their credibility, quality standards, production capacity, and ability to meet your export requirements. Consider visiting data-driven platforms like ExportImportData.in.
4. Reliable leather exporters data
Reliable leather exporters data can help traders analyze the global market. One of the best market research platforms is ExportImportData.in, where you can obtain updated leather buyer details, supplier details, leather HS codes, product descriptions, and much more.

5. Being Informed and Innovative

Stay current on industry developments, developing technology, and altering client preferences. Continuously improve your leather product offerings to meet changing worldwide market demands. Adopt sustainable processes and ethical sourcing to align with rising customer awareness in these areas.

Source : 7. & Figure – 7 A . How to Boost Leather Exports from India: Expert Tips India Export Data 10-May-2024.

8. Market Size of the Leather Industry [8]

8.1 Global Perspective

In 2023–2024, the global leather and leather goods market was valued at USD 469.49 billion. By 2030, it is projected to reach USD 738.61 billion, growing at a compound annual growth rate (CAGR) of 6.7%. This growth is driven by the increasing demand for leather products worldwide, with developing countries like India and China leading the export due to the availability of labor, raw materials, and other resources at low costs.

8.2 Indian Leather Industry

India's leather industry was valued at USD 17 billion in 2023 and is estimated to reach USD 32.4 billion by 2029, with a CAGR of 2.95% expected from 2023 to 2029. Prime leather-producing states in India include Uttar Pradesh, Tamil Nadu, West Bengal, Punjab, Maharashtra, and Karnataka. The industry provides direct employment to over 4.4 million people and contributes 30% of the world's total leather production. With over 3 billion square feet of leather produced annually, India has a robust, eco-friendly tanning base and manufacturing units.

8.3 Leather Export Data 2023-24

Total leather export from India: USD 19 billion. Number of Indian exporters: 31,379.

Number of buyers: 229,674. The top three leather exporters are China with 11,661,750 shipments, Brazil with 4,149,390, and India with 2,088,555 shipments.

Top leather HS codes: 42023120, 42022190, and 42023120.

8.4 Required Documents for Leather Export from India

GST Certificate, Registration cum membership certificate (RCMC), Import Export Code (IEC), Export License, Proforma Invoice, Certificate of Free Sales, Certificates of Origin, Inland Bill of Lading.

These documents are mandatory for the export of leather goods from India

Source : 8. India's Leather Export Industry: Insights, Trends and Top Exporters, Seair Exim Solutions

9. Leather Market Size - Global Industry, Share, Analysis, Trends and Forecast 2022 – 2030 [9]

The Global Leather Market Size accounted for USD 419.3 Billion in 2021 and is estimated to achieve a market size of USD 708.7 Billion by 2030 growing at a CAGR of 6.2% from 2022 to 2030. Rising disposable consumer income, increasing standards of living, evolving fashion trends, as well as more international and domestic tourism, are the primary drivers for the leather market growth. Furthermore, increasing adoption of comfortable, contemporary, and fancy leather garments, footwear, & accessories, as well as growing brand awareness, are likely to benefit the leather market value.

9.1 Global Leather Market Dynamics [9.1] Table – 9 A

9.1 Global Leather Market Dynamics Table – 9 A
9.1.1 Market Drivers . Increasing demand from the footwear industry. Rise in disposable income among consumers. Changing fashion trends among millennials. Rising domestic and international tourism.
9.1.2 Market Restraints. Strict laws prohibit the production and usage of natural leather. Impacts of PU and PVC used in synthetic leather manufacture.
9.1.3 Market Opportunities. Constantly increasing e-commerce retail market. Concentrate on the creation of bio-based synthetic leather.

Source : 9 & Table – 9 A Leather Market Size - Global Industry, Share, Analysis, Trends and Forecast, 2022 – 2030.Acumen Research and Consulting

10. Trends in the Leather Market, Leather Market Dynamics, and Growth Hampering Factors in the Leather Market Tables – 10 A & 10 B & 10C.

10.1 Trends in the Leather Market [10 A] Table -10 A

10.1 Trends in the Leather Market Table -10 A
• Sustainability: There is a growing demand for eco-friendly leather products, with consumers becoming more conscious of the environmental impact of their purchases.
• Alternative materials: Innovations in materials science have led to the development of alternative materials, such as vegan leather, that offer a more sustainable option for consumers.
• Customization: The trend towards personalization and customization is leading to an increase in demand for made-to-order leather products.
• The growth of e-commerce and the use of technology in the fashion industry is driving the adoption of digitalization in the leather market.
• Automation: Automation and robotics are being increasingly used in the leather industry, leading to improved efficiency and reduced costs.
• Luxury goods: The leather goods industry is dominated by high-end luxury brands, which are investing in research and development to create new and innovative leather products.
• Recycling and upcycling: The growth of the circular economy is leading to an increase in the recycling and upcycling of leather waste, reducing waste and promoting sustainability.

10.2 Leather Market Dynamics [10 B] Table -10 B

10.2 Leather Market Dynamics Table -10 B
• Growing demand for leather products: The increasing demand for leather goods, such as footwear, clothing, and accessories, is driving the growth of the leather market.
• Growth of the circular economy: The growth of the circular economy is leading to an increase in the recycling and upcycling of leather waste, reducing waste and promoting sustainability.
• Expansion of personal protective equipment market: The increasing demand for personal protective equipment is driving the growth of the leather market in industries such as construction and manufacturing.
• Investment in research and development: Companies in the leather

10.2 Leather Market Dynamics Table -10 B
industry are investing in research and development to create new products and improve production processes. **• Increasing use of leather in automotive interiors: The use of leather in automotive interiors is increasing, driven by consumer preferences for luxury and comfort in vehicles.**

10.3 Growth Hampering Factors in the Leather Market [10 C] Table -10 C

10.3 Growth Hampering Factors in the Leather Market Table -10 C
• High Competition: The increased competition in the leather market has led to a decrease in profits for leather companies. **• Changing Consumer Trends: Consumers are becoming more conscious of animal welfare and environmental sustainability, leading to a decrease in demand for leather products.** **• Synthetic Alternatives: The popularity of synthetic alternatives such as faux leather and vegan leather is growing, affecting the demand for natural leather products.** **• High Production Costs: The cost of producing leather products has increased, making them more expensive for consumers.** **• Strict Environmental Regulations: Strict environmental regulations regarding the production of leather products have led to higher costs and reduced profits.** **• Volatility in Raw Material Prices: Fluctuations in the prices of raw materials such as hides, skins, and leather chemicals make it difficult for leather companies to maintain consistent profit margins.** **• Trade Restrictions: The implementation of trade restrictions and tariffs on leather products has affected the international trade of leather goods.**

Source : Tables 10 A & 10 B & 10 C. Leather Market Size Growing at 6.2% CAGR, Set to Reach USD 708.7 Billion By 2030. Acumen Research and Consulting.

11. Strategy for Growth and Development

Leading players in the Global Leather industry have adopted various strategies to achieve additional market share. Key strategies adopted by these players include product launch, joint venture, acquisition, partnership,

expansion, and investment. Industry Growth Strategies have the potential to remove challenges and accelerate economic development in the prioritized areas.

11.1 Strategies Followed in Leather Industry for Growth & Development

11.1 Strategies Followed in Leather Industry for Growth & Development
1. Merger & Acquisition Strategies.
2. New Product Launch.
3. Cooperation and Support for Effective & Customer Oriented Marketing by suitable Sourcing and Product Modification & Formulation Strategies.
4. Forward & Backward integration in manufacturing for Market Share, Environmental Advantage & Cost Advantage. Also having activities in allied industries for better survival, growth development and sustainability.
5. Intelligently connecting production plants and technologies to efficiently use resources and leverage expertise. Production plants, energy and material flows, logistics, and site infrastructure are all integrated 6.Product modification and formulation for the Customized Requirements of Customers.

Competitive Strategy is taking offensive or defensive action to create a defend-able position in an industry to cope successfully with five competitive forces such as Potential entrants (threats of new entrants), Industry competitors (rivalry among existing firms), Buyers (Bargaining power of buyers), Suppliers (Bargaining power of suppliers), Substitutes (threat of substitute products/service) and thereby yield a superior return on investment for the firm. In coping with five competitive forces there are three potentially successful strategies- Overall Cost Leadership, Differentiation & Focus.

11.2 Strategies for Enhancing the Competitiveness of Leather Industry in India [11 A]

Efficient Clustering and Networking would allow Leather SMEs to compete globally. Cluster means a geographical concentration of Leather SMEs engaged in the production of related goods, which have common opportunities and face similar challenges. Networks are groups of firms that cooperate on a joint development project complementing each other and specializing in order to overcome common problems, achieve collective

efficiency and penetrate markets beyond their individual reach. Through Clustering and networking the Leather SMEs can -

1. Overcome the disadvantages of economies of scale 2 .Access skilled & educated labour 3. Have better cost effectiveness due to sharing of common costs 4. Have quicker dissemination of information leading to better responsiveness to market challenges 5. Increase competitiveness by sharing best practices in the areas of organizational capabilities, technological innovations, flexible structure and faster decision-making process. 6. Have better negotiating power

11.3 Government initiatives for the leather industry - Indian Footwear and Leather Development Programme (IFLDP) [11 B]

The IFLDP scheme was launched to develop the infrastructure, increase production, facilitate investments and generate employment in the leather industry of India. Under this scheme, Rs. 1,700 crores (US$ 220 million) has been allocated till 2026. It is a central sector scheme. Following are the six sub-schemes under IFLDP:

- Sustainable Technology and Environmental Protection (STEP) – The STEP initiative is aimed at sustainable and environment-friendly industrial and tanning activities which are particularly linked to environmental concerns. Considering these issues, zero liquid and wastewater discharge is made mandatory in some states. Assistance for the upgradation of Common Effluent Treatment Plants (CETPs) and vision document preparation is provided under the scheme.
- Integrated Development of Leather Sector (IDLS) – The main objective of this scheme is to encourage entrepreneurs to diversify and set up new units leading to better productivity.
- Establishment of Institutional Facilities – The scheme aims to provide infrastructure upgradation of campuses of the Footwear Design and Development Institute (FDDI)
- Mega Leather Footwear and Accessories Cluster Development (MLFACD) – The scheme is launched to assist entrepreneurs by providing modern infrastructure, technology, training and skill development, and human resource development inputs.
- Brand Promotion of Indian Brands in Leather – The scheme aims to provide Indian footwear and leather manufacturers international branding support to provide better product visibility.

- Footwear Sector and Development of Design Studios – This scheme will provide design support, technical assistance, and opportunities for employment and business.

11.4 Strategies for Reducing Waste and Maximizing Efficiency in Leather Production [11 C]

The leather production process can generate significant waste and have negative impacts on the environment and the economy. Therefore, it is important for companies in the leather industry to implement strategies to reduce waste and maximize efficiency - Various strategies that companies can implement to achieve these goals, including water conservation, chemical management, energy efficiency, waste management, material efficiency, and transparency and traceability measures. By adopting these strategies, companies can improve their environmental performance, reduce costs, and increase their competitiveness in the market.

11.5 Investing in Technology and Innovation

Technology and innovation can help companies improve their processes, reduce waste, and enhance their environmental performance. Some examples of technology and innovation in leather production include:

Investing in Technology and Innovation Table – 11 C
1. Digitalization: Digitalization can help companies improve their supply chain management, reduce waste, and enhance their production processes. For example, digital tools can be used to optimize production planning, reduce energy consumption, and track material usage. **2. Automation: Automation can help companies reduce the labor required for leather production, increase productivity, and reduce waste. For example, automated cutting machines can help reduce material waste, while automated dyeing processes can help reduce water usage.**
3. Chemical innovations: New chemicals and treatments can help companies reduce the environmental impact of leather production. For example, eco-friendly tanning methods can reduce the use of hazardous chemicals, while water-based finishes can reduce the use of solvents. **4. Sustainable materials: Developing new sustainable materials, such as leather made from plant-based materials, can help companies reduce their environmental impact and meet the growing demand for sustainable products from consumers.**

By investing in technology and innovation, companies in the leather industry can enhance their environmental performance, reduce waste, and meet the growing demand for sustainable and eco-friendly products. Additionally, investing in technology and innovation can help companies stay competitive in a rapidly evolving market and enhance their reputation as innovative businesses.

Source : 11 . 11 A - Strategies for Enhancing the Competitiveness of Leather Industry in India, Mrs. Anamika Singh, Lecturer-Marketing, Bharati Vidyapeeth Institute of Management Studies and Research, Conference on Global Competition & Competitiveness of Indian Corporate. 11 B- Leather Industry in India LAST UPDATED ON OCTOBER 11, 2023 BY CLEARIAS TEAM. 11 C & Table – 11 C. Reducing Waste and Maximizing Efficiency in Leather Production.Deskera.

12. SWOT Analysis of Indian Leather Industry

SWOT Analysis of Indian Leather Industry - STRENGTHS Table – 12 A
• **Existence of more than sufficient productive capacity in tanning.**
• **Easy availability of low cost of labour.**
• **Exposure to export markets.**
• **Managements with business background become quality and environment conscious.**
• **Presence of qualified leather technologists in the field.**
• **Comfortable availability of raw materials and other inputs.**
• **Massive institutional support for technical services, designing, manpower development and marketing.**
• **Exporter-friendly government policies.**
• **Tax incentives on machinery by Government.**
• **Well-established linkages with buyers in EU and USA.**

SWOT Analysis of Indian Leather Industry - WEAKNESSES Table – 12 B
• **Low level of modernisation and upgradation of technology, and the integration of developed technology is very slow.**
• **Low level of labour productivity due to inadequate formal training / unskilled labour.**
• **Horizontal growth of tanneries.**
• **Less number of organised product manufacturers.**

- **Lack of modern finishing facilities for leather.**
- **Highly unhygienic environment.**
- **Unawareness of international standards by many players as maximum number of leather industries are SMEs.**
- **Difficulties in accessing to testing, designing and technical services.**
- **Environmental problems.**

SWOT Analysis of Indian Leather Industry - OPPORTUNITIES Table – 12 C

- **Abundant scope to supply finished leather to multinationals setting up shop in India.**
- **Growing fashion consciousness globally.**
- **Use of information technology and decision support software to help eliminate the length of the production cycle for different products**
- **Product diversification - There is lot of scope for diversification into other products, namely, leather garments, goods etc.**
- **Growing international and domestic markets**.

SWOT Analysis of Indian Leather Industry - THREATS Table – 12 D

- **Entry of multinationals in domestic market.**
- **Stiff competition from other countries.(The performance of global competitors in leather and leather products indicates that there are at least 5 countries viz, China, Indonesia, Thailand, Vietnam and Brazil, which are more competitive than India.)**
- **Non- tariff barriers - Developing countries are resorting to more and more non – tariff barriers indirectly.**
- **Improving quality to adapt the stricter international standards.**
- **Fast changing fashion trends are difficult to adapt for the Indian leather industries.**
- **Limited scope for mobilising funds through private placements and public issues, as many businesses are family-owned.**

Source : Tables – 12 A & 12 B & 12 C & 12 D .SWOT Analysis of Indian Leather Industry

13. Indian Economy and Leather Industry

13.1 Indian Economy

13.1.1 India is the fifth largest economy poised to become the world's third-largest economy by 2030

Rating agency S&P Global Ratings on Tuesday forecast that India is poised to become the world's third-largest economy by 2030, with an estimated 7% GDP growth in the fiscal year 2026-27. Currently, India is the fifth largest, lagging US, China, Germany and Japan.

"A paramount test will be whether India can become the next big global manufacturing hub, an immense opportunity. Developing a strong logistics framework will be key in transforming India from a services-dominated economy into a manufacturing-dominant one," it said.

Realizing the full potential of India's labour market will primarily hinge on the upskilling of workers and a rise in the engagement of women in the workforce, it said. “Success in these two areas will enable India to realize its demographic dividend," it said. S&P said that the robust growth of India's domestic digital market has the potential to drive the expansion of its thriving startup ecosystem, particularly in the realms of financial and consumer technology, over the next decade. [13 A]

The United States of America, China, Japan, Germany, and India are the largest economies in the world in 2023, as per their GDP data. GDP serves as a key metric for assessing the magnitude of a nation's economy. [13 B]

13.1.2 India poised to become a $30 trillion economy by 2047

India is poised to become a $30 trillion economy by 2047 with the collective efforts of the government and industry pushing towards an exponential growth rate to achieve a fully developed India.The Indian economy has been a bright spot with strong growth amid a significant slowdown and even distress in other countries. This has increased the country's respect among nations and given the large size of its market other countries are eager to sign free trade agreements with India**.**[13 C]

Leather Industry has an immense potential by taking advantage of these proposed scenarios for growth and development leading to reaching new heights both in National and International scenarios.

14. India to become third largest economy with GDP of $5 trillion in three years: Finance Ministry

- India is expected to become the third-largest economy in the world with a GDP of $5 trillion in the next three years and touch $7 trillion by 2030

on the back of continued reforms, the Finance Ministry said on January 29, 2024.

- Ten years ago, India was the 10th largest economy in the world, with a GDP of $1.9 trillion at current market prices.
- Today, it is the 5th largest with a GDP of $3.7 trillion (estimate FY24), despite the pandemic and despite inheriting an economy with macro imbalances and a broken financial sector, said the ministry's January 2024 review of the economy.

15 . The major dimensions in Leather Certifications [15]

The major dimensions in Leather Certifications are: Economic, Environmental, Social and Sustainability. Awareness, Knowledge Creation and successful practice play an important role for the sustainability of Leather Industry.

Need to change the Leather Industry image from Polluting Industry to Positive Scenario. The role of Best Available Technology, Cleaner Operations & Green Chemistry has to play a great role for things to make happen. More contributions have to come from Brands, Leather Chemical Suppliers including Colourant manufacturers, Research Institutions & Eco Standards for enhancing the performance of Leather Industry.

Encouraging Organizations to become member and associate in Sustainable Standards and Organizations as well as Industry Associations for enhancing the visibility and acquiring organizational and strategic skills.

A summary of The major dimensions in Leather Certifications from various Organizations and Institutions are presented as below.

- LWG Certification Securing the Leather Supply Chain through ESG Compliance
- The Brazilian Leather Certification of Sustainability (CSCB)
- I.CE.C - Institute of Quality Certification for the Leather Sector
- Sustainable Leather Foundation, LWG Tannery of the Future
- Responsible Leather from Textile Exchange THE SUSTAINABILITY OF LEATHER – FAQ - LEATHER NATURALLY
- Tannery of the Year, ECO_2L Energy Controlled Leather

16. Leather and Leather Alternatives – Harmonious Coexistence

Leather and Leather Alternatives – Harmonious Coexistence
Leather and Leather Alternatives – Synthetic Sheets (Synthetic PU & PVC based),

Recycled Leather (Bonded Leather & Bicast Leather), Bio Leather and Bio Fabricated Leather continue to coexist. This is so because that their Social, Economic as well as Environmental impacts have a great say on their sustainability on an ongoing manner. Needed actions are continuously being taken in the required areas by all the involved stake holders of the value chain of Leather and Leather Alternatives. The proportions of share would vary as per the scenario existing.

Result is the enhanced coexistence of Leather & Leather Alternatives on an ongoing basis. These thinking, attitude and philosophy go well with saying - The only way to live is to let others live. Live and let live. Life goes on. Harmonious Living.

16.1 Information on Harmonious Coexistence

1. The Leather Industry needs to bring together all the good work being carried out into a cohesive platform that represents all and is accessible and understandable by consumers - Farming & Livestock, Deforestation & Biodiversity, Social Responsibility, Leather Manufacturing, Chemistry, Leather Technology, Machinery & Efficiency, Consumer Concerns, Brand Requirements, Business & Political Strategy.

2. An incredible journey of Leather- Leather is the result of the recycling of a slaughterhouse leftover - Hides & Skins. Tanneries tend to maximize the use of valuable matter by converting them into Leather. While doing so, the by-products obtained are recycled for fuller utilization and value addition and environmental protection. Leather & Leather Products are also recycled and up cycled .Leather is natural, biodegradable & durable. Leather is substantially a circular economy product.

3. Environmental challenges; Sustainable Leather Management; Certifications to International Standards on Quality, Traceability, Environmental protection, Chemical management ;Modernization, Innovation and related areas are being addressed on an ongoing basis by Leather Industry, Government, Research Organizations, Leather Industry Association and Trade Groups and Organizations and institutions connected with Leather & Leather Related Activities. Result is the enhanced sustainability of Leather & Leather Products Industry on an ongoing basis.

4. Leather; Recycled Leather; Leather Alternatives – Synthetic PU & PVC based, Bio Leather and Composites from Leather, Recycled Leather & Leather Alternatives would co - exist continuously. Parameters like i. The rise of environmental and societal concerns, as well as animal welfare; ii.Growing demand from rising population & Spending Potential and

iii.Catering the needs of various economic sections favour the co – existence of Leather, Recycled Leather & Leather Alternatives

In Global Footwear Exports have contribution from Leather Footwear – 36%, Synthetic Footwear -26 %, Textile Footwear – 28 % and Others -10% in 2017. [16.2]

5. Manufacturers and Suppliers of Leather Chemicals and Auxiliaries in most of the cases cater the needs of Allied Industries like Textiles, Paper, Surface Coating, Construction and related Industries. This also speaks about Interrelated trade in Chemicals and Auxiliaries.

6. Further in Customer Support, Innovation in Application and Product Development and similar interrelated activities are happening freely.

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The Brazilian Leather Certification of Sustainability (CSCB) CONTACT@CSCB.ORG.BR CSCB.ORG.BR

I.CE.C - Institute of Quality Certification for the Leather Sector. icec@icec.it

Sustainable Leather Foundation www.sustainableleatherfoundation.com

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* * * * *

Italian Footwear, Leather Goods & Tanning Machinery Industry Exports fall: - 6.77% in the first nine months of 2024

- **Preliminary figures for 2024 show a generalised crisis in the footwear, leather goods and tannery machinery and technology sector, which had a strong impact on the domestic market, without sparing exports.**

- **On the export side, footwear and leather goods machinery dropped significantly (-22.45%), tannery machinery performed poorly in Europe (- 30.61%) and held up weakly in the African and Asian markets.**

- **Bergozza, President of Assomac*: 'We remain competitive thanks to the quality and innovation of our technologies, but it is crucial to accelerate investments in advanced technology, sustainability and Industry 5.0.***

The difficulties of the Italian leather-footwear supply chain, combined with a complex international economic scenario, have had significant repercussions on the footwear, leather goods and tanning machinery sector. This is the picture painted by **Assomac** data, the Confindustria association representing Italian companies in the sector, which show **a generalised crisis**. A crisis that, in the first nine months of 2024, **has strongly impacted the domestic market, without sparing exports** (-6.77% compared to the same period last year).

After the resilience recorded in 2023, 2024 looks like a year of widespread difficulties. Few companies expect to close the year with higher orders than the previous year, while **more than 78% of the**

companies in the sector estimate a drop in orders. Numbers that underline the urgency of facing structural challenges and adapting to a market in profound transformation.

The drop in exports was particularly significant for footwear and leather goods machinery, which fell by 22.45%, influenced by the results of exports to France (-36.21%) and Spain (-69.25%), key markets in terms of volume. On the other hand, the decrease was more contained for the **spare parts sector (-3.99%)**, where the drop in demand in Europe was partly offset by the growth in Asia (+6.33%) and America (+1.71%). The trend for tannery machinery remained negative, in line with the sector; weak signs of resilience came from the African and Asian markets.

'The current situation presents significant challenges, but our industry has shown great resilience. We remain competitive thanks to the quality and innovation of our technologies,' commented **Mauro Bergozza**, President of Assomac*. 'However, to maintain and expand this competitiveness, it is crucial to accelerate investments in advanced technology, sustainability and Industry 5.0. In a globalised context, the integration of technological innovation and environmental responsibility is what will allow us to continue to be a reference point in the sector.'*

It is precisely these investments in technology, combined with the expansion of certain emerging markets, that could be the key to returning to growth in 2025. Indeed, the outlook points to **a possible stabilisation of the sector**, with a recovery linked to the ability of companies to respond to the demands for more sustainable production and to collaboration with institutions to fully utilise the funds dedicated to Industry 5.0. The focus on the development of advanced technologies and the strengthening of international partnerships will be crucial to regaining ground in more mature markets and to consolidate Italy's presence at global level.

Assomac

Assomac is the National Association of Italian Manufacturers of Footwear, Leather Goods and Tanning Technology. Founded in 1982, it represents a global reference point for technology applied to these sectors, with over 130 member companies exporting to more than 130 countries. Assomac's mission is to promote and enhance the technological expertise of its member companies, providing customers worldwide with customised solutions, sustainable technology, all-round support, optimal control and management, and continuous innovation. Assomac is a dynamic organisation, which is committed to fostering the growth of its member companies through the promotion of Made in Italy, opening up to new markets and access to innovative technologies. It is also active in creating a modern business culture, disseminating knowledge and sectorial skills and activating supply chain synergies, with the aim of becoming an international reference 'Technological Square': a place of meeting and comparison for all operators in the sector.

Brazil's leather exports grew 12.5% in 2024, surpassing USD 1.2 Billion

Brazil's exports of hides and skins ended 2024 with a positive balance in exports, achieving growth both in numbers and in key advancements in technology, compliance, and sustainability demands. Total exports reached USD 1.26 billion, representing a 12.5% increase compared to 2023. In square meters, the growth was even more significant: a 22.3% rise from the previous year. In weight, the total exported was 38.8% higher in tons.

The promotion of Brazil's leather exports is supported by Brazilian Leather, a project of CICB (the Centre for the Brazilian Tanning Industry) in partnership with the Brazilian Trade and Investment Promotion Agency (ApexBrasil).

According to José Fernando Bello, Executive President of CICB, these figures must be celebrated by the sector, but the most significant advancements of 2024 extend beyond statistics, involving the operational dynamics of Brazil's leather value chain. "This year has been crucial for us. We worked relentlessly on issues such as compliance, traceability, and customs barriers, achieving results that set the stage for further growth in 2025," says Bello.

He highlighted key achievements facilitated by CICB's active participation: the creation of the CICB Raw Material Guide (a step-by-step manual on obtaining traceable raw material data within Brazil), the Federal Government's launch of the National Plan for Individual Identification of Cattle and Buffaloes, and Vietnam's removal of the sanitary certificate requirement for Brazilian wet blue leather.

In terms of market analysis, the 2024 export panorama offers valuable insights for the years ahead. Significant growth in Vietnam (+69.8% in value compared to 2023, solidifying its position as the fourth-largest destination) and Mexico (+26.3%, now the fifth-largest importer) reflects the growing trend toward market diversification in production and manufacturing. Brazil's largest client, China, also showed notable growth in the final results: +26.9% in value (or +20.8% when including Hong Kong).

Looking ahead to 2025, Bello reaffirms the leather sector's commitment to new technologies and processes that enhance sustainability while meeting client demands and international regulations. "We are always attentive to market demands and future trends. Special attention should be given to life cycle assessments, which are increasingly important to leather clients, already impacting the supply chain and material requirements," he states. On this topic, CICB will organize the CICB Sustainability Forum on March 19 during Fimec, with the central theme of "Life Cycle Assessment in the Leather Industry."

Brazilian exhibitors at IILF 2025:

CICB / Brazilian Leather	-	New Hall 1 N1-13-B
Hason International	-	New Hall 1 N1-13-D
JBS Couros	-	New Hall 1 N1-13-C
Cortume Krumenauer	-	New Hall 1 N1-13-A

Vietnam's leather, shoe industry eyes 10% export growth

The leather and footwear industry has set a target of achieving export value of US$29bil this year, an increase of 10% year-on-year (y-o-y), according to the Vietnam Leather, Footwear and Handbag Association (Lefaso).

At a conference reviewing the leather and footwear industry in 2024 held here last Friday, Phan Thi Thanh Xuan, the association's vice-chairwoman and general secretary, said that achieving this goal will depend on consumer demand and implementing green standards and sustainable development requirements set by foreign markets.

Meanwhile the industry will still focus on exporting to available and easy-access markets such as Africa and Asia to increase revenue. Then, it will, step by step, apply high-demanding green standards to conquer demanding markets such as Japan, Europe and the United States.

Leather and footwear enterprises have approached large eCommerce sites, such as Alibaba and Amazon, to open more consumption channels.

At present, a number of large enterprises have signed export contracts to produce until mid-2025.

Also speaking at the conference, Lefaso chairman Nguyen Duc Thuan said the leather, footwear and handbag industry in 2024 achieved a total export value at around US$27bil, an increase of 11.5% y-o-y, despite facing pressure with falling prices, higher quality demands, increasing input costs and labour shortages.

They included US$23.2bil from footwear exports, up 13.2% and US$3.8bil from suitcases, bags and briefcases, up 9.7%.

Thuan emphasised that Vietnam's footwear industry has many competitive advantages, including a large labour force, competitive costs, a high supply of raw materials and attractive investment policies.

It can also leverage international economic integration via many free trade agreements (FTAs) which have attracted many foreign invested enterprises.

In terms of global standing, Vietnam is the world's third largest footwear producer, behind China and India, and the second biggest exporter. But it is still mainly processing export products, so the foreign invested enterprises have held about 75% of the industry's export value.

In 2024, the industry took advantages from FTAs, especially European Union-Vietnam FTA and Comprehensive and Progressive Agreement for Trans-Pacific Partnership, to promote exports.

In addition to traditional markets, with trade promotion activities, the leather and footwear enterprises have expanded into new export markets, such as the Middle East, South America, and Africa with large consumption potential.

Of which, sports shoes - a strong product from Vietnam – have shown significant growth into the Middle East over a short period of time. The industry has set a goal of achieving US$38 to US$40bil in the total export value by 2030.

By 2035, the industry will develop effectively and sustainably according to the circular economic model, and perfect the domestic production value chain to effectively participate in the global value chains.

Simultaneously, it will develop a number of regional and world brands. Presently Vietnam's leather and footwear exports are facing many major challenges, including the greening trend in the world.

Therefore, meeting the green production standards of the export markets is a difficult task for domestic footwear enterprises.

For example, the European Union (EU) market has imposed requirements on green transformation, especially a series of laws related to this issue.

The biggest challenge for the footwear industry now is sustainability in production and requirements for social responsibility, according to Xuan.

From the second quarter of 2024, the EU market began to introduce new requirements such as ecological design and traceability and transparency of the supply chain.

So, if they are also importing raw materials, domestic enterprises have to be transparent about the entire production process.

Meanwhile, the footwear industry depends heavily on raw material imports, according to Thuan. To achieve the goals, the state must develop and complete relevant mechanisms and policies.

In addition, it must perfect energy policies and mechanisms to help the businesses access green energy according to requirements and commitments.

It also is necessary to have action programmes, including issuance of policies on encouraging businesses to implement green production, at the same time building a unified system of green standards.

Experts say that developing supporting industries and producing raw materials for the domestic leather and footwear industry is extremely important.

The association has proposed the state support for formation of industrial zones for production of materials for the leather and footwear industry, focusing on the production of leather, technical fabrics, accessories and soles.

That will be convenient for environmental protection and create a better centralized production system. - Viet Nam News/ANN

Advantage Tanners: Pioneering Compliant Replacement Syntans without Compromise

Leading brands have already restricted bisphenols in their Restricted Substances Lists (RSLs) even ahead of the delayed, but expected legislation, from the EU and the USA.

TFL has pioneered a new range of genuine replacement syntans to ensure that tanners around the world achieve bisphenol levels in the leather below the recognised detection limit to keep ahead of current and expected future legislation.

Genuine replacement syntans with their “tanning power” remain essential to convert wet blue and wet white intermediates into real leather. Syntans possess many advantages as they are designed specifically for certain applications and performance requirements. They facilitate the steering of tightness, softness and fullness and the achievement of properties such as light fastness and heat resistance.

TFL’s wet end range of resins, dyestuffs, fatliquors, retanning and softening polymers are, of course, all free of bisphenols and thus ideal to use in combination with the ultra-low and zero bisphenol replacement syntan range. TFL has also developed a calculation tool to ensure customers that their leather will comply with the regulations.

TFL’s comprehensive and expanding range of ultra-low to zero Bisphenol syntan is comprised of TANIGAN®s OSO, BNO, MBO, RLO, FAO, VRO, OVO and DSO Liquids and now includes TANIGAN® MBO Gran. These syntans ensure that most leather types can be easily achieved.

The range is relatively compact, but especially for new customers it can be helpful to focus on 2-3 syntans initially that have contrasting profiles. This brings many benefits such as the simplification of retanning formulations, reducing the number of products to order and store, etc. For example, by choosing TANIGAN® BNO Liq, a very full and yet soft syntan, TANIGAN® RLO, Liq also soft but tighter, and

TANIGAN® VRO Liq, which is less soft, more firm, it is possible to achieve a wide variety of leather types.

Furthermore, TFL also has an extensive range of auxiliary syntans with strong dispersing power, such as BAYKANOL® RFS Liq. The role of this auxiliary tends to be undervalued but in application BAYKANOL® RFS Liq has a highly effective impact on the performance of the retanning and the ultimate leather. BAYKANOL® RFS Liq can improve the handle, smoothness of the grain and even the tightness by enhancing the distribution in the cross section of not only the syntans but resins, polymers and vegetable tannins.

BAYKANOL® RFS Liq works mainly by reducing the affinity of the substrate for similar anionic charged materials, clearly visible by the improved levelness of dyeing. BAYKANOL® RFS Liq is well known to many in the vegetable tanning field and wet white production, but it is increasingly being exploited for its special performance in wet blue retanning.

Figure 1. By selecting specific **TANIGAN®** Syntans, and combining them with **BAYKANOL® RFS** leather properties can be easily steered.

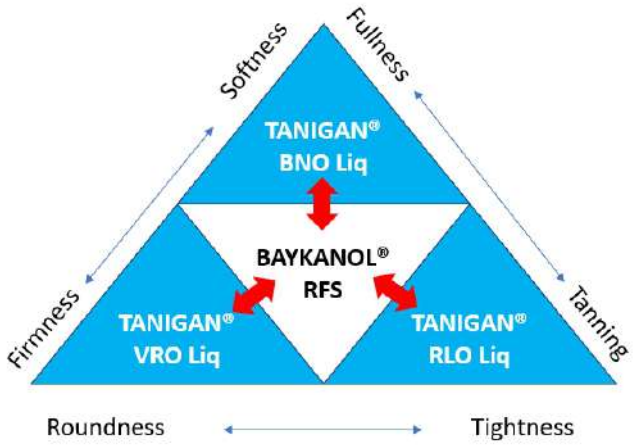

Fig. 1 clearly shows how by selecting “a range within the range” leather properties can be easily manipulated to achieve a variety of leather types and simplify, for example, formulations and inventory.

Volker Rabe succeeds Dietrich Tegtmeyer

In its role as a global producer of speciality chemicals for the leather and related industries, TFL has for many years been strongly committed to supporting the leather industry through active participation in various interest groups such as LWG, IULTCS, VGCT, TEGEWA, etc.

Dr. Volker Rabe

Dr. Dietrich Tegtmeyer

In order to provide the best possible support, these activities have been brought together at TFL under the position of 'Head of New Business Development/Industry Relations'.

This position was previously held by Dr Dietrich Tegtmeyer, who retired on 1 October 2024. His successor is Dr Volker Rabe, who will take over these responsibilities in the future.

Dr Volker Rabe has been associated with the leather industry since his childhood, as his family ran a tannery for over 130 years.

He has held various positions within TFL and its predecessor companies since 2012. After completing his PhD in Chemistry in 2009, he previously worked at FILK for 2 years.

In addition to his professional activities, he already represents TFL in various committees of the leather industry and this year became Chairman of the IUR Research Commission of the IULTCS.

TFL participates in IILF 2025

TFL participates at IILF 2025, continuing its long tradition of more than 20 years, TFL will be present with its exclusive fair concept, displaying a special collection of premium leather articles - all made with great chemicals and excellent advice.

As well as presenting garments, accessories, and footwear in the colors of the Spring-Summer 2026 season, TFL will also be showcasing the new RODA® Line technology, the latest in transfer coating chemistry. Visitors will learn about our RODA® Line customized solutions, from fashion to high performance, with excellent reproducibility.

As a global leader in high quality syntans TFL has continuously invested in pioneering research, development, and extensive application support to enlarge our solutions and come up with the next generation of ultra-low to zero BPS/BPF syntans to enable its customers to stay ahead of regulatory restrictions. TFL's extended range of ultra-low bisphenol syntans, clustered under the TANIGAN® brand name, will be featured alongside and within the exclusive collection of shoe uppers and leather goods on display at IILF 2025.

Discover the TFL effect that makes its customers smile at Stand H1A-05-A in Hall 1 in Chennai from 1st to 3rd February 2025.

Substances containing benzene dominate exports and imports of hazardous chemicals

Based on the data that the European Chemicals Agency (ECHA) has received from Member States, imports of other hazardous chemicals to the European Union (EU) decreased by 56 % in 2023.

The annual report under the Prior Informed Consent (PIC) Regulation on imports and exports of chemicals that are banned, or severely restricted, in the European Union shows that substances containing benzene continued to dominate the trade in 2023.

Benzene as a constituent of other substances in concentrations equal to, or greater than 0.1 % by weight was included in Annex I of PIC in 2022, entering into force on 1 July 2022. In 2023, it accounted for 98 % of total exports (65 147 553 tonnes) and approximately 99 % of total imports (65 739 206 tonnes).

The reported quantities for exports of other PIC chemicals in 2023 increased by 8 %, whereas imports decreased by 56 % compared to 2022. The rest of the top 6 imported and exported chemicals in 2023 were similar to those in 2022.

Exports of pesticides continued to decrease for a second year in a row. From 2022 to 2023, the reported exports of pesticides decreased by 10 % (from 192 674 to 173 451 tonnes). From 2021 to 2022, the decrease was 21 %.

Background

Exports - 532 companies from 23 EU countries provided data to ECHA on the exports of PIC chemicals from the EU in 2023. Four EU countries (Cyprus, Estonia, Luxembourg and Malta) and the

United Kingdom (Northern Ireland) declared that they had not exported PIC chemicals.

Imports - 207 companies from 23 EU countries submitted data on imports of PIC chemicals into the EU in 2023. Four EU countries (Bulgaria, Cyprus, Luxembourg and Malta) and the United Kingdom (Northern Ireland) declared that they had not imported PIC chemicals.

Article 10 of the PIC Regulation requires importers and exporters to give information about the annual trade of chemicals listed in Annex I to the regulation to their designated national authorities by 31 March of the following year. Each EU country must then provide the aggregated information to ECHA so that it can be summarised at EU level and non-confidential information can be made publicly available.

https://echa.europa.eu/

LANXESS receives excellent sustainability ratings

LANXESS has achieved top positions in several sustainability ratings. In the Dow Jones Sustainability Index (DJSI) Europe, the specialty chemicals company ranked first in the “Chemicals” category with 79 out of 100 points. In the DJSI World, LANXESS achieved 4th place and scored particularly well in the areas of climate strategy, water, corporate ethics, human rights and product stewardship.

In November, rating agency MSCI ESG confirmed LANXESS’ AA rating for the fourth year in a row. This makes the specialty chemicals company one of the highest-rated in the “Commodity & Diversified Chemicals” industry. MSCI ESG assesses how well companies manage environmental, social and governance (ESG) risks.

Also in November, rating agency ISS ESG raised LANXESS’ rating from B- to B on a scale of A+ to D-, while at the same time confirming the company’s prime status. This puts LANXESS among the best-rated companies in the chemical industry. ISS ESG takes into account around 100 indicators per industry.

In addition, LANXESS received a gold-level sustainability rating from EcoVadis. This distinction is awarded to the top 5 percent of the more than 100,000 companies evaluated by EcoVadis. The EcoVadis rating is used by companies to assess the sustainability performance of business partners.

On track to climate neutrality

“The excellent scores we have achieved in various sustainability ratings reflect our unwavering commitment to sustainable business practices. They show that we take our responsibility to the environment, society and good corporate governance seriously,” says Hubert Fink, member of the Board of Management at LANXESS. LANXESS aims to achieve climate-neutral production and energy use by 2040. The company also aims to make the entire value chain climate-neutral by 2050. According to the renowned Science Based Targets initiative, LANXESS’ plans will help to limit global warming to 1.5°C.

ILM Efficient. Extraordinary. Effective.

The 161st edition of ILM - the International Fair for Leather Goods, organised by Messe Offenbach, will take place from 15 to 17 February, 2025 in Offenbach, Germany. More than 270 Germans and International Brands from over 20 countries are expected to participate in the event. Some of the prestigious labels that would be present at the Fair include Bugatti, Suri Frey, Vaude, Thule, Tamaris, Dakine and Calvin Klein.

ILM Edition #161, the international fair for leather goods is "Definitely a not-to-be-missed event. ILM is a must-attend," emphasizes Arnd Hinrich Kappe, Managing Director of Messe Offenbach. "As a matter of fact, there is no alternative to ILM anywhere in the world. The fair is as extraordinary as it is efficient."

ILM is the central meeting point for all who are involved with bags, accessories and luggage in both trade and industry. As showcase for the scene, ILM offers wide-ranging insights into the topics and trends of the new season in a compact space Fashionable handbags and accessories traditionally form the core of the exhibition. But the Offenbach fair also affirms its unique position in the flourishing suitcases and travel baggage segment.

The level of internationalisation remains consistently high, with suppliers from over 20 countries heading for Offenbach in February. Besides established exhibitors, visitors can also anticipate a good many newcomers and reappearances.

SIDE EVENTS WITH A PRACTICAL BENT

But placing orders is not all that happens in Offenbach - the trade fair is also a venue for strategic exchange and inspiring side events. "We attach great importance to practical relevance in our extensive supporting programme," Arnd Hinrich Kappe explains. The 'Future Hub' in the entrance area invites visitors and exhibitors to practice-based lectures, trend forecasts and panel discussions.

ILM opens on the Saturday morning with a so-called "Welcome Talk', in which industry experts analyse the current situation and paint to future perspectives. In addition to this, visitors can look forward to creative events at exhibitors' stands - including some surprises. "Porsche Design and Thule will be putting in a powerful and inspirational appearance.

ADVERTISER'S INDEX

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