

RUBIX SECTOR BRIEF

TECHNICAL TEXTILES



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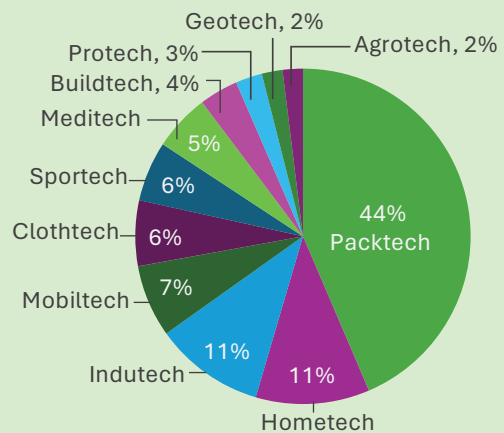
Executive Summary

- The Indian technical textiles market is the fifth largest in the world and accounts for around 15% of the overall textiles and apparel market in India.
- It stood at USD 29 billion in FY2024 with packtech accounting for the largest share of 44%.

Indian Technical Textiles Market Size (USD Billion)

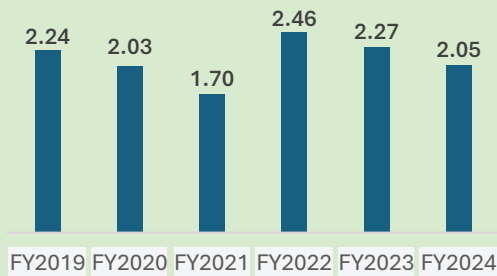


Technical Textile Segments

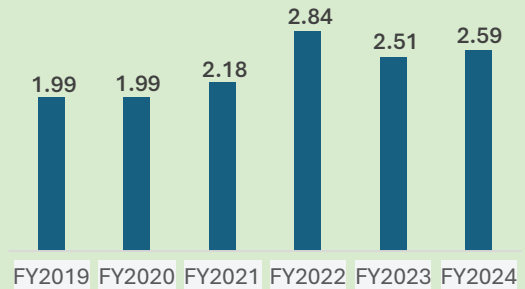


India is a net exporter of technical textiles since FY2021. From FY2019 to FY2024, exports have grown at 5.3% CAGR whereas imports have declined at 1.7% CAGR.

India's Imports of Technical Textiles (USD Billion)



India's Exports of Technical Textiles (USD Billion)



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Textile Policy 2024

National Technical Textiles Mission

PLI Scheme

PM Mitra Scheme

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New HSN Codes

Implementing BIS Standards

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Nanotech for Advanced Functions

Phase Change Material

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Innovations in Packtech

Smart Textiles

Non-woven Manufacturing

Textile Preforms

Overview

India has long been a global leader in traditional textiles and natural fibres. In recent years, however, the country has made significant strides in the specialised field of technical textiles. The modernisation of India's manufacturing sector, along with its growing competitiveness, has been a major factor driving the growth of this segment. As India continues to develop its capabilities in advanced textile technologies, the technical textiles industry is emerging as a key area for expansion and innovation.

Technical textiles are high-performance fabrics designed with advanced functionalities and specialised properties that set them apart from traditional textiles. Technical textiles are materials designed primarily for their functional properties and performance, rather than for aesthetic or decorative purposes. Also known as industrial, functional, or performance textiles, they are used either individually or as components in other products.

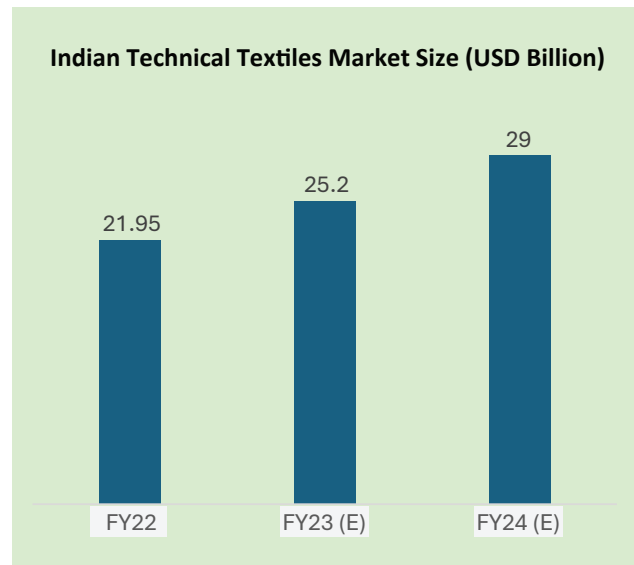
For instance, fire-resistant fabrics for firefighter uniforms or coated fabrics for awnings serve specific functions, while technical textiles in other products enhance strength, durability, and performance. These textiles are gaining popularity due to factors like functionality, safety, cost-effectiveness, durability, versatility, and eco-friendliness. Unlike traditional textiles used for clothing or home décor, technical textiles are valued for their specialised properties and are primarily used by industries with specific needs.

Technical textile products are manufactured using natural as well as manmade fibres such as Nomex, Kevlar, Spandex, Twaron, etc. These fibres exhibit enhanced functional properties like higher tenacity, superior insulation, improved thermal resistance, etc., and are used in various industries and applications.

Market Overview and Segmentation¹

Market Overview

- The Indian technical textiles market is the fifth largest in the world and accounts for around 15% of the overall textiles and apparel market in India.
- Globally, the penetration/usage level of technical textiles across different sectors is comparatively stronger than in India. The penetration level of technical textiles in India varies from 5%–10% across different application areas compared to 30%–70% globally.
- The total production value of the Indian technical textiles market stood at USD 21.95 billion in FY2022, with domestic production accounting for USD 19.49 billion and imports accounting for the remaining.
- In the past five years, the Indian technical textiles market has grown at a rate of 8%–10% annually. The Government is endeavouring to accelerate this growth to 15%–20% over the next five years.



Note: Estimated Growth of 15% for FY23 and FY24.

Source: India 2047 – Vision and Strategic Roadmap for Technical Textiles, KPMG, FICCI, February 2023

Segmentation

Three segments namely packtech, hometech, and indutech account for more than two-thirds (~65%) of the market.

Packtech	44% share
Polyolefin woven sacks, Flexible Intermediate Bulk Containers (FIBC), leno bags, wrapping fabric, etc.	
Hometech	11% share
Pillows, mattresses, blinds, mosquito nets, carpet backing cloth, etc.	
Indutech	11% share
Conveyor belts, drive belts, computer printer ribbons, industrial brushes, etc.	
Mobiltech	7% share
Nylon tyre cord, seat belt webbing, car upholstery/seat cover fabrics, automotive airbags, etc.	
Clothtech	6% share
Sewing threads, shoe laces, interlining, zip fasteners, etc.	
Sportech	6% share
Parachute fabrics, sports nets, sleeping bags, etc.	
Meditech	5% share
Baby diapers, surgical disposables, surgical dressing material, implantable materials, sanitary napkins, etc.	
Buildtech	4% share
Scaffolding nets, tarpaulins – HDPE, cotton canvas and jute tarpaulins, architectural membranes, etc.	
Protech	3% share
Industrial gloves, chemical protective clothing, fire retardant apparel, bullet-proof jackets, etc.	
Geotech	2% share
Geo-composites, geo-bags, etc.	
Agrotech	2% share
Bird protection nets, plant nets, monofil nets, insect protection nets, etc.	

Source: India 2047 – Vision and Strategic Roadmap for Technical Textiles, KPMG, FICCI, February 2023

¹ India 2047 – Vision and strategic roadmap for technical textiles, KPMG, FICCI, Feb 2023

Packaging Technology (Packtech) at the Forefront of Driving the Indian Technical Textiles Market

Packtech is the most prominent segment accounting for the largest share (44%). India's well-established textile manufacturing base, coupled with its global leadership in natural fibre production (such as jute, cotton, and hemp), positions the country as a key player in the packaging textiles market. The growing global demand for eco-friendly, durable, and cost-effective packaging solutions aligns with India's push for sustainable materials, such as biodegradable jute bags and recycled textiles. The Government's initiatives, like "Atma Nirbhar Bharat" and "Make in India", further bolster the technical textiles sector, driving innovation and local production. Additionally, the versatility of packtech across various industries—ranging from agriculture and food packaging to industrial and transportation sectors—enhances India's competitive edge, especially in export markets like the Middle East, Europe, and Africa.



Homegrown Technical Textiles in the Defence Sector

Technical textiles have become a key element in advancing the Indian defence sector, replacing traditional heavier materials due to their superior performance and functionality. For example, military uniforms, essential for battlefield operations, must meet stringent protective requirements against hazards such as high gravitational forces, extreme temperatures, hypothermia from immersion etc.

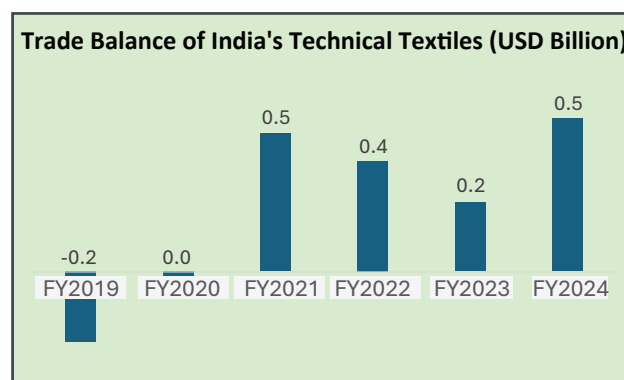
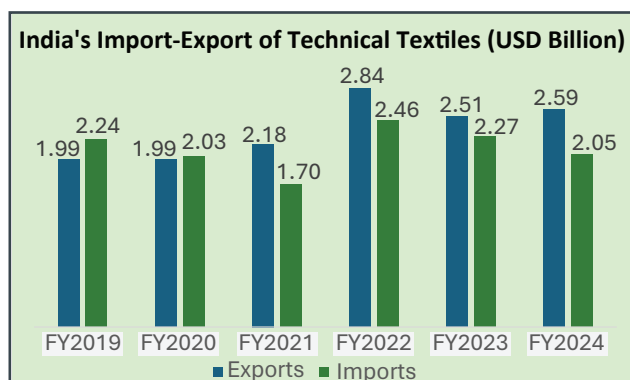
As per The New Indian Express (May 2019), recognizing the key role of technical textiles, the Ministry of Defence (MoD) in 2019 introduced a policy aimed at boosting domestic defence production by encouraging greater involvement of Indian firms in manufacturing technical textiles for the armed forces. This includes the production

of specialized items such as high-altitude inner clothing, three-layered gloves, multi-purpose boots, snow boots, crampons, sleeping bags, and other innovative textile-based products. Furthermore, as per Fibre2Fashion (Feb 2024), India has established a significant export presence, supplying bulletproof jackets, vests, and helmets to around 34 countries, underscoring the global demand for these advanced defence textiles.

Companies such as Kusumgar Corporates Private Limited (one of the world's leading manufacturers of parachute fabric and a leading supplier of technical textiles to the defence forces), Gokaldas Images Private Limited (manufacturer of softshell jacket, tactical combat dress), Jetcord India Private Limited (manufacturer of softshell jacket, tactical combat dress, Sukhoi parachutes etc. are already operating in the defence space.

Trade Analysis

- India has been a net exporter of technical textiles since FY2021.
- From FY2019 to FY2024, exports have grown at 5.3% CAGR whereas imports have declined at 1.7% CAGR.



Source: Compendium of the National Technical Textiles Mission (NTTM) 2024, Ministry of Textiles

Export Analysis

Segment	FY2019 Share	FY2024 Share	CAGR Growth
Packtech	40%	33%	1%
Indutech	19%	25%	12%
Mobiltech	12%	12%	7%
Clothtech	8%	6%	1%
Meditech	5%	6%	11%
Hometech	6%	5%	3%
Agrotech	4%	4%	5%
Protech	2%	3%	8%
Geotech	2%	2%	6%
Sportech	2%	2%	5%
Buildtech	1%	1%	27%
Total	100%	100.0%	

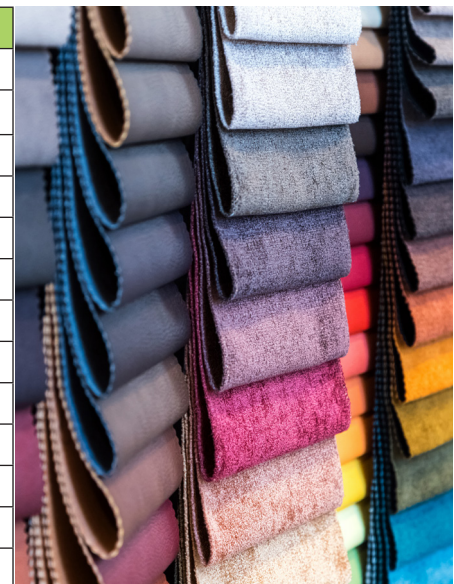


Source: Compendium of the National Technical Textiles Mission (NTTM) 2024, Ministry of Textiles

- India's technical textile exports have grown from USD 1.99 billion in FY2019 to USD 2.59 billion in FY2024 registering a CAGR of 5.3%.
- Packtech and indutech collectively account for 58% share of the total technical textiles exported.
- While packtech remains the highest exported technical textile category from India (33%), its share has declined by 7% points, whereas that of indutech has increased significantly from 19% in FY2019 to 25% in FY2024.

Import Analysis

Segment	FY2019 Share	FY2024 Share	CAGR
Mobiltech	30%	33%	-0.2%
Indutech	30%	29%	-2.2%
Hometech	15%	12%	-6.4%
Clothtech	12%	7%	-12.1%
Meditech	5%	5%	-2.7%
Packtech	3%	5%	10.9%
Agrotech	1%	2%	14.0%
Specialty Fibres and Composites	0%	2%	29.5%
Geotech	1%	1%	16.5%
Buildtech	1%	1%	9.7%
Sportech	0.4%	1%	24.6%
Protech	1%	1%	0.9%
Total	100%	100%	



Source: Compendium of the National Technical Textiles Mission (NTTM) 2024, Ministry of Textiles

- India's technical textile imports have declined from USD 2.24 billion in FY2019 to USD 2.05 billion in FY2024 registering a CAGR of 1.7%.
- Mobitech and indutech collectively account for 62% share of the total technical textiles imported.
- Mobitech has managed to increase its share from 30% (FY2019) to 33% (FY2024) whereas indutech's share showed a minuscule drop of 1%.

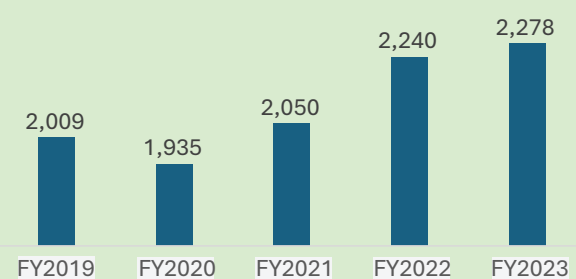
Credit Scenario: Textile Industry

India's textile sector has a substantial credit outstanding, driven by both working capital requirements and long-term debt for capacity expansion. A significant portion of the sector's debt is concentrated in the form of short-term working capital loans, which are often used to fund raw material purchases and production cycles. While many companies are now focused on optimising the utilisation of their existing capacities to enhance operational efficiency, a select group of larger firms is still pursuing capital expenditure (Capex) projects. However, these companies are strategically undertaking new investments while maintaining stronger, deleveraged balance sheets.

For example, in May 2024, Vardhman Textiles approved a capital outlay of approximately INR 2,000 crores for the enhancement and modernisation of its existing spinning and fabric business capacities. Vardhman plans to install 5,520 rotors and 17,000 spindles, totalling about 50,000 equivalent spindles. Additionally, the company will invest in new capacity for technical textiles, targeting a production output of 15 lakh meters of fabric per month². Such instances of capital investment could drive the credit offtake in the textile sector further as Indian textile manufacturers will try to tap global opportunities, especially in the context of the ongoing economic crisis in Bangladesh.

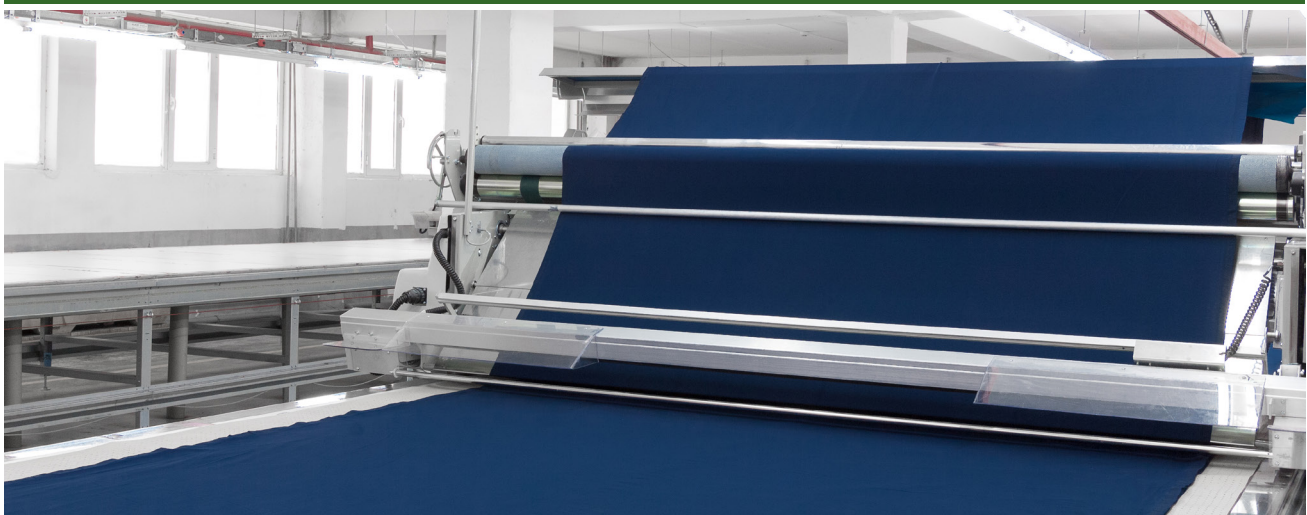


Bank Credit to the Textiles Industry (INR Billion)



Note: Bank credit refers to outstanding credit for the respective financial years. Source: Reserve Bank of India (RBI)

Leading Players



Collaborative Power: Large, Medium, and Specialised Players Shaping the Future of Technical Textiles

In India, the technical textiles ecosystem is driven by a combination of large and medium-sized companies and specialised players. Large companies, with their extensive resources, dominate mass production and scale, helping drive the adoption of advanced materials

in sectors like automotive, healthcare, and agriculture. Medium-sized companies play a crucial role in the technical textiles ecosystem by providing innovation and flexibility, often focusing on niche markets and regional demands. Specialised companies contribute through deep technical expertise, often focusing on cutting-edge applications like smart textiles, medical textiles, and protective fabrics. Together, these companies foster

² World of Technical Textiles, July 2024

a diverse and competitive market, supporting India's growth as a major player in the global technical textiles industry. Their combined efforts enable the development of high-performance fabrics, which cater to a wide range

of industrial, commercial, and consumer applications.

Some well-known players in the Indian technical textiles industry are listed in the following table.

Company	Technical Textiles Product Segment	Brief Description
Arvind Limited	Advanced Composites	Through a joint venture with Preiss Daimler Group (Germany); the JV—Arvind PD Composites—is engaged in manufacturing glass fabrics for wind energy, Cured In Place Pipe (CIPP), marine and other industrial applications.
	Technical Yarns	The Advanced Materials Division manufactures technical yarns and sewing threads for various applications using high-performance fibres like Meta Aramid (Nomex®), Para Aramid (Kevlar®), Mod Acrylic, Nylon 6 & 66, etc.
	Reinforcement Fabrics	Fabrics for belting and reinforcements range from 50 cm in width to 400 cm wide for various belting and reinforcement applications.
	Human Protection	The Human Protection business manufactures a range of specialised clothing and accessories such as flame-retardant wear, face mask, etc.
	Filtration	The company manufactures non-woven needle-punched filter media using a variety of fibres, such as PET, PP, Aramids, PPS, etc.
Welspun Living Ltd	Advanced Textiles	The company offers high-performance innovative materials, for a wide range of customer applications, including personal hygiene (femcare, baby care), homecare, medical, and industrial (filtration, geotextiles, automotive) among other segments.
Vardhman Textiles	Threads	Vardhman Yarns & Threads Limited (VYTL) is a JV between Vardhman Textiles Ltd, India and American & Efird (A&E) LLC, US, primarily producing a wide range of high-quality industrial sewing threads used in various applications like apparel, automotive, home furnishings, medical supplies, etc.
Alok Industries	Diversified	Some of the company's major products include fire-retardant clothing, high-visibility fabrics, healthcare uniforms, camouflage defence fabrics, etc.
BMD Private Limited	Automotive	The company designs, manufactures, and supplies high-performance technical textiles for automotive seating fabric, headliners, door trim fabrics, consoles, etc.
	Protective	The company offers a one-stop solution for specialised, inherent flame-resistant protective fabrics and garments through its vertically integrated facilities.
Garware Technical Fibres	Aquaculture	Offers predator cages, mooring, vertical ropes, etc.
	Sports	Safety protection nets, mountaineering ropes, etc.
	Fisheries	Bottom trawling HDPE braided nets, gill netting, etc.
	Industrial	Transmission ropes, submersible ropes, etc.
	Agriculture	Shade nets, insect nets, grape nets, etc.
Indofil Industries Ltd	Diversified	The company provides products for various applications such as non-woven and automotive applications, artists' canvas, luggage coating, interlining, etc.
Techtex India (A unit of Commercial Syn-Bags India Ltd)	Geotextile	Manufactured from high-strength polypropylene material, geotextile products offer great durability and strength, serving as a robust solution for soil stabilisation, erosion control, and drainage systems.
	Ground Cover	Made of 100% PP tape with UV-stabiliser, it is a permeable weed-blocking fabric, specifically developed for agricultural, landscaping, and organic industries.
	Ventilated FIBC Fabric	Used for bulk packaging of construction material apart from other application

Company	Technical Textiles Product Segment	Brief Description
SRF Limited	Tyre Cord Fabrics	It is the second-largest manufacturer of nylon 6 tyre cord fabrics in the world and supplies tyre cord fabrics to all major tyre companies in India.
	Belting Fabrics	The company manufactures fabrics that provide reinforcement for conveyor belts for mines and steel and cement industries
	Polyester Industrial Yarn	It manufactures different types such as polyester industrial yarn, including High Modulus Low Shrinkage Yarn (HMLS), High-Tenacity Regular Yarn, and Low Shrinkage Yarn that are available in Adhesive Activated (AA) and Non-Adhesive Activated (NAA) forms.
Kusumgar Corporates Private Limited	Military Fabrics	Key applications include special clothing, custom fabrics, etc.
	Aeronautical Fabrics	Key applications include parachutes, hot air balloon, etc.
	Inflatable Fabrics	Key applications include life jackets, life rafts, shelters, etc.
	Mechanical Rubber Goods (MRG) Fabrics	Key applications include transmission belts, automotive hoses, etc.
	Automotive Fabrics	Key applications include roof lining and covers, convertible topping, etc.
	Outdoor Fabrics	Key applications include outdoor clothing, high altitude clothing, etc.
	Custom Fabrics	Key applications in areas of agriculture, medical, geotextiles, etc.
Gokaldas Images Private Limited	Defence	Manufactures diverse products such as softshell jacket, tactical combat dress, etc.
Jetcord India Private Limited	Defence	Manufactures multi spectral camouflage nets (MSCN)
	Military Aviation	Manufactures Sukhoi parachutes

Note: Only selected players and their selected product segments have been mentioned. Source: Company websites.

Government Initiatives

Textile Policy 2024

In October 2024, India launched the Textile Policy 2024 focusing on strengthening the textile sector with a range of financial incentives (such as subsidies ranging from 10% to 35% of eligible fixed capital investments, capped at INR 1 billion based on taluka and activity). The policy highlights two main areas: technical textiles, including clothing and apparel, and various manufacturing processes like weaving and dyeing that are expected to spur the growth of the technical textiles industry³.

National Technical Textiles Mission (NTTM)

With a view to position the country as a global leader in Technical Textiles, the National Technical Textiles Mission (NTTM) was launched in FY 2020-21 with a total outlay of INR 14.8 billion⁴. The Mission has primarily four components:

- (1) Research, innovation, and development
- (2) Promotion and market development

- (3) Export promotion
- (4) Education, training, and skill development

In November 2024, the Union Minister of Textiles approved 12 new research projects worth INR 133 million under the National Technical Textiles Mission (NTTM), focusing on areas like geotextiles, sustainable textiles, and composites. This brings the total number of projects under the mission to 168, with a combined value of INR 5.1 billion⁵. NTTM has prioritised initiatives aimed at advancing high-performance fibre production and material development, supporting India's broader objectives of self-reliance and technological advancement.

Production Linked Incentive (PLI) Scheme for Textiles

To be more competitive in the textile space at the global level, the Central Government launched the PLI scheme for the textiles sector with an approved outlay of INR 106.8 billion to promote the production of Man-made Fiber

³ ET Retail, Oct 2024

⁴ Compendium of the National Technical Textiles Mission (NTTM) 2024, Ministry of Textiles

⁵ Krishi Jagran, Nov 2024

(MMF) apparel, MMF fabrics, and products of technical textiles in the country in September 2021⁶.

Out of the 67 applications received, 17 were dedicated solely to technical textiles, with a projected investment of INR 63.5 billion, while 16 applications combined technical textiles with other sectors, projecting an investment of INR 55.2 billion⁷.

New Measures in Budget 2025

In the Union Budget 2025-26, the Finance Minister proposed adding two shuttle-less loom types to the list of fully exempted textile machinery and revising the Basic Customs Duty (BCD) on knitted fabrics to “20% or Rs 115 per kg, whichever is higher” to boost India’s technical textile industry, including agrotech, medtech, and geotech. The increase in BCD is expected to encourage domestic manufacturing, reduce reliance on imports, and protect local producers from cheaper foreign competition.

The PM Mega Integrated Textile Region and Apparel (PM MITRA) Scheme

To boost the overall textile industry and value chain, including MMF and technical textiles, the Ministry of Textiles launched the PM Mega Integrated Textile Regions and Apparel Parks (MITRA) Scheme in October 2021, with an overall outlay of INR 44.4 billion for a period of seven years up to 2027-28⁸.

Different state governments including that of Maharashtra, Gujarat, Karnataka, Andhra Pradesh, Rajasthan, Odisha, Madhya Pradesh, Telangana, Punjab, Chhattisgarh, Uttar Pradesh, Bihar, and Tamil Nadu have submitted 13 proposals in all⁹.

As of August 2024, the Government had approved the setting up of seven PM MITRA Parks in greenfield/brownfield sites, with world-class infrastructure including plug-and-play facilities at Tamil Nadu (Virudhunagar), Telangana (Warangal), Gujarat (Navsari), Karnataka (Kalaburagi), Madhya Pradesh (Dhar), Uttar Pradesh (Lucknow), and Maharashtra (Amravati)¹⁰.

Adopting Quality Control Regulations

The Government has introduced quality control regulations for technical textiles to ensure safety, durability, product consistency, and functionality in critical sectors like healthcare, aerospace, and construction. They also enhance India’s global competitiveness.

- The Government has identified 107 items to be brought under regulation to ensure quality: Quality Control Orders (QCOs) for 19 geotech, 12 protech, 22 agrotech, and 6 meditech items are already under issue¹¹.

- From October 2024, the Government introduced stringent quality standards for critical medical textile products, including sanitary napkins, baby diapers, reusable sanitary pads, and dental bibs¹².

- In May 2024, the Government announced that it was planning to introduce QCO targeting 11 key textile products in the buildtech category to step up the safety standards of clothing used by workers and professionals in the construction sector¹³.

New HSN Codes

In addition to the 207 identified technical textiles items in 2019, the Government notified 32 new HSN codes dedicated to technical textile products in 2023¹⁴. The introduction of new HSN codes for technical textiles is expected to lead to clearer classification, enabling better tracking of production and trade data. This is expected to result in enhanced transparency, facilitate more accurate taxation and customs procedures, and allow manufacturers to access specific incentives, leading to improved industry growth and global competitiveness.

Implementing BIS Standards

With the aim to ensure product quality, safety, and reliability, the Government has developed more than 500 BIS standards for technical textiles. In addition, more than 50 standards are in the process of development¹⁵.

Mandatory Usage of Technical Textiles

The Government has identified 119 technical textile products for mandatory usage across 10 central ministries and departments to derive the benefits of technical textiles in various fields of applications, and notifications for mandatory use have been issued for 68 products¹⁶.

Providing Funding for Startups

In June 2024, the Ministry of Textiles announced plans to offer grants of up to INR 50 lakh each to 150 startups involved in producing technical textiles. These materials, including Kevlar, Spandex, Nomex, and Twaron, are used across industries such as aerospace, defence, automotive, healthcare, construction, and agriculture. The Government’s initiative to support startups in this sector aligns with its

⁶ Mint, HT Digital Streams Limited, June 2024

⁷ India Brand Equity Foundation (IBEF), July 2023

⁸ Ministry of Textiles, Press Information Bureau (PIB), Oct 2021

⁹ The Indian Textile Journal, May 2024

¹⁰ Ministry of Textiles, Press Information Bureau (PIB), Aug 2024

¹¹ India Brand Equity Foundation (IBEF), July 2023

¹² Fibre2Fashion, Sep 2024

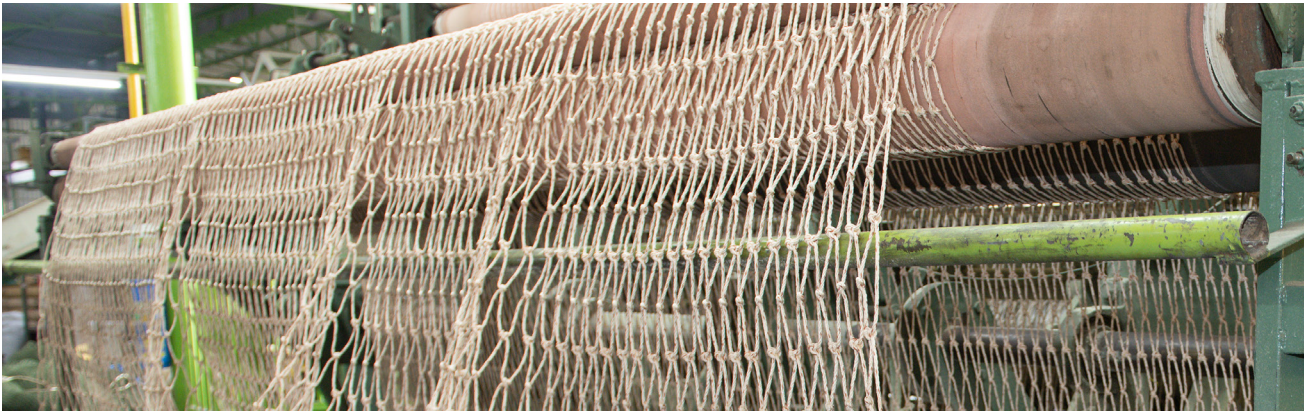
¹³ Mint, HT Digital Streams Limited, May 2024

¹⁴ Directorate General of Foreign Trade (DGFT), Apr 2023

¹⁵ India Brand Equity Foundation (IBEF), July 2023

¹⁶ India 2047 – Vision and strategic roadmap for technical textiles, KPMG, FICCI, Feb 2023

Latest Advancements



broader goal of fostering innovation and entrepreneurship in India. Furthermore, the textiles ministry has eased the royalty cap for this scheme to encourage more entrepreneurs to enter this sector¹⁷.

Sustainability Trends in Technical Textiles: Achieving Eco-Friendly Goals Without Compromising Safety

Sustainability is becoming a key focus in the textile industry, with an emphasis on using biomaterials and recycled textiles to meet growing consumer demand for eco-friendly products. While existing fabrics perform well, research is focused on improving their sustainability and recyclability without compromising on quality or safety. Balancing the push for greener solutions with the need to maintain high safety standards is essential, especially in technical fabrics where performance is critical.

Nanotechnology Trends in Smart Textiles: Advancing Functionality and Eco-Sustainability

Nanotechnology has transformed the development of smart textiles by incorporating nanomaterials, which enhance features like antimicrobial properties, self-cleaning, super-hydrophobicity, UV resistance, fire retardancy, and antistatic capabilities. Ongoing research focuses on optimising the efficiency, comfort, and eco-sustainability of these textiles while keeping costs manageable. Looking ahead, further advancements in embedding smart nano-devices into fabrics promise exciting new applications across various industries.

Developing Innovative Phase Change Material (PCM) Through PPP (Public Private Partnership)

In June 2024, the Government approved a plan by the National Technical Textiles Mission to partner with industry leaders in using Phase Change Materials (PCM) to create clothing suitable for multiple climates. This initiative involves collaboration with

various technology and fashion institutes to develop “indigenous encapsulated PCM-based activewear”. The goal is to provide a versatile solution to India’s diverse weather conditions and improve comfort while reducing the need for multiple clothing sets for different environments.

PCM-based textiles will be particularly valuable for military personnel working in extreme climates, from the cold of Jammu and Kashmir to the intense heat in states like Rajasthan, Telangana, and Bihar. The Government has approved three projects to develop and apply PCM at a total project value of INR 255 million¹⁸. Collaborators include the National Institute of Fashion Technology in Telangana and the Indian Institutes of Technology in New Delhi and Ropar.

Electronic Textiles (E-textiles): Exploring the Potential for Improved Sports and Fitness Performance

E-textiles have gained popularity in wearable sports and fitness technology due to their comfort and ability to integrate smart features, such as monitoring movement and bio-signals, assessing performance, and reducing injury risks. Currently, most e-textile designs rely on separate modules that are placed in pockets, limiting integration within the fabric. Further research and development are needed to create seamless e-textile solutions, which could revolutionise wearable technology in sports and fitness by enhancing performance and functionality.

Homotech Textiles Market Grows Strongly with Tech Innovations and Sustainability Trends

The global homotech textiles market is experiencing significant growth, with an annual growth rate of 4.7%¹⁹. This expansion is driven by rising consumer demand for comfort, luxury, and smart home solutions, including innovations like smart curtains and bedding that offer features such as temperature regulation, energy efficiency,

¹⁷ India Brand Equity Foundation (IBEF), June 2024

¹⁸ TMint, HT Digital Streams Limited, June 2024

¹⁹ Compendium of the National Technical Textiles Mission (NTTM) 2024, Ministry of Textiles

and health monitoring. Sustainability is a major focus, with manufacturers adopting eco-friendly materials like bamboo, organic cotton, and recycled fibres. The market's growth is further supported by the rise of online retail and advancements in AI and IoT-integrated textiles. As consumer preferences shift, the Hometech textiles industry is set to continue its expansion, blending style, functionality, and sustainability, while embracing customisation and personalisation through digital printing technologies.

Sustainable Innovations Shape Consumer Trends in Packaging Textiles

The global packaging market was expected to reach USD 1.05 trillion by 2024²⁰, driving a rising demand for sustainable packaging textiles. These textiles, including nonwoven absorbent pads and durable jute sacks, present both functional benefits and environmental challenges. Innovations such as luminescent nanocomposite coatings, thermochromic pigments, and antimicrobial 3D-woven fabrics are transforming the industry, improving both functionality and sustainability. Companies are increasingly turning to biodegradable and compostable materials to accelerate the breakdown of synthetic fibres, while the reuse of recycled cotton for eco-friendly packaging textiles is gaining traction. As consumer awareness of environmental issues grows, the demand for sustainable packaging solutions is reshaping the market, focusing on reducing the ecological impact of these often-overlooked materials.

Smart Textiles: Clothing that Harvests Energy for Your Devices

Energy-harvesting fabrics are smart textiles engineered to capture and store energy from external sources such as sunlight or body heat. These fabrics enable the creation of clothing with integrated charging capabilities for devices like smartphones. Materials used in these smart textiles include screen-printable low-temperature composite lead zirconate titanate polymer films and poly (vinylidene fluoride) polymer fibres, both of which have demonstrated the ability to harvest mechanical energy from the fabric.

3D Non-woven Technical Textiles

3D non-woven technical textiles are fabrics crafted from non-woven materials and used across a wide range of industries. Produced through advanced techniques such as 3D printing, 3D braiding, 3D knitting, and non-woven methods, these textiles offer enhanced design flexibility, improved durability, and the ability to meet specific functional requirements for diverse applications.

Textile Preforms for Composites

Textile preforms are fabrics designed to produce composite materials, made from high-performance fibres such as carbon, glass, and aramid. These preforms are widely used in applications like aerospace, ballistic protection, and stab-resistant gear, offering enhanced strength and performance for critical uses.

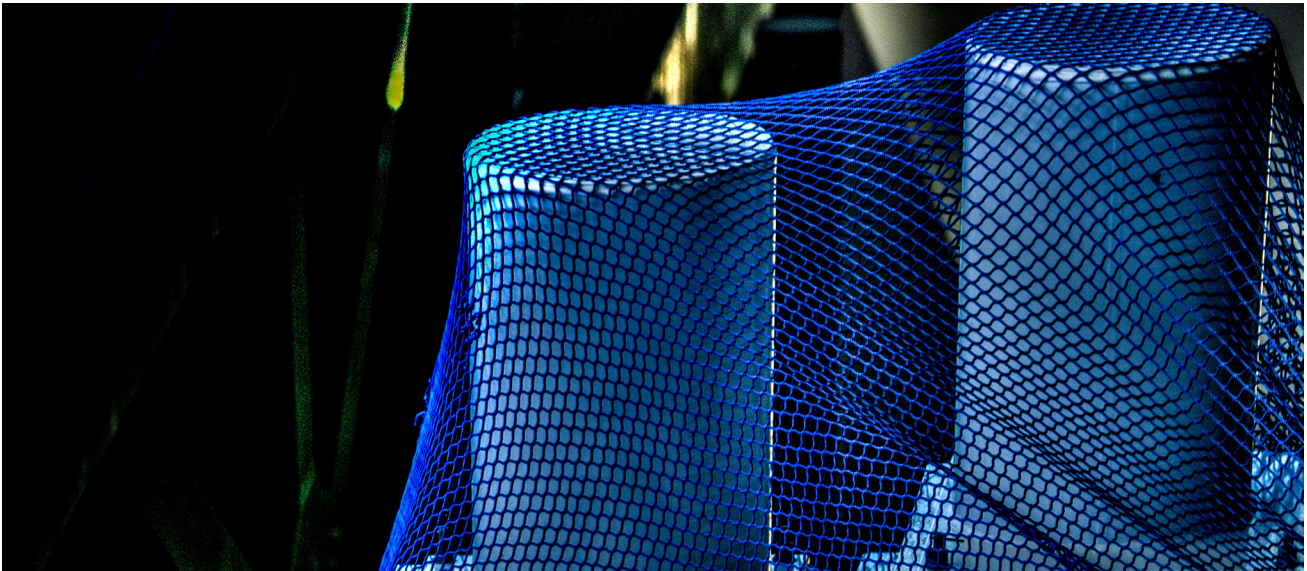
Challenges

India's lack of proper testing infrastructure and clear standards in the technical textile sector could limit its growth prospects if these products fall short of global quality benchmarks.

Poor Awareness Among End Users	Technology Gap	Skilled Manpower Shortage	Funding in Research and Development	Sophisticated Machinery
<ul style="list-style-type: none"> Lack of knowledge about the usage and benefits of technical textiles Need for training entrepreneurs and workers to spread awareness 	<ul style="list-style-type: none"> Lack of machinery and specialized equipment for testing raw materials Deficiency in automated and semi-automated garment-making machines Inability to create sensors for high-tech textiles 	<ul style="list-style-type: none"> Less than 5% of the workforce attends formal training Shortage of skilled manpower across all segments and levels Lack of trained entrepreneurs, workers, and skilled trainers 	<ul style="list-style-type: none"> Insufficient funding for research and development Hinders entrepreneurship in the manufacturing space 	<ul style="list-style-type: none"> Tough competition from European manufacturers for sophisticated machinery with high-end quality Chinese manufacturers are preferred for cost-efficient machines

²⁰ Compendium of the National Technical Textiles Mission (NTTM) 2024, Ministry of Textiles

Outlook



India has significant opportunities to capitalise on the growing global demand for technical textiles, positioning itself as a leading player in this dynamic sector. With a strategic focus on key areas such as specialty fibres, composites, geotechnical textiles, meditech, and agrotech, India can tap into both untapped export markets and its own expanding domestic potential. To achieve this, India must prioritise several core strategies: starting with strengthening R&D in high-impact areas such as high-performance fibres, advanced machinery, and cutting-edge materials. This would drive innovation and foster the creation of specialised, high-value products tailored to global market needs.

Additionally, scaling up the commercialisation of R&D breakthroughs is crucial for enhancing India's cost competitiveness and meeting international standards. Policy support, including favourable regulations and incentives, will be vital to facilitate industry growth and attract investments in the technical textiles sector. The development of a skilled workforce, equipped with the

necessary expertise in technical textiles, will also play a pivotal role in ensuring the sector's long-term success.

Building world-class infrastructure and a robust value chain is essential for enhancing India's ability to manufacture high-quality technical textiles at scale. By positioning India as a hub for high-value, high-growth textile products, the country can attract global investments and project its brands as global champions in the technical textiles space. Fostering innovation, promoting sustainable practices, and creating customer-specific products will further enhance India's competitive edge, allowing the country to play a leading role in the global technical textiles market.

In summary, by focusing on R&D, infrastructure development, policy support, and workforce training, India has the potential to become a dominant force in the technical textiles industry, offering innovative, high-performance solutions to meet the diverse needs of global markets.

Indicators	2026 (P)	2035 (P)	2047 (P)
Total Market Size (USD Billion)	45	123	309
Total Exports (USD Billion)	6	16	50
Growth Rate (CAGR in %)	15%	12%	8%
Penetration Level	13%–20%	25%–35%	40%–60%

Source: India 2047 – Vision and Strategic Roadmap for Technical Textiles, KPMG, FICCI, February 2023

The future of India's textile sector is closely tied to the growth of the technical textiles industry, which is expected to play a crucial role in advancing the nation's economic self-reliance, in line with the Prime Minister's 'Atma Nirbhar' mission. With diverse applications spanning industries such as construction, agriculture,

aerospace, automotive, healthcare, protective gear, and home care, technical textiles are set to become a driving force in India's economic development. Their broad range of uses highlights the growing importance of this segment in both domestic and global markets.



ABOUT RUBIX

Rubix Data Sciences Pvt. Ltd. helps you to take prudent credit risks, build a robust supply chain and monitor compliance for your business partners in India and around the world. Rubix helps you collect payments in time from your debtors, helping generate predictable cash flows.

Set up by highly experienced Risk Professionals, the company has been recognised at the IMC Digital Technology Awards in 2020 for the Rubix ARMS™ platform, and in 2021 for the Rubix Early Warning System (EWS). Rubix has also received the prestigious ET BFSI Exceller Award two times in a row: in 2023 for its ground-breaking analytics initiative, 'SME Income Range Estimation and Financial Ratio Benchmarking' and in 2024 for Rubix Risk Scoring Model.

Rubix has been appointed as India's first Validation Agent for the Legal Entity Identifier (LEI) by Legal Entity Identifier India Ltd, the Local Operating Unit accredited by the Global Legal Entity Identifier Foundation (GLEIF), Switzerland.

The Rubix ARMS™ and Early Warning System (EWS) platforms and their suite of reports, products and services are based on Rubix's extensive database of structured and unstructured data aggregated from over 120+ sources, customised predictive analytics and proprietary technology.

Corporate Office:

D - 424, Neelkanth Business Park, Vidyavihar (West), Mumbai - 400086, India

Ahmedabad | Bengaluru | Bhopal | Chandigarh | Chennai | Delhi NCR | Hyderabad | Indore | Jaipur | Kolkata | Lucknow | Nagpur | Pune | Raipur | Ranchi | Surat | Visakhapatnam

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The Rubix Sector Brief Team

INDUSTRY DATA & ANALYTICS

Rubix Data Sciences

EDITOR

Lakshmi Subramanian

DESIGN

Chandan Naik

BUSINESS DEVELOPMENT

Tushar Bhaskar

✉ tushar.bhaskar@rubixds.com

☎ +91-9999064524

CUSTOMER SERVICE

✉ info@rubixds.com

☎ +91-22-49744274

MARKETING & MEDIA QUERIES

Rahul Chopadekar

✉ rahul.chopadekar@rubixds.com

☎ +91-9819735111

If you'd like to learn more about Rubix's Solutions, please visit www.rubixds.com or contact us via info@rubixds.com