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Plastics Industry in Focus

BHARAT NEXT

India on it's way towards becoming
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President's Message

Bharat Next India On Its Way To Becoming A Manufacturing Hub

India stands on the cusp of a transformative era, as shifting global dynamics present a rare and timely opportunity to redefine our role in the global manufacturing and export landscape. With the world re-evaluating supply chain dependencies and the United States Trade Representative (USTR) increasing scrutiny of Chinese exports, India has emerged as a preferred and reliable partner. For the Indian plastic industry, this is not just a moment of opportunity—it is a moment of leadership.

The Indian plastic sector has become one of the most dynamic contributors to India's export growth, underpinned by technological innovation, a strong manufacturing base, and proactive policy support. Indian plastic products are today reaching over 200 countries, a testament to the industry's ability to deliver quality, scale, and value. As global supply chains realign, Indian plastic exporters are increasingly filling critical gaps, particularly in markets like the United States.

To fully seize this momentum, the industry must focus on scaling up manufacturing capabilities to meet the demands of large economies like the U.S. and the EU. Our manufacturers must be empowered to expand capacity, adopt smart technologies, and move up the value chain—from commodity plastics to high-performance, engineering, and recyclable plastics. Industry-led investment in research and development, adoption of advanced technologies, and robust workforce development will be pivotal in driving this transformation.

An equally pressing area is regulatory alignment with global standards. As we expand our footprint in the U.S. and Europe, it is imperative that Indian plastic products meet the highest quality and safety benchmarks. Steps such as Mutual Recognition Agreements (MRAs), upgraded testing facilities, and clearer compliance frameworks will open more doors for our exporters. There is also a need to internationalise India's own BIS standards so that "Made in India" becomes synonymous with global excellence.



Ravish B. Kamath
President, Plastindia Foundation

PLASTINDIA, in its endeavour to promote the entire plastics ecosystem, has been actively engaged in driving export promotion and global visibility for the Indian plastic industry. As a key initiative, PLASTINDIA is organizing the India Pavilion at K-Fair in Germany from October 8 to 15, 2025—one of the world's leading trade exhibitions—offering Indian manufacturers a global platform to showcase their capabilities. Furthering this momentum, PLASTINDIA will host its flagship event at Bharat Mandapam in New Delhi from February 5 to 10, 2026, where international buyers will be invited to experience the strength and depth of India's robust plastics supply chain. Through such initiatives, PLASTINDIA is reinforcing the country's position as a reliable and competitive player in the global plastics landscape.

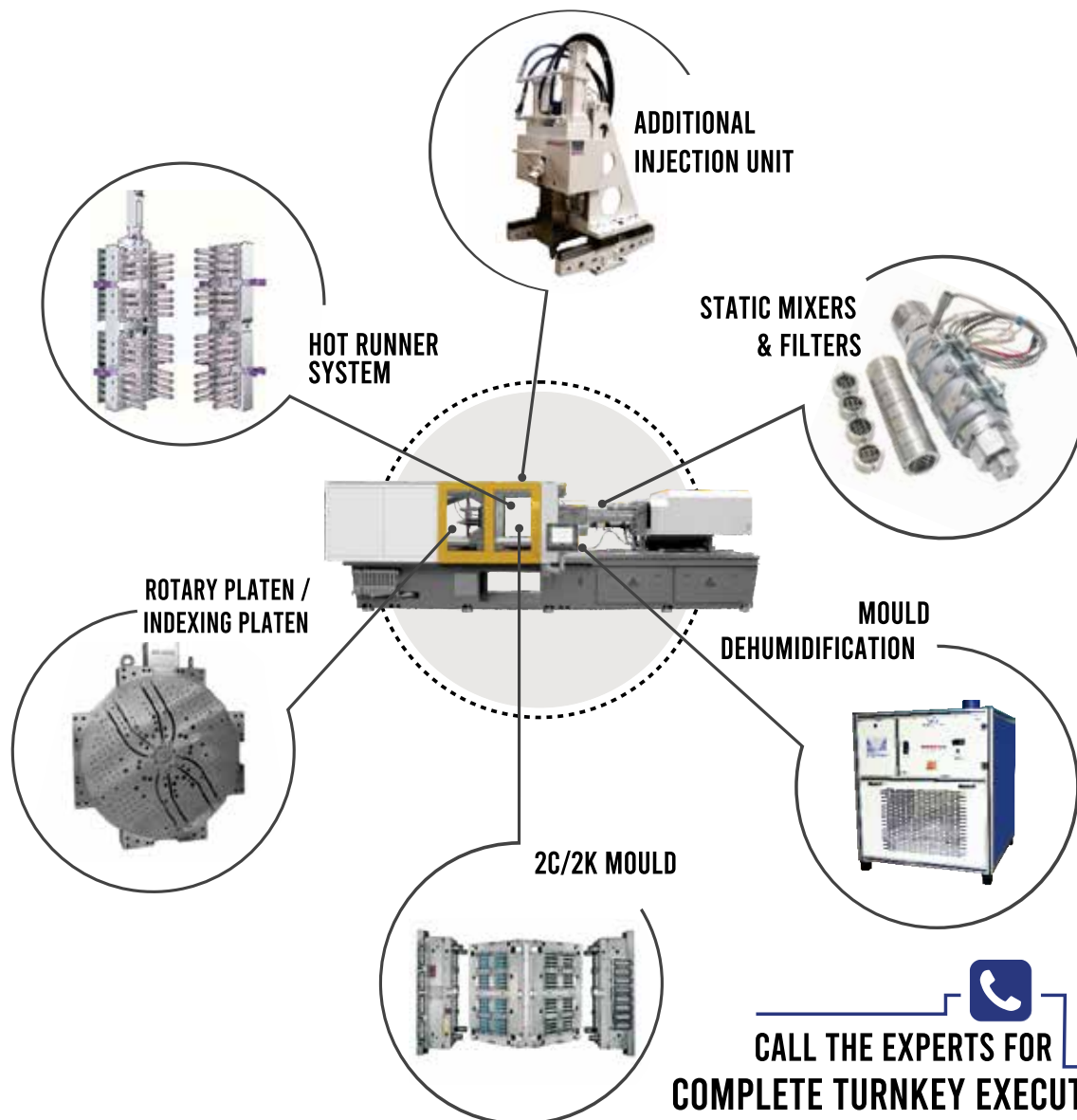
India is intensifying its promotional activities in key markets such as the U.S., where higher tariffs on Chinese goods offer Indian exporters a competitive edge. By participating in leading trade shows with strong end-user presence and organising focused Buyer-Seller Meets (BSMs), we aim to enhance visibility and forge direct industry linkages. Our strategy includes deep engagement with associations and stakeholders to create sustained awareness about the strength and capability of India's plastic manufacturing ecosystem.

Looking ahead, the transition to a circular economy is another defining priority. Indian plastic manufacturers are increasingly embracing sustainability - developing recyclable materials, adopting cleaner processes, and aligning with global ESG expectations. This shift is not only necessary to serve the next generation of environmentally conscious consumers but also critical to securing long-term market relevance.

"Bharat Next" is more than a theme—it reflects the collective aspiration of an industry ready to lead. The Indian plastic sector is not just participating in this new chapter—it is driving it. With the right focus, partnerships, and execution, we can cement India's position as a global manufacturing hub for plastics.



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Editor's Message



Mr. Ramesh Parasuraman
Editor, Plastindia Foundation

Advantage India

India's ascent as a global economic powerhouse has captured the world's attention, with recent milestones underscoring its growing influence and potential. In 2025, India surpassed Japan to become the world's fourth-largest economy, with a nominal GDP of \$4.19 trillion. The International Monetary Fund (IMF) projects that India will overtake Germany by 2027-28, positioning itself as the third-largest economy globally. This trajectory is not just a matter of numbers; it reflects India's strategic policy initiatives, a robust domestic market, and expanding manufacturing capabilities.

India's economic journey has been marked by resilience and dynamism. According to the IMF, India is set to become the world's fourth-largest economy by the end of 2025, marginally ahead of Japan, with a GDP of \$4.19 trillion.

Germany, currently in third place with a GDP of \$4.53 trillion, is expected to be surpassed by India by 2027-28, as India continues to grow at an annual rate of around 6.5%, compared to Germany's less than 1%. Only the United States and China are projected to remain ahead of India, highlighting the country's remarkable rise in the global economic hierarchy.

India's rapid economic growth is supported by several key factors. The country's private consumption has shown strong recovery, particularly in rural areas, buoyed by favourable monsoons and increased sales in fast-moving consumer goods and two-wheelers. The IMF has revised India's growth projection for the financial year 2024-25 to 7%, higher than the government's estimate of 6.5%, citing robust domestic demand and improving agricultural incomes. This resilience has allowed India to weather global uncertainties and maintain its status as the world's fastest-growing major economy.

Manufacturing: The Engine of Growth

India's manufacturing sector is at the heart of its economic transformation. The country has emerged as the third most attractive manufacturing destination globally, driven by its skilled workforce, cost competitiveness, supportive government policies, and a rapidly expanding domestic market. The manufacturing sector's contribution to GDP is estimated at around 13-14% in 2025, with ambitions to increase this share through flagship initiatives such as the Production-Linked Incentive (PLI) scheme and 'Make in India'.

Despite a modest production growth rate of 1.4% in FY 2023-24, compared to 4.7% in the previous year, India's manufacturing sector has demonstrated resilience and adaptability. The sector has seen record-high job creation, with companies hiring additional staff at unprecedented rates in May 2025. The Purchasing Managers' Index (PMI) remains above 57, signalling robust growth and strong demand for manufactured goods.

India's manufacturing ambitions extend to the global stage. The country aims to export goods worth \$1 trillion by 2030, a target that appears achievable given the consistent growth in merchandise and services exports. In FY 2024 (April-March), total merchandise exports reached \$437.42 billion, a 5.5% increase from the previous year, while non-petroleum merchandise exports hit a record high of \$374.1 billion, growing by 6%. Services exports also surged to \$341.11 billion, underscoring India's diversified export portfolio and growing competitiveness in global trade.

The Plastics Industry: A Cornerstone of Industrial Growth

A critical pillar of India's manufacturing and export story is its plastics industry. In FY 2024-25, plastics exports grew by 8.7%, reaching \$12.5 billion, up from \$11.5 billion in the previous year. This growth was driven by robust demand in key product categories such as plastic films, sheets, woven sacks, and tarpaulins, with major export destinations including the United States, China, the UAE, and Brazil.

The domestic plastics industry is undergoing rapid transformation, positioning India as a global manufacturing hub. The market for plastics in India was valued at \$44 billion in 2024 and is projected to reach \$77 billion by 2033, growing at a CAGR of 6.4%. Factors driving this growth include rapid urbanisation, infrastructure development, technological innovation, and increasing demand across sectors such as packaging, construction, electronics, automotive, and healthcare. India is now the third-largest consumer of plastics globally, after China and the United States, accounting for about 6% of global plastic use.

The industry's growth is also reflected in employment, with approximately 4 million workers engaged in plastics processing and manufacturing. Per capita plastic consumption has increased from 1 kg to 15 kg over the past several decades, and is expected to rise further as India's economy and population continue to expand.

India's commitment to infrastructure development has been instrumental in creating world-class manufacturing ecosystems. The government's focus on Public-Private Partnership (PPP) models has led to the establishment of dedicated Plastics Parks, offering state-of-the-art facilities and a conducive environment for plastics manufacturing. These parks are designed to provide integrated infrastructure, reduce operational costs, and foster innovation, thereby enhancing the competitiveness of Indian manufacturers.

The PM Gati Shakti National Master Plan is another transformative initiative aimed at enhancing multimodal connectivity through data-driven planning and seamless logistics. By integrating various modes of transport and streamlining supply chains, Gati Shakti is expected to boost India's competitiveness and position the country as a global economic powerhouse.

Government initiatives such as 'Make in India' and the PLI schemes have played a pivotal role in attracting Foreign Direct Investment (FDI), enhancing industrial infrastructure, and incentivising domestic manufacturing. These schemes are designed to make India a self-reliant nation, strengthen its position in global supply chains, and create new opportunities for growth and employment.

Shifting Global Trade Dynamics: India's Strategic Advantage

The global trade landscape is undergoing significant shifts, creating new opportunities for Indian exporters. While countries like China face punitive tariff barriers, India has benefited from a relative softening in U.S. trade policy, giving its exporters a competitive edge in international markets. This has allowed India to capture greater market share in product categories where Chinese suppliers are being priced out, making India an attractive alternative for global buyers seeking diversified supply chains.

India's trade agreements are also evolving. The plastics industry, for instance, is advocating for the swift conclusion of bilateral and free trade agreements with key partners such as the United States, the United Kingdom, and the

European Union. These agreements are expected to enhance India's export capabilities, open new growth pathways, and further integrate the country into the global economy.

The Road Ahead: Challenges and Opportunities

India's economic ascent is not without challenges. While the country has made significant progress, issues such as income inequality, infrastructure bottlenecks, and regulatory hurdles remain. India's nominal per capita income, for example, is still below \$3,000, lower than several sub-Saharan African countries. However, when adjusted for purchasing power parity (PPP), the picture is more favourable, reflecting the lower cost of living in India compared to developed economies.

The manufacturing sector, despite its growth, faces challenges related to global trade slowdowns and input cost inflation. However, Indian manufacturers have demonstrated resilience by raising output prices and maintaining profit margins, even as global demand fluctuates. The plastics industry, too, must navigate evolving environmental regulations and the need for sustainable practices, particularly as global attention shifts towards circular economy models and responsible consumption.

Advantage India

India's journey towards becoming a global economic powerhouse is marked by robust growth, a thriving manufacturing sector, and a dynamic plastics industry. Strategic government initiatives, continuous infrastructure development, and favourable global trade dynamics have positioned India to capitalise on emerging opportunities and solidify its role as a leading manufacturing and export hub.

The future looks promising. With continued focus on innovation, sustainability, and global integration, India is well on its way to achieving its ambitious economic and industrial goals. The plastics industry, in particular, stands as a testament to India's adaptability, resilience, and potential for leadership on the world stage.

As India moves forward, organisations like the Plastindia Foundation remain committed to supporting and showcasing the remarkable progress of the Indian plastics industry, ensuring that 'Advantage India' is not just a slogan, but a reality that benefits millions at home and abroad.





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NEC Chairman Message



Mr. Alok Tibrewala
NEC Chairman, PLASTINDIA 2026

The Biggest International Plastics Exhibition Set To Change The Benchmarks Of Global Plastics Trade Show

PLASTINDIA 2026 is set to be the most ambitious edition strengthening Bharat's reputation as a global hub for plastics innovation, trade, and technology.

A full Sold-Out PLASTINDIA 2026, shall now cover a staggering – 70,000 square meters of display area. This significant upsize demonstrates India's rising influence in the global plastics sector and the growing demand for high-quality industry exhibitions.

Adhering to the Prime Minister's 'Atmanirbhar Bharat', the mission that focuses on boosting domestic manufacturing, the event will facilitate expert discussions on technology advancements and the government's vision for sectors like space exploration, defence, and infrastructure. This is particularly timely, given India's growth in railways, aerospace, semiconductor manufacturing, and electronics, presenting unprecedented opportunities for the plastics sector.

Exhibitors from across the world are seizing the opportunity to showcase cutting-edge technologies, sustainable solutions, and high-performance materials at PLASTINDIA 2026, that is all set to transform the future of plastics.

The CEO Conclave; an exclusive meet that brings together top executives, industry pioneers, and policymakers, a key highlight at PLASTINDIA 2026, shall delve upon the

insights for ensuring the successful implementation of 'Atmanirbhar Bharat' at home stressing the point- 'Manufacturing Goods in India for Indians'.

Amidst the given geopolitical crises India's real GDP is estimated to have grown by 6.5% in the financial year 2024-25 and this shows the country has a huge potential to become the Manufacturing Hub.

The plastics industry significantly contributes to India's economy, generating substantial GDP and employment opportunities while also playing a crucial role in various sectors. It is a key driver of economic growth and contributes to the development of multiple industries. Our well-crafted theme of PLASTINDIA 2026- 'Bharat Next' entails focussing on the same.

Working Meticulously

While the team PLASTINDIA 2026 has been working diligently for streamlining the tradeshow, it has been equally conscious in anticipating the needs of exhibitors and visitors; be it logistics and /or in-stadia services like navigation and /or Food & Beverages at the Bharat Mandapam. I can assure that the customised facilities will be first of its kind and globally unmatched. PLASTINDIA has opted technology for improved networking, information access, and overall ease of navigation.

The PLASTINDIA 2026 Mobile app

PLASTINDIA will be launching the PLASTINDIA 2026 Mobile app, a tool with 100 percent offline assistance, along with GPS locator designed to enhance the exhibitor / visitor experience at the event, focusing on technology and efficiency.

The app will feature a map of the exhibition hall, making it easier for visitors to locate specific exhibitors, events and Food Courts. Visitors can equally access detailed information about exhibitors, including their products, services, and contact details. The app will provide a comprehensive schedule of events, workshops, and conference sessions, allowing visitors to plan their itinerary effectively. The app also includes features for connecting with other visitors and exhibitors, facilitating networking and business development. Above all visitors can receive real-time updates on event changes, new exhibitors, and other relevant information.

WI-FI Zones

At PLASTINDIA 2026, one will find WI-FI zones (OTP based), Mobile Charging Stations, providing portable USB chargers for iOS/ Android mobiles.

Parking facilities

Parking facilities will be available at Dhian Chand National Stadium & Bhairon Marg Ground with Shuttle Bus services from parking and ITPO gates to exhibition halls.

Ease of movement & Medical Facility

To ensure visitors' ease of movement special emphasis is on directional signage along with a provision of Golf Cart services within the venue for ease of commute. Apart from this, there would be Left Luggage Facility, Medical facilities that includes Advanced Life Support (ALS) ambulance with a 'Doctor-on-call'.

Hassle-free visitor registration at Airports & Delhi Metro

For ensuring hassle-free visitor registration dedicated counters would be available at Ahmedabad, Delhi and Mumbai Airport. While the registration counters would be at 'Departure' terminal at Mumbai and Ahmedabad Airport', the counters for Visitor Registration would be at the Arrival Terminal for New Delhi Airport (all 3 airports).

Counters for Visitor Registration would also be placed at Supreme Court Metro Station.

Travel & Hotel Stay Assistance

Team PLASTINDIA 2026 is planning to tie up with Airlines & e-Commerce Hotel Partner, so that registered Exhibitors & Visitors get discounted rates during their stay.

With the event just months away, the PLASTINDIA 2026 team is working meticulously to ensure that promotions are set to launch in August 2025, amplifying Domestic & international outreach and attracting a diverse audience of industry leaders, manufacturers, and buyers.



Plastindia Foundation Makes It's Mark At Chinaplas 2025 (15th April – 18th April 25)

Plastindia Foundation proudly inaugurated its stall at CHINAPLAS 2025 — a powerful showcase of India's growing influence in the global plastics industry.

The inauguration was graced by industry leaders:

Dr. Raju Desai, Vice President – PIF, Mr. Dharmendra Gandhi, Treasurer – PIF, Ms. Mamta Oza, Chief Business Development Manager - PIF and our global partners from Pilatus International Co. Ltd.

Together, we step forward in the journey to PLASTINDIA 2026 — where the future of plastics meets the vision of Bharat Next.





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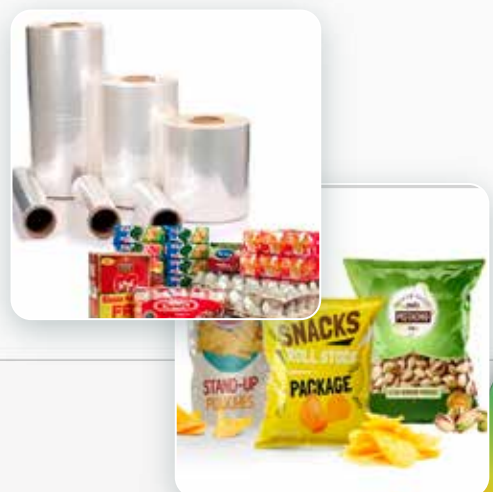
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International Promotion For PLASTINDIA 2026

1. Dr. Raju Desai Represents Plastindia Foundation at BPF Webinar

As part of the international promotion activities for PLASTINDIA 2026, Dr. Raju Desai, Vice President of Plastindia Foundation, delivered an insightful presentation on the "Indian Plastics Industry: Status & Outlook" at a webinar organised by the British Plastics Federation (BPF) on May 23, 2026. His presentation was well received by the global audience and helped further strengthen international engagement and awareness about India's growing role in the global plastics industry.



2. Mr. Vikram Bhadauria Engages with TAMI to Promote PLASTINDIA 2026

As part of the international outreach for PLASTINDIA 2026, Mr. Vikram Bhadauria, Co-Chairman of the PLASTINDIA 2026 National Executive Council, addressed members of the Taiwan Association of Machinery Industry (TAMI) on May 13, 2025. He provided a brief introduction to PLASTINDIA 2026 and shared key highlights of the upcoming exhibition, encouraging participation from Taiwanese manufacturers. The session also covered India's regulatory framework, with particular focus on BIS certification requirements for mechanical products, including plastic and rubber machinery (HS Code 8477). The interaction was well received and helped foster greater collaboration between the two industries.



India's Plastic Surge: Transforming Into A Global Manufacturing Powerhouse



As the country continues to innovate and adapt, it is poised to play a pivotal role in the global plastics industry, contributing to economic growth and environmental stewardship.

India, with its burgeoning economy and strategic initiatives, is rapidly positioning itself as a formidable player in the global plastics manufacturing arena. From humble beginnings in 1957, when polystyrene was first produced, to becoming the third-largest consumer of plastics globally, India's journey is a testament to its industrial resilience and forward-thinking policies.

A Snapshot of India's Plastic Industry

As of 2024, India's plastic industry is valued at approximately USD 49.5 billion, with projections to reach USD 67.82 billion by 2030, growing at a CAGR of over 6.5. The sector employs over 40 lakh individuals across approximately 50,000 enterprises, predominantly micro, small, and medium-sized enterprises (MSMEs).

Strategic Initiatives Fueling Growth

India is the world's fourth -largest economy by gross domestic product and the third-largest economy by purchasing power parity as of 2024, and with its rapidly growing population comes lucrative and diverse opportunities for companies on a global scale.

India has attracted significant interest as a manufacturing hub, particularly for key sectors like automotive, engineering, chemicals, pharmaceuticals, and consumer durables. The Indian manufacturing sector is projected to be one of the fastest-growing sectors in the local economy. With programs like 'Make in India', 'Atmanirbhar Bharat', 'Viksit Bharat', the Indian government is seeking to drive forward the country's manufacturing presence by providing local manufacturers with government incentives.

Various state governments also actively compete with each other to attract new manufacturing units to their states and offer a range of incentives. The focus has not only been on manufacturing for export. There is also an emphasis on local production and expansion within India, as the rate of consumption in the country has increased significantly over the last decade.

India's ascent in the plastics sector is bolstered by several key initiatives:

- i) **Production-Linked Incentive (PLI) Scheme:** Introduced in 2020, the PLI scheme aimed to boost domestic manufacturing across 14 sectors, including plastics. While the scheme faced challenges, it attracted significant investments and underscored the government's commitment to industrial growth.

- ii) **Import Substitution and 'Atmanirbhar Bharat':** The push for self-reliance has led to increased domestic production, reducing dependency on imports and fostering innovation within the industry.
- iii) **Sustainability and Recycling:** There are increasing number of Indian start-up companies that are pioneering digital platforms for plastic waste management, promoting recycling and contributing to a circular economy.

Sectoral Highlights

- **Flexible Packaging:** Companies like Jindal Poly Films are expanding operations to meet the growing demand for flexible packaging solutions, investing significantly in new production lines.
- **Engineering Plastics:** The engineering plastics market is experiencing robust growth, driven by advancements in automotive, electronics, and electrical sectors.
- **Bioplastics:** The establishment of a polylactic acid (PLA) plant by Balrampur Chini Mills in Uttar Pradesh signifies India's foray into sustainable plastic alternatives.

However, despite the positive trajectory, the industry faces challenges such as:

- a) Regulatory hurdles that can impede the ease of doing business and slow down growth.
- b) Environmental concerns those remain critical issues, and c) Upgrading infrastructure further to support large-scale manufacturing is essential.

Addressing these challenges through policy reforms, technological advancements, and sustainable practices will be crucial for India's continued success in the global plastics manufacturing sector.

India's transformation into a global plastics manufacturing hub is a multifaceted journey, driven by strategic initiatives, sectoral growth, and a commitment to sustainability. ■



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Tipco Group Is Strongly Aligned With The 'Make In India', 'Atmanirbhar Bharat' And 'Viksit Bharat'...



Mr. Ankur Betai
Director,
Autotech-Sirmax India Pvt. Ltd.

In recent years, we have observed a notable shift in global manufacturing strategies, particularly among our multinational customers with operations in both China and India. Several of these companies are relocating their sizeable production from China to India, leading to a substantial increase in local manufacturing volumes. In fact, we notice that several are also shutting down their operations in China.

New manufacturing facilities in India, are signaling a clear vote of confidence in India's capabilities and strategic advantages.

Additionally, there is a growing trend of plastic components—both for automotive and non-automotive applications—being manufactured in India and exported to Europe, United States & Latin America. This trend is expected to gain further momentum following the recent tariff increases announced by the U.S. government on Chinese imports coupled by a Bilateral Trade Agreement.

We believe this shift will be increasingly favorable for India, positioning it as a key global hub for plastic manufacturing and exports in the years to come.

With India's robust manufacturing ecosystem and favourable trade relations, Tipco, India's first plastics raw material manufacturer with a legacy spanning over eight decades, is well-positioned to meet the global demand for high-quality engineered plastics.

Moreover, recognizing the global shift in supply chains and the increasing demand for India-manufactured plastic components, we are already in the process of expanding our manufacturing capacities across multiple sites, that includes both; greenfield and brownfield investments to scale up production, enhance automation, and improve overall efficiency. ■





With The Recent U.S. Tariffs, There Is A Shift In Global Supply Chains As Companies Seek To Reduce Reliance On China...



Nivedita Kamath
Vice President – Sales,
Big Bags International Pvt. Ltd.

As global supply chains realign, Indian plastic exporters are increasingly filling critical gaps, particularly in markets like the United States.

Yes, India is positioned as a key alternative for a number of reasons; be it scale of production capabilities, competitive labor cost, improved infrastructure, good quality products and dependable source of supply, to name some.

Also to fully seize this momentum, the industry must focus on scaling up manufacturing capabilities to meet the demands of large economies like the U.S. and the EU.

Big Bags International Private Limited, is the top exporter of FIBC (Flexible Intermediate Bulk Container) products and solutions from India, customized to the bulk packaging requirements of a wide range of discerning global customers.

The company plans to leverage these opportunities and has been working consistently taking appropriate measures like; a) by increasing production capacity through the addition of new production lines, b) modernizing existing equipment to enhance efficiency, c) focusing on high-value products, especially in food and pharmaceutical sectors.

As a corporate, our overall strategy emphasizes capacity expansion and value differentiation to meet the demand for sourcing outside of China. ■





Yes, India Has A Strategic Advantage And Definitely It Is Poised To Become A Manufacturing Hub In Near Future...



Sukhdeep Singh Sethi
Managing Director
AVI Global Plast Pvt Ltd.

With its initiative of **'Make in India'**, **'Atmanirbhar Bharat'** and **'Viksit Bharat'**, India has made significant strides in infrastructure development, creating world-class manufacturing hubs; including Plastics Parks, while PM Gati Shakti enhancing multimodal connectivity through data-driven planning. These initiatives are fostering seamless logistics, boosting competitiveness, and positioning India as a global economic powerhouse.

Also, there is a notable shift in global manufacturing strategies, particularly among multinational customers with operations in China and India. The surge in global demand for consumer goods and the impetus to reduce the over reliance on sourcing from China have boosted trade between India and other countries to unprecedented levels. Although China remains the world's top production hub, India has made improvements and we are looked appreciated equally for our technological innovations and development.

On the other hand, the industry faces challenges like unskilled labour, tariffs and perhaps there is a scope of improvement in infrastructure as well. Low-labour costs used to be one of the main benefits of Indian manufacturing. However, regular low-skill jobs in Western nations are getting automated, while wages in India are progressively growing and that could help in a way.

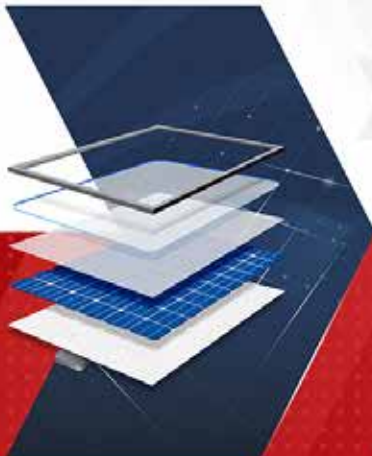
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India's Manufacturing Moment: The Rise Of A Global Production Powerhouse

India's Potential To Become A Global Manufacturing Hub Is No Longer A Distant Aspiration; It Is A Dynamic, Unfolding Reality



In recent years, the global economic spotlight has shifted toward India—not just as a vast consumer market, but as a serious contender for the title of the world's next manufacturing powerhouse. With a combination of favorable demographics, strategic policy reforms, expanding infrastructure, and shifting geopolitical dynamics, India is rapidly positioning itself as a global manufacturing hub. This shift could redefine global supply chains and alter the balance of industrial power in the 21st century.

The Global Backdrop: An Opening for India

The COVID-19 pandemic and subsequent supply chain disruptions exposed the vulnerabilities of over-reliance on any single country—most notably, China. In the aftermath, global companies began reassessing their manufacturing footprints, seeking diversification and resilience.

This created an opportune moment for countries like Vietnam, Mexico, and India. Among them, India stands out due to its massive domestic market, a growing skilled labor force, digital infrastructure, and a government strongly focused on industrial growth.

Make in India and Beyond: Policy as a Catalyst

India's pivot toward manufacturing is not accidental; it's a result of intentional, long-term policy design. Launched in 2014, the 'Make in India' campaign aimed to increase the manufacturing sector's contribution to GDP from around 16% to 25%. While the path hasn't been linear, the campaign laid critical groundwork.

Over the years, the Indian government has rolled out reforms to make doing business easier. These include:

- **Production-Linked Incentive (PLI) Schemes:** With an outlay of over \$26 billion across 14 sectors, these schemes offer financial incentives to companies that increase production in India. Electronics, pharmaceuticals, textiles, automobiles, and semiconductors are among the key sectors.
- **Labour Reforms:** India consolidated 44 labour laws into four new labour codes, aimed at simplifying compliance while protecting workers' rights.
- **Corporate Tax Cuts:** In 2019, India slashed its corporate tax rate to 22% (and just 15% for new manufacturing units), making it one of the most competitive among major economies.
- **Digital Initiatives and Ease of Business:** India jumped 79 positions in the World Bank's Ease of Doing Business rankings between 2014 and 2020. Initiatives like the National Single Window System and digital customs clearance have simplified trade.
- **FTA - India has over 42 trade agreements** (including preferential agreements) with various countries and regions.

With 17% of the nation's GDP and over 27.3 million workers, the manufacturing sector plays a significant role in the Indian economy. Through the implementation of different programmes and policies, the Indian government hopes to have 25% of the economy's output come from manufacturing by 2025.

India now has the physical and digital infrastructure to raise the share of the manufacturing sector in the economy and make a realistic bid to be an important player in global supply chains.

A globally competitive manufacturing sector is India's greatest potential to drive economic growth and job creation this decade. Due to factors like power growth, long-term employment prospects, and skill routes for millions of people, India has a significant potential to engage in international markets. Several factors contribute to their potential. First off, these value chains are well positioned to benefit from India's advantages in terms of raw materials, industrial expertise, and entrepreneurship.

Second, they can take advantage of four market opportunities: expanding exports, localising imports, internal demand, and contract manufacturing. With digital transformation being a crucial component in achieving an advantage in this fiercely competitive industry, technology has today sparked creativity. Manufacturing sector in India is gradually shifting to a more automated and process driven manufacturing which is expected to increase the efficiency and boost production of the manufacturing industry.

India is gradually progressing on the road to Industry 4.0 through the Government of India's initiatives like the National Manufacturing Policy which aims to increase the share of manufacturing in GDP to 25 percent by 2025 and the PLI scheme for manufacturing which was launched in 2022 to develop the core manufacturing sector at par with global manufacturing standards.

The Union Minister for Finance and Corporate Affairs, Ms. Nirmala Sitharaman announced the "National Manufacturing Mission" in the Union Budget 2025-26 to boost "Make in India" by supporting industries of all sizes with policy frameworks, ease of business, MSME growth, future-ready workforce, and clean tech manufacturing.

According to MeitY, India's digital economy is projected to grow at twice the rate of the overall economy, accounting for 20% of the national income by 2029-30, surpassing both agriculture and manufacturing, driven by digital platforms and widespread digitalisation across sectors.

FDI in India's manufacturing sector has reached Rs. 14,34,224 crore (US\$ 165.1 billion), a 69% increase over the past decade, driven by production-linked incentive (PLI) schemes. In the last five years, total FDI inflows amounted to Rs. 33,31,465 crore (US\$ 383.5 billion).

India is planning to offer incentives of up to Rs. 18,000 crore (US\$ 2.2 billion) to spur local manufacturing in six new sectors including chemicals, shipping containers, and inputs for vaccines.

India ranked among the top five countries in services export growth in FY25 (April-November), rising to 12.8% from 5.7% in FY24, with computer and business services contributing around 70%. Major players like Apple and its contract manufacturers, along with Dixon Technologies, are expanding their workforce to meet growing production needs.

Sectors Driving the Shift

Several industries are leading India's transformation into a global manufacturing center:

- **Electronics and Semiconductors**

Once heavily dependent on imports, India is now attracting giants like Apple, Samsung, and Foxconn to set up manufacturing bases. In fact, Apple assembled over 14% of its iPhones in India in 2024, up from just 1% in 2018.

The government is pushing hard to build a semiconductor ecosystem through a \$10 billion incentive scheme, aiming to reduce import dependence and create domestic capacity for chip manufacturing.

- **Automobiles and Electric Vehicles (EVs)**

India is the world's fourth-largest car market, and its transition to electric mobility is accelerating. Companies like Tata Motors, Ola Electric, and Mahindra are not only manufacturing EVs for the domestic market but are also eyeing exports.

Global players such as Hyundai and Tesla are also exploring India as a key EV manufacturing base, capitalizing on local demand and favorable policies.

- **Pharmaceuticals and Medical Devices**

India, often referred to as the "pharmacy of the



world,” supplies over 60% of global vaccines and 20% of generic drugs. With the PLI scheme in place, the government aims to boost domestic production of key starting materials and APIs (Active Pharmaceutical Ingredients), reducing dependency on imports from China.

- **Textiles and Apparel**

With rising labor costs in China and geopolitical pressures, India is regaining its place as a textile export hub. It’s also leveraging its legacy in cotton and handloom production while modernizing with tech integration and automation.

- **Defense and Aerospace**

Under the “Atmanirbhar Bharat” (Self-Reliant India) initiative, the government has prioritized domestic defense manufacturing. Strategic partnerships and indigenous capabilities are leading to increased exports of military hardware, from missiles to aircraft parts.

Geopolitical Tailwinds

India’s geopolitical positioning is also helping attract foreign investment. As U.S.-China tensions escalate, multinational corporations are hedging bets by adopting a “China +1” strategy—choosing India as the most viable alternative.

Moreover, strategic partnerships like the India-U.S. Critical and Emerging Technology (iCET) initiative, the India-Japan Supply Chain Resilience Initiative, and FTAs with countries like Australia and the UAE are cementing India’s global manufacturing ambitions.

India has also benefited from friend-shoring, where companies relocate operations to politically and economically allied nations. As democratic values align and strategic partnerships deepen, India’s reliability as a manufacturing partner becomes increasingly attractive.

Infrastructure Boom

A strong industrial base requires robust infrastructure and India is investing heavily.

- Dedicated Freight Corridors are revolutionizing logistics by offering faster, dedicated rail routes for cargo movement.

- Industrial Corridors such as the Delhi-Mumbai Industrial Corridor (DMIC) aim to create high-tech manufacturing zones with plug-and-play facilities.
- Smart Cities Mission and Gati Shakti National Master Plan are aimed at coordinated infrastructure development across roads, ports, airports, and logistics.
- Power and Renewable Energy: India is also making strides in reliable electricity and green energy, crucial for sustainable manufacturing.

The Demographic Dividend

India’s workforce is one of its strongest assets. With over 900 million people of working age by 2030, India offers a unique combination of scale and youth.

Vocational training programs like Skill India are upskilling millions in areas ranging from robotics to precision manufacturing. India is also seeing a surge in engineering graduates and tech-savvy professionals, bridging the gap between traditional manufacturing and Industry 4.0.

Challenges Ahead

Despite the optimism, challenges remain. Land acquisition, regulatory bottlenecks at the state level, and quality control standards need further improvement. Power outages, inconsistent labor enforcement, and bureaucratic red tape can still deter potential investors.

Additionally, India must ensure that its environmental and labor policies align with international ESG (Environmental, Social, and Governance) standards to attract global investors looking for sustainable practices.

A Manufacturing Future in the Making

India’s potential to become a global manufacturing hub is no longer a distant aspiration; it is a dynamic, unfolding reality. As Apple, Boeing, Samsung, and countless other global giants expand operations, they are laying the foundation for a new industrial era in India.

What once seemed like an ambitious slogan—“Make in India”—is fast becoming a lived experience across factories from Tamil Nadu to Gujarat. The next decade could witness India transform not only into the world’s back office but its factory floor as well. ■



Indian Plastic Industry Leading The Way Forward

The Plastics Industry Has Positioned India As A Significant Global Player, Particularly In Areas Like Plastic Packaging Exports And Overall Plastic Consumption

Plastic production has quadrupled over the last four decades. There are various reports suggesting that; over the last two decades the global production of plastic has increased by a whopping 79 percent. This surge in the plastics industry has positioned India as a key player on the global stage, with significant contributions to economic development and employment generation.

While China and US still remain the largest users of Plastic, India is closely following them and is all set for growth. The Plastics manufacturing industry in India is a major sector, contributing significantly to the country's economy and employment. Plastics are widely used in manufacturing due to their versatility, durability, and cost-effectiveness. They are employed in a vast array of industries, from packaging and consumer goods to automotive, medical, and construction.

While the global plastics manufacturing sector is a large and growing industry, valued at approximately \$712 billion in 2023, with projections for continued growth over the next decade, the domestic plastic industry is a rapidly growing industry. The Indian government aims to increase its economic activity from Rs. 3 lakh crores to Rs. 10 lakh crores in near future and have been helping the industry

in all possible ways. The plastic industry is home to numerous companies, including both large and small enterprises, and has a wide range of applications, from basic consumer goods to high-tech products.

Key Features of the Indian Plastics Industry

The Indian plastics manufacturing industry is a vibrant sector experiencing substantial growth, driven by increasing demand across various sectors and government initiatives. This growth is projected to continue, with the market expected to reach INR 5,784 billion by 2030, exhibiting a CAGR of 6.6%. The industry employs over 4 million people and has more than 30,000 processing units, many of which are small and medium enterprises. The Indian plastics manufacturing sector is a dynamic and growing industry with significant potential for further growth and contribution to the country's economy.

Significant Economic Contribution

The industry contributes significantly to the country's GDP and employs millions of people. The industry produces a wide range of plastic products, including films, sheets, pipes, raw materials, and various consumer goods.



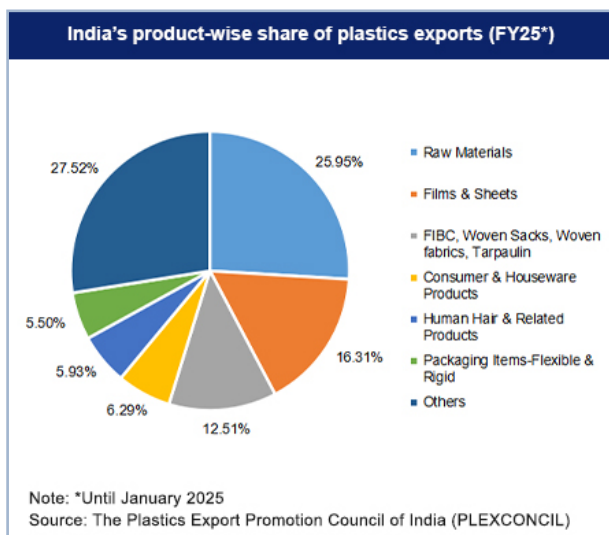
Rapid Growth

The industry comprising of numerous small, medium, and large enterprises, is experiencing rapid growth, driven by increased demand and government initiatives. The sector is projected to continue its growth, with the Indian plastics market expected to reach USD 77.0 Billion by 2033, driven by factors like rising demand, innovation, and the material's role in modern manufacturing.

The industry is increasingly focusing on sustainable practices, including plastic recycling and the use of innovative technologies. Companies are equally investing in automation and other technologies to improve efficiency and reduce labor shortages.

Export

India is a major exporter of plastic products, with exports including raw materials, films, sheets, and woven sacks. In the Financial Year 2024 (April-March), India's total merchandise exports reached USD 437.42 billion, a 5.50% increase from the previous year's USD 414.50 billion. This included a record high of USD 374.1 billion in non-petroleum merchandise exports, a 6.0% increase from the previous year. While, Services exports contributed significantly to the overall growth, reaching a record high of USD 341.11 billion in the previous fiscal year.



Plastics exports registered an 8% growth in FY 2024–25, hitting USD 12.5 billion, as compared to USD 11.5 billion in the previous year, and the top export destinations include the US, China, UAE, and Brazil. Key contributors to this growth include Plastic Films & Sheets, which rose 15.9% to USD 2,028 million, and FIBC, Woven Sacks, and Tarpaulin, which saw a 16% rise to USD 1,571 million. Floorcoverings, Leathercloth & Laminates also contributed with a 9.9% increase to USD 762 million.

Government Support

The government is actively supporting the industry through initiatives like "Make in India" and the establishment of plastic parks. The Indian government's Plastic Park Scheme, implemented by the Department of Chemicals and Petrochemicals, aims to boost the growth of the plastics industry by establishing cluster-based, state-of-the-art infrastructure for plastic processing. These parks are designed to consolidate the capacities of the domestic downstream plastic processing industry, attracting investment, increasing production and exports, and generating employment. The scheme also supports the development of common facilities, fostering innovation and sustainability in the sector.

Growth Drivers

Rising demand in sectors like packaging, automotive, construction, and consumer goods fuels the industry's expansion. The Indian plastics industry aims to increase its export value, with a target of USD 25 billion by 2027, presenting opportunities for raw material exporters. The surge in global demand for consumer goods and the impetus to reduce the over reliance on sourcing from China have boosted trade between India and other countries to unprecedented levels.

Although China remains the world's top production hub, India has made improvements in automation and worker training, which have reduced manufacturing costs, particularly for labor-intensive consumer products.

Furthermore, given the recent USTR trade was between US and China, India has a strategic advantage vis-a-vis China to increase its export to USA and the EU. Industry experts believe this the best time for the Indian industry to take the leap. Says, Nivedita Kamath, Big Bags International Pvt Ltd, "Our overall strategy emphasizes capacity expansion and value differentiation to meet the demand for sourcing outside of China."





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Agrees Sukhdeep Singh Sethi, Managing Director, AVI Global Plast Pvt. Ltd., "India definitely has the growth potential and is all set to capitalise on the China+1 strategy." Emphasizing upon the window of opportunity he adds, "We have been getting increased enquiries from USA especially distributors of diverse packing materials and are starting our 4th PET sheet line in July so we are equipped to handle increased demand."

The industry's growth is expected to lead to significant job creation and entrepreneurial opportunities. Overall, the Indian plastics manufacturing industry is a dynamic and growing sector with significant potential for future growth and innovation.



Key Players in the Indian Plastics Industry:

Reliance Industries Ltd (RIL): A major player in the petrochemical industry and moreover produces a wide run of plastic items like polyethylene, polypropylene, and PVC.

DCM Shriram Ltd: A leading player in the Indian plastics industry, particularly known for its PVC (polyvinyl chloride) production. The company is a major producer of PVC resins and compounds, contributing to India's industrial economy.

Tipco Group: India's first plastics raw material manufacturer with a legacy spanning over eight decades, leading manufacturer of advanced plastics compounds, catering to a wide spectrum of industries.

General Plastic Industries: A leader in Designing & Prototyping, Tool Development, Injection Molding, Contract Manufacturing in sectors Automobile, Electrical, Medical, Household, Engineering Parts, GPI specializes in the production of precision plastic components and moulds.

Supreme Industries: A leading manufacturer of plastic products, including pipes, tanks, and furniture.

Sintex: Considered a market leader in India, having introduced the first overhead water tank it also into manufacturing of plastic pipes, including CPVC, UPVC, HDPE, and OPVC, to cater to the growing water distribution segment

Astral Poly Technic: Another prominent player in the industry, known for its pipes and fittings.

Finolex Industries: A well-established company in the plastics sector, specializing in pipes, tanks, and other products.

Garware Hi-Tech Films: Focuses on specialty films and packaging materials.

Time Technoplast: Specializes in engineering plastics and various industrial applications.

AVI Global Plast: A leading Manufacturer of high-quality rigid packaging films and thermoformed packaging serving sustainable packaging offerings to a wide spectrum of industries.

Other Key Players: Jain Irrigation Systems, Kingfa Science & Technology (India), Mayur Uniquoters, Nilkamal, Plastiblends, Big Bags International Pvt Ltd. and Responsive Industries.

These companies are recognized for their contribution to various sectors such as packaging, automotive, agriculture, construction, and consumer goods. Their innovative products and global reach make them key players in India's growing plastic industry. ■



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Plastic Clusters Has It's Share In Driving Growth

Plastic Clusters Offer A Powerful Mechanism For Driving Manufacturing Growth In India By Fostering Innovation, Attracting Investment, Creating Jobs, And Promoting Sustainable Practices In The Plastic Industry.

India's manufacturing sector is poised to reach Rs. 87,57,000 crore (US\$ 1 trillion) by FY26, led by Gujarat, Maharashtra, and Tamil Nadu, fueled by investments in automobile, electronics, and textile industries. Government initiatives like Make in India and PLI schemes drive growth, attracting FDI and enhancing industrial infrastructure.

Plastic clusters in India, which are geographically concentrated areas of interconnected companies and institutions in the plastic industry, can significantly drive manufacturing growth by fostering innovation, collaboration, and sustainable economic growth. They can also attract investment and create jobs, as seen in the "Tidy Trails" initiative in Mathura-Vrindavan which focused on sustainable plastic waste management.

India has several prominent plastics manufacturing clusters, particularly in Maharashtra's Mumbai and other major cities along with states like Gujarat and Tamil Nadu. The government is also supporting with the development of 10 Plastic Parks across the country to further boost the domestic Plastic industry.

Key Plastics Manufacturing Clusters in India

Maharashtra:

Maharashtra is a significant plastic cluster within India's plastics industry, particularly in the Western region. The state has a large number of plastic industries and is a major consumer of plastics, with Mumbai's Dharavi known for its plastic recycling.

- Mumbai's cluster is a hub for MSMEs, notable for its numerous micro, small, and medium enterprises (MSMEs) located across various suburbs like Kandivali, Malad, and Thane.
- Apart from this Mumbai is home to major pharmaceutical and biotechnology companies, some of which utilize plastics for packaging and manufacturing.
- Pimpri-Chinchwad, Chakan, and Talegoan in Pune with its industrial concentration are prominent auto hubs with a strong presence of plastic industries.

- Government initiatives like the Cluster Development Program and the Plastic Action Roadmap play a crucial role in supporting the growth of the plastic industry and addressing its environmental concerns.
- The Maharashtra government supports the growth of plastic clusters through initiatives like the Cluster Development Program, providing financial aid to enhance the competitiveness of micro and small entrepreneurs.

Dharavi has evolved into a significant plastic recycling hub in the plastics industry, playing a vital role in India's waste management system. It's a thriving center of small-scale manufacturing and recycling, where plastic waste is melted, reshaped, and molded, employing a large number of people. The area processes a substantial amount of Mumbai's plastic waste, with some estimates suggesting it recycles over 50-80% of it.

- Dharavi is renowned for its plastic recycling industry, where thousands of small units, often operating in the "13 compounds," are involved in various stages of the recycling process.
- The industry employs a significant workforce, estimated at around 10,000 to 12,000 people, and generates substantial annual turnover.
- Dharavi plays a crucial role in managing Mumbai's solid waste, particularly plastic waste, which is a major challenge for the city.



- It's estimated that a large portion of Mumbai's plastic waste, potentially 60% or more, is recycled within Dharavi, demonstrating its significant environmental contribution.
- Dharavi's recycling practices exemplify the principles of a circular economy, where resources are recovered, waste is reduced, and livelihoods are created through resource management.
- This approach not only supports the local population but also contributes to environmental sustainability in Mumbai.
- Dharavi's plastic recycling industry is a testament to the informal economy and entrepreneurial spirit of its residents.
- Many small-scale businesses and micro-entrepreneurs are involved in the industry, creating a vibrant hub of economic activity.

Gujarat

Gujarat is home to India's largest multi-layered plastic (MLP) recycling facility and is also a growing hub for plastic manufacturing. Gujarat has the highest plastic machinery manufacturers.

Gujarat is a significant plastics cluster in India's plastics industry, exhibiting a strong growth trajectory and a substantial presence in both production and exports. The state's plastic industry is experiencing an annual growth of over 15%, with a notable share in both production and exports of plastic products. While Gujarat's share in exports of plastic is around 15 %, its share in the production of plastic products is around 14 %.

Gujarat also boasts a significant number of plastic machinery manufacturers, contributing to the overall strength of the sector.

- Gujarat's strategic location, coupled with strong infrastructure, allows for efficient access to major

domestic and international markets, including those in South East Asia.

- The state has a robust ecosystem supporting the plastics industry, including machinery manufacturing and a strong foundation for toy manufacturing, which benefits from a competitive edge due to the plastics sector.
- Gujarat is also actively working on environmental protection and green growth through initiatives like plastic recycling, with the Dhoraji taluka emerging as a major plastic recycling cluster.
- The government has been encouraging the growth of the plastic industry through various initiatives, including tax incentives and collective purchase policies.

Tamil Nadu

Tamil Nadu's plastic industry is a major player in the Indian economy, particularly in South India, leading in consumption and manufacturing among South Indian states. It's a major player in the Indian plastics industry, with a large number of manufacturers, particularly around Chennai.

While it faces challenges related to waste generation and environmental concerns, the state is actively working on sustainable solutions and promoting eco-friendly alternatives.

- Tamil Nadu dominates plastic consumption and manufacturing in South India, with over 9 lakh tonnes consumed.
- The plastic-related businesses in Tamil Nadu generate revenue of over Rs. 18,000 crore.
- The state has a large and competitive plastic household industry, with over 8,000 manufacturers and employing around 800,000 people.



- Chennai, in particular, has a thriving plastic products cluster with a significant number of micro and small enterprises.
- While the industry has grown at around 5%, there's a potential for growth of over 28% in Tamil Nadu, according to experts.

There are other examples as well how the clusters could help and contribute to the economy

- **Surat (Gujarat):**

A prominent textile cluster specializing in synthetic textiles, including polyester fabrics, which relies heavily on plastics.

- **Chennai (Tamil Nadu):**

Often referred to as the “Detroit of India,” with major automotive manufacturers that heavily rely on plastics for various components.

- **Gurugram-Manesar (Haryana):**

Another automotive cluster with numerous auto parts and engineering facilities that use plastics extensively.

- **Other States:**

The government is actively promoting the development of plastic parks in states like Madhya Pradesh, Assam, and others.

The positive developments in the manufacturing sector, driven by production capacity expansion, government policy support, heightened M&A activity, and PE/VC-led investment, are creating a robust pipeline for the country's sustained economic growth in the years to come.

“In recent years, we have observed a notable shift in global manufacturing strategies, particularly among our multinational customers with operations in both China and India. Several of these companies are relocating their sizeable production from China to India, leading to a substantial increase in local manufacturing volumes. In fact, we notice that several are also shutting down their operations in China. New manufacturing facilities in India, are signaling a clear vote of confidence in India's capabilities and strategic advantages.”, says Ankur Betai, M.D. Autotech Sirmax, a leading manufacturer of advanced plastics compounds, catering to a wide spectrum of industries.

Anticipating the trend of increased demand in Indian manufactured goods further Betai adds, “Additionally, there is a growing trend of plastic components—both for automotive and non-automotive applications—being

manufactured in India and exported to Europe, United States & Latin America. This trend is expected to gain further momentum following the recent tariff increases announced by the U.S. government on Chinese imports coupled by a Bilateral Trade Agreement. We believe this shift will be increasingly favorable for India, positioning it as a key global hub for plastic manufacturing and exports in the years to come.”



- The plastic industry in India market size is estimated at INR 3,938 billion in 2024 and is expected to reach INR 4,466 billion by 2029, growing at a CAGR of over 6.5% during the forecast period (2024-2029).
- As of 2023-24, the Share of India's plastic products industry is 0.5% of India's GDP.
- An Indian uses 15 kg of plastic annually versus 27 kg globally.
- Plastic consumption in India has increased 23 times since 1957 when polystyrene was first produced in India, reaching about 22 million tons.
- The consumption of plastics in India has significant regional variation, with Western India accounting for 47%, Northern India for 23%, and Southern India for 21%. The remaining 9% is consumed in Eastern India.
- India accounts for about 6% of global plastic use and is the third-largest consumer of the material after China and the US.
- The market for recycling waste plastic in India reached 9.9 million tons in 2023.
- India recycles plastic at a rate of 60%, which is higher than that of developed nations.
- The 'Make in India', 'Skill India', 'Swachh Bharat', and 'Digital India' initiatives of the government are increasing plastic production, and by 2027, it is expected that the plastics industry will generate INR 10,382 billion in annual revenue, with two lakh tons of exports.
- There are 4,953 registered plastic manufacturing/recycling units engaged in plastic activities in 30 states/Union territories of India and 823 non-registered plastic manufacturing/recycling units in 9 states/UTs.
- Leading global investors have invested INR 65,388 million in the plastics circularity industry in India across 199 deals from 2018-2023.

(Source: UJA)

Pivot to smart manufacturing

Low labor costs used to be one of the main benefits of Indian manufacturing. However, regular low-skill jobs in Western nations are getting automated, while wages in India are progressively growing. It is anticipated that in certain developed economies, technology-driven reshoring and localization will be the prevailing trends. Further, the Indian manufacturing sector is facing stiff competition from developing economies with lower labor costs, such as Vietnam, as well as wealthy industrial nations like China and South Korea.

Higher cost markets are taking advantage of cutting-edge technologies like blockchain, 3D printing, IoT, cloud computing, and artificial intelligence (AI) to lower costs across the production process and increase operational efficiencies in the long-term.

As per the "State of Smart Manufacturing Report" published by Rockwell Automation, India leads the world in terms of manufacturing businesses investing in technology.

The majority of manufacturers concur that digitalization can be applied to every stage of a company's lifecycle, including idea and design, engineering, sourcing, procurement, supply chain logistics, warehousing, customer experience, strategic functions, and governance. Digitalizing operations can increase efficiency, quality, safety and transparency. It can also reduce costs, timelines, and errors.

In India, several leading companies, such as Larsen & Toubro Ltd., ABB India Ltd., Siemens Ltd., Rockwell Automation India Pvt. Ltd., Honeywell Automation India Ltd., Schneider Electric India Pvt. Ltd., Mitsubishi Electric India Pvt. Ltd., etc., have incorporated automation technology into their manufacturing units to increase production efficiency and quality.

India cashing on China+1 strategy

With India rising as a preferred option, the China Plus+1 approach entails businesses diversifying their manufacturing operations by building or growing production facilities in markets other than China. This strategy reduces the risks of becoming overly dependent on a single country while simultaneously tapping India's growing customer base, skilled labor pool, and advantageous commercial incentives.

Indian plastic clusters contribute to export growth by producing a wide range of products, including raw materials, films, and packaging items and ancillary products across the sector. This contributes to the overall export performance of the Indian economy.

Needless to say, Plastics clusters are a significant engine of economic growth in India, contributing substantially to the national GDP. They drive investment, create new businesses, and expand existing ones, leading to overall economic expansion. ■

Chinaplas 2025 Concludes On A Higher Note

The Four-Day Trade Show Witnessed Numerous Strategic Cooperation Agreements And Deals Between Various Exhibitors And Buyers With Overall Visitors Across 170 Countries.

CHINAPLAS 2025, the 37th International Exhibition on Plastics and Rubber Industries concluded successfully on April 18, 2025 at the Shenzhen World Exhibition & Convention Center (Bao'an), PR China. Spread over exhibition area of over 380,000 sqm, the trade show witnessed 4,616 exhibitors from 40 countries and around 281,206 professional visitors across 170 countries. During the four days numerous strategic cooperation agreements and deals were achieved between various exhibitors and buyers.

Under the theme of "Transformation • Collaboration • Sustainability", CHINAPLAS 2025 focused on four key

areas - "Circular Economy", "Digitalization", "Innovative Materials" and "High-end Technology, Made in China" by displaying over 120 global/Asian debut technologies, more than 3,800 machinery exhibits and innovative solutions from over 1,600 raw material suppliers.

From advanced injection molding equipment, AI visual inspection systems to bio-based materials and high-performance flame retardant materials, each technological breakthrough marked a milestone for the industry. In the field of humanoid robots, PEEK, PPA and other new materials helped reduce the weight and improve the endurance of products; in the low-altitude economy segment, lightweight materials were able to fulfill the stringent requirements of UAVs and eVTOL.

These innovations formed a strong force for the transition of the plastics and rubber industries to a high-end, intelligent and green era.

CHINAPLAS 2025 showcased the prosperity of the industry chain of plastics and rubber technologies in full scope, from advanced material innovations, intelligent manufacturing solutions to innovative technology products, covering automotive, electronics and electric,



packaging, medical and healthcare, building materials, new energy, sports and leisure, as well as other downstream applications.

Ms. Ada Leung, General Manager, Adsale Exhibition Services Ltd., the organizer of CHINAPLAS, said, "In the face of uncertainty brought by economic slowdown

around the world, the success of CHINAPLAS reflects the resilience and vitality of plastics and rubber supply chain. The trade fair promoted both local and foreign trade partnerships, injecting new impetus and developing a more prosperous prospect of the plastics and rubber industries than ever."

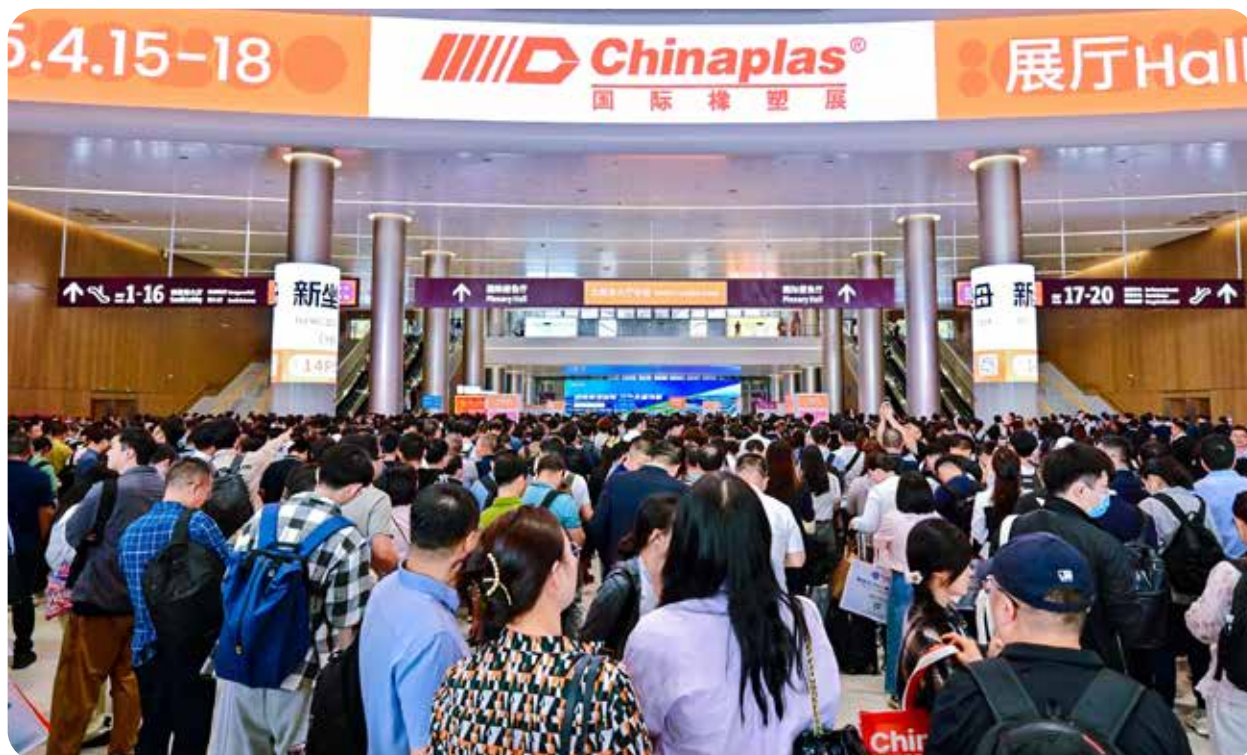


Gist of Trade Show

A series of more than 20 concurrent events like "Sustainable Plastic Packaging Forum", "SciXplore Forum", etc. attracted overwhelming attendance from industry professionals and the management of enterprises.

The "innoGreen Hub", one of the concurrent events, was held for the first time. Focusing on high quality

production of automotive, electronics and electric, medical and packaging applications, this event will showcase cutting-edge injection molding production line, and explore in depth innovative design, research and development of materials, as well as inventive applications behind.





Some of the Innovation- Product launches at ChinaPlas 2025

SK Chemicals showcased their sustainable material solutions at CHINAPLAS 2025, emphasizing commercially available products and technologies rather than future

plans. Their booth, under the slogan “On-hand solution for a sustainable tomorrow,” focused on circular recycled materials, bio-based materials, and copolyesters.

Key highlights of SK Chemicals’ at CHINAPLAS 2025

- **Circular recycled materials:**

They featured a lineup of recyclable materials, including the world's first chemically recycled materials, utilizing depolymerization technology.

- **Bio-based materials:**

SK Chemicals showcased ECOTRION, a 100% plant-based bio polyol, and other products like ECOZEN and SKYGREEN.

- **Copolyesters:**

They presented SKYPEL, a polyester-based elastomer, and its applications in various industries.

- **Practical and scalable solutions:**

The company highlighted its commitment to providing readily available, sustainable solutions for a circular plastic ecosystem.



LG Chem

LG Chem showcased its Low Glossy ABS (High matte and skin-friendly texture ABS plastic) that can provide superior matte and skin-friendly texture, and cost reduction and efficiency. It can be used in the case of high-gloss mold, so that the final injection product has a high-level matte texture, the gloss can be ensured in 10~20° (degree). Low Glossy ABS is mainly used in high-end home appliances and other fields.

At the same time, matte ABS is closer to skin texture than high-gloss ABS, so it is also known as skin-friendly ABS. At present, LG Chem's matte ABS has been widely used in the world's leading home appliance companies and has been well received.



Useon Technology Limited's EC Series Twin Screw Extruder

Useon Technology Limited's showcased the EC series twin-screw extruder that is tailor-made for small to medium-scale production users, equipped with a new permanent magnet direct drive motor and an efficient transmission system. Compared to traditional asynchronous motor equipment, energy consumption is reduced by approximately 11%. Whether it's high-

efficiency output or quiet operation, the EC series embodies the concept of "just right, is efficient" in every detail. Based on the large-scale production line control architecture, every alarm and every adjustment are clearly visible with precise feedback.



ZhongyunTech

Zhongyun Tech's specific launches highlighted particularly focusing on areas like low-carbon manufacturing, recycling solutions, and intelligent manufacturing.

Presented its ultra-strength socket for double wall corrugated pipes, designed to improve strength and sealing.

The ZhongyunTech K socket is designed to enhance the strength of corrugated pipe sockets by improving their structural design, effectively doubling the strength compared to standard double-layer sockets. This new design minimizes socket deformation during storage and transportation, and improves sealing performance to prevent leakage



Yizumi Rubber Machinery's A3 Series Rubber Injection Molding Machine

Yizumi Rubber Machinery Co Limited showcased its A3 Series Rubber Injection Molding Machine with applications across industries like Aerospace, Aviation, Railway Transport, E&E, IT & Telecommunication, Automotive, New Energy Building Materials, Packaging, Daily Chemicals, Sports & Leisure, Food & Beverage, Optoelectronics, Medical and alike.

The Machine is simple in design, showcasing Industrial aesthetics with streamlined processes, initiating efficient

operations having good visibility and accessibility, facilitating convenient maintenance. The Machine has energy - efficient design, practicing 'Green Development' with a cutting - edge Plasticizing and Injection, pioneering new technological chapters that provides intelligent Control Center, ensuring efficient production

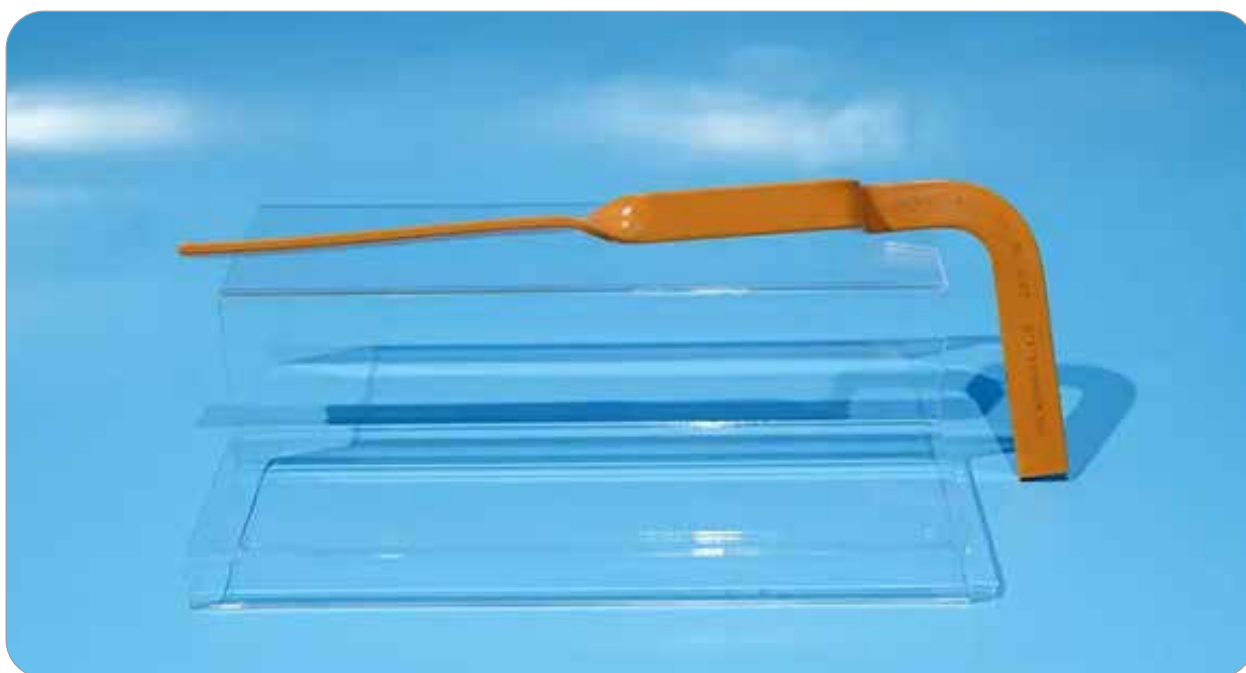


BASF's Ultramid® Solutions for Extrudable Busbar Insulation

BASF's solution for extrudable busbar insulation is a material designed to meet market demands. It offers a broad processing window, good extrudability, reliable bending performance, effective insulation, anti-aging properties.

The BASF solution integrates with mainstream long-chain PA, ensuring production efficiency with minimal adjustments. Its extrudability and thickness control enable precise insulation layers. The material's bonding strength with metal prevents bulging at bending corners, which is important for EV battery

busbars. It maintains a smooth appearance after bending. With high initial resistance and dielectric performance under DC5000V, the BASF solution prevents electric breakdowns at high voltages. It retains insulation even after a 7-day water bath, suitable for moist environments. Operating effectively from -40 to 125°C, the BASF solution withstands harsh conditions while maintaining stable performance, ensuring durability in extreme temperatures and prolonged exposure to stressors.



BioLogiQ Elite (HK) Limited

The company showcased Plant-Based & Sustainable Materials for Non-Woven Applications. BioLogiQ has 43 patents issued worldwide and 3 core patents for advancements in non-woven materials (XN series).

The XN Series are designed to maintain the high performance of conventional non-woven materials made from polypropylene while significantly improving their environmental profile. They can be utilized on current commercialization without modification. The versatility of XN Series was demonstrated across various non-woven applications, e.g., lightweight spunbond fabrics for hygiene products; durable materials for isolation gowns/reusable bags; and melt-blown/bi-component fibres.

The XN Series for nonwoven applications represents a unique technology invented by BioLogiQ - utilizing sustainable feedstocks and reducing reliance on fossil-based materials, plastic pollution and carbon footprint. The success of BioLogiQ XN series was well recognized, including the Gold Award at the 4th Asia Exhibition of innovations and inventions Hong Kong 2024 and the Jury Award at the Hong Kong Sustainable Development Innovation and Technology Award 2025.



From the technological innovations to market trends and from sustainable development to industrial advancement, these activities served as a bridge for in-depth interaction, accelerating the conversion and application of technological achievements, leading the plastics and rubber industries to a more far-sighted and strategic direction.

Next year, the 38th International Exhibition on Plastics and Rubber Industries, will be held from April 21-24, 2026, at the National Exhibition and Convention Center (NECC) in Hongqiao, Shanghai, China. ■

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Defining Medical Grade Plastics & Selecting Right Materials For Medical Applications

Defining Medical Grade Plastics Materials

MEDICAL STORY



D L Pandya
CEO, Medical Plastics Data Service
Vice President, SPE India Medical Plastic Division

It is interesting to know that a globally accepted, agreed-upon definition and standard does not exist.

Globally, the vast majority of polymers produced are used in industrial and consumer segments, with only a small percentage of the polymer volume being used in medical devices. In order to differentiate grades supplied into the medical device market, raw material suppliers distinguish these materials as “medical grade.”

Currently there is no regulatory definition of a medical grade polymer and no prescriptive regulatory requirements for raw materials used in medical devices, so material suppliers and others in the medical device industry have assigned their own meaning to “medical grade polymer.”

The manufacturer of a medical device can therefore theoretically choose any kind of plastic for a given application, so long as the manufacturer has ensured that the material complies with the various regulatory requirements.

In Practice, medical device manufacturers or manufacturers of Medical / Pharmaceuticals packaging materials select polymers that are recertified. Considerations are given not just to product specification and required performance attributes but the robustness of quality systems, manufacturing consistency, management of changes and understanding the possible implications on a finished device so the process is well managed by the supplier and effective communication systems are in place.

What Is a Medical Grade Plastic ?

Polymeric plastics and refined plastic preparations and formulations (master batches, blends, com-pounds) are called “Medical Grade Plastics” (MGP) when they are intended for use by a given manufacturer in the manufacture of finished products in the following application areas:

- Medical devices in accordance with Regulation (EU) 2017/745
- In-vitro diagnostics in accordance with Regulation (EU) 2017/746
- Primary pharmaceutical packaging in accordance with various guidelines

Plastics are further subject to thermal, mechanical, and radiation stresses that can affect the properties of the plastic.

Regulatory Requirements Of Medical Grade Plastics

This includes relevant tests on the medical device, such as tests relating to biological requirements, e.g., using a biocompatibility test in accordance with the DIN EN ISO 10993 series of standards and/ or United States Pharmacopoeia (USP) Class VI, tests relating to chemical requirements, such as permissible limits for metal ions, which are laid down in the relevant product standard, tests relating to the requirement for sterilization of the product, e.g. resistance to radiation, ethylene oxide or steam sterilization, physical and technical tests that arise from client requirements or are stipulated by the relevant product standard, and tests relating to packaging requirements.

Common considerations in polymer selection are shown below:

- Biological Performance : Biocompatibility, Biostability, Hemocompatibility , Infection risk
- Application Performance : Strength , Flexibility , Fatigue resistance
- Heat and/or electrical resistance
- Chemical Resistance : Cleaning product resistance , Drug resistance
- Sterilization stability , Processability
- Thermal methods (extrusion, molding, forming)
- Solvent (casting, dipping, spinning)
- Secondary assembly (reflow, bonding)
- Compatibility with other materials within the device
- Regulatory and Compliance Requirements

Questions To Be Asked

- Does the material contain REACH, RoHS or other substances of concern?
- Has the material been used in devices cleared by regulatory agencies?
- Cost: Volume specific pricing , Annual access, licensing and/or royalty fees

Medical Device development requires a long-term endeavor requiring rigorous testing , quality control systems and compliance to an ever-evolving set of domestic and global regulatory requirements.

With the growing need for new and innovative devices, selecting right Materials has become more critical. There are hundreds of polymers to choose from, but where do we start from?

The material selection process requires a preliminary understanding of polymers, additives and their properties.

Benefits of Preselection

Preselection is a valuable tool for helping product designers find materials that comply with safety standards. It greatly reduces time and cost associated with final end product testing, certification and development thereby speeding time to market. Also helps manufacturers maintain a competitive advantage turnaround time. It allows product designers to determine the function of a component in the end product application.



Selection based on polymers meeting following environmental and mechanical/physical requirements.

Application Based Considerations

- Should the material be biocompatible?
- Will the component be in contact with body tissues or drugs? If so, for how long?
- Is the product a single use instrument/device?
- Will the component undergo sterilization? If so, which method of sterilization will be used? How frequently will it be sterilized?
- Will any other chemicals/solvent vapours be in contact with the product (wiped/submerged) as part of hospital cleaning?
- Will the device be painted/electroplated /glued?
- To what humidity and temperature (maximum and minimum) will the product be exposed? How long will it be exposed?
- Is dimensional stability in a wet or humid environment critical? What tolerances must be met?
- Is UV resistance needed?
- Does the device need to be visible under a fluoroscope or X-ray?
- Is flame retardability a requirement?
- Is the colour of the material is an important factor?
- Will the part be used outdoors?

Functional and Mechanical Considerations

- What are the overall parts dimensions (diameter, length, width, thickness)? Is dimensional stability a factor to be considered?
- What load will the part have to carry? How long will the load to be applied? Will the load be continuous or intermittent?
- What is the maximum stress on the part? What kind of stress is it (tensile, flexural, etc.)?
- Is toughness or impact resistance critical during use?
- Will the material be used as a bearing? Will it need to resist wear? What wear or abrasion conditions will the material see?
- Is the product going to be used as an electrical insulator?
- What are the manufacturing processes/options available?
- If it is a moulded component, does it make use of any of these techniques: micro moulding, over moulding, insert moulding, gas assisted moulding or in-mold decoration?
- What is the target cost of the component?
- What is the projected life of the part or design?
- What other mechanical properties are required?
- Are static dissipation / conductivity / dielectric properties required?
- Which manufacturing technique is going to be used for producing the final component?



Sr No.	Application of Medical Devices	Polymer Selection
1.	Non-contact with human body , e.g. syringes, blood storage bags, glucose drip bags	PVC,PA,PE,PS, Epoxy resins
2.	Short-term contact with human body , e.g. catheters, feeding tubes, drainage tubes, surgical instruments	Silicone rubber, Natural rubber, PVC, Polyurethane, PE, PP, Polyester, PEEK, Polyphenylsulfone, Nylon, Teflon, PeBax
3.	Medium term contact with human body , e.g. cultures, ligatures	Nylon, PP, Polyester
4	Long term contact with human body , e.g. implants, drug delivery devices	PE, UHMWPE, PET, Silicone rubber, Polyurethane, PMMA, Polysulphones, Hydrogels Polyphosphazenes, Thermoplastic elastomers, Polydimethylsiloxane

Manufacturing Feasibility

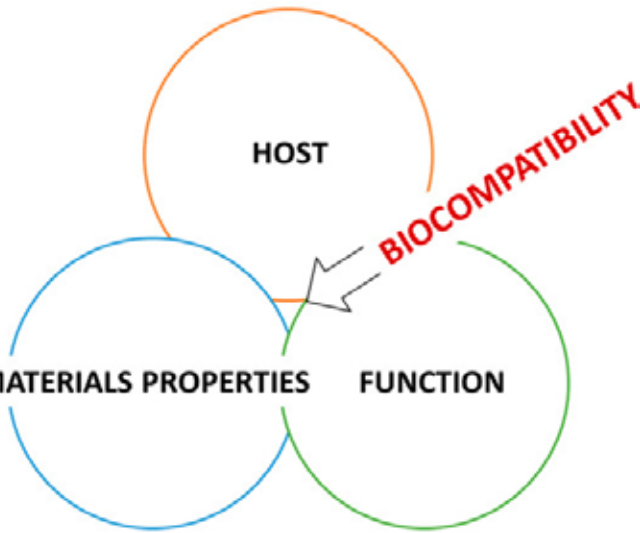
This is another factor, based on which plastic materials need to be identified for a particular product, the same way thermoplastic and thermosetting plastics are produced using different manufacturing processes.

It is all very well to choose the perfect material, but somehow we have to make something out of it as well!

An important part of understanding a product is to consider how it was made. In other words, what manufacturing processes were used, and why?

There are two important stages to selecting a suitable process:

- Technical performance: Can we make this product with the material, and can we make it well?
- Economics: If we can make it, can we make it cheaply enough? ■



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- VDI 2017 draft Standard on “Medical Grade Plastics”.
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- An article on “Understanding The Complexities of Medical Grade Plastics” by Jennifer Green , Technical Marketing Manager, Medical Polymers , “Lubrizol Life Science Health, Medical Devices, USA as published in “MEDICAL PLASTICS DATA SERVICE” , Vol. 28, No. 5.

The Plastindia International University

Responsible Upcycling Of Bio-Medical Plastics-Waste Into Value-Added Products Is Most Important - Dr. Pol

The Plastindia International University (PIU), Vapi, recently conducted a session by Dr. Harshawardhan Pol, Senior Scientist, CSIR-NCL, Pune, to address the escalating problem of biomedical plastic waste, specifically from PPE kits.

Responsible upcycling of bio-medical plastics-waste into value-added products is most Important says Dr. Harshawardhan Pol, Senior Scientist, CSIR-NCL, Pune. Addressing a technical session at the Plastindia International University (PIU), Dr. Harshawardhan Pol, focused on an innovative and timely initiative undertaken by CSIR-NCL during the peak of the COVID-19 pandemic to tackle the escalating problem of biomedical plastic waste, specifically from PPE kits then.

Dr Pol said, "The massive surge in biomedical waste was due to the widespread use of single-use PPE suits made primarily from polypropylene. Moreover, most of this waste was being incinerated to prevent viral transmission, following Central Pollution Control Board (CPCB) guidelines, that was then challenging, both environmental and logistical, due to the high volumes generated."

Dr. Pol highlighted the broader implications for India's plastic waste management, pointing out that while per capita plastic waste generation in India is significantly lower than in developed countries, the lack of efficient recycling infrastructure and waste segregation systems remains a key challenge.

The project not only provided a scalable model for

biomedical plastic waste recycling but also underlined the importance of circular economy practices in tackling future pandemics and plastic waste crises.

Dr Pol stated that the project aimed to develop a sustainable and circular approach to manage this waste by establishing a decontamination and recycling process. The proposed methodology involved collecting used PPE suits, decontaminating them using CPCB-approved autoclaving, followed by shredding, washing, agglomeration, and processing into value-added plastic products through injection moulding.

Initial trials using unused PPE suits subjected to autoclaving showed that the mechanical and thermal properties of the polymer remained largely unaffected, validating the feasibility of recycling after proper decontamination.

The autoclave energy intensity along with the need to explore more energy-efficient decontamination alternatives in the future was emphasized upon during the talk. The team successfully converted shredded and agglomerated PPE material into injection moulded products such as garden pots and plastic grower trays.

They also explored blending the recycled material with virgin polypropylene and incorporating fillers like talc (up to 20%) to enhance mechanical properties. These blends exhibited comparable melt flow index and tensile strength to virgin polymers.

To scale the initiative, a 100 kg pilot recycling trial was conducted in Pune, despite strict restrictions from the Maharashtra Pollution Control Board (MPCB) during the pandemic. With persistent effort, the team obtained permission and collaborated with key stakeholders



including Passco Environmental Solutions Pvt. Ltd., a biomedical waste management co., Reliance Industries, and several plastic processing industries.

The project involved companies such as APPL, Urmilla Polymers, SKYI Composites, Harshdeep, and Jaihind Autotech ensuring end-to-end processing from waste collection to product development.

The Indian Institute of Petroleum (IIP), Dehradun, also participated by demonstrating both mechanical and chemical recycling of PPE waste into value-added products such as mugs, waxes, pyrofuels, and oils.

The initiative successfully demonstrated that single-

use biomedical plastics, if managed properly, can be upcycled into useful industrial and consumer goods without significant loss in performance.

With a distinctive education model that offers 100% job assurance from Day 1 and merit-based scholarships of up to 100%, PIU is setting a new benchmark in industry-aligned and inclusive higher education. Beyond the classroom, PIU faculty conducted seminars in over 45 schools and 6 polytechnic colleges across Gujarat, Maharashtra, and Silvassa, engaging with hundreds of students and promoting careers in polymer science.

Through Its Academic Structure, Corporate Partnerships, And International Exposure, The University Is Nurturing A New Generation Of Professionals Who Are Technically Sound, Industry-Ready, And Aligned With India's Plastics Export Ambitions. ■



Aramco Likely To Pick 20% In New Andhra And Gujarat Refineries

Saudi Aramco may pick up 20% stakes each in the two new large refineries being planned by India's state-run ONGC and BPCL on the country's west and east coasts respectively. Aramco has been one of the major exporters of crude into the country for decades, and downstream investments in the country are seen to cement the ties. According to reports, the two refining facilities, each with a capacity to process 12 million tonne of crude annually, will be set up at a cost of roughly Rs 1 lakh crore each. Though the details are still being worked out, Aramco's initial investment in both the units could be around Rs 24,000 crore (around \$2.8 billion at current exchange

rate), including a debt component commensurate with the equity, informed sources told FE. The investments could later be jacked up to \$5 billion. The move would end the long wait for the world's largest oil and gas company's entry into India as an investor. Both projects would likely have a debt-equity ratio of 7:3. While an in-principle agreement was arrived at between the two countries to set up the refineries in India during prime minister Narendra Modi's visit to Riyadh on April 23, the modalities are being worked out. ■



HUL Acquires Stake In Lucro Plastecycle

Hindustan Unilever Limited (HUL), an India-based subsidiary of consumer goods company Unilever, has acquired a 14.3% stake in a Mumbai-based recycler of flexible plastics, called Lucro Plastecycle. Hindustan Unilever said in a statement the investment is a step forward towards its sustainability goals to scale up the use of recycled flexible plastic content in packaging, in line with the Indian Government's vision of zero plastic waste future. However, the terms of the deal were not disclosed. According to reports, the investment aims to strengthen plastic circularity by increasing the availability of recycled content for flexibles, providing a roadmap for businesses to move towards sustainable plastic packaging and address the challenge of hard-to-recycle flexible plastic. Lucro collects, sorts and recycles difficult-to-manage flexible plastic into recyclates, both for use in its own production and for third-party sales. Its proprietary de-inking, dry wash, and deodorising solutions remove ink, absorb oil and contaminants, and eliminate odours from

granules making it easier for brands to adopt Lucro's PCR material.

"At Lucro, we turn the challenge of recycling post-consumer flexible plastics into an opportunity to create high-quality, recycled plastics while driving the circular economy," said Ujwal Desai, Managing Director, Lucro Plastecycle. "This investment by HUL paves the way for increasing our recycling capacity, driving large-scale commercial adoption of post-consumer resin and setting a new benchmark for sustainable plastics.", he added. ■



Borealis Invests \$113m In New HMS PP Line In Germany

Borealis, a polymer solutions provider, has made an investment exceeding €100m (\$113.6m) for a new high melt strength polypropylene (HMS PP) line at its Burghausen facility in Germany. The new line will produce an innovative polymer foam solution called Daploy HMS PP and triple the company's supply capability for fully recyclable HMS PP, catering to the increasing demand for high-performance foam solutions that are environmentally friendly. The material solutions are used in consumer products, as well as the automotive and building and construction industries. The expansion is set to commence operations in the second half (H2) of 2026. Borealis polyolefins, circular economy solutions, and base chemicals executive vice-president Craig Arnold said, "In line with our We4Customers strategy, this investment creates value for customers by enabling them to design recyclable, foam-based products for a wide range of high-performance applications."

"By expanding production, we're ensuring a reliable supply of this advanced material to help our customers achieve their sustainability goals and deliver high-performance solutions.", he added. Daploy HMS PP's versatility reportedly makes it suitable for a range of consumer products, including reusable coffee cups and food packaging, aligning with the EU Packaging and Packaging Waste Regulation. The solution, developed at Borealis' Innovation Headquarters in Linz, Austria, is designed for recycling and offers lightweight properties alongside mechanical strength. Together, these features contribute to material efficiency, cost reduction, and lower carbon dioxide emissions, making it an ideal choice for monomaterial solutions that are easily recyclable at the end of their life cycle. ■



NOVA Launches Its First PE Film Recycling Facility In Indiana



NOVA Chemicals has commissioned its first polyethylene (PE) film recycling facility, referred to as SYNDIGO1, located in Connersville, Indiana, US. The facility is claimed to be one of the most advanced of its kind globally, spanning 450,000ft².

It is expected to recycle 145,000 bales of end-of-life plastic film annually, producing over 100 million pounds of recycled PE suitable for various packaging applications. The facility is set to be fully operational by early 2026 and will play a significant role in mechanically recycling PE film and producing high-quality recycled PE. SYNDIGO1 will source high-quality feedstock by collaborating with major US retailers and distribution centres to collect back-of-store polyethylene film. This process will divert, on average 400 bales of plastic film each day from landfills, equivalent to filling four professional football fields annually. The recycled plastic film will be processed into pellets and sold as NOVA Chemicals' SYNDIGO recycled linear, low-density polyethylene (rLLDPE), meeting FDA compliance for a range of food packaging applications. This initiative supports the circular economy by adding recycled content to food packaging, from pantry staples to freezer items. In conjunction with the facility's opening, NOVA Chemicals has contributed \$25,000 to the Fayette Community Foundation to establish the NOVA Chemicals Community Impact Fund. This fund will support local initiatives, with the Lilly Endowment's GIFT

VIII initiative providing an additional \$50,000 through a matching grant. NOVA Chemicals CEO Roger Kearns said: "At NOVA, we have decades of experience in developing products that make our lives better. As of today, we're not only a petrochemicals producer but also a recycler of polyethylene. We're diverting plastic waste from landfills and turning it into new, quality products that help keep our food fresh or safely transport goods and materials to store shelves." The facility's mechanical recycling process received a letter of non-objection from the US Food and Drug Administration in 2024, confirming its ability to produce rLLDPE suitable for food-contact applications. By April 2025, the facility had achieved Recycled Material Standard certification, verifying that the recycled polyethylene produced is 100% post-consumer recycled content. NOVA Chemicals is partnering with manufacturers and distributors, including Charter Next Generation, M.Holland, Osterman & Company, Petoskey Plastics, PolyExpert, Pregis, Sigma Plastics Group, and Winpak, to incorporate recycled polyethylene into flexible packaging. With the demand for post-consumer recycled plastic expected to triple by 2030, NOVA Chemicals' survey indicates strong consumer support for increased use of recycled material in packaging. In July 2023, NOVA Chemicals unveiled its plans to build the facility and collaborate with Novolex for its operation. ■

Amcor Builds New Coating Facility In Malaysia



Amcor, a global leader in developing and producing responsible packaging solutions, today announced that it has completed construction of its advanced coating facility for healthcare packaging in Selangor, Malaysia. This state-of-the-art facility is the first in Asia to leverage cutting-edge air knife coating technology, strengthening the supply of high-quality, sterile packaging for healthcare customers across the region.

The new facility expands Amcor's existing healthcare packaging plant in Selangor, creating an integrated campus that makes Amcor the first in Asia to produce both top and bottom substrates for medical device packaging. This development delivers critical benefits to customers, including enhanced supply chain resilience and reduced lead times. Equipped with advanced technologies such as water-based coating systems, online inspection systems and air knife technology, the facility sets new standards for precision and efficiency. The air knife technology, in particular, uses high-speed air streams to ensure uniform coating application, enhancing product consistency and reducing material waste. "Amcor's investment in this new facility reflects our unwavering commitment to support our customers across the Asia Pacific region," said Chris

Kenneally, president of Amcor Flexibles Asia Pacific. "By introducing advanced coating technology and boosting local production capacity, we are better positioned to meet the growing regional demand for sterile, reliable packaging and to offer our customers greater flexibility and security." "Producing our industry-leading global product platform locally brings us closer to our customers, enhancing supply security and flexibility," said Virginie Maes, vice president of global healthcare, Amcor. "By investing in advanced coating technologies and expanding our regional capabilities, we are not only addressing the growing demand for high-performance healthcare packaging but also reinforcing our promise to deliver a consistent and innovative value proposition to our customers worldwide." This new facility is part of Amcor's broader commitment to expanding its healthcare capabilities in the Asia Pacific region. ■

New York Passes Packaging Reduction And Recycling Infrastructure Act

The New York State Senate has passed the Packaging Reduction and Recycling Infrastructure Act, a sweeping bill aimed at tackling plastic pollution and shifting the financial burden of waste management from taxpayers to manufacturers. Approved by a 33-25 vote, the legislation seeks to reduce single-use plastic packaging by 30%, ban 17 toxic substances used in packaging, and create a new oversight body to enforce compliance. The bill now moves to the State Assembly for further consideration before the legislative session ends in June. The legislation mandates a phased reduction in plastic packaging over 12 years, with the goal of cutting packaging waste by nearly a third. By 2052, all packaging materials—including plastic, paper, glass, metal and cardboard—will be required to achieve a 75% recycling rate, with progress tracked through a series of interim benchmarks. The act also prohibits the use of several hazardous chemicals often found in packaging, such as PFAS, polyvinyl chloride (PVC), lead and mercury. These chemicals have been linked to environmental harm and health risks, including cardiovascular disease and cancer. The bill rejects the inclusion of chemical recycling as an acceptable form of recycling under state law, citing its reliance on energy-intensive processes and fossil fuel outputs. A key feature of the act is extended producer responsibility (EPR), which shifts the cost of packaging waste management from municipalities to the

companies that produce it. Producers will be required to pay a fee to help fund recycling infrastructure and waste reduction initiatives.

According to reports, the law is projected to save New York taxpayers \$1.3bn over the next decade by reducing landfill and incineration costs. These financial savings do not account for the revenue generated from producer fees, suggesting additional long-term economic benefits. Over 300 organisations and businesses, including NYPIRG, Environmental Advocates NY, and the League of Women Voters, have endorsed the legislation. More than 30 municipalities across the state, including New York City, have issued formal resolutions backing the bill. Moreover, supporters point to the growing environmental and health risks associated with plastic pollution. Scientific studies continue to uncover the widespread presence of microplastics in human bodies and natural ecosystems. As plastic production is expected to double globally over the next two decades, legislators and environmental advocates argue that strong state-level action is essential. The Assembly is expected to take up the bill in the coming weeks, with Speaker Carl Heastie indicating it will receive a floor vote this session. ■



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UK Initiates EPR Amendments For N. Ireland



The UK Government has initiated the formal process of notifying the European Union about planned amendments to the Extended Producer Responsibility (EPR) for packaging regulations in Northern Ireland. This step marks the beginning of a legislative timeline that aims to implement the changes before the second year of the scheme begins. According to a government update, the amended regulations are scheduled to be introduced in Parliament in November 2025. The changes will build upon the existing framework of the packaging EPR scheme, which is designed to hold producers accountable for the full lifecycle costs of packaging waste.

By notifying the European Union under the terms of the Windsor Framework, the UK is meeting its obligations to ensure regulatory alignment in Northern Ireland for areas covered by the Protocol. The amendments are expected to take effect ahead of the scheme's second operational year, beginning in 2026. In developing the amendments,

the government said it had engaged extensively with stakeholders from across the packaging supply chain, including manufacturers, retailers, waste management firms and local authorities. Feedback received during this process influenced the proposed revisions, although specific changes have not yet been publicly detailed.

The update noted a commitment to ongoing dialogue with industry and public sector partners as the legislative process continues. The Department for Environment, Food and Rural Affairs (Defra) has also made a full policy update available online, outlining the background and next steps for the amended regulations. ■



Steve Reed
Environment Secretary

APR And ECOCE Sign A MoU To Improve Plastic Packaging Recyclability



The Association of Plastic Recyclers (APR) and ECOCE, a Mexican environmental organisation, have signed an MoU announcing a partnership to enhance plastic packaging recyclability. This collaboration will focus on sharing information, building stakeholder relationships, and developing joint projects in the North American region.

The organizations plan to align in the following areas: i) Bilateral sharing of information regarding trends, regulatory frameworks, studies, statistical data, operational strategies, and media campaigns, ii) Public and private stakeholder relationships, iii) Joint development of projects in the North American region.

APR and ECOCE will work together to create a Spanish version of the APR Design Guide for Plastics Recyclability. The guide will be adapted to reflect the unique recycling infrastructure in Mexico. Additionally, the APR Design Training Program will be expanded to include Spanish-language resources, promoting the APR

Design Recognition Program in Mexico. “APR is pleased to formalize our relationship with ECOCE as we work to align plastic design for recyclability across the globe,” said Steve Alexander, President & CEO, APR.

While, COCE general director Jorge Terrazas Ornelas said, “The signing of this MOU [memorandum of understanding] reaffirms our commitment to advancing a more sustainable model of production and consumption.”

“Through our collaboration with APR, we seek to accelerate the adoption of international standards that improve packaging recyclability in Mexico.”, he added. ■

Steve Alexander
The Recycling Partnership



Sintex Launches India's 1st CPVC Antimicrobial Pipes

Welspun Sintex has launched India's first CPVC antimicrobial pipes under its Sintex brand, a move that highlights the company's focus on water quality and health. This launch is part of Sintex BAPL's broader expansion into plastic pipes, with an investment of INR 2,355 crore planned to capture 5% of the market share in the next seven years. The company also plans to diversify into more specialized water treatment in the future. Sintex is the first to introduce CPVC pipes with antimicrobial properties in India, emphasizing the importance of clean water. The launch is part of a broader strategy to expand into plastic pipes, including CPVC,

UPVC, HDPE, and OPVC, to cater to the growing water distribution segment. The company with the launch of 1st CPVC antimicrobial pipes, is also highlighting the health aspect in the water story. Mr. Yashovardhan Agarwal, Managing Director, Welspun BAPL, & Director, Sintex stated, "This year, we launched our much-anticipated CPVC pipes with antimicrobial properties, which will gain traction and achieve market share. The Pipes come with Sintex NXT Advantage, offering built-in protection with antifungal, antibacterial, antimicrobial and antiviral properties, ensuring hygiene and safety." ■



Innovia Americas Adds Surface Engineering Capability

Innovia Films, a leading materials science pioneer that manufactures BOPP films for labels, graphics, packaging and tobacco, has announced the launch of a new film coating line at its Zacapú plant in Mexico and will also add enhanced metallizing capabilities later this year. "In addition to the brand new coater and metallizer, we have also invested in a dedicated slitter to slit rolls to customer widths, roll handling equipment, laboratory equipment and last but not least, IT infrastructure" explains Andrés Bernal, General Manager of the Innovia Zacapú plant. "These investments are the result of a strategic decision to produce various grades of surface engineered films locally in the Americas – some of these products have previously been imported from our European facilities. This will provide our customers with a local supply chain in reflection of the growing market opportunity, as well as broadening our portfolio". The coated and metallized film types to be produced in Mexico will be predominantly used as facestocks for Pressure-Sensitive Labels, some applications also target barrier applications for Flexible Packaging. "We can offer films with different functional coatings on each side

such as proprietary print coatings and on the other side adhesive receptive coatings -both of which are critical to make high-performance label constructions," says Juan Carlos Magaña Camacho, Coating Manager at Innovia Zacapú. "The new coated films are ideal for pressure sensitive labelling(PSL) in various markets such as food, beverage, home and personal care, healthcare and so on. Many of the products you find on supermarket shelves or in drugstores/pharmacies - where print quality and performance matter. The coatings are designed to be compatible with all industrial printing technologies," says Aaron Henneger, Vice President and General Manager for Innovia Films Americas.

"Basically, we now have the ability to offer a very modular principle when it comes to label facestock - we can control printability, and the use of special adhesives that are modified to support, for example, single-use glass or PET recycling. And on top of that, we offer metallized materials for barrier and printability - our customers have the ability to tailor materials to meet their label and packaging needs," concludes Henneger. ■



Elkhart Plastics Launches TUFF E-Series For Safe Liquid Handling



US-based custom rotational moulding company Elkhart Plastics has expanded its TUFF product line with the launch of the E-Series, a new durable and sustainable intermediate bulk container (IBC). The IBC is engineered for the protection of liquids during storage, transportation, and dispensing. The TUFF E-Series product line is manufactured at the company's facility in Indiana, US, and aims to assist businesses in managing regulated and nonregulated liquid materials efficiently. The E-Series stands out as a reusable and cost-effective alternative to traditional limited-use IBCs, which often contribute to excessive packaging waste and ongoing expenses, the company said. The TUFF E-Series features a rotomoulded base that is tough and impact-resistant, offering enhanced protection against rigorous use and helping to minimise replacement costs. This base design also aids in reducing product loss and waste by enabling 99.9% drainage. Additionally, the E-Series has the

TUFF LinQ Outlet Valve Connection, which is reportedly 30% stronger when tested against comparable brands. The valve connection includes an integrated male cam-lock fitting with a dust cap, designed to protect against leaks and reduce downtime.

The latest E-Series IBC provides a reliable solution for industries such as chemical manufacturing, waste management, and water treatment. Myers Industries sales vice-president Cullen Jones said: "The new E-Series builds on the proven strengths of our TUFF line and gives customers a smarter way to protect, handle, and store liquid materials." "It also reflects our commitment to innovation and quality. Reusable, environmentally responsible, and economically viable, the E-Series cuts waste, lowers costs, and delivers long-term value – setting a new standard for IBC performance in liquid handling." ■



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Country's Nine Plastics Parks To Be Ready By 2025 Year-End

The government is aiming completion of physical infrastructure at all nine plastic parks by end of 2025, according to Nivedita Shukla Verma, Secretary Chemicals and Petrochemicals. "The parks are in different stages of development. We are pushing for the completion of the physical infrastructure. By the end of this year, we want to complete the infrastructure in all nine parks," Verma said. The government has so far approved a total of 10 plastic parks under a central scheme that provides funding up to 50 per cent of the project cost, capped at Rs 40 crore per park. Currently, there is a stay order on one park in Tamil Nadu by National Green Tribunal. "While physical infrastructure is advancing in many parks, operationalisation remains slow. Out of nine parks, 3-4 parks are partially operational that include Tamot (Madhya Pradesh), Paradeep (Odisha) and Tinsukia (Assam). While the intention is try to complete the parks at the earliest, the secretary said it has taken a "little longer for the plastic parks because of issues related to land acquisition and coordination with the state governments." However, since last one-and-a-half year, the government is pushing state governments to complete the physical infrastructure in the parks. "So a lot of progress has taken place in the last few years," she added. The parks are designed to attract both domestic and foreign investment, enhance production and exports of plastic products, and create a robust ecosystem for plastic processing The Plastic Parks Scheme was launched in 2013, with approvals for parks in Tamot and Paradeep granted on October 9, 2013. The scheme has since expanded, with additional parks having been approved in subsequent years. ■



India Launches Mass Mobilisation Campaign 'End Plastic Pollution'

**'One Nation, One Mission:
End Plastic Pollution'**



The Union Environment Minister, Bhupender Yadav, has launched the 'One Nation, One Mission: End Plastic Pollution' campaign, a step towards combating plastic pollution across the country. The campaign, part of the government's broader Mission Lifestyle for Environment (LiFE) initiative, seeks to engage citizens in adopting eco-friendly habits and reducing plastic waste. Key thrust areas of the campaign focus on educating the public about the dangers of plastic waste, reducing plastic usage, enhancing waste management, and fostering the development of sustainable alternatives to single-use plastics. It aligns with Indian Prime Minister Narendra Modi's vision of promoting a sustainable lifestyle. The nationwide mobilisation will involve various stakeholders, including ministries within state and national governments, local bodies, educational institutions, civil society organisations, and community groups. The campaign will utilise diverse engagement methods such

as social media campaigns, competitions, marathons, and clean-up drives in public spaces. Additionally, the campaign will feature workshops, webinars, and educational activities to promote sustainable practices and support lasting behavioural change. Stakeholders are encouraged to align their activities with the campaign's objectives and report their contributions via the government's 'Meri LiFE' portal.

Yadav said on a social media post: "In the run-up to #WorldEnvironmentDay, @moefcc has launched a nationwide mass mobilisation campaign against plastic pollution today. "The campaign 'One Nation, One Mission: End Plastic Pollution' aims to nudge citizens to adopt eco-friendly alternatives as envisioned by PM [prime minister] Shri @narendramodi ji under Mission LiFE. Let's move from awareness to action collectively by embracing sustainable living and #EndPlasticPollution." ■



AIMPLAS Introduces Rapid Biodegradation Testing For Plastics

AIMPLAS, a plastics technology company based in Spain, has launched a new technique for assessing the biodegradability of plastic materials. The method reportedly speeds up the testing process, making it three times quicker than conventional approaches. This research was coordinated by the Plastics Technology Centre (AIMPLAS) with the participation of the Materials Technology and Sustainability Research Group (MATS) in the Chemical Engineering Department of the ETSE School of Engineering at the Universitat de València, and the company Prime Biopolymers. AIMPLAS points out that current biodegradation assessments are frequently laborious and costly. Such constraints can impede companies from investigating new formulations during the initial phases of product development. The project consortium therefore developed and validated an innovative methodological protocol that combines specific bioplastic formulations, various oxidative

pretreatment technologies and compost enrichment to speed up the bioplastics biodegradation process. The new testing method developed replicates industrial composting conditions to evaluate the transformation of polymeric carbon into carbon dioxide. This enables companies to receive preliminary findings in considerably shorter periods, aiding in the early detection of viable formulations. Although this test does not substitute the standardised assessments necessary for compostable product certification, it serves as a strategic filter. It allows businesses to optimise resources and make adjustments before proceeding to official certification processes. AIMPLAS asserts that this innovation also mitigates risk and hastens the journey to certification. The technique complies with international standards such as EN-ISO 14855, assisting companies in their sustainability initiatives. ■



Northwestern University Develops Non-Toxic Solution For Food Packaging



Researchers at Northwestern University, US, have developed a new graphene oxide-based water- and oil-resistant material for transforming food packaging. The solution offers a nontoxic, recyclable, and compostable alternative to harmful plastics and per- and polyfluoroalkyl substances (PFAS). The material improves the strength and barrier properties of paper-based packaging, making it a viable sustainable option for the food and beverage industry, according to the researchers. "Derived from graphene oxide, the material is non-toxic, environmentally friendly and affordable. When applied to paper-based food and beverage packaging, the material not only provides exceptional barrier properties but also significantly enhances the product's overall strength. This could mean an end to flimsy paper plates and soggy takeout containers. After use, packaging treated with the material can be readily composted or recycled—closing the loop on a truly sustainable solution.", says Timothy Wei, the co-researcher. GO-Eco, a subsidiary of Chang Robotics, is commercialising this patent-pending product, which is claimed to have outperformed current market solutions in third-party evaluations. The material's development is a collaborative effort between Northwestern's mechanical engineering adjunct professor and Chang Robotics chief scientist Timothy Wei, and chemistry professor SonBinh Nguyen. Extensive testing has demonstrated that the application of small amounts of graphene oxide

enhances the barrier performance and strength of various packaging types by 30 to 50%, without incurring a significant cost increase.

GO-Eco, with support from the InQbation Lab, Northwestern's Office of Undergraduate Research, The Alumnae of Northwestern University, and an exclusive licensing agreement with Northwestern, is now moving towards commercialisation. GO-Eco's advancements have led to funding from a national tableware manufacturer and partnerships for further development. The team's next steps involve scaling up production, pursuing regulatory approvals, and conducting full-scale production trials to bring this sustainable solution to the global market. Wei said: "This is not just a materials innovation; it's a market-ready solution." "We are thrilled to be taking GO-Eco from the lab to the factory floor, with applications that could ultimately transform the entire food packaging industry." The US produces an estimated 14 million tonnes of paper-based food packaging and corrugated cardboard annually, contributing to more than \$60bn in sales. Traditional packaging often relies on environmentally harmful coatings for water and oil resistance. However, Northwestern's graphene oxide material is claimed to offer a safe and cost-effective alternative, aligning with increasing regulatory pressures to eliminate toxic substances. ■

Polymer – Vitrimer Help Develop New Electrically Recyclable Circuits

Michael Bartlett, associate professor of mechanical engineering, and Josh Worch, assistant professor of chemistry, come from different fields, but together with a Polymer – vitrimer have created a new class of circuit materials. With significant work from their team of postdoctoral and graduate student researchers, including Dong Hae Ho, Meng Jiang, and Ravi Tutika, the new circuits are recyclable, electrically conductive, reconfigurable, and self-healing after damage. Yet they retain the strength and durability of traditional circuit board plastics -- features rarely found together in a single material.

The new material starts with a vitrimer, a dynamic polymer that can be reshaped and recycled. This versatile material is combined with droplets of liquid metal that do the work of carrying the electric current, the way rigid metals do in a traditional circuit.

This is a fundamentally different approach from other recyclable or flexible electronics. By combining the high-performance, adaptable polymers with electrically conductive liquid metals, the new circuit holds up under a host of challenges.

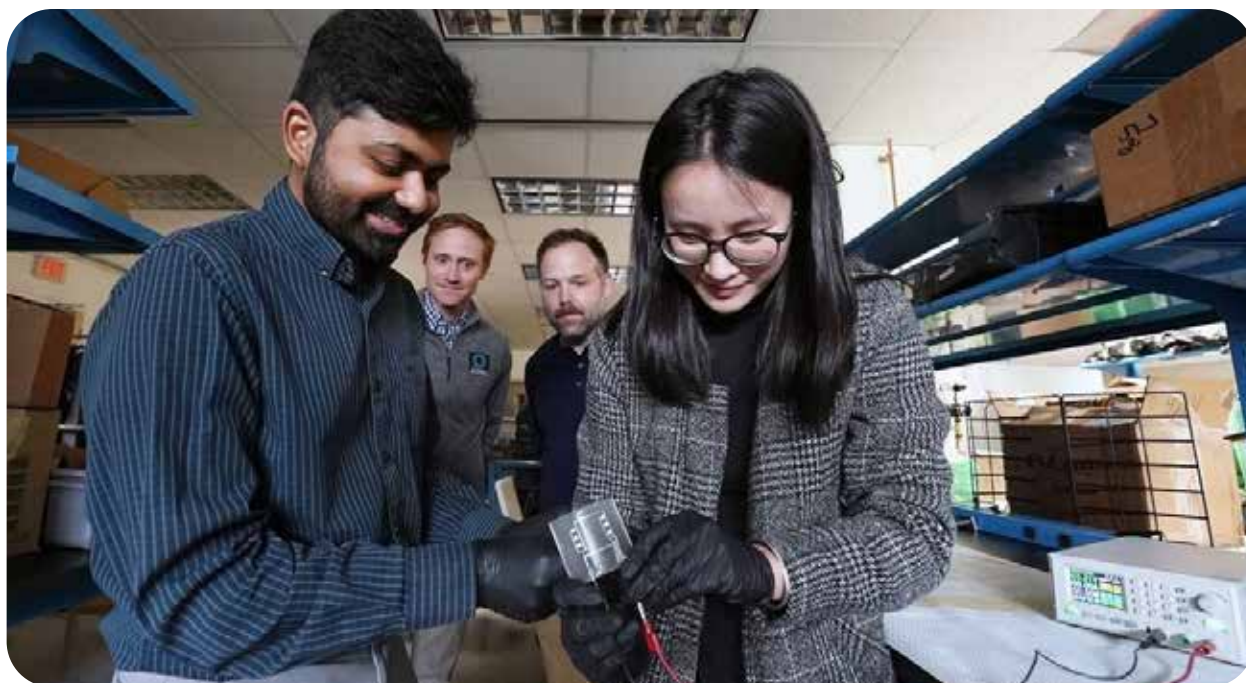
"Our material is unlike conventional electronic composites," said Bartlett. "The circuit boards are remarkably resilient and functional. Even under mechanical deformation or damage, they still work."

Recycling traditional circuit boards involves several energy-intensive deconstruction steps and still yields large amounts of waste. Billions of dollars of valuable metal components are lost in the process.

Recycling the team's circuit board is straightforward and can be accomplished in multiple ways. The vitrimer circuit boards also can be deconstructed at their end of life using alkaline hydrolysis, enabling recovery of key components such as the liquid metal and LEDs. Fully reusing all components of the conductive composites in a closed-loop process remains a goal for future research.

"Traditional circuit boards are made from permanent thermosets that are incredibly difficult to recycle," said Worch. "Here, our dynamic composite material can be healed or reshaped if damaged by applying heat, and the electrical performance will not suffer. Modern circuit boards simply cannot do this." While it may not be possible to curb the amount of electronics that are discarded by the world's consumers, this work represents a key step toward keeping more electronics out of landfills.

But a new study in Advanced Materials by two Virginia Tech research teams offers a potential solution to the e-waste problem: a recyclable material that could make electronics easier to break down and reuse. ■





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25th - 27th June 2025

Saigon Exhibition And Convention Center,
Ho Chi Minh, Vietnam

Plastics, Packaging, Printing Expo 2025

11th July - 13th July 2025

SS Convention, Vijaywada, Andhra Pradesh

Complast Kenya 2025

24th July - 26th July 2025

Kenyatta International Convention Centre,
Nairobi, Kenya

Total Plastics Expo 2025

1st Aug - 03rd Aug 2025

Codissia Trade Fair Complex, Coimbatore

Complast Sri Lanka 2025

29th Aug - 31st Aug 2025

BMICH (Bandaranaike Memorial
International Conference Hall) Sri Lanka

RACE Recycling & Compounding Expo

10th - 11th September, 2025

NESCO, Mumbai, India

Vietnam Print Pack 2025

10th Sept - 13th Sept 2025

Saigon Exhibition And Convention Center,
Ho Chi Minh, Vietnam

Kplex 2025

11th Sept - 14th Sept 2025

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