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No	Exibitions	Date	Place	
1	CPhI North America	May 20-22, 2025	Pennsylvania Convention Center, Philadelphia	
2	CPhI Barcelona	TBD	Fira Barcelona Gran Via, Spain	
3	CPhI Middle East & Africa	Dec 10-12, 2024	Riyadh, Saudi Arabia	
4	CPhI China- Virtual CPhI	June 24-26, 2025	Shanghai New International Expo Center	
5	CPhI Japan	Apr 09-11, 2025	Tokyo, Japan	
6	CPhI Korea	Aug 26 - 28, 2025	COEX, Seoul, Korea	
7	CPhI India	Nov 25-27, 2025	Noida, India	
	MEC	S (Coating Show)		
1	Asia Pacific Coatings Show	Sept 3-5, 2025	Indonesia	
2	Saudi Arabia Coatings Show	May 13-15, 2025	Dammam Saudi Arabia	
3	Middle East Coatings Show	Apr 14-16, 2026	Dubai World Trade Centre	
4	Coatings For Africa	June 24-26, 2026	Johannesburg, South Africa	
		DYE+CHEM		
1	Dye+Chem Morocco International Expo	Nov 5-7, 2025	Morocco	
2	48rd Dye+Chem Sri Lanka International Expo	March 13-15, 2025	Colombo Sri Lanka	
3	Dye+Chem Bangladesh International Expo	Sept 3-6,2025	Bangladesh, Dhaka	
4	50th Dye+Chem Brazil International Expo	Nov 2025	Brazil	
	Rec	l Carpet Events		
1	Bangladesh Int'l Dyes, Pigments and Chemicals Expo	TBD	Dhaka, Bangladesh	
	Turke	ey (Arkim Group)		
1	InterDye Textile Printing Eurasia	TBD	Istanbul, Turkey	
2	Paint Istanbul TURKCOAT	2026	Istanbul	
3	Paint Expo Eurosia	Oct 01-03, 2025	Istanbul Expo Center / Istanbul Fuar Merkezi	
	Otl	ner Exhibitions		
1	Paint India	Jan 30-31, 2025	Bombay Exhibition Centre, Mumbai	
2	Expo Paint and Coating	Jan 21-23, 2025	Dhaka, Bangladesh	
3	CIPI	TBD	Mumbai, India	
4	Chemspec Europe	June 4-5, 2025	Koelnmesse, Germany	
5	ChemUK Expo	May 21-22, 2025	NEC, Birmingham, UK	
6	American Coatings Show	May 5-7, 2026	Indianapolis	
7	China Coat China	Nov 25-27, 2025	China Import & Export Complex, Guangzhou	
8	Interdye China	Apr 14-18, 2025	Shanghai, China	
9	Paint Expo Germany	Apr 14-17, 2026	Messe Karlsruhe Germany	
10	India Chem	Oct 2026	Mumbai Exibition Centre, India	
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5	Methyl Chloroformate	79-22-1		
6	Methylamine Hydrochloride	593-51-1		
7	Monomethylamine In Methanol	74-89-5		
8	Pyrophosphoryl Chloride	13498-14-1		
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## EDITORIAL

# **CHEMICAL MARKET**

A MONTHLY MAGAZINE DEVOTED TO THE DYES, CHEMICALS, PHARMACEUTICALS, TRADE & INDUSTRY SINCE 1982

#### How AI Is Transforming the Chemical Industry from Manufacturing to Marketing

Technological progress, whether through gradual enhancements or revolutionary breakthroughs, has consistently driven down the costs of critical technologies. AI can significantly amplify the ingenuity and efficiency of researchers, enabling them to conceptualize and validate ideas more effectively. The chemical industry has always been a major part of the global economy, spanning manufacturing to consumption and from basic materials to pharmaceuticals and electronics. It is also one of the most complex and highly regulated industries worldwide.

While digital transformation has helped individuals and companies achieve longterm success, implementing these changes and realizing results in the short term has been challenging. The longer companies delay adopting digital platforms, the longer it will take to significantly increase their profits.

The first and most crucial step for any company aiming for substantial growth is to adopt the latest technologies. The current scenario demands that companies integrate AI into their day-to-day activities-from simple tasks like drafting email content using AI tools to employing AI in manufacturing, procurement, and other critical operations. Using AI broadens possibilities and streamlines tasks. For instance, drafting and sending customer emails can be done with AI tools within seconds. While some argue this approach lacks a personal touch, the email's quality and efficiency often justify its use after human verification.

Companies should begin small. The initial step could involve digitizing products, sales, and purchases using innovative software. This software should be user-friendly and capable of generating data outputs such as reports, CSV, or Excel files. These outputs enable data analysis or integration with other software systems for additional applications.

This approach is feasible even for smaller

companies and has long-term, guaranteed benefits. While a basic learning curve of one week to a month may be required, depending on the software's complexity, a well-designed system will become more robust and efficient over time. This foundational step is critical for effectively adopting AI tools.

Once data is standardized, AI tools can analyze past performances and leverage data analytics to predict trends or identify issues. With increasing data inflow, AI can uncover hidden problems or opportunities that might be overlooked by human analysis. Large data sets are often too complex for manual evaluation, but AI can process this information, identifying glitches or areas for improvement. Furthermore, continuous research and development are expanding AI's capabilities. Its ability to process vast amounts of data and make forecasts is invaluable in this data-driven industry.

AI also enhances safety standards by analyzing sensor data, facilitating timely maintenance, and preventing human or resource hazards. Predictive maintenance can save lives in large production facilities, avert major disasters, and build trust through reliable performance.

On the manufacturing side, including procurement and supply chains, several ERP (Enterprise Resource Planning) systems can streamline operations. Efficient integration of ERP software in chemical companies can track every raw material from entry into the premises to its departure as a finished product. CRM (Customer Relationship Management) software helps manage customer contacts, communication logs, and processes like invoicing and quote generation. Leading ERP systems such as SAP, Oracle, and ODOO are examples of platforms that support these functionalities. To conclude, let's highlight an advanced solution-our SaaS platform designed to revolutionize marketing for your products. We've developed a system that integrates data from your ERP system or manually

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CHENNAI PRICE TREND – 28.10.2024		8.10.2024	Mercury	34.5Kgs	7,200.00
Inorganic Chemicals	No/ of Units	Price Rs.	Napthaline Balls	50Kgs	130.00
Acid Slurry (Soft)	50Kgs	127.00	Lithopone B301(China)	25Kgs	124.00
Alum- Ferric	50Kqs	24.00	Magnesium Carbonate (Indian)	50Kgs	125.00
Ammonium Bicarbonate	25Kgs	28.00	Magnesium Sulphate	50Kgs	16.00
Ammonium Bi fluoride	50Kgs	178.00	Potassium Permanganate [Tech]	50Kgs	174.00
[sugar-grade]	50Kgs	178.00	Potassium Permanganate [Pure]	50kgs.	190.00
Ammonium Carbonate	50Kgs	92.00	Potassium Phosphate (Di)	50Kgs	158.00
Ammonium Chloride	50Kgs	22.00	S.L.E.S	50kas	62.00
Ammonium Nitrate	50Kgs	30.00	Soda Ash_Light	50Kgs	30.00
Ammonium Phosphate (Mono)	50Kgs	135.00	Sodium Bicarbonate	50Kgs	33.00
Ammonium Sulphate	50Kgs	22.00	Sodium Bichromate	50Kgs	165.00
Antimony Trioxide	50Kgs	2,500.00	Sodium Bisulphite	50Kgs	52.00
Barium Chloride	50Kgs	58.00	Sodium Chlorite 50% (India)	50Kgs	240.00
Bleaching Powder (33% Cl)	25Kgs	14.00	Sodium Chlorite 80% (India)	50Kgs	280.00
Borax (Granular)	50Kgs	72.00	Sodium Cyanide	50Kgs	650.00
Boric Acid (Tech.)	50Kgs	142.00	Sodium Fluoride	50Kgs	150.00
Calcium Carbonate (Activate)	50Kgs	20.00	Sodium Formate	50Kgs	53.00
Calcium Carbonate (Precipitated)	50Kgs	19.00	Sodium Hexameta Phosphate 68%	50Kgs	128.00
Calcium Chloride Lump 70%	50Kgs	14.00	Sodium Hydrosulphite [China]	50Kgs	180.00
Calcium Chloride-Anhydrous	50Kgs	28.00	Sodium Metabisulphite	50Kgs	37.00
Camphor Oil	200Litrs	135.00	Sodium Nitrate	50Kgs	52.00
Caustic Potash (Flakes)	50Kgs	82.00	Sodium Nitrite (China)	50Kgs	68.00
Caustic Soda (Flakes)	50Kgs	52.00	Sodium Silicate	Naked	28.50
Caustic Soda (Prills)	50Kgs	92.00	Sodium Sulphate (Anhydrous)	50Kgs	15.00
Chromic Acid Flakes	50Kgs	280.00	Sodium Sulphide 50-52% (Flakes)	50Kgs	58.00
Chlorinated Xylene	25kgs	85.00	Sodium Sulphide 58-60% (Flakes)	50Kgs	52.00
Copper Sulphate	50Kgs	220.00	Sodium Sulphite 92%	50Kgs	56.00
Di ammonium Phosphate	50Kgs	34.00	Sodium Tri polyphosphate	50Kgs	95.00
Dioctylmalite	180kgs	82.00	Titanium Dioxide Anatase	25Kgs	208.00
Ferric Chloride (Anhydrous)	50Kgs	42.00	Titanium Dioxide (Rutile - R-902)	25Kgs	265.00
Ferrous Sulphate – crystals	50 Kgs	16.00	Trisodium Phosphate	50Kgs	28.00
Hydrochloric Acid	Naked	6.00	Zinc Chloride Powder (Tech.)	50Kgs	82.00
Hydrogen Peroxide 50%	50Kgs	33.00	Zinc Oxide White Seal	50Kgs	230.00
Hyflosupercell	22.7Kgs	138.00	Zinc Stearate [Pure]	25kgs	175.00
Litharge	50Kgs	220.00	Zinc Sulphate (Tech.)	50Kgs	58.00

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## **BUY INQUIRIES**

Product	Quantity	Grade
<b>Toluene</b> Details : Looking to establish a recurring supply arrangement	21000 Kgs for high-	VirginPure
quality Toluene in bulk. Quantity: 21,000 kg , For trading purpos	es	CLICK HERE TO VIEW
Ankleshwar, Gujarat, India		
<b>Toluene</b> Details : 25mt toluene industrial grade,in tanker loadex kandl credit	<b>25 Tonnes</b> a 60 days	Industrial
Mumbai, India		CLICK HERE TO VIEW
<b>Acetone</b> Details : 30 mt acetone in tanker load exkandla, 60 days credit ghaziabad uttar pardesh	<b>30 Tonnes</b> ,delivered	Industrial
India		CLICK HERE TO VIEW
Lithium Borohydride Details : Lithium Borohydride CAS No:- 16949-15-8 Qty:- 500 gm location:- Sonipat, Haryana Description/Use/Application:- R&D	<b>500 Grams</b> a Shipping use	Any CLICK HERE TO VIEW
Gaziabad, Uttar Pradesh, India		
<b>XANTHAN GUM FOOD GRADE 80 MESH</b> Details : Shipping location:- CIF offer to Mombasa Port. Current of this item to support our operations, and we would like to kno	<b>40 Tonnes</b> ly in need ow if your	Not Applicable
company can supply this product. We value quality and require that can provide us with consistent and reliable products that stringent standards.	suppliers meet our	CLICK HERE TO VIEW
Ellesmere Port, Cheshire West and Chester, UK		
Dyes & Chemical Market   December 2024		17

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## **BUY INQUIRIES**

Product	Quantity	Grade
<b>Xanthan Gum</b> Details : Application - Cosmetic Use . Xanthan Gum transparent Mak	<b>200 Kgs</b> Ke-	None
		CLICK HERE TO VIEW
Ghaziabad, Uttar Pradesh, India		
<b>Cyanuric Acid CAS#: 108-80-5</b> Details : Need it to export to China on a repeat basis.	1 Tonnes	Industrial
		CLICK HERE TO VIEW
Chennai, Tamil Nadu, India		
<b>Epibromohydrin CAS No:- 3132-64-7</b> Details : Please quote the best CIF Air (Shanghai, China) price, wi shortest lead time & COA/MSDS	<b>100 Kgs</b> ith	Industrial
		CLICK HERE TO VIEW
China		
<b>4-Piperidone Hydrochloride Monohydrate 99% (</b> Details : Please share your best offer along with the COA, delivery timpacking detail and payment terms.	CAS No:- 4 ne,	0064-34-4 1 Kgs Industrial
		CLICK HERE TO VIEW
Ahmedabad, Gujarat, India		
<b>Starvis 3003F BASF CONSTRUCTION POLYMEF</b> Details : Looking to buy 200kg Starvis, 1000kg Vinapor 2941 DF and 100 Kelco Crete DG-F of genuince BASF material	RS GmbH <sup>kg</sup>	200 Kgs Chemical
		CLICK HERE TO VIEW
Melbourne		
18 Dyes & Chemical Market   December 2024 🛛 🕋 🗐		

<b>BUY INQUIRIES</b>	5
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Product	Quantity	Grade
Dilute Acetic Acid Details : Sir , We Are Dealing In Acetic Acid , Dilute Acetic Acid Hydrochloric Acid Since 1987 Here In Ahmedabad Sir , We A Regularly Need Of Dilute Acetic Acid Will Be Waiting For Your P Approach Thanks And Regards Dinesh Gupta Haresh Acid Chemicals Pvt Ltd Ahmedabad, Gujarat, India	<b>50 Tonnes</b> d And Are In ositive Is And	Chemical CLICK HERE TO VIEW
<b>Corium 4040</b> Details : Description:- Please quote the best price with lead time & MSDS Purpose:- Heavy Duty metal repair compound. It quickly releaks, cracks, fractures, and groves in metal. Technical Parameter Composed: Base (type A) and Reactor (type B) b. Part No: 40 Chemical Category: Industrial Chemical	<b>1 Litres</b> COA/ repairs s:- a. 40 c.	Industrial CLICK HERE TO VIEW
Kolkata, West Bengal, India		
<b>Corium 4040</b> Details : Please quote the best price with lead time & COA/MSDS, Tec document, Brochure of the product, Cost of Shipping to Banglad Sea/AIR (Dhaka Air Port)Both Ways Bangladesh	<b>250 Other</b> hnical esh by	Industrial
Selenium dioxide CAS No:- 7446-08-4 Details : Please quote the best price with lead time & COA/MSDS. Blovice, Czech Republic	25 Kgs	Industrial CLICK HERE TO VIEW
<b>Nickel Sulphamate</b> Details : Packing Size:- 25 Ltr Can Spec : IS 1809 : 1979 Technical Description:- Please quote the best price with lead time & COA/MSI	<b>500 Litres</b> Grade DS.	Technical CLICK HERE TO VIEW
Indiranagar, Bangalore, Karnataka, India		

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# From a Cold Start to a US\$180 Billion Market by 2035 - Green Hydrogen is Set to Displace, Outpace, and Outgrow Polluting Alternatives

Nov. 14, T ONDON, 2024 / LPRNewswire/ -- Green Hydrogen (H2) is the cleanest form of hydrogen production. It's produced by renewable energy with zero CO2 emissions. Though only 0.2% of hydrogen is produced today, green H2 will account for 27% of total hydrogen production by 2030 - and 55% by 2035. ABI Research, a global technology intelligence firm, forecasts that this explosive growth will drive the market for green H2 from US\$10 billion today to US\$180 billion by 2035, significantly displacing grey hydrogen as the primary driver of the market. "We're witnessing the start of a huge upheaval in what is already an established market," says Daniel Burge, Smart Energy Analyst at ABI Research. "Despite previously widespread doubt that green hydrogen would play a role in the energy transition, we're seeing committed investment – a global trend spearheaded by Asia-Pacific – in massive electrolysis productive capacity. Heavy industries, like petrochemical refineries and ammonia producers, are investing in low-emission hydrogen to

decarbonize, reduce operational costs, and capture green premiums. Meanwhile, industries unable to electrify recognize green hydrogen as a promising sustainability path."

Net-zero regulations are impacting hydrogen production. Europe's upcoming RED II rules will require 42.5% low-emission hydrogen by 2030, while China and India are also scaling production to decarbonize and reduce costs, aiming to capture significant market share. In 2024, China accounted for about 30% of global hydrogen production, with green H2 output expected to grow at a 38% CAGR through 2035, likely increasing its lead. This increasing commitment to clean hydrogen has dispelled the uncertainty around whether it is a suitable foundation for the decarbonization of heavy industry - for the largest regions in terms of supply and demand, that decision is clearly already made. "To capitalize on the opportunities inherent of the hydrogen market's prospective transformation and growth, players in

petrochemical, chemical, steel, shipping, and aviation industries need to watch closely to see where, when, and how green hydrogen displaces, outpaces, and outgrows grey hydrogen and take its place as a fuel of the future," Burge concludes.

Green hydrogen and electrolyser producers to watch include Adani Energy, Linde, ITM Power, Sinopec, and Plug Power. These findings are from ABI Research's Hydrogen Market Data report. This report is part of the company's Smart Energy for Enterprises & Industries research service, which includes research, data, and ABI Insights. Market Data spreadsheets are composed of deep data, market share analysis, and highly segmented, servicespecific forecasts to provide detailed insight into where opportunities lie.

Read the full report : https://www. abiresearch.com.

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# High Performance Coating Market to Reach USD 53.2 Billion by 2030, Driven by Demand for Durable and Eco-Friendly Solutions Across Key Sectors **Valuates Reports**

Bangalore, India, Nov. 13, 2024 / PRNewswire/ -- High Performance Coating Market Is Segmented by Type

(Epoxy Coating, Coating, Polyester Coating, Acrylic Resin Coating), by

Polyurethane Application (Industrial Use, Construction): Global Opportunity Analysis and Industry Forecast, 2024-2030.





The Global High Performance Coating Market Was Valued at USD 38.5 Billion in 2023 and Is Anticipated to Reach USD 53.2 Billion by 2030, Witnessing a CAGR of 4.8% During the Forecast Period 2024-2030.

Major Factors Driving the Growth of High Performance Coating Market:

The High Performance Coating Market is expanding rapidly, driven by demand across sectors such as automotive, construction, marine, and aerospace. These coatings are valued for their durability, resistance to harsh environmental conditions, and protective qualities that extend the lifespan of substrates in demanding applications. Key drivers include increased infrastructure development, growing demand for corrosion-resistant coatings in marine and oil & gas industries, and a shift towards ecolow-VOC friendly, formulations. Additionally, the automotive and aerospace sectors rely on highperformance coatings for aesthetic appeal and protection against wear.

#### TRENDS INFLUENCING THE GROWTH OF THE HIGH PERFORMANCE COATING MARKET:

Epoxy coatings are known for their exceptional adhesion, durability, and resistance to chemicals, making them a popular choice in industries such as automotive, marine, and aerospace. The demand for epoxy coatings continues to rise as they offer protective properties essential for harsh environments. These coatings also exhibit strong resistance to abrasion, which is ideal for industrial applications requiring highperformance protective layers. Epoxy's adaptability to multiple substrates, including metal, concrete, and wood, enhances its appeal across various sectors. This versatility and protective quality make epoxy coatings a key contributor to the growth of the high

performance coating market. Polyurethane coatings contribute significantly to the high performance coating market due to their flexibility, durability, and resistance to wear. Widelv used in construction, automotive, and furniture industries, polyurethane coatings offer UV protection, color retention, and high resistance to weathering, making them suitable for outdoor applications. Their application in heavy-duty environments transportation such as and manufacturing ensures equipment longevity and aesthetic preservation, which appeals to end-users focused on quality and durability. The growing demand for coatings that combine protection and visual appeal drives polyurethane's role in the market, supporting its sustained growth.

The construction sector demands high performance coatings their for protective and aesthetic qualities, especially for infrastructure projects exposed to harsh weather. Coatings used on bridges, buildings, and other structures ensure long-term durability, which is crucial for reducing maintenance costs and enhancing safety. construction projects increase As worldwide, especially in emerging economies, the demand for protective coatings grows proportionally. The need for resilient materials that can withstand environmental stressors makes high performance coatings an indispensable component in the construction industry, fueling market expansion.

Rapid urbanization and infrastructure expansion, particularly in developing regions, drive the need for durable and reliable coatings in construction. High performance coatings offer protection against corrosion, UV exposure, and extreme weather, which are critical for long-lasting infrastructure. As cities expand, the demand for resilient coatings continues to grow, supporting market's development. the The automotive industry requires high

performance coatings to protect vehicles from rust, scratches, and wear. As consumers seek longer-lasting vehicle finishes, the demand for coatings with advanced protective properties rises. The automotive sector's push for superior quality and durability in finishes contributes significantly to the high performance coating market.

High performance coatings are essential industry, in the marine where equipment and vessels are exposed to saltwater and extreme conditions. Coatings that prevent corrosion and reduce maintenance costs are highly especially for commercial valued, vessels. The demand for marine-grade coatings is a key driver in the market, supporting its steady growth. The oil and gas industry relies on high performance coatings for their protective qualities, especially in pipelines and storage facilities. These coatings provide resistance to chemicals and harsh environments, ensuring the longevity of expensive infrastructure. As oil and gas projects expand, the demand for coatings that offer corrosion protection continues to grow.

## HIGH PERFORMANCE COATING MARKET SHARE

The high performance coating market experiences growth variations based on regional infrastructure development and industry demand. North America and Europe lead in innovation and regulatory compliance, while Asia-Pacific shows strong growth due to manufacturing and construction expansion. Regional needs shape market dynamics, with each area contributing uniquely to overall growth.

Read the full report : https://reports. valuates.com/market-reports/QYRE-Auto-28I7047/global-highperformance-

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## **NEWS ROUND UP**

# Green hydrogen revolution and innovative pathways Exploring India s INR 200 crore green hydrogen initiative

Vinodini Harish

#### Introduction:

Tndia has taken a bold step forward Lwith the ambitious National Green Hydrogen Mission and this transformative initiative launched by the Ministry of New and Renewable Energy(MNRE). The announcements about the pilot projects sound very ambitious and enriching, and they are expected to redefine the way energy is produced, consumed and emphasize local resource utilization and reduce infrastructure dependency. These initiatives are considered and seen as a cornerstone of the country's clean energy agenda; therefore they are explored here in the article. Let's begin.

India launches 200 crore decentralized green hydrogen initiative.

India is known for its fossil fuel infrastructure, but with rising energy needs and great green hydrogen ambitions, it is important to strike the balance between the both. How India is going to balance between the two, especially in the sectors that are heavily reliant on traditional energy sources? Also, how can India's green hydrogen initiative complement its other renewable energy investments in solar and wind, thereby creating an integrated clean energy ecosystem? Although the country grapples with these questions, the path is clear and the pilot project is all set. In this article, we have explored a bit more of this proud launch of our nation. Let's dive into the article.

The initiative focuses on innovative methods for residential and commercial applications.

The Ministry of New and Renewable Energy MNRE outlines various pilot projects that include floating solar-based hvdrogen production, biomass utilization and wastewater conversion. The ultimate goal is to decentralize hydrogen use for cooking, heating and off-grid electricity generation.

#### Scheme Overview

India's ₹200-crore scheme and the pilot project initiative represent a forwardthinking approach to exploring diverse hydrogen production methods for both commercial and community applications. There is a governmentappointed body to oversee the scheme and it is designed to test and validate sustainable. resource-efficient technologies establish to а comprehensive hydrogen green ecosystem. The key idea is to extend the scheme and keep it an initial part of a broader strategy to establish this green hydrogen ecosystem.

There are various innovative methods to be explored under this scheme and some of the key methods include the following:

Floating solar panels for hydrogen production: India already has solar resources in mass. Therefore the idea is to leverage these abundant solar resources by placing solar panels on water bodies and cutting down the usage

of land use while optimizing the solar for hydrogen production. energy Floating solutions reduce solar evaporation from water bodies and thereby enhance water resource management alongside energy generation.

Biomass-based hydrogen generation: The key idea is utilizing agricultural and organic waste and converting biomass into hydrogen, which offers dual benefits by addressing waste management issues and generating cleaner energy. This energy generation is delivered to diverse applications, such as community and commercial uses.

Wastewater treatment for hydrogen extraction: This strategy harnesses water treatment by-products, which utilize wastewater as a resource for hydrogen extraction. This method addresses wastewater management issues while producing green hydrogen sustainably and cost-effectively.

These innovative methods reflect a broader government strategy aimed at establishing a green hydrogen ecosystem in India. The idea behind these approaches is to combine environmental sustainability with economic and resource efficiency while promoting local industries, creating jobs and helping India meet its green energy targets.

How the INR 200 crore initiative is helping India transform its green hydrogen infrastructure:

Continued on Pg 37









#### **AUTOMOBILES** ·

## **COVESTRO DEEPENS COLLABORATION** WITH AUSELL TO **ADVANCE END-OF-LIFE AUTOMOTIVE** PLASTICS RECYCLING

million 19-liter polycarbonate water barrels annually, converting them into high-performance post-consumer recycled (PCR) polycarbonates for various industries such as electronics. home appliances and automotive. With this strengthened collaboration, Ausell will supply recycled polycarbonates derived from discarded automotive headlamps, which Covestro will then process into high-quality PCR materials for automotive engineering applications.



- Joint initiative to build a closed-loop for automotive plastics recycling
- Plastics recycled from end-of-life • headlamps to be used for new automotive applications
- Addressing rising industry demands and regulations

▶ovestro, a global leader in high-→performance polymer materials, has announced an enhanced collaboration with Chinese plastics recycling company Ausell. Building on their previous partnership in recycling polycarbonate water barrels, this new collaboration aims to accelerate the recycling of plastics from end-of-life vehicles, contributing to automotive the industry's circularity by transforming waste into valuable materials for new automotive components.

Since 2020, Covestro has been partnering with Ausell to recycle 1

This partnership marks a further step to effectively closing the plastics recycling loop within the automotive sector, reducing waste and carbon emissions while enhancing resource efficiency.

Lily Wang, Global Head of the

Engineering Plastics Business Entity at Covestro, said: "We are excited to deepen our partnership with Ausell as we work closely with our value chain partners to accelerate the circular transformation of the automotive industry. Together, we are committed to pioneering sustainable solutions that will lead the way toward a circular and climate-neutral future."

Xia Wenjun, CEO of Ausell, added: "Our enhanced collaboration with Covestro represents a significant step toward achieving our shared vision of a circular economy. By turning end-of-life automotive components into valuable resources, we are not only reducing waste but also contributing to the development of sustainable materials for future vehicle

#### production."

The automotive industry, facing increasing regulatory pressures for sustainability, as well as following their own roadmap to "close the loop" of materials, is looking for robust and adapted solutions to their challenges.

This collaboration positions Covestro and Ausell at the forefront of efforts to develop compliant, high-performance addressing materials while the challenges of plastic waste management and resource utilization in the automotive industry. The recycled polycarbonates will not only enhance sustainability of automotive the components but also demonstrate the potential for high-value recycling solutions.

Source : Covestro

**XCHARGE NORTH AMERICA AND GRENSOL GROUP PARTNERSHIP TO** FOCUS ON A **SUSTAINABLE SOLUTION FOR ELECTRIC VEHICLE CHARGING MATERIALS** 

Charge North America, a provider  $\Lambda$  of DC fast charging and batteryintegrated electric vehicle (EV) solutions, todav announces its with partnership Grensol Group (Grensol). The collaboration aims to advance sustainable, electrified travel by



addressing the pressing challenge of reducing the end-of-life waste associated with Electric Vehicle Supply Equipment (EVSE) — particularly, EV charging cables and modules.

Effective immediately, XCharge NA will provide broken or worn-down EVSE materials to Grensol, and its research partner Worcester Polytechnic Institute (WPI), for the development of an industrial recycling solution for such equipment. Grensol will then use its advanced metals recovery and photolysis technologies, amongst other technologies also being studied, to process the waste and produce useful raw materials for a circular economy, including critical metals for new EVSEs. Grensol's research at WPI is being led by Prof. Brajendra Mishra and Dr. Akanksha Gupta and is being performed under a collaborative agreement between WPI and the DEVCOM Army Research Laboratory.

"EVSEs have a particularly short useful life due to constant wear and tear, so the need for a recyclable material solution is the driving force behind this partnership," said Rajiv Singhal of Grensol. "Partnering with XCharge NA will provide us and WPI with more materials and information for our development of breakthrough lowcost circular materials solutions for the future that keep resources onshore and materials in use for longer, while avoiding carbon emissions."

XCharge NA and Grensol discovered their shared interest in promoting sustainable solutions in the automotive industry while both being part of the Harvard Innovation Labs. Grensol is a Swiss startup with a mission to maximize the recycling of end-of-life waste, including cars, while preventing the incineration and landfilling of recycling residues. The company aims to transform this waste into valuable low-emission raw materials such as hydrogen, carbon black, metals and glass, for a circular economy, contributing to a cleaner and more sustainable future.

XCharge North America specializes in high-power EV charging and batteryintegrated solutions tailored for the North American electrical grid. With focus innovation а on and sustainability. XCharge North America is committed to advancing the future of electric mobility through cutting-edge technology and thoughtful design.

XCharge, founded in 2015, is a global leader in integrated EV charging solutions. The Company offers comprehensive EV charging solutions, which primarily include the DC fast chargers, the advanced batteryintegrated DC fast chargers, as well as its accompanying services. Through XCharge's combination of the proprietary charging technology, energy storage system technology and accompanying services, the Company enhances EV charging efficiency and unlocks the value of energy storage and management. Committed to providing innovative and efficient EV charging solutions, XCharge is actively working toward establishing a global green future that is critical to longterm growth and development.

Source: prnewswire.com

## HIGHSTAR UNVEILS TABLESS CELL TECHNOLOGY AT

## GERMANY'S BATTERY EXPERTS FORUM, ADVANCING BATTERY PERFORMANCE

HIGHSTAR showcased its Tabless and sodium battery at the Battery Experts Forum in Germany, officially launching its latest Tabless cell series. The groundbreaking structural design significantly boosts battery performance, demonstrating exceptional capabilities and broad application potential.

At the Battery Forum, Dr. Zhou, the battery expert from HIGHSTAR, highlighted that the Tabless Cell design has abandoned traditional tab structures by utilizing a tabless approach, which significantly enhances conductivity and heat dissipation, thereby boosting overall cell performance.

The internal resistance of the Tabless Cell is reduced by approximately 70% compared to traditional cells, leading to a 35% temperature decrease under high current discharge. The cycle life is extended by 100% compared to traditional cells.

The Tabless Cell supports continuous discharge current up to 100A and pulse discharges up to 200A, with extremely low internal resistance that enables ultra-fast charging performance at 5C, allowing charging to reach 80% State of Charge (SOC) in just 10 minutes.

Moreover, the Tabless cell exhibits superior low-temperature performance and improved safety, making it suitable for various demanding environments. It is particularly ideal for high rate scenarios such as power tools, gardening tools, and cleaning appliances, offering a better choice for high-performance, stable, and reliable power supply.





The launch of Tabless cell marks a breakthrough significant for HIGHSTAR in battery technology, offering unique advantages in the global market for power tools, home appliances, and industrial power tools. Particularly in Europe, where demand is rapidly growing due to environmental and sustainability initiatives, these innovations will further enhance lithium battery performance to meet a broader range of applications.

To meet market demand,

HIGHSTAR's overseas Tabless cell production line is expected to step into mass production phrase at Q4 of 2025, covering both 18650 and 21700 series, with potential to reach sales in the billions by 2026. The exhibition also featured HIGHSTAR's innovative sodiumion products suitable for UPS backup power, automotive startstop power, two-wheelers, and energy storage, garnering widespread interest. HIGHSTAR remains committed to innovationdriven progress, delivering efficient and safe energy solutions for the global market, and leading the industry toward a new phase of enhanced performance, safety, and efficiency, contributing to the advancement of global clean energy!

Source : PRNewswire

## NEO AND LINDE KOREA COLLABORATE TO

## COMMERCIALIZE SILICON ANODE TECHNOLOGY

TORONTO, Nov. 07, 2024 (GLOBE **L** NEWSWIRE) -- NEO Battery Materials Ltd.(TSXV: NBM) (OTC: NBMFF), a low-cost silicon anode materials developer that enables longer-running, rapid-charging lithium-ion batteries, is highly pleased to announce the signing of a Memorandum of Understanding ("MOU") with Linde Korea Co., Ltd. ("Linde"), an affiliate of the leading industrial gases and engineering company, on November 6, 2024, to collaborate on the scale-up of NEO's silicon anode manufacturing for lithium-ion batteries. There are no material terms or considerations regarding this MOU.

Under the MOU, Linde, NEO, and NBM Korea Co. ("NBMK") will collaborate to incorporate and optimize Linde's industrial gases, specifically nitrogen and argon, as critical inert gases in NEO's silicon anode manufacturing process. These gases have a significant role in ensuring the quality of NEO's production environment, minimizing input oxidation risks and enabling quality control of the anode's performance.

NEO's Linde and strategic collaboration is structured to support the technical transition from the current pilot-scale to commercial-scale production. NEO and NBMK will work closely with Linde to define technical requirements and implement leading engineering solutions tailored to optimize NEO's silicon anode manufacturing process. The commitment to adopting Linde's advanced industrial gas technology will enhance the energy efficiency and performance of NEO's silicon anode

products.

Mr. B. S. Sung, President of Linde Korea, said, "We look forward to working with NEO, combining our extensive expertise and capabilities to drive innovation and create value for our partners while also paving the way for future growth and success."

Mr. Spencer Huh, Director, President & CEO of NEO, commented, "This MOU with Linde marks a key step in NEO's ongoing route-to-commercialization strategy. Both parties are committed to maintaining a productive relationship toward the mass production of our silicon anodes. By working with a global leader like Linde, we anticipate receiving advanced engineering expertise to realize efficient production and high levels of quality control and assurance."

Source : NEO Battery Materials Ltd.

HONGQI SHINES WITH FLAGSHIP MODELS AND ADVANCED TECHNOLOGY AT AUTO GUANGZHOU 2024

GUANGZHOU, China, Nov. 27, 2024 /PRNewswire/ -- On November 24, Auto Guangzhou 2024, one of China's most prestigious automotive events, successfully concluded, attracting leading global brands and international media. HONGQI stood out with its advanced TianGong electric platform series, showcasing the brand's relentless commitment excellence to in craftsmanship technological and innovation.

Built on TianGong electric platform, the





luxury electric SUV EHS7 has become the center of attention. It supports ultrafast charging, allowing the battery to go from 10% to 80% in just 20 minutes, it allows users to recharge during a coffee break, ensuring long-distance travel. The EHS7 features rare-in-class rear-wheel steering and dynamic chassis control with a variable damping suspension. These advanced technologies, combined with intelligent driving systems like L2 ADAS (advanced driver assistance system), deliver a smooth and modern driving experience.

Safety is the cornerstone of the HONGOI brand and a fundamental guarantee for its vehicles. The EHS7 adopts a "9H4M" cage body structure, with 74% of the vehicle composed of high-strength steel, while key areas achieve a maximum yield strength of 2000 MPa, providing users with "fortress-like" safety protection. Furthermore, the EHS7's battery system utilizes a honeycomb structure and multi-laver sealing technology, achieving an IPX8 waterproof rating to ensure durability and reliability even in extreme environments. These features exemplify HONGQI's commitment to delivering a safe and luxurious electric SUV experience for its users.

Also showcased is the HONGQI EH7, a premium choice in the luxury EV segment with supercar-level performance and advanced intelligent technology. Equipped with a highperformance electric drivetrain reaching 22,500 RPM, it delivers 455 kW of power and 756 Nm of torque, ensuring exhilarating acceleration and dynamic driving. With a WLTP range of 655 km, it offers exceptional endurance for longdistance journeys.

Looking ahead, HONGQI plans to introduce 10 new models in Europe over the next five years, tailored to meet the needs of European and global consumers seeking high-quality, intelligent, and eco-friendly vehicles. Pre-orders for the EH7 and EHS7 have already begun in Europe as of October 14. With a strong focus on innovation and sustainability, HONGQI strives to provide global users with exceptional luxury and an unparalleled mobility experience.

Source : PRNewswire

## HYUNDAI MOTOR AND KIA'S ROBOTICS LAB ANNOUNCE PLANS TO LAUNCH 'X-BLE SHOULDER' AT WEARABLE ROBOT TECH DAY

SEOUL, South Korea, Nov. 27, 2024 / PRNewswire/ -- Hyundai Motor Company and Kia Corporation have unveiled a reliable companion for industrial work, the wearable robot 'Xble Shoulder.' This device, just by being worn, can increase workers' efficiency and reduce musculoskeletal injuries. Two videos released on Hyundai Motor Group's YouTube channel show the Xble Shoulder in action, including product features and the development story.

Hyundai Motor and Kia unveiled the Xble Shoulder at Wearable Robot Tech Day held at the Hyundai Motorstudio Goyang near Seoul. The X-ble brand a combination of 'X,' symbolizing infinite potential, and 'able,' indicating that anything can be realized — heralds a new era in wearable technology.

The X-ble Shoulder, the first product in the X-ble line, is an industrial wearable robot developed by Hyundai Motor and



Kia's Robotics LAB. When used in 'overhead work' where the arm is raised, it can assist the user's upper arm muscle strength and reduce the burden on the upper extremity musculoskeletal system.

The X-ble Shoulder will find use in various industries, including construction, shipbuilding, aviation and agriculture, not just automobiles. Following its domestic launch, the companies plan to gradually expand sales to overseas markets.

In addition to the X-ble Shoulder

Hyundai Motor and Kia plan to develop an industrial wearable robot 'X-ble Waist' to assist the waist when lifting heavy loads, and a medical wearable robot 'X-ble MEX' for the rehabilitation of the walking impaired.

"The X-ble Shoulder is a wearable robot that leverages the technical capabilities of the Robotics LAB and implements feedback from actual users," said Dong Jin Hyun, Vice President and Head of Robotics LAB at Hyundai Motor and Kia. "Going forward, we aim to expand the availability of wearable robots, creating products that work naturally with users to enhance their daily lives. By pushing technological boundaries, we will make these beneficial products accessible to more people."

Source : Hyundai Motor Company; Kia Corporation



#### **DRUG & PHARMA**

## CLARIANT INTRODUCES NEW HIGH-PERFORMING EXCIPIENTS AT THE CPHI INDIA 2024 TRADE SHOW

- Clariant Health Care is presenting eight new products in its portfolio of high-performing pharmaceutical ingredients to support the evolution of safe and effective medicines
- The expanded range includes • excipients for different applications sensitive such as for active pharmaceutical ingredients, parenteral formulations or applications where the final formulation needs to be colorless
- Our experts will be available at Booth Number O 05 Hall 6 at the India Expo Centre, Greater Noida, Delhi NCR, India

MUMBAI, November 25, 2024 -Clariant is excited to present the company's latest portfolio of products for the healthcare industry at the upcoming CPHI India tradeshow in Delhi NCR on November 26 through 28, 2024. This year's event will showcase Clariant Health Care's Made in India products, local Bonthapally operations, and expertise in biologics, generics, and excipient production. This includes a range of reliable, high-quality, costeffective, and tailored solutions for the growing Indian healthcare market.

## <u>"We are leveraging India's</u> <u>manufacturing capabilities</u> <u>to provide high-purity</u>

excipients to the global pharmaceutical market and our Made in India products are integral to the pharmaceutical sector's commitment to improving drug formulation, delivery, and patient outcomes. We're also simultaneously focused on ensuring compliance with the highest industry standards," comments Vaios Barlas, Global Head of Health Care at Clariant.

Excipients are essential to the stability, bioavailability, and efficacy of active pharmaceutical ingredients (APIs) and the global excipients market is expected to grow at a compound annual growth rate (CAGR) of 6 to 7%. This increase has been driven by rising demand for specialty drugs and biologics, stricter regulatory standards, and the increasing needs of aging populations worldwide.

To ensure the uninterrupted supply of ultra-pure excipients, Clariant has combined the global expertise of Clariant International Ltd (Switzerland) with local manufacturing capabilities in India to offer customized solutions for the evolving needs of the pharmaceutical industry. India is now a leader pharmaceutical global in manufacturing, supplying over 50% of global vaccines and 40% of generic drugs.





quality products that support local economies and **Clariant's manufacturing** operations in India cater to the specialized needs of the Indian and regional markets while also ensuring that we meet the global standards required by the FDA, EMA, and other regulatory bodies. This makes us a preferred partner in the development of biologics, injectables, and complex drug formulations," says Bhushan Thekedar, Head of Global Business Development, Health Care.

Parenteral excipients manufactured in Bonthapally facility are equipped with advanced clean room environments, adhering to the highest international standards of sterility and purity to ensure the efficacy and safety of the excipients. Through the local production of key excipients like VitiPure<sup>™</sup> Superior and Meglumine, Clariant's Bonthapally facility plays a central role in supporting the global healthcare supply chain.

Clariant is pleased to be launching a variety of innovative products for the pharmaceutical sector, with applications ranging from sensitive API to parenteral formulations to oral and topical agents, as described below.

Clariant introduces VitiPure LEX 3350 S, VitiPure LEX 4000 S, and Polyglykol 1450 S to solve API delivery and

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#### bioavailability challenges

The VitiPure LEX which is low in endotoxin, is a product line which has been designed for customers who require stringent control of the microbial load in their formulations. These co-solvents have been optimized for sensitive applications, as well as for the safe use with a variety of APIs, including those with low water solubility.

VitiPure LEX 3350 S and VitiPure LEX 4000 S not only surpass the general pharmacopoeia monograph requirements, but they have also been risk-assessed in their production for their use as excipients in parenteral applications. In addition to the general monograph requirements, specific microbiological aspects have also been certified.

Polyglykol 1450 S is an alternative polyethylene glycol co-solvent specified according to the current USP-NF monograph, which is additionally meeting the monoethylene and diethylene glycol limits recommended by the corresponding FDA guideline on this topic. Polyglykol 1450 S is produced under IPEC GMP conditions in the form of flakes, which allows easier handling during production. This product surpasses current international pharmacopeia requirements.

New launch of VitiPure CO 35 Superior (Polyoxyl 35 Castor Oil), VitiPure O 80 Superior (Polysorbate 80), and VitiPure L 20 Superior (Polysorbate 20) for colorless and parenteral applications with the highest purity excipients.

The VitiPure Superior line offers nearly colorless excipients and hence adds no color to the final formulation due to its ultra-low residual impurities. Additionally, this line is suitable for APIs that are sensitive to residual impurities and for formulations that require low microbial loads with low endotoxins. VitiPure Superior products are highlypurified excipients, suitable for parenteral formulations. VitiPure CO 35 Superior is addressing the parenteral application where the highest purity of the excipient is required. VitiPure O 80 Superior and VitiPure L 20 Superior are additionally appropriate for the stabilization of human and veterinary vaccines and biologics.

Compared to the standard excipient grade, all three Superior products improve the stability of the finished API formulations. In addition, the steel packaging with nitrogen purging assures low levels of peroxide formation during product storage.

## New VitiPure Meglumine LEX for sensitive formulations

Clariant has developed Meglumine for sensitive formulations where both a low bioburden and low endotoxin grade are required. This solubilizer can be used as a counter-ion in contrast media, a buffering agent, and a bioavailability and solubility enhancer of mildly acidic APIs. Due to its low microbial load, Meglumine LEX is suitable for parenteral applications.

#### VitiPure HCO is a new hydrogenated castor oil (HCO) in micronized form for solid oral and topical use

Clariant has developed VitiPure HCO for tablet formulations as a lubricant or sustained-release agent. Additionally, VitiPure HCO is suitable as a factor for consistency topical formulations. The consistent particle size distribution is well-suited as a tablet lubricant for applications where a hydrophobic lubricant is needed or as a replacement of magnesium stearate. Therefore, this product is suitable for processing through direct compression or dry granulation.

Clariant is committed to providing strong quality assurance and robust regulatory support for its customers. For more information on Clariant's one-stop shop solutions for excipients, visit the team at CPHI India Booth Number O 05 Hall 6 at the India Expo Centre, Greater Noida, Delhi NCR, India, on November 26 through 28, 2024.

Source : Press Release





#### **CHEMICAL TECHNOLOGY**-

TORAY RELEASES REVERSE OSMOSIS MEMBRANE ELEMENTS THAT DOUBLE IMPURITY REMOVAL TO PRODUCE ULTRAPURE WATER FROM RECYCLED WASTEWATER

Toray Industries, Inc., announced today that it began advance sales to domestic water treatment engineering companies within the course of this month of the TBW-XHR series of reverse osmosis (RO) membrane elements (see note 1). These neutral molecular high-removal, low-pressure elements double urea removal efficiency when using recycled wastewater (note 2) in producing ultrapure water suitable for fields such as semiconductor manufacturing.

Increasingly global water severe shortages have prompted semiconductor manufacturers to consider using recycled wastewater and seawater as sources for ultrapure water for manufacturing semiconductors, augmenting efforts to increase wastewater reuse at foundries, which consume huge volumes of ultrapure water.

Production of Ultrapure water from these water sources requires advanced technology capable of removing salts, silica, boron, urea, alcohols, and other impurities. Urea poses a particular challenge, as it impacts both the safety of drinking water and in the quality of ultrapure water used in photolithography processes for semiconductor manufacturing. Highly efficient urea removal is crucial to meet stringent demands of this application.

The urea concentration in conventional recycled wastewater is about 30 micrograms per liter, or around three times higher than in tap water. The ultrapure water production process requires maximum urea removal. Urea is hard to remove, however, owing to its small molecular size and electrically neutral nature, much like boron in seawater. Improving removal rates for urea and boron while maintaining high water production rates has been a significant challenge in developing RO membranes.

By innovating the RO membrane manufacturing process, Toray developed a new membrane structure control technology that allows selective water permeation and enhances the removal of urea, boron, alcohol, and other substances. These efforts culminated in the TBW-XHR series of RO membrane elements, whose urea removal efficiency is double that of conventional systems, achieving high water permeability at low pressure.

The company employed advanced analytical technology from Toray Research Center, Inc., in developing this product. Internal evaluations found that urea removal efficiency is nearly 90%, contributing to a stable supply of highquality ultrapure water needed by advanced semiconductor fabs. The technology reduces urea levels by half compared with conventional methods, supporting ultrapure water production from recycled wastewater.

This product addresses the demand for

improved water quality in current ultrapure water production systems. It could play an important role in constructing new systems, such as those using recycled wastewater. Advance sales are made to domestic water treatment engineering companies handling ultrapure water production equipment for semiconductor and electronic component plants. Toray plans to expand applications overseas, including seawater and brackish water desalination and wastewater reclamation.

Toray will present the technology underlying this product at the annual conference of the International Desalination and Reuse Association, one of the world's largest water treatment Associations. This event will be in Abu Dhabi, United Arab Emirates, from December 8 to 12 this year.

RO membrane elements are water treatment membrane products with diverse applications, including seawater desalination, industrial water production, wastewater reuse, and drinking water production. In addition to RO elements, the company offers a wide range of water treatment membranes and technical services, including ultrafiltration membrane modules for turbidity removal and membrane bioreactors for wastewater treatment. Toray will continue developing and marketing advanced materials that contribute to sustainable social progress.

Source : Toray



## COP29: WANHUA CHEMICAL REVEALS MULTIPLE INNOVATIONS THAT DRIVE CARBON NEUTRALITY IN CHEMICAL INDUSTRY SUPPLY CHAIN

BAKU, Azerbaijan, Nov. 22, 2024 / PRNewswire/ -- Wanhua Chemical ("Wanhua" or "the Company"; 600309. revealed multiple innovative SS). sustainable transformation models and technology applications at COP 29 in Azerbaijan from November 11th-22nd related to reaching a carbon-free future across energy, chemical. home appliance, and industrial park industries, among others. The Company industry with also collaborated organizations to address common environmental pollution and global warming development challenges.

Mr. Liao Zengtai, Chairman of Wanhua, commented: "With our corporate mission of Advancing Chemistry, Lives, Wanhua Transforming is committed to using the power of chemistry drive to our own transformation while providing solutions to common challenges facing the world and contributing to a sustainable future."

Wanhua's technological innovations champion a zero-carbon future.

• Utilizing waste heat to reduce energy consumption and carbon emissions

WanhuaChemicalHehaiComprehensiveEnergyProjectintroducedthe world's firstintegratedintelligentthermalenergytechnology to

improve energy efficiency and reduce carbon emissions. Utilizing advanced technologies, like corrugated plate absorption heat pumps, centrifugal heat pumps, mechanical and vapor recompression (MVR), the system waste heat from recycles Yantai Industrial Park. This reclaimed heat provides high-quality thermal energy for production processes and supplies a clean heating source for Yantai city in winter. By enabling effective use of lowtemperature waste heat, this approach supports the sustainable development of the chemical industry, lowering emissions and enhancing air quality. In 2023, the project achieved its goal of supplying heating of 10 million square meters for residential use, with full production set to reduce coal use by 2.6 million tons and heat 64 million square meters annually, and is capable of adopting and promoting on a larger scale.

• Adopting recycling innovation to reduce carbon emissions in scopes 1 and 2

diphenylmethane Wanhua's diisocyanate (MDI) technology uses wastewater recycling to efficiently process high-concentration aminecontaining waste brine, reducing brine emissions by 3 million tons and cutting carbon emissions by 140,000 tons annually. Additionally, a pioneering hydrogen chloride (HCl) oxidation cycle technology reuses HCl by converting it into high-purity chlorine for the MDI production process. This approach cuts electricity use from 1,250 kWh to 245 kWh per ton of chlorine, saving 710 million kWh and reducing CO<sub>2</sub> emissions by about 700,000 tons each vear.

Promoting full-cycle material recycling

Polycarbonate (PC) and thermoplastic polyurethane (TPU) have established recycling methods, yet over 78% of waste plastics remain unrecyclable. In the home appliance sector alone, over 5 million tons of polyurethane foam are incinerated or landfilled annually, contributing to pollution. Wanhua's alcoholysis technology breakthrough now enables polyurethane foam recycling, recovering up to 30% of polyol without product degradation. Leading global brands have expressed interest in partnering on this innovation.

In today's fast-paced world, Wanhua's functional, continuous environmentally friendly innovations serve daily life in globe-wide markets:

- MDI adhesive-based, formaldehydefree furniture eliminates formaldehyde release, while slow-rebound polyurethane ensures a better living experience.

- Materials like Nylon 12, HDI-type TPU, bio-based TPU, and others enhance comfort during sports activities.

- Wanhua leads in high-performance optical materials, offering solutions like high-refractive polycarbonate (PC), light-guiding PC, optical-grade polymethyl methacrylate (PMMA), MS, Cyclic Olefin Copolymer (COC) and Cyclic Olefin Polymer (COP) for industries such as home appliances, electronics, automobiles, and lighting.

- High-purity rose alcohol and menthol offer premium fragrances for personal care.

- Medical-grade materials like polysulfone, PC, PVC, and TPU meet the performance demands of medical devices.

- Wanhua's sustainable materials support energy-efficient building, lowcarbon travel, and improved lives with nutritional chemicals and formaldehyde-free products.

> Source : Wanhua Chemical Group Co.,Ltd





## EVONIK UNVEILS FLAME RETARDANT PA12 AND CARBON BLACK EMBEDDED 3D-PRINTABLE POWDERS AT FRANKFURT TRADE SHOW

- Evonik launches new INFINAM<sup>®</sup> powders with carbon black encapsulated in the core-shell
- Evonik and HP Inc. release new, jointly developed 3D-printable, halogen-free flame retardant material with 50% reusability
- Carbon black e n c a p s u l a t e d INFINAM<sup>®</sup> powders to be directly available from Evonik

**F**rankfurt am Main, Germany. Evonik is unveiling its latest innovations in PA12 polymer applications for 3D printing at Formnext 2024, the highlight exposition and convention for the world's additive manufacturing community.

Most notably on display will be the company's PA12 based INFINAM<sup>®</sup> 6013 P and INFINAM<sup>®</sup> 6014 P 3D-printable powders, which through a feat of engineering, possess a relatively substantial amount of carbon black in the core of each particle.

Produced through the precipitation

#### **NEW PRODUCTS**

process, these carbon black powders are specially designed for powder bed fusion techniques like SLS (Selective Laser Sintering), and offer high flowability and homogenous sintering. Additionally, the high core-shell carbon content allows black for true pigmentation uniformity, minimizes visibility of surface abrasion and wear, as well as provides elevated resistance to ultraviolet rays and greater isotropic performance.

<u>"These properties make our carbon</u> <u>black powder an ideal material for</u> <u>producing 3D-printed items</u>



destined for use outdoors – especially in applications that need to withstand an elevated exposure to heat and light, such as those found in the aerospace and automotive industry," says Arnim Kraatz, director of Powder Bed Fusion at Evonik.

To better serve the needs of this specialized customer base, the carbon black embedded INFINAM<sup>®</sup> 6013 P and INFINAM<sup>®</sup> 6014 P powders will be available for direct purchase from Evonik.

Also featured at Formnext will be the product launch of HP 3D HR PA12 FR, a robust, PA12-based 3D-printable polymer. Developed jointly by Evonik and well-known additive manufacturing technology powerhouse, HP Inc., the innovative powder is halogen-free, flame retardant, and remarkably features 50% reusability.

"We are very excited to be introducing the new HP 3D PA12 FR, a halogen-free flame-retardant polymer enabled by Evonik. Our long-term partnership is key to developing innovative solutions

> to continue growing the industry. This innovative material, which is 50% reusable. enables costeffective production of highquality parts and is poised to be a breakthrough in 3D printing, paving the way for applications scalable in consumer electronics," says François Minec, VP and Global Head of 3D Polymers at HP Inc.

> "We are proud of the fruits of this successful partnership with HP Inc., as

it is the latest application of an encapsulation technique enabled by Evonik's specially pioneered precipitation method," says Dominic Stoerkle, head of Evonik's High Performance Polymers' Long Chain Polyamides product line. "Partnerships like these help Evonik continue to develop innovative technology that put customers at the center of our business."

Other key properties include the powder's 50% reusability, which leads to less waste, improves the efficiency of the manufacturing process, and lowers the product's overall environmental impact.





Additionally, items made from HP 3D HR PA12 FR are cost-effective and possess exceptional surface aesthetics, facilitating the finishing process.

For excellent customer reach, the 3Dprintable powder will be available directly from HP Inc. and compatible with HP JF 5600 Series 3D Printing Solutions. Similar to other INFINAM PA12 powders from Evonik, HP 3D HP PA12 FR is produced using 100% renewable energy sources at the chemical site in Marl, Germany.

During the Formnext 2024 trade show, held from 19 to 22 November in Frankfurt am Main, Germany, Evonik experts will also be on hand in Hall 12.1, booth C39 to showcase INFINAM<sup>®</sup> TPA 4006 P, a PA12-based powder optimized for SLS (Selective Laser Sintering) technologies. Items printed with this material feature excellent rebound behavior and outstanding durability, making them ideal for a variety of consumer goods applications such as footwear.

Source : Evonik

## SYENSQO LAUNCHES ITS FIRST FLUORO-IONOMER BASED ON NON-FLUORO-SURFACTANT TECHNOLOGY

**B**a science company focused on developing groundbreaking solutions that support the sustainability ambitions of its customers, has launched Aquivion<sup>®</sup> N+ 125D, a fluoro-ionomer produced using Syensqo's proprietary new NFS (non-fluorosurfactant) technology. The new grade is commercially available worldwide and is intended for use in select hydrogen-related applications.

The launch of Aquivion  $(\mathbb{R})$  N+ 125D is aligned with the company's One Planet sustainability roadmap and represents the next step in Syensqo's ongoing journey to voluntarily phase out the use of fluorosurfactants from the PFAS family of chemicals. This commitment, announced in 2022, involves transitioning to non-fluorosurfactant technology across all our product lines particularly important as we aim to strengthen the role of our essential materials in the emerging hydrogen economy and our sustainability journey" said Mike Finelli, CTIO Syensqo.



and manufacturing nearly 100% of fluoropolymers without fluoro-surfactants by 2026.

<u>"We are proud to continue</u> on the transition of our products to Non-Fluorosurfactant technology. This achievement stems from our intensified Research and Innovation efforts over recent years that enabled our commitment to phase out the use of fluorinated surfactants. This is Launched in 2021, Syensqo's Green Hydrogen Growth Platform offers material solutions across the entire value chain, from green hydrogen production to usage, that are designed to advance the development of the green hydrogen economy. The platform brings together Syensqo's advanced materials and competencies, developing innovative solutions that focus on improving system durability, efficiency and total cost of ownership. Aquivion<sup>®</sup> N+ is the new brand name for the company's fluoro-ionomer range.

As the green hydrogen economy develops, the platform will continue to partner with customers and key players in the industry to enable the energy transition

Source Syensqo





#### **MERGERS AND ACQUISITIONS**

ARKEMA AND AUTHENTIC MATERIAL PARTNER TO OFFER INNOVATIVE AND MORE SUSTAINABLE MATERIALS FOR THE LUXURY GOODS MARKET AND BEYOND

The partnership leverages Arkema's leadership position in the design, manufacture, and recycling of advanced bio-circular materials and the proprietary expertise of Authentic Material in leather recycling.

The new innovative compounds based on combinations of recycled leather and Rilsan<sup>®</sup> polyamide 11 or Pebax<sup>®</sup> TPE pellets, are produced by Authentic Material and sold under their Qilin<sup>™</sup> brand. They can be easily transformed by 3D printing or traditional extrusion and molding processes.

Primary markets of focus include luxury goods, fashion and accessories, consumer electronics, and automotive interior, and sports equipment with several exciting product launches already completed with luxury brands in 2024.

Bio-based polyamide 11-based materials derived from renewable castor seeds and recycled natural leather are an ideal combination to develop an exciting new range of materials with a unique look and feel. Authentic Material has unique leadership expertise in terms of leather sourcing, analysis, treatment, and alloying with polyamide 11. We are also working on 100% recycled grades using recycled polyamide 11 grades produced as part of our Virtucycle<sup>®</sup> recycling program. Arkema's Virtucycle<sup>®</sup> system is an in-house recycling program specifically for high performance



thermoplastic resins." David DUPONT, vice-president of specialty polyamides at Arkema

Today's discerning brands and consumers demand high performance in terms of luxurious touch, feel, and long-term durability. They also want the highest standards in terms of ethical and sustainable sourcing and we are proud to bring them this innovative solution combining recycled leather and advanced biocircular polymers." Noémie DUMESNIL, Chief Operations Officer at Authentic Material

Source : Arkema

DOW, JLR AND ADIENT DEVELOP INDUSTRY FIRST BREAKTHROUGH FOR CIRCULARITY IN AUTOMOTIVE SEATING

Gaydon, UK – 27 November 2024: JLR has made a significant technical breakthrough in the closed-loop recycling of polyurethane seat foam from its used vehicles by successfully reintegrating it back into the production of new seats.

In collaboration with Dow's MobilityScience<sup>™</sup> material innovations and global leader in automotive seating Adient, this is the first time closed-loop seat foam content has been successfully used in automotive production.

Luxury vehicle manufacturer JLR is now putting the material through its full production process aiming to test its use at scale in pre-production vehicles early next year.

Polyurethane foams are known to be challenging when it comes to recycling and are designed for durability, meaning they end up in landfill and can remain in





the environment for several generations. By creating a closed-loop supply chain, JLR will be able to reduce emissions, eliminate waste and enable a secure supply of low carbon seat foam for its vehicles.

The recycled foam will be one element to a new 'circular seat' that it is estimated will half CO2e emissions impact while maintaining high performance, avoiding over 44kg of CO2e per seat, the equivalent of charging almost three thousand smartphones2.

Andrea Debbane, Chief Sustainability Officer, JLR said: "I am so excited about the potential of this way of working. It represents a collective commitment to doing things differently, challenging us to rethink our approach from all angles to find the solutions needed to design and build the cars of the future."

"Close collaboration with experts from the recycling and materials science industries, with our supply chain partners, and colleagues from design and engineering is key – we need to work as a collective value chain to unlock meaningful change at scale. The knowledge and applications found demonstrate that full circularity is feasible and as a business this is critical to our transition."

Jon Penrice, Mobility President, Dow said: "This collaboration highlights Dow's MobilityScience<sup>™</sup> initiative to drive sustainable mobility through advanced material science. By leveraging our expertise and collaborating with Adient and JLR, we are

developing technologies that support our net-zero carbon emissions and our circular and renewable solutions goals. Through Dow's **RENUVA<sup>™</sup> sustainability** program, Dow addresses the growing demand for recycled materials by converting End of Life waste into new raw circular materials, helping our customers meet their recycled content targets. Through chemical and advanced recycling processes, this breakthrough depolymerization closedloop recycling solution meets the requirements and maintains the superior comfort and quality of JLR seats."

Mick Flanagan, Vice President Customer Group at Adient said: "At Adient, we are proud to lead the change in integrating closed-loop recycled materials into our seating solutions. Our collaboration with ILR and Dow not only showcases our commitment to sustainability but also demonstrates how innovative partnerships can drive significant advancements in the automotive industry. By leveraging recycled polyurethane, we are setting new benchmarks for environmental responsibility ensuring while our

products deliver the luxury and comfort our customers expect."

The breakthrough is a result of ongoing research and testing at JLR's Circularity Lab in Gaydon, which aims to reduce waste and boost the recyclability of its luxury vehicles.

Historically, vehicles have been designed with limited consideration for how easy it is to take them apart and separate materials once they reach end-of-life. The use of mixed materials that are difficult to separate, fixing methods and adhesives can make the challenge of reducing waste and recycling for reuse almost impossible.

ILR's Circularity Lab aims to troubleshoot these challenges by bringing together cross-disciplinary squads comprising sustainability, engineering, procurement and design. The teams disassemble vehicles in a collaborative 'learn through doing' approach, working closely with suppliers and experts in materials to understand and overcome the barriers to reuse and recycling.

Data is fed from the Lab directly into early decision-making for vehicle development and testing for the technical feasibility of returning materials such as glass, steel, aluminium, and polymers back into its supply chain for reuse in the production of new vehicles whilst retaining the same highquality standards.

For example, initial tests on front bumpers found the same quality and performance could be achieved using a reduced number of polymers, saving 177,500 kg CO2e over a single model line3, whilst also saving £560,000 in cost. The approach means JLR will be able to deliver lower carbon bumpers physically on new cars from next year.

JLR has already had success in closed-loop innovation through an award-





winning landmark project, which saw post-industrial waste from aluminium body panel stamping recycled back to the supplier to be incorporated into new body panels. This involved technical innovations, such as the creation of a new aluminium grade that would be best suited to the closed-loop process and could only have been achieved through true supply chain collaboration.

The Circularity Lab supports JLR's Reimagine strategy which aims to set new benchmarks in environmental, societal and community impact for business. Central to this is its ambitious vision for circular economy, which aims to achieve a more resource efficient economy through the elimination of waste and repeated circulation of products and materials.



JLR has been an Ellen MacArthur Foundation Network Partner since 2023 and is applying circular economy principles to all aspects of its business, including its industrial transformation, which has seen thousands of pieces of equipment refurbished and redeployed to balance capability requirements, energy efficiency and CO2e impact as it prepares for its all-electric future.

Souce : Dow

ARCHROMA TO SHOWCASE NEW DENIM HALO PROCESS FOR LASER-FRIENDLY DENIM WITH A REDUCED ENVIRONMENTAL FOOTPRINT

Pratteln, Switzerland, November 28, 2024 - Archroma, a global leader in specialty chemicals towards sustainable solutions, will showcase innovations for the denim industry at Sustainability Talks in Istanbul, Turkey and Denim Première Vision in Milan, Italy next month.

#### **INTERNATIONAL NEWS**

Specifically, Archroma will highlight its revolutionary DENIM HALO pretreatment and dyeing process for laser-friendly, easily washable denim. It will also join its partners Kipaş Denim and Jeanologia to launch a joint hangtag for the upcoming Kipaş Denim Contra Denim collection, which is based on the DENIM HALO concept.

"Denim continues to be an incredibly exciting market segment, with brands and mills pushing the limits in terms of sustainability and aesthetics to give consumers the iconic look and feel of denim in a more environmentally conscious way," Umberto De Vita, Archroma's Market Segment Director -Denim, said. "Guided by our PLANET CONSCIOUS+ approach, we develop solutions that not only help our customers navigate the shift to cleaner chemistries and resource-saving processes, but improve their productivity and competitiveness too."

#### Innovative DENIM HALO process

The DENIM HALO process combines Archroma's new DIRSOL® RD special pretreatment with its unique DENISOL® indigo dyes, including an aniline-free[1] formulation, or DIRESUL® sulfur black, sulfur blue or sulfur colors dyestuffs to achieve a ring-dyeing effect. This superficial dyeing creates laser-friendly denim for popular worn or distressed washdown effects while reducing yarn shrinkage and improving garment tensile strength[2].

Crucially, the new process also delivers a substantially reduced environmental footprint compared to industrystandard denim finishing. It avoids processes like manual hand scraping or potassium permanganate spraying and helps reduce caustic soda use in sulfur dyeing, which lowers the effluent load and improves weaving efficiency.





Archroma will also join Kipaş Denim, a leader in integrated textile production based in Turkey, and Jeanologia, a sustainable textile solutions company, to launch a hangtag program for the upcoming Kipaş Denim Contra Denim collection.

Based on DENIM HALO, the Contra Denim concept is a dyeing and finishing process that enables brands to create stunning and long-lasting distressed looks and design effects, such as intricate patterns, whiskering and fades, through cleaner processes that save water and energy and reduce greenhouse gas emissions. The hangtag will enable partner brands to communicate these benefits to consumers at the point of sale, nurturing transparency and trust.

Meet the Archroma team at Sustainability Talks 2024

Sustainability Talks is an intensive oneday event that emphasizes networking and collaboration to solve the textile industry's toughest challenges through sustainable solutions.

Visit Archroma in Turkey at Booth 20 at the Hilton Istanbul Bomonti Conference Center for Sustainability Talks on December 3, 2024.

You are also invited to attend the Sustainability Focused Innovative Technologies Panel at 10:00 am, where Julio Perales will join other denim experts to share insights into innovations and best practices that keep brands ahead of regulatory change.

Meet the Archroma team at Denim Première Vision 2024

Denim Première Vision is bringing the global denim community to Milan, Italy in December to explore denim trends, markets and culture through the lens of eco-responsibility. Meet our experts Umberto De Vita and Julio Perales to Source : Press Release

## COVESTRO UNVEILS CERTEVO®: AN INNOVATIVE POLYMERIC SUBSTRATE TO REVOLUTIONIZE SECURITY PRINTING

- Launch of official brand CERTEVO<sup>®</sup> for security printing industry
- Applied in high-secure and durable official documents, certificates, and applications demanding for advanced anti-counterfeiting measures
- Combining advanced security features design with recyclability
- Covestro showcases its advanced polymer substrates at TRUSTECH 2024 in Paris

Novestro is excited to introduce ∠CERTEVO®, innovative an polymeric printing substrate. It is designed for advanced security printing applications like high-secure and durable official documents, certificates, applications demanding and for advanced anti-counterfeiting measures. The launch of CERTEVO® marks a significant advancement in document security, sustainability, and printing technology, combining performance and environmental responsibility.

"The introduction of CERTEVO" marks a pivotal advancement in security printing as an innovative, recyclable polymeric substrate that combines excellent printability,

#### durability, and sustainability."

Daniel Hentschel, Global Segment Manager, ID & Security Printing at **CERTEVO**<sup>®</sup> Covestro Covestro's revolutionizes security printing with several key features: It supports excellent printability via intaglio and offset processes, enabling embossing structures—surpassing traditional paper and enhancing security elements. Its hotmelt nature eliminates the need for coatings and primers, ensuring superior ink adhesion that simplifies printing and Additionally, boosts durability. advanced laser engravability allows precise micro-engravings, making counterfeiting efforts more challenging.

As a single-polymer composition, CERTEVO<sup>®</sup> is recyclable, meeting the demand for sustainable security printing materials. Its high tear resistance and ink adhesion extend the lifecycle of printed items while conserving resources. CERTEVO<sup>®</sup> thereby addresses environmental concerns and meets evolving sustainability requirements in document production.

Furthermore, its durable composition lowers long-term costs by minimizing replacements, making it an ideal choice for governments and the public sector that prioritize security and environmental responsibility.

#### Meet Covestro at TRUSTECH 2024

Covestro's team will be present at the TRUSTECH trade show, held at the Paris Expo Porte de Versailles - Pavilion 5.2, from December 3-5, 2024. We invite industry professionals and stakeholders to discuss with us at meeting room 8 and discover how CERTEVO<sup>®</sup> and other advanced polymer materials can transform their security printing needs.

Source : Covestro




### **NEWS ROUND UP**

#### Continued on Pg 22

Before the initiatives, India's green hydrogen infrastructure was in its nascent stage with only a few projects and goals. The production capacity was also limited. It was all due to limited dedicated facilities for green hydrogen production, storage, and distribution that hindered its ability to scale hydrogen-based technologies.

Most existing hydrogen production relied on fossil fuels and natural gas, therefore it resulted in the production of "Grey hydrogen" with a significant carbon footprint. Some private companies and research institutions conducted small-scale experiments and demonstrations without a strong policy framework or substantial government investment. Therefore, the headway was limited.

The National Hydrogen Mission was launched in 2021 marking a turning point as it set some ambitious targets and came up with a framework to establish green hydrogen infrastructure. This mission has its goal clear which is to transition the grey hydrogen into green by focusing on refining, ammonia production and mobility. Although there were some renewable energy producers such as NTPC, and Indian Oil Corporation initiated small green hydrogen projects, the nation lacked large-scale green hydrogen infrastructure due to high production costs and technology standardization.

This INR200 crore initiative is now filling the gaps as it is funding the decentralized hydrogen projects by building testing and certification capabilities and setting up refuelling infrastructure, especially in heavy industries and shipping.

The initiative has created a more

structured and scaled approach to green hydrogen infrastructure in India, that supports the country's transition to • clean energy thereby reducing dependence on fossil fuel imports.

India is on its way to position itself as a major player in the green hydrogen economy and aspiring to become a hub for clean energy innovation and a key hydrogen-based exporter of technologies. The transformation has the potential to reduce carbon emissions and enhance energy security while creating a robust green energy sector. The transformation also includes significant economic and employment benefits. In the long term, green hydrogen could contribute to India's goal of attaining net-zero emissions by 2070 and making the country a global leader in sustainable energy.

What are the key principles of the scheme?

Decentralize	green	hydrogen
applications:		

Making the applications viable for various practical uses by decentralizing the applications is the primary focus of the initiative which includes:

- Household cooking and heating: Substituting traditional fuels with hydrogen, creates households that can access cleaner energy, especially in rural and remote communities.
- Off-grid electricity generation: India has proudly achieved a 99.4% electrification rate, however many communities still lack reliable access electricity due to some to discrepancies associated with the term "electrification". For instance, a village is considered electrified even if a fraction of households or institutions have access to

electricity.

- Also, even if the access is intermittent or insufficient to meet the daily needs. Even today there are large populations in states like Uttar Pradesh, Bihar and Jharkhand experience inconsistent or poorquality electricity. Therefore, these areas are dependent on alternative sources. Likewise, certain regions in North India are isolated and struggle with grid connectivity, these tribal areas are facing geographical challenges and infrastructural constraints.
- To bridge the gaps, innovative models like renewable mini-grids, community-owned energy projects, and greater public-private collaboration are being encouraged. Similarly, hydrogen-fuelled systems are capable of offering sustainable and stable electricity.
  - Powering off-road vehicles: Green hydrogen can provide low-carbon alternatives for vehicles that are used in industrial sectors such as agriculture, mining and others.

Overall, the decentralization concept revolves around the idea of decentralizing access to green energy, supporting both urban and rural areas and thereby reducing dependence on conventional energy sources.

#### Safety and reliability as cornerstones:

The Ministry of New and Renewable Energy(MNRE) emphasizes the secure use of green hydrogen across diverse applications. These pilot projects will validate its feasibility as a clean fuel alternative for household and commercial purposes thereby aligning with India's broader mission to advance in producing sustainable energy.







Government commitment and infrastructure development:

The government's INR 200 crore initiative has gotten the approval from Integrated Finance Division which includes detailed guidelines for implementing these pilot projects. This commitment is fostering a green hydrogen ecosystem, diversifying its applications and building essential infrastructure like refuelling stations.

### Addressing India's battery market challenges:

Although there is significant progress in renewable energy, the country remains dependent on imported batteries. According to the International Energy Agency (IEA), By 2030 India's domestic production rate will not be enough to fulfil its needs and it will fulfil only 30% of the demand, even with its reliance on Chinese imports. This statistic accentuates the need for a stronger local manufacturing ecosystem to support India's clean energy goals.

### Creating a favourable impact on US trade policies:

The current news states that the United States has revised their trade policies, reinstating tariffs on solar imports from Southeast Asian nations and reducing their dependence on Chinese imports. This situation has created a profitable landscape for Indian exporters as they can now capture a larger share of the US solar market. As India's solar photovoltaic exports are surging and valued at \$2 billion in 2024, it showcases the growing opportunity with market players like Waree, Adani and Vikram shining in the sector.

Link of the context with National Green Hydrogen Mission:

The Ministry of New and Renewable Energy (MNRE) has rolled out comprehensive guidelines for pilot projects designed and them to revolutionize the production and usage of green hydrogen through innovative decentralized methods. and The initiatives form a cornerstone of the National Green Hydrogen Mission, inaugurated in January 2023 with a budgetary allocation of INR 19,744 crore. The mission is India's strategic play to emerge as a global leader in green hydrogen technologies, drive decarbonization and curtail its dependence on fossil fuels.

The pilot projects will make use of novel approaches like floating solar-powered hydrogen production, biomass-based methods, and wastewater-driven hydrogen generation. However, by leveraging localized resources such as renewable energy, land and water, the projects will foster its efforts in reducing infrastructure and transportation needs while expanding the application of green hydrogen into new sectors.

The scope will continue and reach diverse applications such as cooking, heating, off-grid electricity powering off-road vehicles and so on.

The key objectives are massive but clear. To validate the technical feasibility and safety of green hydrogen for real-world which include household uses, appliances, community services and urban gas networks. With the help of a dedicated budget of INR 200 crore for implementation until 2026, the Scheme Implementing Agencies such as the National Institute of Solar Energy (NISE), National Institute of Bio-Energy(NIBE), and Solar Energy Corporation of India (SECI) are tasked with addressing the challenges in technology, regulations or supply chains.

Another important objective is to build an ecosystem supporting storage, distribution and refuelling networks for





green hydrogen, thereby paving the way for large-scale adoption.

As the nation continues to tackle pressing questions related to carbon neutrality, the programs also lead to critical points to consider:

- How the decentralized green hydrogen production transform energy access in rural and remote areas?
- What role do these floating solar technologies and bio-mass-based methods play in optimizing green hydrogen generation?
- How viable is green hydrogen for common household applications

like cooking and heating?

- What are the safety measures needed to ensure public confidence in adopting green hydrogen in daily life?
- Is there any possibility of bringing in more advancements or technological developments to reduce the infrastructure costs or resource constraints in these green hydrogen projects?

Overall, through these groundbreaking efforts, India is not only addressing domestic energy challenges, but it is also positioning itself as a pivotal player in the global clean energy transition. Take away:

Can green hydrogen truly become the crux of India's clean energy transition? Yes! The National Green Hydrogen Mission answers this with a resounding ves thereby offering a roadmap too that integrates innovation, sustainability, and practical application. Overall the mission envisions reducing carbon emissions but also explores the real potential of green hydrogen across diverse sectors such as household energy, community services, and industrial applications. By setting the stage for large-scale adoption, these efforts reinforce the country's role as a global leader in the clean energy domain.

# From Low-Margin to High-Value Transforming India's Chemical Industry through lessons from China's global leadership in chemicals

#### Vinodini Harish

#### Introduction:

Tndian chemical sector stands at a Lcrossroads. The rapidly expanding economy and global demand for specialized, high-valued chemicals are creating a unique opportunity to reshape the sector for the future. India should move beyond traditional, low-margin chemical production to become a global leader in innovation and sustainability. However, the country can take valuable from China's lessons recent transformation, showcasing the impact of strategic investments in high-tech manufacturing, digital adoption and sustainable practices. Could India replicate these successes? What are the challenges and choices that lie ahead as the country pursues a path toward advanced chemical production and, a resilient and self-sustaining industry? In this article, we have explored the possibilities of the nation's ready to adopt a game-changing vision for its chemical sector.

### Growth of the Chinese chemical market:

The Chinese chemical industry is vast and thus forms a backbone for much of the country's economic activity. However, this dependence on chemical production could create critical vulnerabilities, particularly if supply becomes dominated by allied adversaries.

This context raises strategic concerns: China's reliance on its chemical industry not only powers its industrial sector but also affects its resilience in global trade and economic stability. Dependence on materials that could be controlled or influenced by external forces creates potential risks, especially in a world with shifting alliances and economic power struggles. If geopolitical tensions rise, China could face significant supply chain disruptions, impacting everything from manufacturing to technology.

In 2022, the global sales in the chemical industry accounted for about \$4.7 trillion. China was responsible for 44% of global chemical production and contributed 46% of the sector's capital investment.

China leads the globe in terms of chemicals industry sales and with the help of modern technologies the country has a significant cost advantage in chemicals. Additionally, the country accounts for about 55% of the global capacity for acetic acid about 50% of the







global carbon black capacity and about 45% of the global capacity for titanium dioxide.

### Analysis of Chinese chemical market trends and approaches:

For the majority of commodity chemicals, China started as a net importer, then built its domestic capacity and then ended up being a major exporter.

This scale highlights China's significant role in the global chemical industry. Such a high concentration of production and investment not only reinforces China's influence over global supply chains but also makes it a central player in the development of new chemical processes and materials. However, this dominance also increases exposure to geopolitical risks. Any disruptions in Chinese production could reverberate worldwide, affecting industries like

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Pharmaceuticals, electronics, and agriculture, which rely heavily on chemical inputs.

China aims to achieve self-sufficiency in the chemical sector and then establish itself as a global leader in the chemical industry.

This strategy reflects China's desire to reduce its dependence on foreign chemical imports, ensuring a stable and autonomous supply for its industries. By becoming self-sufficient, China can insulate its economy from potential disruptions caused by international supply chain issues or geopolitical Beyond self-sufficiency, tensions. China's ambitions to lead the global chemical industry signals its intent to drive innovation, control more of the value chain and capture a larger share of global market influence.

This strategy helps the country to set

industry standards, shape global pricing, and maintain a significant competitive edge, especially in fields like advanced materials, green technologies and pharmaceuticals where chemical advancements play a crucial role.

Most of the Chinese chemical firms are strong in their basic chemicals where innovation plays a lesser role, but are focusing on gaining global market share in fine chemicals and consumer chemicals.

#### Case study 1:

Wanhua Chemical Group is a major player in the production of MDI (Methylene diphenyl Diisocyanate), a basic chemical used in polyurethane production, Wanhua was first focusing on scaling production to become the largest MDI producer across the globe. However, it has shifted to the production of fine chemicals, recognizing limited growth in basic chemicals. The company has expanded into high-value fine chemicals and specialty chemicals, such as automotive coatings, and adhesives. This shift has enabled them to capture more lucrative segments in the global markets.

#### Case study 2:

China National Chemical Corporation famously known as ChemChina was initially focused on basic chemicals, however, the firm after its acquisition of foreign companies like Syngenta (a major Swiss Agrochemical and Seeds Company) marked a turning point. After the acquisition the company entered the consumer-focused agricultural chemicals market, thereby positioning itself as a leader in pesticides, herbicides and advanced agricultural solutions.

Case study 3:

Huntsman Acquisition by Sinopec





Sinopec is one of China's largest stateowned petroleum and petrochemical enterprises, was traditionally focused on basic chemicals and refining. However, it aimed to shift towards more specialized and value-added products. Then the company planned and acquired Huntsman's chemical assets and gained access to specialty chemical segments, especially in polyurethanes and performance products for consumer applications. The acquisition helped the company diversify its product portfolio to include specialty and consumer chemicals thus enabling it to offer solutions in unique fields like automotive, electronics and consumer goods. Furthermore, with the help of Huntsman's technology and innovation base, Sinopec has been able to target new markets and strengthen its global footprint.

How does China deal with a low investment structure and redundant construction?

Government policies to curb redundant construction and overproduction:

China is dealing with the overproduction of low value-added products market, and this scenario increases the domestic demand by the high value-added chemicals that mostly rely on imports.

The Chinese government and industry understand the vulnerability of the domestic market and are striving to change it. That is why the country is innovative pushing toward fine chemicals. The Chinese government has introduced strict environmental regulations and standards that discourage the expansion of outdated, polluting facilities.

These policies reduce the redundancy and encourage them to focus on modernization and compliance. In addition to these, the government is also focusing on implementing capacity control measures in specific sectors to avoid the continued oversupply of basic and low-margin chemicals.

### Investment in high-value and high-tech chemical production:

China is attempting to shift production capacity from lower-value to highervalue chemical segments. Subsidies and tax benefits for companies investing in advanced technologies, R&D and green chemistry initiatives are helping to redirect capital from low-value production towards sectors with greater growth potential and higher added value.

On the other hand, significant investments are channelled towards producing active pharmaceutical ingredients that are also called APIs domestically. This has reduced the dependency on imports in critical sectors.

The country is also fostering innovation hubs and chemical parks to centralize high-value production streamline the resources and share them. These clusters offer opportunities for joint research and technology sharing that are utilized for developing fine chemicals, specialty chemicals and consumer chemicals.

The strategic partnerships between state-owned and private enterprises help the country to build a robust innovation ecosystem. These partnerships help in providing capital for high-tech ventures and allow the private firms to access government support thereby expediting the development of advanced products.

Shifting the production to the more profitable ones, high-value-added chemical production:

The country has shifted their focus from basic to fine chemicals and began investing in these more profitable and critical ones that play vital roles in consumer electronics, automotive and healthcare. For example, Wanhua Chemical and ChemChina have shifted part of their focus towards producing specialty chemicals with applications in high-tech fields.

Overall, China is swiftly shifting its focus on the production of high-valueadded chemicals thereby positioning itself to reduce the dependency on imports and elevate its domestic industry's technical standards.

What can India learn from China's approach to transform its chemical industry?

India has similar aspirations to China, to become a global leader in high-valueadded sectors. India could adopt and implement strategies similar to those in China.

• Address the overproduction and optimize capacity:

The key is to begin with implementing capacity control measures and enforcing environmental standards, especially in the areas like basic chemicals, and petrochemicals and in the areas where the possibility of overproduction leads to inefficiencies.

For instance, the Indian government should take initiatives to restrict or redirect investments in basic chemicals and encourage the capacity in fine chemicals, specialty chemicals and green chemistry.

• Shift focus to high-value and high-tech chemical production:

Incentivizing firms that produce specialty chemicals and high-growth industries such as pharmaceuticals, electronics and automotive manufacturing. Establishing policies that encourage R&D spending, tax breaks for innovation and public-private partnerships. Designating specialty



chemical zones with streamlined regulatory support and encouraging global partnerships for technology transfer.

• Promoting the manufacturing sector with advanced digital and automation technologies:

Prioritizing smart manufacturing, and adaptation of digital tools such as AI, IoT and automation in the chemical sector can enhance efficiency and reduce costs. Therefore focusing on smart manufacturing practices not only optimizes production but also reduces resource consumption and emissions thereby aligning with India's sustainability goals.

Companies in Gujarat or Maharashtra could incentivise to adopt real-time digital monitoring systems allowing them to maintain competitive prices and improve operational efficiency.

• Enhance R&D capabilities and build innovation ecosystems.

India could establish research hubs and chemical parks that are dedicated to innovation in fine and specialty chemicals. These hubs facilitate collaboration between industry players, universities, high-performance polymers and sustainable materials. Developing a skilled workforce and attracting global talent:

Focusing on specialized educational programs in fine chemicals, biotechnologies and material science alongside the initiatives that incentivize graduates to join domestic chemical firms. For instance, by partnering with institutions such as the Indian Institutes of Technology and the National Chemical Laboratory (NCL), India could design tailored programs that areas focus on emerging such as advanced materials green and chemicals.

• Reduce the dependency on imports through targeted production:

China is now focusing on developing domestic capabilities for products that are heavily imported, especially highperformance chemicals and pharmaceutical ingredients. This helps reduce the dependency on imports, strengthens supply chains and increases resilience against global disruptions.

Increasing support to the development of API manufacturing through grants, and subsidies, thereby reducing reliance on imports from countries like China.

• Emphasize sustainability and green chemistry:

The global pressure for sustainable practices has gotten effect on our country thereby pushing it to integrate green chemistry principles into its chemical production processes and adopting eco-friendly technologies. Therefore the focus not only aligns with environmental goals but also gives an edge to Indian companies in the global markets where sustainable products are in high demand.

#### Take away:

The journey to a high-value, innovative chemical industry demands bold choices and a clear, forward-thinking strategy. Learning key lessons from China's approach, prioritizing high-tech production, embracing digital solutions, fostering a highly skilled workforce and much more help India to revolutionize its position in the global chemical market. But are the current policies enough to support this transformation? Can the country reduce its dependence on low-value imports and build a foundation for specialty chemical production? Although India grapples with these questions, the path forward lies in fostering innovation, investing in talent and committing to sustainability. Overall with the right focus, the Indian chemicals sector could not only meet the global demands but also establish itself as a model of advanced, resilient and sustainable growth.

# Indian Chemical Council Wins 2024 OPCW-The Hague Award

Mumbai, India – November 25, 2024: The Indian Chemical Council (ICC), the apex national body representing the \$220-billion chemical and petrochemical industry in India has been honoured with the prestigious 2024 OPCW-The Hague Award in recognition of its exceptional contribution towards achieving a world

free of chemical weapons. The ICC is named as a co-recipient alongside the National Institute of Criminalistics and Criminology of the National Gendarmerie (NICC/NG) of Algeria. The 2024 OPCW-The Hague Award, which acknowledges significant efforts to support the objectives of the Chemical Weapons Convention (CWC), was announced by the Organisation for the Prohibition of Chemical Weapons (OPCW).

This award acknowledges the role played by ICC in promoting chemical safety, compliance with the convention, and enhancing industry-wide security practices in India. Through initiatives







like the Chemical Weapons Convention (CWC) Helpdesks, ICC has increased industry compliance and facilitated e-filing efficient for chemical declarations. Additionally, ICC's 'Nicer Globe' initiative has had a substantial impact on chemical transportation safety in India, offering real-time monitoring and emergency response capabilities. ICC has conducted other activities to promote chemical safety and security through its 'Responsible Care' (RC) programme and the introduction of the Security Code of RC. ICC's focus on enhancing industry security and advancing national implementation of the convention in one of the world's largest chemical sectors, demonstrates an outstanding commitment to responsible industrial stewardship, and the aims of the CWC in this regard. This is the first time that the award recognises the efforts of a chemical industry body.

The 2024 OPCW-The Hague Award was held on November 25, 2024, during the 29th session of the Conference of the States Parties to the Chemical Weapons Convention, held at the World Forum in The Hague. Mr D Sothi Selvam, Director General, ICC accompanied by Dr R Naravanan, Advisor-CWC Help Desks, ICC received the 2024 OPCW-The Hague Award from Ambassador Fernando Arias, the Director General of OPCW and Mr Jan van Zanen, the Mayor of The Hague at a grand ceremony in the presence of all State Parties attending the Conference including India's Ambassadorr &

Permanent Representative to the OPCW and the Chairperson, National Authority Chemical Weapons Convention (NACWC), Government of India.

AmbassadorFernandoArias,OPCWDirector-General, congratulated ICCfor its longstanding effortsinenhancingindustry

advancing security and national implementation of the convention. Ambassador Fernando Arias said, "The Indian Chemical Council has been a tireless champion for the peaceful application of the chemistry within the chemical Industry in India, through initiatives such as the Chemical Weapons Convention (CWC) Helpdesks and the Nicer Globe initiative for chemical safety and security in logistics. The Indian Chemical Council has been a leader in promoting chemical security and compliance with the convention. Its purpose on enhancing chemical security and advancing national implementation of the convention in India demonstrates an outstanding commitment to responsible industrial stewardship."

"The OPCW – The Hague Award winners make real contribution to reducing the continuing threat caused by chemical weapons. Peace, Justice and Security are not given, they must be fought for. The OPCW along with this year's winners actively contribute to that." said Mr Jan van Zanen, the Mayor of the Hague congratulating the two winners of OPCW-The Hague Award 2024.

He also mentioned, "The winners of this year's OPCW-The Hague Award reflect the remarkable global efforts needed to work towards a world free of chemical weapons. Their dedication and innovative approach are inspiring examples of how we can work together for a safer and more peaceful world. Together, we must continue to push forward, fostering collaboration and innovation to build a future rooted in global peace and security."

In acceptance of the honour, Director General of ICC, Mr D. Sothi Selvam said, "I am deeply humbled to receive the prestigious 2024 OPCW-The Hague Award on behalf of the Indian Chemical Council (ICC). This honour not only recognizes the efforts of ICC but also underscores the importance of the National Authority Chemical Weapons Convention (NACWC) and the Department of Chemicals & Petrochemicals of the Government of India for their unwavering support and guidance. OPCW's tireless efforts to eliminate the chemical weapons and promote disarmament are a beacon of hope for a safer and more secure world."

In his speech, Mr. D Sothi Selvam acknowledged the tireless efforts of NACWC, Secretariat. Cabinet Government of India, Mr. Kartik Bharat Ram, President of ICC, the other office bearers of ICC, the entire team of CWC Helpdesk personnel and ICC colleagues who have worked alongside. He congratulated the co-recipient of the 2024 OPCW-The Hague Award: The National Institute of Criminalistics and Criminology of the National Gendarmerie of Algeria.

Mr. D Sothi Selvam added, "ICC's role for the implementation of Chemical Weapons Convention through the CWC Help Desks with the support and guidance of NACWC has been greatly appreciated by the global chemical industry fraternity. The 2024 OPCW-







Hague Award serves as a powerful reminder that our individual and collective efforts can make a meaningful difference."

In 2013, the OPCW was awarded the Nobel Peace Prize in recognition of its extensive efforts to eliminate chemical weapons. To preserve the legacy of this achievement, the OPCW established the OPCW-The Hague Award in collaboration with the Municipality of The Hague in 2014. The award recognises individuals and organisations that play a significant role in advancing the goals of the Chemical Weapons Convention (CWC).

As the implementing body for the Chemical Weapons Convention (CWC), the OPCW, with its 193 member states, oversees the global endeavour to permanently eliminate chemical weapons. Since the convention's entry into force in 1997, it is the most successful disarmament treaty eliminating an entire class of weapons of mass destruction. In 2023, the OPCW verified that all chemical weapons stockpiles declared by the 193 States

Parties to the Chemical Weapons Convention since 1997 — totalling 72,304 metric tonnes of chemical agents — have been irreversibly destroyed under the OPCW's strict verification regime. For its extensive efforts in eliminating chemical weapons, the OPCW received the 2013 Nobel Peace Prize.

ICC is a full member of the International Council of Chemical Associations (ICCA) and the nodal agency implementing Responsible Care (RC) in India with nearly 100 RC logo companies. ICC introduced the Security Code of RC in 2019, a pioneering initiative promoting chemical security. ICC is also conducting a series of Vulnerability Assessment Security studies in the Chemical Industry. ICC's initiative "Nicer Globe", for enhancing chemical safety and security within India's transportation network is a unique project offering real-time monitoring, tracking, and remote and on-site emergency response capabilities, covering large number of companies, logistics service providers, and drivers. The ICC's role in assisting the

government in the implementation of Chemical Weapons Convention through the outreach centres called the CWC Help Desks with the support of the NACWC has been greatly appreciated by the chemical industry fraternity and representatives of various countries during their visits to India. These CWC Help Desks have played a pivotal role in spreading awareness on chemical safety and security.

The CWC help desks work under the guidance of NACWC in complying with the technical and legal provisions of the CWC Act 2000, and provide the required guidance to the chemical industry across India in their convention compliance requirements. These efforts have earned ICC, this distinguished global recognition, marking a significant milestone in India's role within the global non-proliferation framework. ICC has gratefully acknowledged the support provided by the Government of India in its efforts.

Source : Chemical Market

# CFCL and TERI Join Forces for the Center of Excellence in Sustainable Agriculture

#### Vinodhini Harish

#### Introduction:

Indian farmers have seen many pressing challenges and overcame them with their traditional farming techniques. However, the modern challenges and the demand to develop sustainable and bio-based agricultural inputs are critical as they require modern solutions and techniques. Given that the global population is expected to grow by 70% by 2050, food security has become a pressing concern of the globe. Therefore CFCL and TERI are

addressing these challenges by developing sustainable and bio-based agricultural inputs. The solutions are not simply innovative, they are known to enhance crop productivity, minimize environmental impact and present a resilient future for agriculture. In this article. we have explored the opportunities, their strength and interesting facts to understand the depth of the news. Let's explore.

Chambal Fertilisers Partners with TERI to Pioneer Sustainable Farming Solutions: Chambal Fertilisers and Chemicals Ltd. (CFCL) and The Energy and Resources Institute (TERI) have established a contract to create the CFCL-TERI Centre of Excellence for Advanced and Sustainable Agriculture Solutions. The partnership was signed by CFCL's Managing Director, Mr. Abhay Baijal, and TERI's Director General, Dr. Vibha Dhawan, mainly to tackle the major issues in the Indian agricultural sector.

There are a few pressing challenges in the agricultural sector such as declining soil health, low crop productivity, inefficient use of nutrients, resistance to





chemicals and harmful effects due to excessive usage of synthetic inputs on the environment and human health.

These challenges require efficient yet eco-friendly solutions such as nanobiotechnology-based fertilizers, biofertilizers, bio-stimulants, and biological pest control products. These solutions not only improve farming efficiency without disturbing the environmental health or human health but are also considered the most costeffective for the farmers.

TERI is Although involved in developing incorporating and innovative agricultural products complementing the conventional chemical farming inputs, there is a significant investment required for research, which will be done by CFCL for 5 years as per the agreement. Dr.Dhawan highlighted that the rise in global population and rising food production demand with about 70% by 2050 are some of the reality checks and factors to consider while focusing on these developments. Therefore it is obvious that traditional chemicals alone are not enough to meet the demand. Similarly, the government is also encouraging alternative fertilizers through schemes such as PM PRANAAM.

Considering the rising demand, TERI is involved in bringing advanced biological solutions to improved food security, health and environmental sustainability, with financial support from CFCL.

Mr. Balaji mentioned the success of CFCL's bio-based products such as Uttam Superrhiza and Uttam Pranaam Bio-Phosphorous and those products inspired have to create this collaboration. Uttam Superrhiza and Uttam Pranaam Bio-Phosphorous are bio-based agricultural solutions developed by CFCL as a part of their commitment to sustainable farming.

likely improves plant root systems, while promoting better nutrient absorption and healthier crops. This also focuses on enhancing soil health while reducing dependency on chemical inputs.

Uttam Pranaam Bio-Phosphorous – is a bio-phosphorous fertilizer that serves as an alternative to synthetic phosphate fertilizers. This product is environmentally friendly and supports sustainable farming by improving the phosphorous availability to plants.

Overall the products are in line with the efforts to minimize the environmental efforts of the usage of



chemical fertilizers while ensuring higher productivity and cost efficiency for farmers.

The CFCL- TERI initiative aligns with the government's BioE3 program which is a government initiative that is aimed at fostering the development of bio-manufacturing industries the key aspects of the initiative are as follows:

Economic growth, and should be achieved through bio-based industries.

Environmental sustainability is attained by reducing chemical dependency and pollution.

efficiency

through

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manufacturing processes.

Therefore the ultimate goal is to promote innovation in biological solutions for agriculture, healthcare, and industrial applications that are aligned with India's goals of self-reliance, and sustainability under the Atmanirbhar Bharat Initiative.

### Challenges that are expected to be addressed through the initiative:

The CFCL and TERI initiative should also focus on some of the pressing challenges that prevail in biomanufacturing, such as:

Scaling production – Transition from the laboratory-scale production to industrial-scale production is complex and costly.

Raw material supply - A consistent and sustainable supply of bio-based inputs is a challenge.

Regulatory hurdles - compliance with safety and efficacy standards involves time-consuming approvals.

Market acceptance – Both farmers and industries have hesitation to adopt new bio-based products due to lack of awareness or perceived risk.

Cost-effectiveness – Manufacturing biobased alternatives at a competitive price against synthetic counterparts is considered a major challenge for all.

### How does this agreement help in reaching the goal?

Considering the strengths and collaborative approach are expected to push towards reaching the goal of sustainable agriculture research.

TERI's research expertise: The Energy and Resource Institute is a leading organization in sustainable development and environmental research. The expertise includes areas such as:

Uttam Superrhiza – is a bio-product that Energy

Energy



- Biotechnology: Developing ecofriendly solutions such as biofertilizers, bio-stimulants, and biopesticides.
- Soil health improvement: research to find out techniques to restore soil fertility
- Climate resilience: researching and designing agricultural inputs that help crops adapt to climatic changes.
- Collaboration: Partnering with industries to bring innovative solutions from the lab to the market.

#### CFCL's market knowledge:

CFCL has developed a robust and widespread network to deliver agricultural products to farmers across the nation.

Chambal Fertilizers and Chemicals Ltd. is one of the nation's largest fertilizer manufacturers with extensive experience in the following areas:

#### Agri-input distribution:

CFCL has a huge distribution network that ensures the products reach even remote areas, addressing the diverse needs of India's vast agricultural landscape. Their logistical excellence and streamlined supply chain ensure the timely availability of fertilizers, seeds, and other agri-inputs that are crucial during sowing seasons.

The retail network, outlets and partnerships make it more convenient for the farmers to access high-quality inputs. Therefore the well-oiled distribution system plays a vital role in bridging the gap between the innovative products and their end-users.

#### Farmer engagement:

CFCL is known for its workshops, demonstrations, and campaigns to educate farmers about advanced farming techniques, crop management and sustainable practices.

The company also assist with expert guidance to the farmers on soil testing, nutrient management, and efficient use of fertilizers to enhance productivity.

They also support through direct line of communication with the farmers and by gathering direct valuable insights about their challenges and preferences.

#### **Product innovation:**

CFCL has a legacy of developing and introducing innovative agricultural solutions to meet evolving demands.

Consumer demands are evolving and new products are brought into the market. For instance, consider ecofriendly products such as Uttam . Superrhiza and Uttam Pranaam biophosphorous, which demonstrate CFCL's commitment to sustainable • agriculture. These products reduce dependency on synthetic chemicals that help in improving soil health and crop • productivity. CFCL uses their market knowledge to design products that address specific regional challenges such as nutrient deficiencies or crop-specific needs.

The company is also working towards their goal by investing in research and development to stay ahead in delivering next-generation solutions for Indian agriculture. Therefore by focusing on environmentally conscious innovations, CFCL contributes to sustainable farming practices while addressing the farmer needs effectively.

#### Market insights:

CFCL has a deep understanding of the agricultural market and farmer behaviour that sets it apart from competitors.

CFCL understand the difficulties that

farmers face such as soil degradation, climate change and rising cost of inputs. The insights also help in understanding the market and then designing solutions which are highly practical and effective for the farmers.

Continuously understanding the market dynamics, CFCL anticipates future needs such as growing demand for biobased products and reduced chemical inputs. The company also works for an intimate understanding of regional agricultural practices, enabling it to customize the products and services for different parts of the nation.

Therefore the combination of CFCL's market expertise with TERI's research helps in delivering promising results such as:

- Improved soil health and crop yields.
- Reduce environmental harm caused due to excessive chemical usage
- Enhance farmer's profitability through cost-effective and sustainable inputs.
- Support India's food security goals in the face of growing population

CFCL due to its consistent connection to the pulse of Indian agriculture, is positioned to drive a transformative change in the sector and ensure both economic and environmental sustainability.

#### Take away:

Our earth is striving for food security and sustainability, and the CFCL-TERI collaboration offers a beacon of hope. Their combined efforts help in developing eco-friendly, climateresilient agricultural solutions as they are setting the stage for a future where farming thrives in harmony with nature.





# INEOS and GNFC sign a Memorandum of Understanding to build a new world scale Acetic Acid unit in India

- INEOS Acetyls are a leading producer of Acetic Acid globally and GNFC is the only current producer of Acetic Acid in India.
- The two companies have held a technology partnership for close to 30 years but will now establish a new joint venture.
- David Brooks, CEO INEOS Acetyls, comments "We are delighted to make this announcement today, working with our partner GNFC on this new project. India is recognised as being a key growth market for our products over the coming years and this investment will increase much needed locally produced acetic acid, reducing the country's reliance on imports."

**I**NEOS Acetyls and Gujarat Narmada Valley Fertilizers & Chemicals Ltd (GNFC) have signed an MOU to explore the feasibility to build a new world scale, 600kt Acetic Acid plant at GNFC's site in Bharuch, Gujarat, India.

INEOS Acetyls are a leading producer of Acetic Acid globally and GNFC is the only current producer of Acetic Acid in India. The two companies have held a technology partnership for close to 30 years but will now establish a new joint venture which will manage bringing this project to market, currently forecast in 2028.

David Brooks, CEO INEOS Acetyls commented "We are delighted to make this announcement today, working with our partner GNFC on this new project. India is recognised as being a key growth market for our products over the coming years and this investment will increase much needed locally produced acetic acid, reducing the country's reliance on imports."



Pankaj Joshi, MD GNFC commented that India imports ~85% of its annual requirements of Acetic Acid. The proposed JV is expected to achieve objective of 'Make in India'. Domestication of Acetic Acid will serve existing demand and provide required boost to other evolving downstream demands saving precious foreign exchange outgo.

Source : Ineos

# Braskem introduces a new line of post-consumer recycled resins for flexible applications

São Paulo, November 11, 2024 -Braskem, a global leader in the production of thermoplastic resins, is pleased to showcase its portfolio of postconsumer recycled (PCR) resins intended for flexible applications. The set of nine 'grades', for various applications, is currently the most comprehensive on the market, making a mark in both the primary and secondary packaging segments. And, among the many advantages of using these resins, perhaps the most important is the

elimination of plastic waste and the reduction in carbon footprint. This year alone, Braskem's collection of products and solutions for flexible applications has already recovered more than 13 million pieces of plastic packaging between January and August.

<u>"On average, the grades in our flexible</u> portfolio reduce CO2 emissions in the atmosphere by up to 15%. And this is on top of the benefit of recovering plastic waste," stated Pier Pesce, Business Development Manager for Circular Economy at Braskem. And there are even more perks. Flexible Wenew PCR packaging can be found in a wide range of sectors, including the home care market, e-commerce envelopes, and films for transportation purposes. "Our grades have features that pave the way for a variety of flexible applications. We



have options in the sector of heatshrinkable materials that can increase the percentage of PCR in the final sustainable film product or enhance its shrink properties," Pier describes.

### Different applications now available on the market

The benefits of the Wenew portfolio for flexible packaging applications have already attracted attention from several companies focused on sustainable development. GTEX, the fifth largest cleaning product brand in Brazil, is just one example. The company decided to use post-consumer resin in its packaging for Urca soap powder and saw great results. "The film used for packaging, produced by TotalFlex, is made of 30% recycled materials and helps reduce GTEX's carbon footprint. This solidifies the partnership we have with our customers to offer increasingly sustainable solutions to the market," explains Maurício Motta, Account Manager at GTEX, responsible for TotalFlex and Plasdil accounts.

Talita Santos, CEO of GTEX Brasil, emphasizes the synergy between the company and Braskem's products. "Projects focused on sustainability are fully aligned with our commitments. At GTEX, we are always on the lookout for solutions that reduce our environmental impact without compromising the quality of our products, and this initiative reinforces our vision of a more responsible future. In the coming years, sustainability will be one of GTEX's strategic pillars, and projects like this are vital in offering conscious alternatives to

consumers." Another successful project was the Netshoes' secure packaging, produced by Probag in partnership with TotalFlex, which included 60.3% Wenew PCR in its composition. The selected resin met the requirements for both the aspect of the film and its weldability and mechanical strength necessary for ensuring the product's safety during delivery. And there are even more examples: together with partners Plasdil and Copapa, Braskem worked on a project to incorporate 20% Wenew PCR into toilet paper packaging, which met requirements of mechanical the resistance and transparency needed for the product. Additionally, this project with Plasdil and Copapa was honored in the latest edition of the Grandes Cases de Embalagem award.

Source : Braskem

# Sinopec Receives ISO's Approval for China's First ISO International Technical Specification for Heavy Oil Development

**D**EIJING, Dec. 11, 2024 / **D**PRNewswire/ -- China Petroleum & Chemical Corporation's (HKG: 0386, "Sinopec") has successfully obtained ISO's approval for the Technical Specifications for Multi-element Thermal Composite Flooding of Heavy "Technical Specification") Oil (the proposed by academician Sun Huanquan's team. Leveraging Sinopec's independent innovative technologies, the Technical Specification is China's first to receive approval in the field of heavy oil thermal recovery and will promote international technical cooperation and global heavy oil development upon release. Heavy oil refers to crude oil of high density and viscosity, and it is a key petroleum resource accounting for 36 percent of global proved oil reserves. The heavy oil

is also an important raw material for specialty oils, and the naphthenic heavy oil, coined as the "rare earth" of oil, is a high-quality raw material for producing asphalt and transformer oil. China's annual production of heavy oil has exceeded 15 million tons for 13 consecutive years.

Due to land-phase sedimentation and complex geological conditions, China's heavy oil reserves are buried deep with thin oil layers, so the developments are facing challenges such as flow speed and distance. With the support of the National Natural Science Foundation of China and Sinopec's key science and technology projects, Sun Huanquan's team focused on tackling the bottlenecks of heavy oil development and innovated the multi-element thermal compositive development technology that has been applied on a large scale in Shengli and Henan oilfields, which enables Sinopec to achieve annual heavy oil production of over 4.8 million tons.

Next, Sun Huanquan and the team will set up an international working group with technical experts from the U.S., Saudi Arabia and other countries following ISO's requirements to speed up the drafting of the international standard and release it at the earliest availability.

Source : Sinopec



## From Waste to Resource The Evolution of Recycling Techniques in a Circular Economy

- Vinodini Harish

#### **INTRODUCTION:**

lastic waste management remains a great concern across the globe, there millions of tons of waste are accumulated annually and the conventional recycling methods don't suffice. There are plenty of challenges in the segment such as mixed plastic streams, contamination, and limited recyclability of certain materials. Therefore, the demand for innovative techniques has emerged to overcome these barriers. Some cutting-edge solutions such as molecular recycling, enzymatic processes, and advanced sorting technologies appear to be the most promising solutions to elevate the efficiency and quality of the recycling systems. In this article, we have highlighted these technologies for industries to adopt as the recycling landscape is rapidly evolving. Let's begin.

### REGIONAL GROWTH AND HOTSPOTS

Rising demand in the automotive and packaging industries has contributed the most to the recycled polymer market share in North America. North American market growth is expected to be higher than that in Europe and Asia Pacific.

Similarly, in the Middle East and Africa, the key growth factors for the growing demand are construction and food packaging applications. In this region, food packaging will be the primary application for recycled plastic and the rise in demand for lightweight yet sustainable food packaging shall expand the use of this polymer over



conventional ones in the territory. Latin America is all set to get a glimpse of considerable growth in the market during the forecast period. The increasing number of packaging product manufacturers, coupled with increased consumption of plastics due to the ban placed on single-use plastic products, have surged the recycled plastics market growth in the region.

The global recycled plastics market is valued at USD 69.4 billion in 2023 and is expected to reach USD 120 billion by 2030 with an 8.1% CAGR—the market.

SHIFTING PREFERENCES TOWARDS RECYCLED PLASTICS

## PACKAGING AND STRICT GOVERNMENT REGULATIONS:

According to National Geographic, only 9% of the world's plastic waste is recycled and the rest ends up in landfills, and rivers or is dumped improperly. Thus, the plastic waste problem is growing into a big problem for governments across the globe.

Some countries like Germany, the UK, Italy and France have adopted and embraced a circular economy that focuses on reducing plastic waste by incorporating reusing the materials. Companies in Australia, Japan, and Mexico are producing water bottles that





are made from recycled plastics. These efforts are helping the recycled plastics market to grow. Additionally, the COVID-19 pandemic has been a for adaptation of stronger push disposable packaging and the mass population is now focused on sustainability during the crisis. especially in food packaging and the practice continues.

Realization of the importance of preserving valuable natural resources and reducing the strain on ecosystems associated with extraction processes. Plastic waste is a major environmental concern and recycling helps in reducing the usage of virgin materials for plastic production. On the other hand, recycling practices require minimal energy compared to the production of plastics from raw materials. This leads to energy savings and, the reduction of greenhouse gases. Furthermore, most of the plastics utilized for various purposes are non-biodegradable and thus recycling is the only efficient solution to decrease the burden of polymers present in the environment.

The initiatives created by some countries like China, Europe, Brazil and India and restrictions for single-use plastics are boosting recycling promotions.

#### COMPARISON OF QUALITY-RICH RECYCLED PLASTICS IN THE MARKET:

#### Polyethylene Terephthalate (PET):

Polyethylene Terephthalate (PET) is transparent, lightweight and strong, and has high resistance to moisture and chemicals. Therefore, they are utilized for beverage bottles, food packaging and textiles. It possesses excellent recyclability and there is only minimal quality loss even after multiple cycles. Therefore, they are utilized to produce high-quality recycled PET that is used in bottles, fibres and packaging. However, recycling efficiency is affected due to labels, dyes and caps.

#### High-Density Polyethylene (HDPE):

High-density polyethylene is strong, rigid and resistant to chemicals, and it is opaque with excellent durability. Therefore they are utilized in milk jugs, detergent bottles, piping and plastic lumbers. They are capable of retaining their original strength and durability, therefore they are commonly used in applications non-food due to contamination concerns. Due to their nature and quality, they are used very rarely in food-grade applications, even if used they require appropriate and vigorous cleaning methods.

#### Polypropylene (PP):

Polypropylene is flexible, lightweight, and resistant to heat and chemicals. Therefore, they are well utilized in food packaging and containers, automotive parts and textiles. It suffers low recovery rates as recycling them is more complex compared to PET or HDPE. Therefore, they have lower market demand compared to PET and HDPE.

#### Low-Density polyethylene:

Low-density polyethylene possesses physical properties like soft, flexible, and transparent. They perform excellently well as moisture barriers however comparatively less durable than HDPE. Thus they are used in plastic bags, shrink wraps, and squeezable bottles. Recycling LDPE is quite complex due to thin-film contamination and poor recovery rates. Therefore recycled LDPE is often downgraded and utilized for noncritical applications such as bin liners, construction films and so on.

#### Other plastics:

Other plastics such as polystyrene, and PVC are rigid and flexible, however, they are utilized in specialized applications such as insulation, pipes and food containers.

Recycling is limited due to high contamination risks and lack of facilities. Therefore quality of recycled materials is poor, leading to limited reuse options.

### ADVANCED RECYCLING TECHNIQUES:

Like every industry drawing towards efficient and sustainable solutions, the polymer recycling industry is also moving towards it while managing plastic waste. The advancements in technologies are creating revolutions and gaining significant attention from investors and industries. Some of the advanced recycling techniques include:

• Chemical recycling enhancements:

Researchers are developing methods to break down hard-to-recycle plastics like polyethylene and polypropylene using chemicals like hydrogen, and catalysts such as ruthenium. The processes create new monomers while minimizing byproducts, this makes them more energy-efficient and scalable for many industrial applications.

Breaking down of polyethylene and polypropylene is a difficult task and it is done by the chemical processing. The process begins with melting the plastic in a steel tank and then Gaseous hydrogen is introduced into the molten plastic.

The crucial step involves adding a powdered catalyst that contains metals such as ruthenium. The catalyst is selected carefully so that the researchers can increase the efficiency of the chemical reaction. Therefore, the formation of molecules with specific chain lengths is formed while minimizing byproducts such as methane or propane.

In the production process, the key



challenge arises while stirring the molten plastic in the steel tank in a way to ensures the catalyst powder and hydrogen get mixed through. By carrying out experiments and computer simulations, the research team found that the plastic gets stirred in the best possible way when an impeller with blades parallel to the axis is used.

The efficiency is well-achieved when the blades are set parallel to the axis than a propeller with angled blades or a turbine-shaped stirrer. The results are favourable as it gets more even mixing and fewer flow vortices. The stirring speed is also crucial and should be close to 1000 revolutions per minute.

#### • Molecular recycling:

The molecular recycling approach involves processes like depolymerization and conversion. The depolymerization process involves breaking down plastics like PET into monomers that can be reused to produce virgin-quality materials. This innovative solution addresses the limitations of traditional mechanical recycling by targeting the chemical structure of plastics.

The process involves breaking down polymers into their fundamental building blocks and allowing for the production of materials with properties comparable to virgin plastics. Therefore it involves two primary processes in molecular recycling:

#### • Depolymerization and conversion.

Depolymerization involves breaking down polymer chains of plastics such as polyethylene terephthalate (PET) into monomers. These monomers are purified and then repolymerized into new plastics.

The process is found to be very effective for polyesters and nylons, as it enables closed-loop recycling, which is when the same material is reused repeatedly without the degradation of quality.

In this process, high-purity monomers are produced and are virtually indistinguishable from virgin materials. It helps in reducing the dependency on fossil fuels or raw materials. The process tackles contamination issues more effectively than mechanical recycling.

For example: Carbiosuses enzymatic depolymerization for PET and it employs enzymes to selectively break down the polymers at mild temperatures.

The demand for high-quality recycled plastics in the packaging, textiles and automotive industries is driving the investment in molecular recycling technologies. These methods have expanded the recycling possibilities for the polymers that were previously considered non-recyclable such as multi-layer and contaminated plastics.

• Biological solutions in plastic recycling:

The biological solutions in plastic recycling are а groundbreaking approach to recycling that leverages enzymes and microorganisms to break down polymers like PET into their fundamental components. This approach is considered the most efficient eco-friendly and alternative to traditional recycling techniques.

The technique involves specific enzymes that are often derived from bacteria or fungi that are used to catalyze the breakdown of plastic polymers into their monomers. For example, PET can be decomposed into terephthalic acid (TPA) and ethylene glycol (EG) which can be repurposed to create new plastic products.

A leader in the field, Carbios, has developed enzymes capable of degrading 90% of PET waste within hours under optimized conditions. The process operates at milder temperatures which significantly reduces energy consumption compared to conventional chemical recycling.

Enzymatic recycling is well-suited for PET used for bottles, textiles, food packing and other critical applications. This approach efficiently handles coloured and complex plastic waste that is challenging for mechanical recycling.

The approach is well received in the industry as it uses only biodegradable catalysts and eliminates the need for harsh chemicals or extreme conditions. Likewise, the process enables the recovery of monomers with the highest rate of purity and facilitates the production of recycled materials with properties that are equivale to virgin plastics. The approach requires less energy and makes it more sustainable.

Biological solutions are poised to revolutionize plastic recycling as they address the shortcomings of traditional methods. With continued advancements, the enzymatic recycling process has the potential to significantly reduce plastic waste, conserve resources and foster a circular economy.

#### • Advanced sorting technologies:

Advanced sorting technologies include Near-infrared (NIR) spectroscopy and AI-driven robotic systems, which transform the efficiency and accuracy of the plastic recycling processes. The innovations address one of the critical bottlenecks: effectively separating plastic various types reduce to contamination and improve the quality of recycled materials.

NIR spectroscopy identifies the materials that are based on their unique spectral signatures in the near-infrared wavelength range. When the plastics pass through the NIR sensors, they get detected by the reflected light and the polymer types such as PET, HDPE, and





PP are determined.

Sorting plastics by type and colour even when they are mixed or contaminated is done effectively. Especially distinguishing between food-grade and non-food-grade plastics enables the researchers to segregate them with precision for precise recycling streams.

NIR systems are capable of processing large volumes of waste in real time. It is non-destructive and thereby doesn't alter the materials and preserves the integrity for recycling. It is also effective for a wide range of polymer types and combinations.

However, it faces the challenge when it involves black plastics and multimaterial items that may not reflect NIR light effectively. The expansion of NIR technology includes the new systems from TOMRA sorting solutions that incorporate NIR and UV-VIS sensors to detect even complex and opaque plastics. In recent times recent advancements include hyperspectral imaging that addresses the difficulty of sorting the black plastics which is considered as a persistent challenge for NIR technology.

#### **CLOSING THOUGHTS:**

The recycling techniques are getting better and reshaping the way the world tackles plastic waste, thereby turning the challenges into opportunities for sustainability. The advancements are enhancing efficiency, reducing contamination, and producing highquality recycled polymers, hence paving the way for a more circular and environmentally friendly economy. Industries, governments and consumers together embrace work to the technologies and the future of recycling looks more promising than ever.

# Indorama Ventures Collaborates to Launch World's First Commercialized PET Bottles Using Bio-Paraxylene for Suntory

**B**angkok, Thailand - 31 October 2024 Indorama Company Limited, a global sustainable chemical producer, as part of a supply chain collaboration with Suntory, Mitsubishi ENEOS Corporation, Corporation, Iwatani and Neste, will launch the world's first bio-PET bottle for commercial scale, made from ISCC+ bio-paraxylene2 certified This collaboration marks a significant milestone in the journey toward sustainable packaging, introducing PET bottles derived from used cooking oil. PET bottles made from this technology can significantly reduce CO2 emissions of products.

From November onwards, the Suntory Group will successively introduce these bio-PET bottles for selected products in Japan. The collaboration will see the launch of approximately 45 million PET bottles for beverages made with this innovative material3 with further introduction for Suntory products to be considered in the future. By combining the expertise and resources of industry leaders across the value chain, this initiative underscores the power of collaboration in addressing global sustainability challenges.

#### Mr. Yash Lohia, Executive

President Petchem Special Projects, and Chairman of the ESG Council of

Indorama Ventures, stated, "ThisEaexciting collaboration reflects thesudshared vision and responsibility ofwithall partners involved to contributeCrocto a more sustainable future. We areanproud to work alongside industryPaleaders in this pioneering effort,thatwhich not only brings newglypossibilities to the packagingEa

industry but also reinforces the importance of collaboration in driving meaningful change. And we are excited to see the fruits of the collaboration on the shelves soon as high-quality Suntory products."



Each company brings unique capabilities to the table, ensuring the success of this breakthrough initiative. Within the global supply chain through cross-industry collaboration, Indorama Ventures the world's largest producer and recycler of PET, took Bio-Paraxylene to create Terephthalic acid, then reacted it with monoethylene glycol to produce PET Resin.

Source : Indorama Ventures



# Global Impacts of China s Chemical Surplus Strategies for Adaptation

#### Vinodini Harish

Introduction:

China is the world's largest producer of chemicals, contributing nearly 40% of global chemical production. The dominance of the chemical industry is due to its focus on expanding its capacity in high-demand segments such as basic petrochemicals and specialty chemicals. Due to this oversupply from China,

coupled with a slowdown in global manufacturing and demand for consumer goods, the condition has led to declining margins for producers across the globe. In this article, we have explored the consequences and opportunities at best. Let's begin.

China's role in global chemical production:

China's chemical industry has expanded rapidly its production capacity in the last decade to reduce its import dependency and become more self-sufficient. Even though the production processes in the country are

expensive when compared to other countries, it didn't affect the growth of the production capacity or hinder their investment plans. China has invested heavily in growing the sector to meet its needs and strengthen its global position. This growth is part of their strategy to ensure a domestic supply of key chemicals and reduce their dependency on foreign markets. This surplus has caused the prices and profits in the global chemical market to drop and has diminished the utilization rates of

production facilities.

The global demand for the chemical market has been picking up in recent times and therefore it might slow down the chemical production in China. Likewise, the cost advantage in North America in producing certain chemicals will likely affect the condition as well. However, the massive oversupply of chemicals in China will take years to resolve. Therefore North American manufacturing. The policy has encouraged higher Research and Development (R&D) intensity and the Chinese companies have been incentivized to innovate in areas like high-performance materials and biochemicals.

The policy also helped in the transition from basic chemicals to higher-value specialty chemicals fostering advancements in products such as

coatings, pesticides, and food additives.

### Structural shifts in the market:

Several segments in China's chemical industry are experiencing a recurring cycle overinvestment of and consolidation phase and this dynamic works with the beginning of overinvestment. Several companies including State-Owned Enterprises and private firms have invested aggressively in expanding their production capacity, this investment is with the help of government initiatives and subsidies.

producers would still face challenges like reduced export opportunities and lower profit margins and deal with the tougher competition from cheaper Chinese products.

#### Impact of governmental policies:

China's Made in China 2025 policy has influenced chemical production significantly, aligning it with their broader goals, in terms of becoming a global leader in advanced The rapid expansion has led to an oversupply of key chemical segments such as Polyester fibres and vitamin C. The Vitamin C production sector is largely dominated by China and a situation with price volatility due to cyclical oversupply occurred due to the situation.

Then comes the consolidation phase, as the profits shrink in the global market, less competitive companies are forced to shut down or look for mergers or







### **EVENTS AND CONFERENCES**

### PAINT INDIA

Date : Jan. 30-31, 2025

City: IICC (Yashobhoomi), Dwarka, New Delhi

**Country : India** 

Website : https://paintindia.in/

**Description :** PaintIndia is the premier trade fair for the paints, coatings and allied industries in this part of the world, and the third largest show of its kind the world over. It has been in existence for over 25 years now, and has been the fastest growing event globally in this space. It comes from the same lineage as the magazine of the same name, which has been serving the Industry for over 70 years now. More recently, it has been fortified and strengthened globally with the joint ownership between the erstwhile owners and the owners of the European Coatings Show.

### WATER EXPO

Date : Feb. 26-28, 2025 City : Chennai Trade Centre Country : India Website :https://www.waterexpo.biz/

**Description :** The 18th Edition of Water Today's WATER EXPO 2025 in Chennai will introduce yet another avenue for many organisations in the water and wastewater industry. In 2025, many start-ups are looking to do a promising business, while those established can use this platform as a stage to reaffirm their position among industry buyers and end users. In Chennai, the Water Expo will work as an effective business hub to connect manufacturers & distributors with buyers, professionals, dealers, municipalities, contractors, and potential decision-makers from several industrial sectors. The upcoming event will also feature developments and opportunities for startups, emerging companies, and distributorship networks across India.

The event is a platform for manufacturers of equipment, technologies, products, and processes in the different water and wastewater sectors like sewer infrastructure, industrial water & effluent, sanitation, environmental services, water quality, drinking water supply, effluent treatment plants, sewage treatment plants, and industries.

### 48<sup>™</sup> DYE+CHEM SRI LANKA INTERNATIONAL EXPO

Date : Mar. 13-15, 2025

City : Sri Lanka Exhibition & Convention Centre (SLECC), Colombo - Sri Lanka

Country :Sri Lanka

Website : https://lk.cems-dyechem.com/

**Description :** 1. The garment industry provided 52% of Sri Lanka's total export earnings in recent years, and the final products of the apparel sector are heavily dependent on the dye chemicals sector, making the dyestuff sector one of the key components of the country's chemical industry

2. The majority of Sri Lanka's textile dye chemical imports come from Singapore, India, and Pakistan; according to current



reports, the country ranks third in the world for textile dye chemical imports!

3. Sri Lanka is largely dependent on imported chemicals and dyes. Compared to its local production, Sri Lanka imports a substantial amount of chemicals and dyestuffs annually, which makes them a major draw for exporting nations

4. Major investments in Sri Lanka are happening in the textile & garment sector. The dye chemical industry is a key sector that needs continuous upgrading and acquisition of new technology and equipment

Th5. e largest and oldest Exhibition of its kind, Dye+Chem Sri Lanka provides Fine & Specialty Chemicals and Dyes to the Sri Lankan industry, and it is surely becoming even more relevant

6. The 48th Dye+Chem Sri Lanka 2025 is a significant International Exhibition with worldwide Dyestuffs and Fine and Specialty Chemical Manufacturers. It highlights Sri Lanka's complete Textile and Apparel Industry as well as the other significant manufacturing sectors of the nation

7. Participate in the one-of-a-kind Exhibition. Meet and connect with potential buyers through the Expo

### CPHI JAPAN

Date : Apr. 9-11, 2025

City: East Halls 4, 5 & 6, Tokyo Big Sight, Tokyo, Japan

Country : Japan

Website : https://www.cphi.com/japan/en/home.html

**Description :** The event successfully concluded with 720 exhibiting companies and 21,159 unique attendees from 60 countries around the world. We invited the global pharma community to convene under one roof for three days of networking, forging important alliances and propelling the Japanese pharma sector forward.

### EXPO PAINT AND COATING

Date : Jan. 21-23, 2025

City: Dhaka, Bangladesh

Country : Bangladesh

Website : https://expopaintcoating.in/about.html

**Description :** Expo Paint & Coatings - 2025 is a comprehensive Paint & Coatings Exhibition providing platform to the needs of every facade of the coating industry right from raw materials, formulation, application, technology, finishing, quality assurance, recycling and disposal. The Exhibition will feature a wide range display of products, Raw Materials, Application systems, Machines, Tools, current trends, development & innovations shaping future of coating industry.

Expo Paint & Coatings - 2025 will bring together leading local and international manufacturers, formulators, buyers, industry professionals, consultants, enthusiasts and prospective entrants from the Paint & Coatings, surface finishing & allied industry presenting unrivaled opportunities to network, exchange best practices, do business, unveil new products and source cutting-edge products, technologies and solutions.



acquisitions by larger players.

This consolidation phase helps in stabilizing the market by reducing the number of players and aligning production with demand. This condition and practice is also extended to the specialty chemicals that require advanced technologies. Overproduction in pesticides, coatings, and advanced materials often leads to the same downward pressure on prices and subsequent market corrections.

The consolidation phase has enhanced the competitiveness of China's chemical exports as the larger players are capable of producing at a scale while complying with global environmental standards. This restructuring has reduced pollution and boosted the quality of Chinese chemical production, but it has also led to overcapacity in the larger facilities and intensified the export pressures.

Overcapacity in key chemicals like Ethylene and Acetone among others:

Investments in the new facilities have led to the overproduction of Ethylene, which is considered the cornerstone of the petrochemical industry. Since China accounts for a massive percentage of the world's ethylene capacity, the supply often exceeds the global demand, which oftentimes leads to inefficient utilization of plants.

Acetone is intensively utilized in plastics and resins. China's Acetone production faces similar challenges due to overambitious capacity expansions. This has impacted the smaller players and made it difficult for them in China and across the globe, to compete.

Industry estimates suggested that the utilization rates of these chemicals for some facilities are below 70% which highlights the significant mismatch between capacity and actual demand. Global ethylene demand is growing at a steady rate of 2-3% annually and China's

production outpaces domestic consumption by approximately 20%.

China's methanol capacity stands at over 100 million metric tons annually and the domestic demand is only 60 million metric tons. Therefore the excess methanol is often exported or channelled into producing derivatives like olefins, and such practices are intensifying the competition.

Now Acetone is the key input for plastics, adhesives and solvents and is facing declining global prices due to oversupply in China's downstream sectors.

### The global implications of this overcapacity:

The sheer scale of China's chemical production affects the global markets by destabilizing prices, especially in sectors like plastics, petrochemicals, and adhesives. It also creates pressures in sectors like plastics, petrochemicals and adhesives. Manufacturers in countries like Europe, and North America are finding the situation extremely difficult to compete with Chinese exports due to plant closures, higher energy costs and labour costs and scaled-back production.

Likewise, countries like South Korea and Japan, which traditionally exported chemicals to China are witnessing reduced opportunities as China is now prioritizing domestic output over imports.

Similarly, there are some long-term risks and challenges pinned with this overcapacity of chemicals. Global markets are experiencing vulnerability to supply chain disruptions that are due to geopolitical tensions, trade restrictions and economic slowdowns in China.

On the other hand the environmental burden of the chemical industry,

especially as older and coal-reliant facilities continue to operate to maintain the employment and economic activities in certain regions. For instance, the Blue Sky action plan introduced by the Chinese government includes stringent environmental regulations to combat air and water pollution. Thousands of small and non-compliant chemical industries that were heavily industrialized in the Bejing-Tiajin-Hebei region, were forced to shut down.

However, the larger coal-based plants that are often state-owned remained operational, sustaining overcapacity in chemicals like methanol and acetone. Although the closure of the smaller facilities caused shortages in niche chemicals, those led to driving up prices domestically affecting global supply chains that are dependent on the inputs.

Therefore these environmental challenges coupled with overcapacity illustrate the need for a balanced approach and increased investment in green technologies while managing production capacity to meet both environmental and market demands.

### What are the opportunities amid the crisis?

China's overproduction creates challenges, but we can't deny the opened doors for innovation and market rebalancing.

#### Export market realignment:

Nations like India, Vietnam, and Brazil can benefit from importing China's surplus chemicals at competitive prices. These lower the input costs and thereby enhance their domestic manufacturing. For instance, Indian pharmaceutical and plastics industries rely on Acetone, an essential chemical for producing solvents and polymers. In recent years, China's overproduction of acetone has created an opportunity for Indian



manufacturers to source this chemical at competitive prices.

#### Technology advancements:

Investments in chemical recycling technologies help manage the surplus by breaking down waste products into reusable feedstocks, minimizing the environmental impact of this overproduction.

For instance, Advanced recycling of surplus methanol could create sustainable fuels or inputs for specialty chemicals.

#### Consider these strategies:

Producers can innovate in creating highvalue specialty chemicals and move away from commodity chemicals that face oversupply. This approach reduces direct competition with China while catering to demand in pharmaceuticals, electronics or renewable energy sectors.

Countries like India that are striving for growth should move their production facilities to underdeveloped areas to evenly distribute the economic benefits more equitably. This also alleviates the strain on the industrial hubs.

#### Take away:

Although China's overproduction is causing a stir in the global markets, the key to sustainability is to find the right opportunities and focus on growth. agreements, Collaborations on managing chemical trade imbalances, and the key is to ensure that there is no single region that is overwhelmed by oversupply or price dumping. Strategies like international partnerships, focus on joint R&D technologies and effective management of this overcapacity such as carbon-neutral production processes will only lead to growth.

### ADNOC s vision for 2025 by introducing XRG Dollar 80 billion bet on a low-carbon future

#### Vinodini Harish

#### Introduction:

The world is steering towards cleaner L energy and Gulf states are looking for opportunities to move beyond the oil dependency. At the forefront of the transformation, ADNOC leveraging acquisitions and innovative bold strategies in gas, chemicals, LNG and renewables. With their landmark \$16.3 billion offer for Covestro, a global leader in plastics and chemicals, ADNOC is now making waves not just as a regional powerhouse but as a global agent of change. What does this explain about the energy landscape and the Gulf's evolving role in it? We have discussed just that in the article and let's explore them all!

#### What's the news?

The Abu Dhabi Nation Oil Co (ADNOC) announced the launch of XRG, an international lower-carbon energy and chemicals investment company. The company is valued at over \$80 billion and was approved as part of their strategic plans. XRG will commence their operations in Q1 2025, as this forward-looking company plans to more than double their asset value in the next decade by tapping into three powerful global shifts, which are the energy transition, the rapid growth of AI and the rise of emerging economies. ADNOC revealed that XRG is the short form of Exergy.

#### What is the strategy?

XRG and the Future of Energy: ADNOC's \$80 Billion Vision for a Low-Carbon Economy

Leveraging ADNOC's expertise and international acquisitions, XRG will operate independently, focusing on three strategic areas. One of their core ambitions is to become a top five global chemical player, delivering essential products to support modern life and address a predicted 70% surge in global demand by 2050. This could be very well a step toward a sustainable and innovative future.

Statistics show that there will be a 15%

increase in the natural gas demand over the next decade, recognizing gas as a key transition fuel. This will also respond to a 65% rise in demand for LNG by 2050. Emphasizing the three key strategic goals of XRG across its three platforms which are chemicals, gas and lowcarbon energies. The lower-carbon energies platform will focus on solutions in a way that meets the growing demand lower-carbon for energy and decarbonization technologies that are critical for driving economic growth during the transition. Furthermore, the low-carbon ammonia market alone is expected to grow tremendously from near zero to 70-90 million tonnes every year by 2040.

XRG's role as a transformative initiative within the ADNOC's portfolio is impressive and Dr. Sultan Ahemd Al Jaber's statement ties these factors together as he emphasized the same, which also is designed to drive innovation, create long-term value and reinforce Abu Dhabi and the UAE leadership in the global energy and chemical sectors.





ADNOC has made several strategic acquisitions in gas and chemicals, viewing the areas along with LNG and renewable energy as the key drivers for their future growth. For instance, Covestro, а German company specializing in plastics and chemicals had announced their management, and supervisory boards have approved ADNOC's \$16.3 billion acquisition offer. The deal is now called one of the Gulf's largest international takeovers that reflected a broader effort by the Gulf states, whereas the intention is to diversify their economies and bring down their reliance on oil as the world transitions to cleaner energy sources.

Overall, according to ADNOC, XRG will focus on global investments while creating value across natural gas, chemicals and lower-energy solutions that help meet the rising demand for lower-emission fuels and chemicals to unlock sustainable economic growth.

Furthermore, the robust strategy doesn't end there with international acquisitions. ADNOC's board has recently committed to USD 54.45 billion to strengthen their local economic growth through an in-country value



programme, thereby showcasing their dedication to fostering both global and regional progress.

The scale of ADNOC's new ventures which includes XRG, aligns with the immense global challenges that they seek to address. The magnitude of ADNOC's new ventures including XRG, reflects their commitment to tackling the challenges. Meanwhile, ADNOC's visionary leadership sets an inspiring benchmark for the energy sector paving the way toward a future that is both sustainable, economically inclusive and transformative.

#### Final thoughts:

The rise of XRG within the expansive umbrella of ADNOC's dynamic portfolio marks а turning point in the energy sector's evolution. By embracing sustainability, leveraging cutting-edge technology and

economic growth, fostering local ADNOC is crafting a legacy that traditional transcends energy boundaries. This holistic strategy demonstrates how neighbour countries and industries worldwide can balance their progress with environmental responsibilities. The journey provokes deeper reflection on how will ADNOC's ambitious vision inspire others to lead the way in building a sustainable and inclusive global energy landscape.

# ExxonMobil s Dollar 200 Million Investment Pioneering Chemical Recycling for a Circular Economy

#### Vinodini Harish

#### Introduction:

Plastic pollution poses a massive challenge for India. The plastic recycling industry is taking shape with advanced chemical recycling innovations and initiatives. ExxonMobil has gotten into an impressive position in this context through its investment. This strategic investment is a great move towards sustainability and a solution to convert hard-to-recycle plastics into usable raw materials. In this article, we have explained how the investment addresses the global plastic waste problems and their impressive efforts to create a circular economy where the materials are reused rather than discarded. Let's begin.

Exxonmobil will add to chemical recycling capacity:

ExxonMobil is on its way to investing \$200 million to invest its ability to recycle plastics at its facilities in Baytown and Beaumont, Texas. The expansion plans include the upgrades of increasing the chemical recycling capacity at the Baytown and Beaumont facilities and by 2026, these upgrades should be ready. This will help the company recycle up to 500,000 tons of plastics across the globe by 2027.

ExxonMobil uses an advanced





technology called Exxtend pyrolysisbased chemical recycling technology, which works well even for plastics that cannot be recycled traditionally. This investment is expected to address the growing concern of plastic waste accumulation and support a circular economy, where used plastics can be turned into new products instead of ending up as waste.

#### Vision and efforts:

Exxonmobil's investment aligns well with its status as a key player in the oil, gas and consumable fuels industry. This initiative focuses on their commitment to sustainability and enhancing their market position. Research from a leading stock analyzer shows that due to their leading position in the energy and petrochemical industry, their Price-toearnings ratio is 14.91.

The recycling expansion and other strategic projects suggest that the company is positioning itself to capitalize on future market opportunities that can lead to an increase in its earnings and profitability.

Exxonmobil aims to recycle an additional of about 175,000 tons of plastics annually at Baytown and Beaumont thereby bringing the total to 250,000 tons per year. And since 2022, the Baytown facility alone has recycled plastic scrap of about 35,000 tons, making it one of the largest facilities in North America.

As a part of this mission, the company has planned to join hands with a company called Cyclyx to collect and sort the plastic waste in a better way. The recycled materials are used in over 15 countries for various products, including food packaging, pet food containers and so on. The demand for recycled products is growing across the globe. However, the technology itself has received some criticism and scrutiny on how effectively the technology is performing in handling plastic waste.

The mission also includes plans to build additional units to reach a global plastic recycling capacity of 500,000 tons per year by 2027. The company's goal is to continue recycling projects at its refining and manufacturing sites in North America, Europe, and Asia as it works towards its goal of reaching 500,000 tons of scrap consumed by 2027 worldwide.

### A quick introduction to Chemical recycling:

Chemical recycling is the process of breaking down hard-recycle plastics into raw materials and these materials can be used to make new products like fuels, lubricants and high-quality plastics.

The world is full of plastics and we talk about pollution, but we can't deny their uses such as light weight, durability, versatility and immediate choice compared to other alternatives. To address the piling up of plastics the modern chemical industry has come up with solutions such as an advanced recycling process that converts plastic waste back to its molecular building blocks, where these building blocks are then used for making new plastics, transportation fuels and other products. This proven technology is essential for a futuristic world with improved recycling rates and a world that supports a circular economy.

### Other chemical recycling processes that are stirring up the market:

Recent advancements in the chemical recycling of plastic scrap significantly enhance sustainability by addressing some key challenges of traditional recycling methods. Here are some of the latest developments in the chemical recycling of plastics: Enzymatic recycling:



This method uses enzymes to break down specific plastics, like PET, into their original monomers. These monomers are then reused to produce new plastics, ensuring high-quality recycling with minimal contamination.

#### Depolymerization:

This new technology breaks down plastics like polystyrene and polyethylene into monomers. The resulting materials are then polymerized to create plastics with properties similar to virgin materials, which supports a circular economy for plastics.

#### Dissolution recycling:

This method is a solvent-based approach that separates polymers from additives without disturbing their molecular structure. It is especially useful in recycling polymers such as polypropylene, polystyrene, and nylon.

#### Nanotechnology applications:

Nanotechnology is being leveraged to break down plastics at a molecular level and thereby improve the performance of recycled materials. This approach is adopted to enhance material quality and also expands the types of plastics that can be recycled.

#### Advanced sorting technologies:

Innovations in AI and sensor-based sorting systems are improving the separation of recyclable materials and these technologies help reduce contamination and increase recycling efficiency.

# What are the possible global implications and how this might affect our country?

This is a great question associated with the context as every incident in the petrochemical industry has a rippling effect that grows across the globe. Now,

### Booking price as on 11/06/2024

Current Exchange rate-\$1= 83.50 INR

Chemicals	Current Prices	Location	
Acetic Acid	410	CFR India	
Acrylonitrile	1300	CFR India	
Benzene	1055	CFR India	
Phenol	1150	CFR India	
Acetone	1210	CFR India	
Butyl Acrylate Monomer	2300	CFR India	
С9	990	CFR India	
LAB	1650	CFR India	
IPA	1210	CFR India	
Methanol	290	CFR India	
VAM	860	CFR South Asia	
Toluene	1055	CFR India	
Styrene Monomer	1210	CFR India	
N-Butanol	1200	CFR India	
Octanol	1490	CFR India	
Isobutanol	1200	CFR India	
MEG	615	CFR India	
Mix Xylene-Solvent Grade	1030	CFR India	
Gycerine	850	CIF India	
DMF	850	CFR India	
Acrylic Acid	1300	CIF India	
Formic Acid	650	CFR India	
Adipic Acid	1450	CIF India	
Ethylene	940	CFR India	
РТА	880	CFR India	
Propylene	815	CFR India	
THF	1600	CIF India	

### Mumbai Market Price as on10/12/2024

Name of Chemical	Current Price	Location
Acetic Acid-Imported Repack	42	Mumbai
Acetic Acid-Domestic Intact	52	Mumbai
Acetic Acid-Domestic Repack	42	Mumbai
Acetone-Imported Repack	76	Mumbai
Acetone-Domestic Intact	90	Mumbai
Acetone-Domestic Intact	76	Mumbai
Acetonitrile-Imported Intact	133	Mumbai

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Acetonitrile-Domestic Intact	155	Mumbai
Acetonitrile-Domestic Repack	130	Mumbai
Acrylonitrile-Imported Intact	160	Mumbai
Acrylonitrile-Imported Repack	150	Mumbai
Aniline-Imported Intact	151	Mumbai
Aniline-Domestic Intact	152	Mumbai
Benzene-Domestic Repack	89	Mumbai
Cyclohexane-Imported Intact	120	Mumbai
Cyclohexane-Domestic Intact	111	Mumbai
Cyclohexane-Domestic Repack	105	Mumbai
Cyclohexanone-Imported Intact	140	Mumbai
Cyclohexanone-Imported Repack	125	Mumbai
Cyclohexanone-Domestic Intact	150	Mumbai
Cyclohexanone-Domestic Repack	137	Mumbai
C9 Solvent (99.99% purity)-Imported Repack	88	Mumbai
C9 Solvent (Arham Petrochem)-Imported Repack	87.75	Mumbai
Dibutyl Phthalate-Domestic Intact	121	Mumbai
Dioctyl Phthalate-Domestic Intact	127	Mumbai
Ethyl Acetate-Domestic Intact	76.5	Mumbai
Ethyl Acetate-Domestic Repack	73	Mumbai
Formaldehyde(37%)-Domestic Repack	18.5	Mumbai
Methanol-Imported Repack	34.5	Mumbai
Methyl Ethyl Ketone-Imported Intact	117	Mumbai
Methyl Ethyl Ketone-Imported Repack	110	Mumbai
Methyl Isobutyl Ketone-Imported Intact	153	Mumbai
Methyl Isobutyl Ketone-Imported Repack	139	Mumbai
Methyl Methacrylate-Imported Intact	146	Mumbai
Mixed Xylene-Imported Repack	76	Mumbai
Mixed Xylene-Domestic Repack	76	Mumbai
Monoethylene Glycol-Imported Repack	59	Mumbai
Monoethylene Glycol-Domestic Intact	64	Mumbai
Monoethylene Glycol-Domestic Repack	60	Mumbai
Iso propyl Alcohol-Imported Repack	125	Mumbai
Iso propyl Alcohol-Domestic Intact	120	Mumbai
Iso propyl Alcohol-Domestic Repack	109	Mumbai





nButanol-Imported Repack	92	Mumbai
nButanol-Domestic Intact	105	Mumbai
nButanol-Domestic Repack	92	Mumbai
Ortho Xylene-Imported Repack	90	Mumbai
Phenol-Imported Repack	105	Mumbai
Phenol-Domestic Intact	110	Mumbai
Phenol-Domestic Repack	108	Mumbai
Phthalic Anhydride-Imported Intact	97	Mumbai
Phthalic Anhydride-Domestic Intact	97	Mumbai
Styrene Monomer-Imported Repack	111	Mumbai
Toluene-Imported Repack	82	Mumbai
Toluene-Domestic Repack	82	Mumbai
Vinyl Acetate Monomer-Imported Repack	78	Mumbai

Note-Above prices have been collected from experts and experienced outsources of the industry. Kindly verify from your end as well.

### International market prices as on 10/12/2024

Product	Regions	Current prices
Feedstock Prices \$/unit		
Crude Oil (\$/barrel)	WTI CRUDE	67.94
	BRENT CRUDE	71.76
	MARS US	74.33
	OPEC BASKET	71.67
Natural Gas	New York	3.17
Gasoline	RBOB	1.93
Heating Oil	US	2.17
Ethanol	US	1.56
Naphtha	FOB Singapore	627
	European	600
	CFR Far East Asia	626
Propane	New York	0.77
Aromatics prices \$/MT		
Benzene	FOB Korea	885
	CFR Japan	910
Styrene	CFR Japan	1020
	CFR South East Asia	1060





	CFR China	1020
	FOB Korea	1000
Toluene	CFR China	700
	CFR South East Asia	795
	FOB Korea	745
	CFR Japan	700
lso-Mix Xylene	CFR South East Asia	720
	CFR Taiwan	715
	FOB Korea	700
MEG	CFR China	540
	CFR South East Asia	550
Methanol	CFR China	291
	CFR Korea	339
	CFR South East Asia	347
	CFR Taiwan	335
Solvent-MX	CFR South East Asia	770
	FOB Korea	685
	CFR China	695
Ortho Xylene	CFR South East Asia	845
	FOB Korea	815
	CFR China	835
Para Xylene	CFR South East Asia	810
	FOB Korea	775
	CFR Taiwan	800
Propylene	FOB Japan	775
	FOB Korea	790
	CFR China	835
	CFR South East Asia	820
Propylene Glycol	FOB Korea	820
	CFR China	850
Ethylene	CFR North East Asia	890
	CFR South East Asia	920
	FOB Japan	850
	FOB Korea	855
EDC	CFR Far East Asia	275



	CFR South East Asia	285
Butadiene	CFR China	1125
	CFR South East Asia	1045
	FOB Korea	1075
Benzene	FOB Rotterdam	840
Methanol	FOB Rotterdam	443
Ortho Xylene	FOB Rotterdam	1085
Para Xylene	FOB Rotterdam	845
Solvent-MX	FOB Rotterdam	720
Styrene	FOB Rotterdam	945
Toluene	FOB Rotterdam	780
Benzene C/G	FOB US Gulf	291
Toluene C/G	FOB US Gulf	258
Styrene C/LB	FOB US Gulf	43
Para Xylene \$/MT	FOB US Gulf	855
Mix Xylene C/G	FOB US Gulf	248
Methanol C/G	FOB US Gulf	125
Intermediates prices \$/MT		
Acrylonitrile	CFR Far East Asia	1220
	CFR South East Asia	1225
	CFR South Asia	1235
VCM	CFR Far East Asia	545
	CFR South East Asia	575
MTBE	FOB Singapore	724
	FOB US Gulf	712
Phenol	CFR China	885
	CFR South East Asia	1015
	FOB US Gulf	1126
	FOB Rotterdam	986
Acetone	CFR China	780
	CFR South East Asia	755
	CFR Far East Asia	655
	FOB US Gulf	1146
	FOB Rotterdam	952
Caprolactum	CFR Far East Asia	1510







	CFR South East Asia	1530
Caustic Soda	FOB North East Asia	440
	CFR South East Asia	515
Ethyl Acetate	FOB US Gulf	1499
	FOB Rotterdam	931
	FD North West Europe(Euro/mt)	980
Butyl Acetate	FOB US Gulf	1758
	FOB Rotterdam	1249
	FD North West Europe(Euro/mt)	1280
MEK	FOB Rotterdam	1376
	FD North West Europe(Euro/mt)	1400
IPA	FOB US Gulf	1300
	FOB Rotterdam	1132
	FD North West Europe(Euro/mt)	1170
NBA	CFR China	990
	CFR South East Asia	980
	CFR Far East Asia	980
Octanol	CFR China	1120
	CFR South East Asia	1115
	CFR Far East Asia	1080
DOP	CFR China	1200
	CFR South East Asia	1195
	CFR Far East Asia	1175
Phthalic Anhydride	CFR China	920
	CFR South East Asia	925
	CFR Far East Asia	915
РТА	CFR Far East Asia	610
	CFR South East Asia	635
Acetic Acid	CFR Far East Asia	415
	CFR South East Asia	410
	CFR South Asia	371
	FOB China	305
VAM	CFR China	845
	CFR South East Asia	730
	CFR South Asia789	





Shippi	ng term	Description
FOB	Free on Board	The seller quotes a price including the cost of delivering goods to the nearest port. The buyer bears all the shipping expenses and is responsible to get the products from that port to its final destination. In simple terms, FOB price means the buyer has to bear the shipping costs completely. This is one of the most used shipping terms by international buyers and sellers.
EXW	Ex-Works	The seller has no involvement with the transportation costs and risks. The buyer has to collect the goods from the seller's site and get them to the final destination. All the costs and risks are borne by the buyer. It is advisable that the buyer purchases insurance since the goods can get damaged in transit. EXW is ideal when the buyer and seller are in the same country or region.
CFR	Cost and Freight	The seller pays the loading and freight costs from his premises up to the destination port. Then, the buyer has to arrange for the goods to be transported from the port to his premises. The seller is only responsible for the cost of shipping the products to the destination port. CFR is used for products transported by sea or inland waterways only. The seller does not bear the risk of loss or damage during transit.
CIF	Cost, Insurance, and Freight	If the buyer opts for CIF price, the seller pays for the loading and freight costs right from his premises up to the destination port as well as insurance. In the case of damage or loss, the seller bears the risk completely. The buyer has to arrange for transportation of the goods from the port to his premises. CIF is a safer option than CFR since the goods are insured by the seller up to their arrival at the destination port.
DAP	Delivered at Place	It was previously known as DDU, Delivery Duty Unpaid. In this case, the seller is responsible for getting the goods from his own factory up to the premises of the buyer. He also bears the risk in the case of loss or damage of the goods right until the products are delivered to the buyer. The buyer only has to pay the import duties or custom clearance charges.
DDP	Delivery Duty Paid	The seller is responsible for shipping the goods from his factory to the destination address provided by the buyer, usually his factory or warehouse and is also liable for any damage or loss of goods during transit. The seller also takes care of the customs, VAT, or import duties levied on the products. The buyer only has to receive the products at the destination. In most cases, most sellers only offer DDP for small shipments.

FD North	Free Delivered	Free Delivered North West Europe	Free Delivered	Free Delivered
West Europe Countries Groups	Southeast Asia is composed of eleven countries: Brunei, Burma (Myanmar), Cambodia, Timor- Leste, Indonesia, Laos, Malaysia, the Philippines, Singapore, Thailand and Vietnam.	Far East Asia:The following countries are considered to be located in the Far East: China, Hong Kong, Macau, Japan, North Korea, South Korea, Mongolia, Siberia, Taiwan, Brunei, Cambodia, East Timor, Malaysia, Laos, Indonesia, Myanmar, Singapore, Philippines,	North West Europe South Asia: The region consists of the countries of Afghanistan, Pakistan, India, Nepal, Bhutan, Bangladesh, the Maldives, and Sri Lanka	North West Europe Northwestern Europe usually consists of the United Kingdom, the Republic of Ireland, Belgium, the Netherlands, Luxembourg, Northern France, Northern Germany, Denmark, Norway, Sweden, and Iceland.



Thailand, and Vietnam.



### **Opening Ports Price (Rs/kg) of Chemicals as on 10/12/2024**

USD Exchange Rate: 83.98 INR

Products	Current Prices (INR/kg)	Prices in USD/mt Equivalent to INR/kg	Location
Acetic Acid	36	424.43	Ex-Kandla
<mark>Acetonitrile-imported ir</mark>	ntact 145	1709.50	Ex-Bhiwandi
Acetone	67	789.91	Ex-Mumbai
Acrylic Acid	87.5	1031.60	Ex-Mumbai
Acrylonitrile	120	1414.76	Ex-Kandla
Adipic Acid	120	1414.76	Ex-Bhiwandi
Aniline Oil	128	1509.08	Ex-Kandla
Benzene	76	896.02	Ex-Vizaz
Butyl Acetate	87	1025.70	Ex-Kandla
Butyl Acrylate Monome	r 121	1426.55	Ex-Kandla
Butyl Glycol	99	1167.18	Ex-Kandla
C10	88	1037.49	Ex-Kandla
C9	71	837.07	Ex-Kandla
Carbon Black-regular gra	ade 60	707.38	Ex-Mumbai
Caustic Soda Lye	41.5	489.27	Ex-Dahej
Chloroform	16	188.63	Ex-Dahej
Citric Acid-ANHYD	75	884.23	Ex-Bhiwandi
Citric Acid-Mono	67	789.91	Ex-Bhiwandi
Cyclohexane	92.5	1090.54	Ex-Hazira
Cyclohexanone	112	1320.44	Ex-Kandla
DMF Drum	75	884.23	Ex-Bhiwandi
DEG	56.25	663.17	Ex-Hazira
EDC	28	330.11	Ex-Kandla
Epoxy Resin	190	2240.04	Ex-Nhava Sheva
Ethyl Acrylate	122	1438.34	Ex-Kandla
Formic Acid	65	766.33	Ex-Bhiwandi
Glycerine	81	954.96	<b>CIF Nhava Sheva</b>
N-Heptane	190	2240.04	Ex-Bhiwandi
Hexane	80	943.17	Ex-Kandla
Hydrogen Peroxide-50%	30	353.69	Ex-Bhiwandi
Isobutanol	83.5	984.44	Ex-Kandla
IPA	94	1108.23	Ex-Kandla





IPA	96	1131.81	Ex-Mumbai
LAB	132	1556.24	Imported
Maleic Anhydride-Drum	87	1025.70	Ex-Mumbai
MDC	35.5	418.53	Ex-Dahej
MEG	53.5	630.75	Ex-Mumbai
MEK	98	1155.39	Ex-Kandla
Melamine	79	931.38	Imported
Methanol	29.5	347.80	Ex-Kandla
Methanol	29.5	347.80	Ex-Mumbai
MIBK	128	1509.08	Ex-Hazira
Mix Xylene-Solvent Grade	66.5	784.01	Ex-Kandla
Mix Xylene-Solvent Grade	68	801.70	Ex-Mumbai
MMA	140	1650.55	Ex-Hazira
N-Butanol	82.5	972.65	Ex-Kandla
N-Propanol	95	1120.02	Ex-Kandla
NPAC	95	1120.02	Ex-Kandla
Octanol	104	1226.13	Ex-Kandla
Ortho Xylene	85	1002.12	Ex-Kandla
Phenol	87	1025.70	Ex-Kandla
Phenolic Resin	150	1768.45	Ex-Indore
Phthalic Anhydride	94	1108.23	Ex-Mumbai
Propylene Glycol	82.5	972.65	Ex-Kandla
Sodium Nitrate (50Kg Bag)	61	719.17	Ex-Make-Lasons
Soda Ash Light	35	412.64	Ex-Bhiwandi
Styrene Monomer	96.5	1137.70	Ex-Kandla
Styrene Monomer	99	1167.18	Ex-Mumbai
Sulphuric Acid	9	106.11	Ex-Vapi
Tio2 (Anatase Grade)	195	2298.99	Ex-Bhiwandi
Tio2 (Rutile Grade)	220	2593.73	Ex-Bhiwandi
Toluene	76	896.02	Ex-Kandla
Toluene	74	872.44	Ex-Mumbai
VAM	69	813.49	Ex-Kandla
VAM	69.5	819.38	Ex-Hazira



### Producer Prices (Rs/kg) of Chemicals as on 10/12/2024

Producers	Current Price (Rs/kg)	Import parity Price in USD/MT	Location
Accord-Ethyl Acetate	64	754.54	Ex-Maharashtra
Arham Petrochem-C9	70.75	834.12	Ex-Kandla
Arham Petrochem-C9	71.75	845.91	Ex-Ahmedabad
Arham Petrochem-C10	87.5	1031.60	Ex-Kandla
Arham Petrochem-C10	87	1025.70	Ex-Ahmedabad
Arham Petrochem-C10 (Imported Repack)	100.75	1187.81	Ex-Bhiwandi
Arham Petrochem-MTO/White Spirit (KL)	59.65	703.25	Ex-Kandla
Arham Petrochem-MTO/White Spirit (KL)	60.65	715.04	Ex-Ahmedabad
Arham Petrochem-De-Aromatised D40	130	1532.66	Ex-Kandla
Arham Petrochem-De-Aromatised D40	131	1544.45	Ex-Ahmedabad
Arham Petrochem-De-Aromatised D60	139	1638.76	Ex-Kandla
Arham Petrochem-De-Aromatised D60	140	1650.55	Ex-Ahmedabad
Andhra Petrochemicals-Iso-Butanol	101.5	1196.65	Ex-Vishakhapatnam
Andhra Petrochemicals-N-Butanol	89	1049.28	Ex-Vishakhapatnam
Andhra Petrochemicals-Octanol	109	1285.07	Ex-Vishakhapatnam
BASF-Adipic Acid	120	1414.76	Imported
BPCL-2-Ethyl Hexanol (B)	98.45	1160.69	Ex-Kochi
BPCL-2-Ethyl Hexanol (P)	107.35	1265.62	Ex-Kochi
BPCL-2-Ethyl Hexyl Acrylate (B)	132.35	1560.36	Ex-Kochi
BPCL-2-Ethyl Hexyl Acrylate (P)	142.35	1678.26	Ex-Kochi
BPCL-Acrylic Acid (B)	81	954.96	Ex-Kochi
BPCL-Acrylic Acid (P)	90	1061.07	Ex-Kochi
BPCL-Benzene	82.2	969.11	Ex-Mumbai
BPCL-Butyl Acrylate (B)	117.45	1384.70	Ex-Kochi
BPCL-Butyl Acrylate (B)	119.95	1414.17	Ex-Kandla
BPCL-Butyl Acrylate (P)	127.45	1502.59	Ex-Kochi
BPCL-Hexane (KL)	97.15	1145.37	Ex-Mumbai
BPCL-Hexane (MT)	146.31	1724.95	Ex-Mumbai





BPCL-Iso-Butanol (B)	89.03	1049.63	Ex-Kochi
BPCL-Iso-Butanol (P)	108	1273.28	Ex-Kochi
BPCL-MTO (KL)	86.25	1016.86	Ex-Mumbai
BPCL-N-Butanol (B)	80.48	948.83	Ex-Kochi
BPCL-N-Butanol (B)	86.61	1021.10	Ex-Kandla
BPCL-N-Butanol (P)	94.5	1114.12	Ex-Kochi
BPCL-Paraffin Wax	110	1296.86	Ex-Delhi
BPCL-Sulphur (Molten)	18.74	220.94	Ex-Mumbai
BPCL-Toluene	71	837.07	Ex-Mumbai
Deepak Phenolics-Acetone	64	754.54	Ex-Dahej Gujarat
Deepak Phenolics-IPA	93.25	1099.39	Ex-Dahej Gujarat
Deepak Phenolics-Phenol	84.75	999.17	Ex-Dahej Gujarat
GACL-Caustic Soda Lye	43.5	512.85	Ex-Dahej Gujarat
GACL-MDC	33.5	394.95	Ex-Bharuch Gujarat
GNFC-Acetic Acid	35.5	418.53	Ex-Bharuch Gujarat
GNFC-Aniline Oil	131	1544.45	Ex-Bharuch Gujarat
GNFC-Ethyl Acetate	67	789.91	Ex-Bharuch Gujarat
GNFC-TDI Drum	207	2440.46	Ex-Bharuch Gujarat
Grasim-MDC	33.5	394.95	Ex-Gujarat
GSFC-Cyclohexane	92	1084.65	Ex-Gujarat
HOCL-Acetone	92	1084.65	Ex-Kochi
HOCL-Phenol	105.5	1243.81	Ex-Kochi
IOCL-Banzene	91.5	1078.76	Ex-Vadodara Gujarat
IOCL-DEG	53.4	629.57	Ex-Odisha(Paradip)
IOCL-DEG	56.4	664.94	Ex-Panipat
IOCL-LAB	142	1674.13	Ex-Gujarat
IOCL-MEG	54.2	639.00	Ex-Odisha(Paradip)
IOCL-MEG	56	660.22	Ex-Panipat
IOCL-Paraffin Wax	110	1296.86	Ex-Delhi
Jubilant-Ethyl Acetate	68.5	807.59	Ex-Maharashtra
Laxmi-Ethyl Acetate	64.5	760.43	Ex-Maharashtra
Meghmani-Caustic Soda Lye	43.5	512.85	Ex-Bharuch Gujarat





Meghmani-MDC	33.5	394.95	Ex-Ankleshwar
Gujarat			
NIRMA-LAB	134	1579.82	Ex-Vadodra
Reliance-Caustic Soda Lye	43.5	512.85	Ex-Gujarat
Reliance-DEG	56	660.22	Ex-Jamnagar
Reliance-LAB	135	1591.61	Ex-Vadodra
Reliance-MEG	58.1	684.98	Ex-Jamnagar
Reliance-Mix Xylene	65	766.33	Ex-Jamnagar
Reliance-PTA	69.9	824.10	Ex-Dahej Gujarat
Reliance-TEG	116.5	1373.50	Ex-Jamnagar
Reliance-Toluene	72	848.86	Ex-Jamnagar
SI GROUP-Phthalic Anhydride	107	1261.49	Ex-Navi Mumbai
TATA Chemicals-Soda Ash light	34	400.85	Ex-Bhiwandi

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Exxonmobil's expansion of chemical recycling capacity is expected to have a notable global implication, especially that is linked with the environmental challenges posed by plastic waste and promoting a circular economy.

Since advanced recycling complements the existing recycling methods, it adds efficiency in transforming plastic waste into raw materials that can be used to make valuable products. Moreover, advanced recycling is a vital element of the circular economy where this circularity includes the entire life cycle of the plastics, right from designing them, recycling them and improving waste management systems. Therefore it is attracting a lot of investors across the globe.

The investment creates opportunities for other companies that are into processing plastic waste. For instance, Cyclyx international company which was created through a partnership between Agilyx, ExxonMobil, and LyondellBasell, they have decided to go with their construction of Cyclyx Circularity Centre. The recycling facility will be located in Houston, United States. The centre is expected to recycle more plastics into usable materials thereby contributing to a more sustainable future.

The facility is built with a capacity to produce 136,000 tonnes or 300 million pounds of plastic feedstocks every year.

ExxonMobil and LyondellBasell the two largest players in the petrochemical and recycling industries are collaborating on the project. These two companies have revealed that they will have the "offtake rights", meaning that they will have the right to purchase the recycled feedstock produced at the facility for their use in their own recycling and manufacturing processes.

These two companies have announced that they are collectively investing \$135 million in the project for the construction costs and operating costs. The facility is expected to begin operations by mid-2025.

India generates a substantial amount of plastic waste with challenges in managing the non-recyclable or lowvalue plastics. Advanced recycling technologies such as those used by Cyclyx, are difficult-to-recycle materials such as multilayer packaging, food wrappers, and bottle caps thereby reducing the plastic waste burden on landfills.

These investments and developments in the recycling sector are expected to inspire similar innovations and operations across Asia and countries like India. Thereby catalyzing investments in the chemical recycling infrastructure creating jobs and growing the waste management systems. If ExxonMobil's chemical recycling technology is poised to handle up to 500,000 tons of plastic waste every year by 2027, how can similar scalable models be adapted to cater to India's 3.4 million tons of annual mismanaged plastic waste?

What kinds of policy frameworks can India develop to encourage the adoption of advanced recycling technologies, balancing the costs and environmental benefits?

Since chemical recycling methods are energy intensive, how can countries like India ensure the process is powered sustainably to avoid undermining climate goals?

Take away:

India generates over 9.4 million tons of plastic waste annually, of which 40% of the waste is uncollected, leading to severe environmental and health issues. Less than 10% of the plastics are recycled across the globe. Well-implemented plastic recycling sector can contribute up to \$2 billion annually to the Indian economy. Therefore chemical recycling methods, inventions and the recycling sector possess great opportunities. If the circular economy goals are integrated successfully, our nation could become a key hub in the recycled plastics market in the whole world.

Some thought-provoking questions:

# Exploring India s Industrial Advancements Key R and D and Manufacturing Milestones

#### Vinodhini Harish

#### Introduction:

India is experiencing a transformative wave of industrial developments and we are so excited to share that! The country is reinforcing its position as a global hub for innovation and manufacturing. From cutting-edge R&D facilities to large-scale manufacturing expansions, the leading companies are making significant strides to meet the growing demands of diverse industries. In this article, we have highlighted the same and the milestones mentioned are not to simply showcase the country's industrial capabilities but to underline the potential for sustainable growth and global collaboration.

Breaking new grounds! Nouryon unveils game-changing innovation centre in Mumbai.




In a well-defined path to the future of specialty chemicals in India and beyond, Nouryon, the Dutch chemical giant, has made a bold leap forward by inaugurating its state-of-the-art innovation centre and expanding its office in Mumbai to an impressive 100,000 square feet!

The air is simply filled with excitement as this cutting-edge facility promises to be more than just a research hub-its launch pad for revolutionary solutions that will shape industries ranging from paints and coatings to agriculture, home and personal care and construction.

Nouryon has expanded its presence in India as its ultimate focus is to develop tailored solutions for a vast number of industries such as paints, agriculture, construction and personal care. Technological facilities allow researchers and developers to create water-based paints, seed coatings for better crop protection and advanced personal care products such as surfactants, hair styling polymers and fabric softener actives. The office is also set up well to host global hubs for sales administration, information management, human resources, finance, research and development and customer service.

What do you think? Why is it crucial for companies to focus on such a diverse range of industries?

According to Sobers Sethi, Senior vice president for Emerging Markets and China, Nouryon is dedicated to servicing their customers in India with sustainable and innovative solutions, that are backed by strong research and development capabilities. The expanded presence enhances their ability to support the region while establishing key global support hubs.

Did you know? Some of the sustainable solutions offered by Nouryon in the region include Bermocoll Cellulose Ethers(used in paints), Kromasil highperformance Silica, Trigonox organic peroxides and Morwet dispersing agents.

What do you think? How could sustainable products like these make a difference in industries like agriculture or personal care?

Why does it matter? How might this kind of expansion help the country's industries grow while promoting sustainability?

Beyond the Mumbai operations, Nouryon has been active in India since 1991 with a production facility in Mahad, Maharashtra for over 30 years. The firm is also offering its continuous support to the local communities through various initiatives such as improving drinking water access, supporting schools for differently-abled children and making huge donations for ambulance services to the residents of Mahad.

What's next? India is buzzing with similar groundbreaking developments:

Laurus Labs has launched its advanced

R&D facility at IKP, pushing the boundaries of pharmaceutical research.

Symrise has launched its new manufacturing facility in Chennai, thereby strengthening its footprint in India.

Tanfac has recently doubled its capacity by completing the expansion of its hydrofluoric acid plant, this has been a significant boost for the industrial chemicals.

Amneal Pharmaceuticals is making a huge step with its \$200 million investment in new manufacturing facilities in India.

GSFC has begun their commercial production at its state-of-the-art Hydroxylamine Sulphate plant in Vadodara, to drive their domestic production capabilities.

#### What's the takeaway?

India is undoubtedly a forerunner in the context of innovation since the companies are investing heavily to meet both local and global demands. These advancements not only highlight the country's ability but also their strategic importance in expanding its chemical and pharmaceutical landscapes. Clearly, there is a huge room for opportunities, technological breakthroughs, economic growth and a more sustainable tomorrow. With so much occurring in the industry, it is apparent that the best is yet to come!

# Gujarat at the Helm Shaping India s Chemical and Petrochemical Growth

#### Vinodhini Harish

Introduction:

Indian chemical and petrochemical sectors are reaching new heights mainly due to key initiatives such as India Chem 2021 and the upcoming



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Summit





FutureChem

in

technology in chemicals and petrochemicals. Given that Gujarat is known as the petrochemical capital of India, these summits are catalysts for investments and innovation in a rapidly expanding industry. Thus we have explored the highlights of them in the article. Let's begin.

#### Highlights of 11th edition of India Chem 2021: A step towards Global Chemical leadership

The 11th edition of India Chem 2021, held in New Delhi emphasized the growth of Indian manufacturing hubs for chemicals and petrochemicals to extend globally. Union minister D.V. Sadananda Gowda also pressed on the sectors' vital role in achieving the vision of Atmanirbhar Bharat (self-reliant India).

He also mentioned that the sector is expected to attract investments of about INR 8 lakh crore by 2025, benefitting from policies such as Production Linked Incentive (PLI) schemes for 12 sectors. Furthermore, the support to the industry and import duties on Naphtha were reduced from 4% to 2.5% in the 2021-22 budget. The investment opportunity is due to the reflection of the tremendous growth in the industry. The sector was valued at \$178 billion in 2019 and is expected to reach \$308 billion by 2025 with an annual growth rate of 9.3%.

The secretary of the Department of Chemicals and Petrochemicals,

Yogendra Tripathi mentioned that India is becoming one of the world's fastestgrowing economies and the vision is clear to become a leading hub for • chemicals and petrochemicals production hub.

Mr. Gowda highlighted how the • Production Linked Incentive (PLI) schemes across 12 sectors would boost the chemical industry directly and indirectly.

FutureChem Gujarat Summit in Bharuch: shaping the future of • chemicals and petrochemicals.

Gujarat plays a key role in India's chemical sector which produces about 35% of the nation's chemicals and accounted for about 47% of the state's exports over the last three years.

As a part of the lead-up to the Vibrant Gujarat Global Summit 2024, the FutureChem Gujarat Summit will be held in Bharuch. The summit will focus on the future of the chemical and petrochemical industries.

The summit will explore key topics like sustainable growth, new technologies, investment opportunities worth INR 34,773 crores and global partnerships. Key highlights of the summit:

Gujarat Chief Minister Bhupendra Patel will be inaugurating the summit, joined by the union minister Mansukh Mandaviya and the ministers, Gujarat's Energy and petrochemical minister Kanu Desai and Balwant Singh Rajput, Gujarat's industries minister.

- Gujarat is also called as "Petrochemical Capital of India" as it exports to about 168 countries.
- The event included the investment exchange program that is worth INR 34,773 crores featuring seven companies collaborating on key projects.
- The summit will also host three technical sessions addressing the latest trends, challenges and opportunities in the chemical and petrochemical sectors.

Overall, The Indian chemicals and petrochemicals industry continues to see rapid growth reinforced by the government's commitment to making the country a global manufacturing hub in the sector.

#### Take away:

Both the India Chem 2021 and FutureChem Gujarat Summit highlight the country's rising prominence in the global chemical and petrochemical industries. While India Chem 2021 set the tone with its vision of India as a global manufacturing hub FutureChem Gujarat Summit reinforces Gujarat's leadership as a key player driving the transformation. Therefore, both events underscore India's focus on sustainability, innovation and economic growth in the chemical sector.

### Groundbreaking Development India and Japan Sign Agreement for Green Ammonia Export

#### Vinodhini Harish

Introduction:

A new era in Green Energy collaboration is embarked on as India and Japan jointly achieve a significant milestone in pursuing green energy collaboration. Their first project offtake agreement for green ammonia export. The deal finalized on Tuesday in the presence of India's Minister of New & renewable energy, Pralhad Joshi is expected to open doors for future





partnerships in the green energy sector between the two nations. This article is expected to leverage renewable energy for green ammonia production and integrate into Japan's energy mix, this collaboration paves the way for reducing carbon emissions and fostering longterm sustainability. In this article, we have explored this agreement and explained how it strengthens India's position as a global leader in green hydrogen and ammonia production.

#### A historical step forward in Green **Energy**:

The Ministry of New & Renewable Energy(MNRE) commanded the agreement as a key step in India's emergence as a global leader in green hydrogen and ammonia production.

The Heads of Terms Agreement was signed by Sembcorp Industries, Sojitz Corporation, Kyushu Electric Power, and NYK line, establishing a crossborder green ammonia supply chain from India to Japan.

The intention behind the agreement is to strengthen the cross-border partnerships in the green energy sector by leveraging India's growing capacity for renewable energy production and Japan's commitment to transitioning towards sustainable energy sources.

Also to facilitate a robust supply chain by establishing a dependable and efficient supply chain for green ammonia from India to Japan, showcasing India's production capabilities and ensuring Japan's access to clean energy solutions for its industries.

The agreement also enables Japan to partially replace coal consumption in its thermal power plants with green ammonia, supporting global efforts to achieve net-zero emissions. It also reinforces India's position as a key player in the global renewable energy market by demonstrating its ability to produce

and export green ammonia at competitive costs.

The MNRE remarked that the contract symbolizes the first such partnership between the two nations, underscoring India's growing prominence in the global green energy landscape.

The role of the involved industries under the agreement:

### 1. Sembcorp Industries: Spearheading Green Ammonia Production

The role of Sembcorp Industries is to lead the production of Green ammonia in India using renewable energy sources like solar and wind, as opposed to conventional ammonia that relies on fossil fuels.

Sembcorp will build and operate production facilities that harness renewable energy to power the processes required for green ammonia production thereby ensuring the process is carbonneutral.

With the agreement's backing, India will be transformed into a hub for sustainable green ammonia production, helping the country tap into its renewable energy potential while reducing its dependence on fossil fuels.

### 2. Kyushu Electric Power: Integrating Green Ammonia into Japan's Energy Mix

- Kyushu Electric Power Systems is a • major utility provider in Japan which will utilize the green ammonia supplied by India in its energy systems. The industry will utilize green ammonia by mixing it with coal or using it as a substitute in thermal power plants operated by Kyushu Electric Power.
- By using this, the utility can gradually reduce its dependence on coal, a high-emission fuel, while lowering overall greenhouse gas



The energy transition goal of Japan is to replace conventional fossil fuels with cleaner alternatives, and this agreement is in line with the goals to achieve carbon neutrality by 2050.

#### Sojitz Corporation: acting as the business intermediary:

Sojitz Corporation is a global trading and investment company that will be acting as a link between the ammonia producer (Sembcorp) and end-user (Kyushu Electric Power)

Sojitz will handle the business arrangements that are required to ensure a smooth flow of green ammonia such as negotiating contracts and managing financial transactions while addressing logistical and operational challenges.

The company will also ensure that the ammonia meets the required quality and regulatory standards. This intermediary role ensures a seamless supply chain between India and Japan, fostering trust and operational efficiency.

#### NYK line: Managing maritime transportation:

NYK line is one of Japan's leading shipping companies that will oversee the transportation of green ammonia from the production sites in India to the energy facilities in Japan.

Green ammonia being in the gas or extremely liquid state at low temperatures required specialized ships with appropriate storage and safety mechanisms while transporting. NYK line will ensure safe and efficient transport includes maritime that loading, shipping and unloading at Japanese ports.

The component is critical to the supply chain thereby enabling the export of India's green ammonia to Japan without





disruptions.

#### Significance of this agreement:

The agreement has put everything's roles and responsibilities in their respective places. The responsibilities are divided effectively with each entity focusing on its area of expertise: production, integration, facilitation, and transportation.

The partnership also helps both the countries meet their sustainable development goals which are India through renewable energy production and Japan through decarbonizing its energy mix.

The partnership also strengthens the supply chain through well-defined roles that ensure that all aspects of the green ammonia lifecycle, from production to consumption are addressed.

#### What does the agreement entail?

During the announcement, Pralhad Joshi, India's minister of New and renewable energy, highlighted the importance of the agreement, describing it as a historic milestone in green energy collaboration between India and Japan He emphasized that the partnership would create a strong supply chain for green ammonia, from production in India to its use in Japan, and serve as a foundation for more such collaborations in the future.

Joshi also revealed that India is accelerating its green ammonia production efforts, with an active tender for 7.5 lakh tonnes per annum (TPA) and additional tenders for 4.5 lakh TPA. This initiative is part of India's larger goal to incentivize the production of over 1 million TPA of green hydrogen, showcasing the country's determination to expand its green energy sector rapidly.

The minister further stressed the enduring cultural and collaborative ties between India, Japan, and Singapore, especially in energy efficiency and renewable energy technologies. He expressed optimism that the agreement was just the beginning envisioning even bigger and more impactful initiatives in the future. This partnership not only strengthens India's global position in the green energy sector but also highlights the Indian government's unwavering commitment to promoting green hydrogen and renewable energy projects.

#### Final thoughts:

The India-Japan agreement for green ammonia is beyond just a trade deal. It is a testament to the potential of international partnerships in combating climate change. With companies like Sembcorp, Sojitz, Kyushu Electric Power, and NYK driving the initiative, the agreement highlights the role of technology collaboration and in achieving sustainability goals. As our nation accelerates its green energy production with large-scale tenders and incentives, this agreement marks the beginning of even greater endeavours in renewable energy sector. the highlights India's growing influence on the global green energy stage and sets a precedent for future partnerships aimed at fostering a cleaner and greener world.

### Pharma's Next Frontier Insights from the 17th Edition of CPHI and PMEC India 2024

Vinodhini Harish

#### Introduction:

The 17th edition of CPHI &PMEC India brought together global and domestic pharmaceutical leaders, innovators and stakeholders to spotlight the country's pharmaceutical industry and its remarkable growth and potential. The event was held at the India Expo Centre and Mart from November 26-28, 2024 which also served as a dynamic platform for showcasing advancements in the related technologies, concepts related to sustainability and leadership. In this article, we have taken a deep dive into the concepts discussed in the event and thrown some light on the concepts for the stakeholders and interested readers to take insights and lessons from the concepts. Let's begin.

CPHI showcases Indian pharma's capabilities to a global audience

The 17th edition of CPHI & PMEC India was organized by Informa Markets from November 26-28 at the India Expo Centre, Greater Noida. The event demonstrated the actual potential of the Indian pharmaceutical market which is

expected to grow \$130 billion by 2030 and \$450 billion by 2047. The statistics also emphasize the role of the pharmaceutical industry in promoting global healthcare. At the event, CPHI India featured a line of exhibitors which included suppliers of Active Pharmaceutical Ingredients (API), excipients, and drug formulations. On the other hand, PMEC India highlighted the innovations that are creating quite a bit of stir in the industry including innovations in pharmaceutical equipment, packaging, process automation and processing equipment. The event brought over 2000 exhibitors,





and 5000 visitors from across 150 countries including the USA, UAE, South Korea, Japan and the UK.

The CPHI lineup of exhibitors included leading names and their activities like:

- Dr. Reddy's Laboratories Ltd. Highlighted the advancements in the generic formulations and APIs. Showcased cost-effective drug solutions for global healthcare markets.
- Biocon Ltd.- Presented innovations related to biosimilars and biologics. Emphasized the solutions for chronic disease management including oncology and diabetes.
- Glenmark Lifesciences Ltd. Displayed a wide range of highquality APIs for therapeutic areas such as cardiovascular, antiinfective and CNS. Also emphasized their R&D capabilities.
- Morepen Laboratories Ltd. Highlighted their expertise in OTC products and APIs. They have also focused on active ingredients for wellness and diagnostics.
- Hetero Labs Limited showcased some of its integrated pharmaceutical solutions, which include API products and finished formulations. It has also addressed the affordability of medicines for critical illnesses.
- Lupin Ltd. Presented their pipeline of generic drugs and advanced pharmaceutical ingredients and also focused on their role in improving global healthcare access.
- Signet Excipients Pvt. Ltd. highlighted innovative excipients that are essential for drug formulation. They have also showcased solutions to improve drug stability and delivery.
- Apitoria Pharma Pvt Ltd. Introduced their capabilities in niche APIS and custom pharmaceutical manufacturing and discussed the advancements in

personalized medicine.

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- Capsugel Healthcare Pvt. Ltd. Displayed advanced drug delivery systems such as capsule technologies and highlighted their sustainable and patient-centric solutions.
- Supriya Lifescience Ltd. Focused on APIS for antihistamines, analgesics, and antidepressants. Discussed global supply chain strengths.
- SMS Pharmaceuticals Ltd. highlighted APIS and intermediates for multiple therapeutic categories. They have also emphasized their compliance with international quality standards.
- MSN Laboratories Pvt. Ltd. Highlighted innovative APIs and formulations for oncology, cardiology, and other areas. Focused on affordable solutions for emerging markets.
- Tirupati Lifesciences Pvt. Ltd. Displayed a wide range of nutraceuticals, APIs and finished dosage forms. They have also highlighted their R&D initiatives for health supplements.
- Merck Life Science Pvt. Ltd. presented pharmaceutical-grade chemicals and lab solutions. Focused on cutting-edge research tools for drug development.
- Other prominent exhibitors

Overall these exhibitors collectively showcased the nation's diverse strengths pharmaceutical including innovations in drug formulation, advanced APIs, sustainable excipients and global healthcare solutions. They have also engaged with attendees through product demonstrations and carried out discussions on emerging trends and networking to foster partnerships.

Discussions about the strong growth potential of the Indian pharmaceutical industry:

AVPS Chakravarthy, Mr. global ambassador of, the World Packaging Organization (WPO), took the discussion into some of the crucial advancements in the industry and the implications of broader such innovations. He mentioned Carticel Therapy given for cancer treatment where the T-cells are engineered to target and destroy cancer cells and this has opened a promising method in treating blood cancers like leukemia and lvmphoma. In this advanced methodology of treating cancer, the Tcells of immune cells are collected from the patient and are genetically modified in a laboratory to express specific receptors called CARs. This receptor enables the T-cells to recognize and attack the cancer cells. Therefore, once the modification is done at the laboratory, these T-cells are infused back into the patient where they actively target and eliminate the cancerous cells.

When commercialized, such advanced, cutting-edge therapies can be costeffective global treatments. Such advancements will enhance India's position in the development of precision medicine and personalized therapies.

He also mentioned Nafithromycin which is called a next-generation Macrolide antibiotic that is developed to drug-resistant combat bacteria infections. The rise of antimicrobial resistance is considered a severe threat to global health and we witness several health professionals admit to the threat in social media and otherwise. Therefore this advanced antibiotic targets those Drug-resistant pathogens and can be a powerful solution where the conventional anti-biotics fail.

The number of patients affected by respiratory tract infections caused by multi-drug-resistant (MDR) bacteria is growing and this drug is considered to be an effective solution for them. Also, the drug is expected to be effective against gram-positive and gram-





negative bacterial strains.

These advancements or developments are extremely crucial for a country like India, where there are high rates of infectious diseases and these advancements are considered most crucial for the development of domestic healthcare and global supply chains.

Consider the broader implications of these innovations:

Although these were not covered at the event, we can't deny the broader and positive implications of these innovations.

- Affordability and Access: India is capable of developing these advanced technologies at a fraction of the global cost and this underscores its dual strength in affordability and efficacy. However, can India ensure widespread access to these cutting-edge therapies such as Carticel while maintaining its affordability?
- Global healthcare contributions: • India has come up with these costeffective solutions thereby reinforcing its reputation as the "Pharmacy of the world", with these solutions, the nation has already met underserved the needs of populations across the globe. However, the question arises - what strategies are required to scale the production of innovative antibiotics like Nafithromycin to address global AMR challenges?
- Research and Development (R&D) excellence: These advancements are testament to the growing а expertise investment and in pharmaceutical R&D within India enhances that further its competitive edge in the global market. However, we can't fail to think about this question: how can collaborative efforts between Indian pharma companies and global

stakeholders accelerate the adoption of these technologies?

Veeramani, Chairman. Dr. of Pharmexcil, mentioned that the Indian pharmaceutical industry is capable of exporting to over 200 countries while supplying a variety of medicines, vaccines and other healthcare solutions. He also added that our nation is known as the "API capital of the world due to its solid manufacturing base. Furthermore, Indian companies are capable of supplying the finished dosages for the patients to use such as tablets, capsules and injectables through affordable generics, especially in therapeutic areas such as diabetes, oncology and cardiology.

He also mentioned the country's ability to become the hub for clinical trials, leveraging its large patient pool, skilled professionals and cost-effective infrastructure. This involves Pharmacovigilance, which is a process of monitoring the safety of drugs postapproval to ensure they remain effective and safe for use. Indian companies play a significant role in assisting global pharmacovigilance efforts to provide excellent medical support to the world.

During the event, he also addressed the contemporary innovations in biologics and specialty generics that are rapidly advancing, and that possess biosimilars and products that bring the country's expertise in generics with innovation and cost-effective alternatives to the high-priced branded drugs.

They have also covered the topics related to the impact of the US Biosecure Act which emphasizes the need for secure supply chains in pharmaceuticals especially for critical drugs and APIs. The way it encourages diversifying sources to reduce dependence on a single country like China.

On the other hand, the Indian pharmaceutical industry also benefits

from the policy such as global companies that seek alternative suppliers with robust manufacturing capabilities. It also strengthens the country's position as a preferred supplier of essential medicines and APIs to the US and other markets.

Mr. K. Raja Bhanu, Director General, Pharmexcil commented on the exports and their role in contributing to the market size of \$55 billion. He also mentioned the future projections in exports that are expected to grow to \$130 billion by 2030 and \$450 billion by 2047 showcasing the country's potential to dominate the global pharmaceutical market.

The major drivers mentioned in the event are as follows:

- Expanding the global demand for affordable generics and biosimilars
- Increasing the production capacity and compliance with global regulatory standards
- Strengthening the trade relationships with emerging markets in Africa, Southeast Asia and Latin America.

Overall the pharmaceutical sector is considered a major contributor to the country's GDP and viewed as a significant source of foreign exchange.

India's affordable medicines ensure access to healthcare for millions across the globe that covers critical health challenges such as HIV, AIDS, tuberculosis, and Malaria.

These segments in the event have given rise to some of thought-provoking questions like:

How can countries like India further leverage their strength to address global healthcare challenges such as antimicrobial resistance or pandemic preparedness?





What strategies should India adopt to ensure sustainable growth in exports maintaining quality while and regulatory compliance?

How can policies such as the US Biosecure Act shape the country's role in global pharmaceutical supply chains?

Mr. Namit Joshi, Vice chairman, of Pharmexil, commented on the concept of integrating IT with pharmaceuticals that will further strengthen the industry's role while paving the way for dominance in biologics and biosimilars. The integration of IT and pharmaceuticals includes IT-driven solutions such as artificial intelligence (AI), machine learning(ML), and data analytics that are revolutionizing drug discovery, manufacturing and supply chain management.

These advanced technologies are well applied in applications such as

AI in drug discovery helps in faster identification potential of drug candidates and optimization of clinical trial designs.

Data analytics in manufacturing for predictive maintenance, quality control, and improved efficiency in production.

Blockchain in the supply chain to enhance traceability and reduce counterfeit drugs.

The dominance in biologics and biosimilars is considered more efficient to produce and monitor, enabling the country to dominate the high-value market.

Mr. Yogesh Mudras, Managing Director, Informa Markets in India commented on the leadership of India in the sector that stems from the key advantages such as low manufacturing costs which is about 30-35% lower than countries like the US and Europe. He also included cost-efficient R&D which lies at 87% less

than developed markets and an abundance of skilled labor. These strengths position India as а formidable player that shapes the future of global healthcare.

The low manufacturing costs are achieved through efficient processes and inexpensive labour, therefore generic medicines produced in India are often 60-90% cheaper than their branded counterparts.

Likewise, pharmaceutical research and development in the country costs about 87% less than in the developed markets, which is due to lower operational costs for running clinical trials and regulatory processes. Therefore India is considered a major hub research for contract organizations thereby enabling global companies outsource to drug development activities.

India has a vast pool of scientists, chemists, and engineers specializing pharmaceuticals, in and biotechnology. Therefore this skilled workforce is considered crucial for maintaining quality and driving innovation in the sector.

Mr. Adam Anderson, Executive Vice President - Pharma, Informa Markets B.V. covered the topics related to the growth of the biopharma industry which accounts for about 35% of the global market. The growth extends across the entire supply chain including contract manufacturing and packaging, and thereby packing a ton of opportunities for India.

Biopharmaceuticals encompass biologics and biosimilars which are some of the fastest growing segments in healthcare. The growth is expected to constitute about 35% of the global pharmaceutical market by 2027 which is driven by the demand for personalized medicine, immunotherapies and advanced

treatments. He also stated some of the opportunities that lay ahead in the path for India which includes contract manufacturing for both APIs and finished drugs. Also, innovations in pharmaceutical packaging like temperature-controlled packaging for biologics are crucial for maintaining the integrity of the medicines during transportation.

India's Contract For instance: Development and Manufacturing Organizations (CDMOs) are partnering with global players to cater to rising demands in biopharma.

#### Summary:

The 17th edition of CPHI & PMEC India showcases the potential of the Indian pharmaceutical industry and its ability to shape the future of global healthcare. These healthy discussions and contributions only accentuate thriving countries like India towards their goal. Since the event highlighted the country's growing influence driven by innovation, cost-efficiency and robust talent pool it doesn't mean that it should lose its focus on developing technologies such as AI. The event addressed also the sustainability challenges and geopolitical opportunities such as the Biosecure Act, which combined to position the country to expand its global footprint. The discussions of biologics, biosimilars, green chemistry and women's leadership highlighted the sector's focus on embracing diversity, environmental innovation and responsibility. Overall these events are considered as a vital platform for stakeholders to connect, collaborate, and drive meaningful progress reaffirming the country's leadership in delivering affordable, and accessible healthcare solutions.







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