

Polymers_Resins

Weekly Intelligence Report

2026-07-19 | 34 articles | 16 countries
troy-technical.jp

This Week's Keyword

Sustainable Polymers

Circular economy & PFAS-free drive innovation

34

articles

Total Articles Analyzed

16

countries

Source Countries/Regions

\$1.97B

by 2034

Coextruded Film Market

40%

reduction

Signal Loss in Dielectrics

All 34 Articles This Week — 5-Axis Evaluation Matrix

How to read columns — Tech Novelty: degree of breakthrough Market Proximity: closeness to commercialization Market Impact: industry-wide effect Data Reliability: quantitative data & peer review US/EU Relevance: direct impact on US/European companies & supply chains

#	Article Title	Type	Tech Novelty	Market Proximity	Market Impact	Data Reliability	US/EU Relevance	Summary
#01	Bio-Based Resins for FRP	Guide						Guide details bio-based/recyclable resins for FRP, tackling greenwashing and forecasting trends.
#02	D&A; Eco-Leather Resins	New Product						D&A; Group unveils special-effect edge paints and eco-friendly leather resins at Vietnam exhibition.
#03	Cornstarch Bioplastic Plates	New Product						Cornstarch-based biodegradable bioplastic plates/containers launched as eco-friendly packaging.
#04	RBI Polymer Banknotes	Corporate Strategy						RBI issues global EOI for polymer substrate facility to launch durable, counterfeit-resistant plastic banknotes.
#05	CSM Epoxy Compatibility	Technical Guide						CSM technical guide details powder-bound CSM compatibility with epoxy resin for FRP lamination.
#06	Recycled BOPP Film	Partnership						PureCycle, RM TOHCELLO, Mitsui partner to accelerate virgin-quality recycled BOPP film production.
#07	CFRTP Forming Advances	Research						Advances in CFRTP forming overcome high melt viscosity/chemical inertness for aerospace applications.
#08	Toray Aerospace Composites	New Product						Toray unveils fast-curing prepreg '3960-FC' and high-temperature resin 'TC1810' for aerospace.
#09	Covestro & BYD Partnership	Corporate Strategy						Covestro and BYD partner for advanced polymer materials in NEVs and batteries, focusing on low-carbon solutions.
#10	EU Chem Recycled PET Rules	Regulatory						EU adopts first rules for calculating/reporting chemically recycled content in PET bottles.
#11	SABIC & Rongsheng Project	Corporate Strategy						SABIC and Rongsheng advance "Jintang New Materials Project" in China for Asia's chemical demand.
#12	DePoly PET Recycling Plant	New Tech						Swiss DePoly unveils showcase plant for 500-ton/year PET chemical recycling technology.
#13	Recyclable Paper Packaging	New Product						Kuraray's bio-based resin & Mica Corp.'s primer create recyclable high-barrier paper packaging.
#14	BASF Biomass Additives	New Product						BASF expands biomass-balanced additives for architectural coatings, reducing PCF with high performance.

#	Article Title	Type	Tech Novelty	Market Proximity	Market Impact	Data Reliability	US/EU Relevance	Summary
#15	Coextruded Film Market	Market Overview						Coextruded multilayered film market projected to grow to \$1.97B by 2034, driven by sustainable packaging.
#16	Natural Polymers in Ag	Field Trial						Kanematsu, EF Polymer, MSP launch field trial for sustainable tomato production with natural polymers.
#17	Saudi Petrochemicals	Market Overview						Saudi petrochemicals sector rises to 4th largest producer, driven by SABIC and Vision 2030, embracing circularity.
#18	Greene Tweed Xycomp DLF	New Material						Greene Tweed's Xycomp DLF thermoplastic accelerates aircraft prototyping, achieving up to 60% weight reduction.
#19	BASF Düsseldorf Plant	Corporate Strategy						BASF inaugurates new plant in Düsseldorf for high-performance surfactants, polymers, driving green transformation.
#20	Circular CF/LM-PAEK	Research						Resistance-welded CF/LM-PAEK composites pave way for truly circular structures in aerospace, overcoming recycling.
#21	Polyketimine Networks	Research						Novel polyketimine networks achieve stable performance and closed-loop recyclability without reagents/catalysts.
#22	Daher Thermoplastics	Demonstration						Daher demonstrates thermoplastics can replace aircraft aluminum with 64-layer CFRTP wing rib.
#23	CO2-to-Polymer Synthesis	Research Facility						JGC Holdings opens 'JBX1' bio-manufacturing center targeting direct CO2-to-polymer synthesis via gas fermentation.
#24	BASF PFAS-Free PPA	New Material						BASF develops PFAS-free flame retardant PPA for next-gen batteries, closing polyamide circularity loop.
#25	Benzene Derivatives Mkt	Market Overview						Benzene derivatives market to surge to \$69.27B by 2035, driven by styrene polymers and sustainable solutions.
#26	Fraunhofer PFAS-Free Coatings	New Product						Fraunhofer ISC commercializes renewable-based, fluorine-free ORMOCER® coatings, achieving PFAS-equivalent performance.
#27	Oerlikon PFAS-Free Coatings	New Product						Oerlikon redefines standards with DLC and ceramic PFAS-free coatings, achieving superior wear resistance.
#28	EF Polymer Funding	Corporate Strategy						India's EF Polymer secures ₹2.63B to accelerate global expansion of 100% natural superabsorbent polymer.
#29	EU CBE JU Call for Proposals	Policy/Funding						EU's CBE JU launches 2026 call for proposals, allocating €170.7M to boost bio-based industry.
#30	Ultra-low Loss Dielectric	New Material						Novel build-up dielectric film reduces signal transmission loss by 40% for advanced IC packaging.
#31	CO2 Separation Membranes	Research Overview						Polymeric membrane technology for CO2 separation advances significantly, achieving high efficiency and low energy.
#32	Songwon RSPO Antioxidant	New Product						Songwon establishes new benchmark with RSPO-certified antioxidant 'SONGNOX 1076' for polymer additives.
#33	NYSKC Personal Care Polymers	New Product						NYSKC unveils innovative polymer solutions for personal care, driving bio-based transition with new launches.

#	Article Title	Type	Tech Novelty	Market Proximity	Market Impact	Data Reliability	US/EU Relevance	Summary
#34	3D Printing Surgical Models	Application						3D printing accelerates personalized surgical models in hospitals, reducing recovery times and complications.

High Med-High Med Low | Yellow highlight = featured article

Three Questions That Demand Your Decision This Week

❶ Is your aerospace platform ready for circularity?

Breakthroughs in resistance-welded CF/LM-PAEK composites (#20) and advanced thermoplastics (#18, #22) promise truly circular aerospace structures. Does your R&D; roadmap include disassemblable and reusable composites, or will you be left with unrecyclable legacy designs?

❷ How exposed is your supply chain to PFAS regulations?

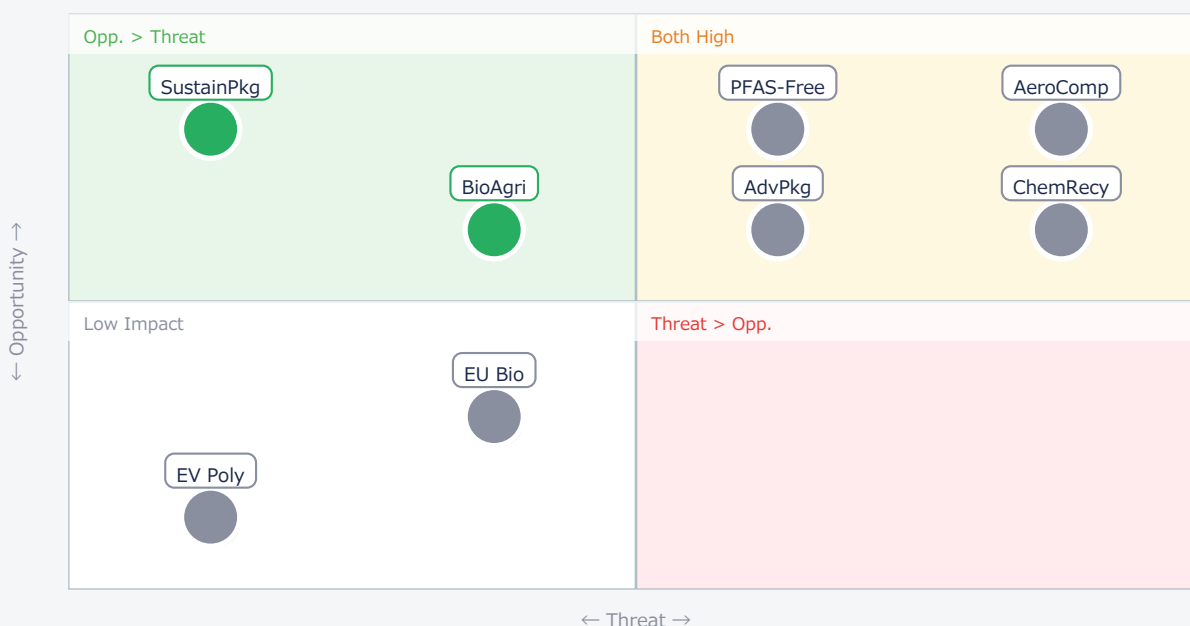
With commercialized PFAS-free coatings (#26, #27) and battery materials (#24) now available, the regulatory hammer is dropping faster than anticipated. Have you identified all PFAS-containing components and secured high-performance, cost-effective alternatives?

❸ Are you investing enough in advanced recycling IP?

EU regulations for chemical recycling (#10) and breakthroughs in closed-loop polyketimine networks (#21) are reshaping the polymer value chain. Is your company developing proprietary chemical recycling or depolymerization IP, or will you rely on others for virgin-quality recycled feedstocks?

Opportunities vs. Threats for US/European Companies

Opportunity vs. Threat Matrix for US/European Companies



Item	Quadrant	↑ Opportunity	↓ Threat
● AeroComp	Critical	Lightweighting, circular	Tech qualification, IP
● PFAS-Free	Critical	Regulatory compliance	Market disruption
● ChemRecy	Critical	Circular economy	Scale & cost
● AdvPkg	Critical	HPC/AI enabler	Tech lag
● SustainPkg	Opp.	Consumer demand	Performance gap
● BioAgri	Opp.	Water saving, eco	Niche market
● EV Poly	Ref.	EV market access	Local competition

● EU Bio	Ref.	R&D; funding	Grant competition
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Deep Dive ① — Circular Aerospace Composites Breakthrough

#20 | 2026/07/15 | Engineer Live | Tech Novelty ●●●●● Proximity ●○○○○ Market Impact ●●●●● Data Reliability ●●●●● US/EU Relevance ●●●●●

Groundbreaking research on resistance-welded Carbon Fiber-Reinforced Low-Melt Poly(aryletherketone) (CF/LM-PAEK) composites enables truly circular structures in aerospace, overcoming long-standing recycling challenges.

This technology allows for easy assembly, disassembly, and reuse of high-performance thermoplastic composite joints, maintaining mechanical properties after multiple cycles, a critical step for sustainable aerospace manufacturing.

► Strategic Analyst's Perspective

Strategic Analyst's Perspective: This is an academic breakthrough (TN5) with immense long-term market impact (MI5), but still in basic research (P1). The published numbers on reusability and property retention are promising, but scaling from lab to industrial aerospace qualification is a multi-decade effort. Technical barriers include developing robust, automated resistance welding processes for large structures and ensuring long-term fatigue performance after multiple recycling cycles. [Opportunity] for US/EU materials & component suppliers to lead in next-gen circular composite development and IP licensing. [Threat] for OEMs & device manufacturers who do not invest in this foundational shift, risking obsolescence of current composite platforms. Next actions: [R&D;] Initiate internal research programs or academic partnerships on disassemblable thermoplastic composites by Q4 2026. [Strategy] Begin long-term scenario planning for a circular aerospace materials economy by mid-2027.

Deep Dive ② — Commercial PFAS-Free ORMOCER® Coatings

#26 | 2026/07/17 | Fraunhofer ISC | Tech Novelty ●●●●○ Proximity ●●●●● Market Impact ●●●●○ Data Reliability ●●●●○ US/EU Relevance ●●●●●

Germany's Fraunhofer ISC has commercialized fluorine-free ORMOCER® coatings from renewable, non-toxic compounds, offering a robust PFAS alternative with equivalent or superior performance.

These inorganic-organic hybrid polymers deliver high hardness, abrasion resistance, thermal stability, and environmental durability, achieving over 25% environmental impact reduction in food packaging and textiles.

► Strategic Analyst's Perspective

Strategic Analyst's Perspective: The commercialization of PFAS-free ORMOCER® coatings (P5) is a significant near-term market shift. Fraunhofer's claims of PFAS-equivalent performance and 25%+ environmental impact reduction appear realistic, given their reputation and the commercialization status. Technical barriers are primarily related to application-specific optimization and cost-competitiveness against existing non-PFAS alternatives. [Opportunity] for US/EU materials & component suppliers to license this technology or develop competing solutions, and for OEMs & device manufacturers to rapidly adopt these coatings for regulatory compliance and enhanced brand image. [Threat] for companies still reliant on PFAS or lagging in alternative development, facing market exclusion and reputational damage. Next actions: [Procurement] Evaluate ORMOCER® and other PFAS-free coating suppliers immediately. [R&D;] Benchmark performance against internal requirements and existing solutions by end of Q3 2026.

Deep Dive ③ — Ultra-low Loss Dielectric for ICs

#30 | 2026/07/17 | Vertex AI Search | Tech Novelty●●●●○ Proximity●●●○○ Market Impact●●●●● Data Reliability●●●●○ US/EU Relevance●●●●●

A novel build-up dielectric film for advanced IC packaging reduces signal transmission loss by 40%, overcoming high-frequency/high-temperature challenges of existing epoxy resins.

This material maintains compatibility with existing manufacturing processes, achieving ultra-low loss and robust reliability, crucial for high-performance computing, telecommunications, and automotive applications.

► Strategic Analyst's Perspective

Strategic Analyst's Perspective: A 40% reduction in signal transmission loss (MI5) is a critical enabler for next-gen semiconductors (HPC, 5G/6G, AI). The claim is significant and likely based on lab benchmarks, but real-world integration challenges (P3) in complex IC substrates remain. Technical barriers include long-term reliability under extreme operating conditions, manufacturability at scale, and integration with diverse packaging architectures. [Opportunity] for US/EU materials & component suppliers to develop and license similar or superior dielectric materials, securing a critical position in the advanced packaging supply chain. [Threat] for OEMs & device manufacturers who fail to integrate such materials, leading to performance bottlenecks and competitive disadvantage in high-speed electronics. Next actions: [R&D;] Initiate evaluation of novel dielectric materials for advanced packaging roadmaps by Q4 2026. [Procurement] Identify potential suppliers and engage for early access to samples by Q1 2027.

Other Notable Articles

Toray Aerospace Composites (Jota International)
TN●●●●○ P●●●●○ MI●●●●○

New fast-curing prepreg and high-temp resin from Toray will boost aerospace manufacturing efficiency and performance.

DePoly PET Recycling Plant (Packaging Europe)
TN●●●●○ P●●●●○ MI●●●●○

Swiss DePoly's 500-ton/year chemical recycling plant for PET is a key step towards commercializing virgin-quality recycled plastics.

Novel Polyketimine Networks (Journal of the American Chemical Society)
TN●●●●● P●○○○○ MI●●●●●

Breakthrough polyketimine networks offer closed-loop recyclability without reagents, a major step against plastic pollution.

Oerlikon PFAS-Free Coatings (Oerlikon)
TN●●●●○ P●●●●○ MI●●●●○

Oerlikon's DLC and ceramic PFAS-free coatings offer superior wear resistance, accelerating PFAS elimination across industries.

Recommended Actions This Week

Action recommendations based on article evaluation matrix and opportunity/threat analysis.

■ Immediate (this week)

- [Strategy] Assess current product portfolio and supply chain for PFAS exposure and regulatory compliance risks.
- [R&D;] Review new aerospace composite breakthroughs (thermoplastics, circularity) for potential competitive advantage or threat.
- [Procurement] Identify and engage with suppliers offering commercialized PFAS-free coating solutions.

■ Short-term (1 month)

- [R&D;] Initiate feasibility studies for integrating PFAS-free materials into critical product lines (e.g., batteries, coatings).
- [Business Dev] Explore partnerships for advanced chemical recycling technologies, particularly for PET and polyamides.
- [Strategy] Conduct competitive analysis on Asian advancements in EV battery polymers and advanced packaging dielectrics.

■ Medium-long term (quarter+)

- [Executive] Develop a comprehensive circular economy roadmap for polymer materials, including investment in recycling infrastructure and bio-based alternatives.
- [R&D;] Invest in long-term research for CO₂-to-polymer synthesis and truly closed-loop polymer systems to secure future feedstock independence.
- [Legal/IP] Review IP landscape for advanced aerospace thermoplastics and next-gen battery materials to protect or acquire key technologies.

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Polymers_Resins — Selected Articles

Date: 2026-07-19

Articles: 34

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#33 NYSCC Unveils Innovative Polymer Solutions for Personal Care: ChemJac®KX, Clarivance®, and Low-VOC Nail Polish Drive Bio-Based Transition with Multiple Product Launches

#34 3D Printing Accelerates Personalized Surgical Models in Hospitals by 2026, Contributing to Reduced Recovery Times and Fewer Complications

#01 Comprehensive Guide Details Bio-Based & Recyclable Resins for FRP, Tackling Greenwashing and Future Trends

Published July 13, 2026 CSM Supplier USA



OVERVIEW

CSM Supplier has released a technical guide on bio-based and recyclable resins for Fiber Reinforced Polymers (FRP), offering in-depth analysis on bio-content vs. biodegradability, thermoplastic alternatives, performance trade-offs, and cost premiums. The guide aims to equip industry stakeholders with knowledge to navigate sustainable claims and avoid greenwashing in the composites market. It also forecasts key manufacturing trends for 2026-2031, including automation, AI, enhanced recyclability, and hybrid materials, positioning it as a critical resource for sustainable innovation.

Key Findings

CSM Supplier's new technical guide on bio-based and recyclable resins for Fiber Reinforced Polymers (FRP) provides crucial insights for advancing sustainability in the composites industry. It meticulously differentiates between bio-content and biodegradability, clarifying common misconceptions, and evaluates thermoplastic options for FRP, including their performance characteristics and potential cost implications. By addressing challenges like greenwashing, the guide empowers purchasers to make informed decisions that balance environmental impact with economic viability, a significant step towards more responsible material selection.

Technical Details

The guide delves into the intricate technical aspects of sustainable FRP resins. For bio-based resins, it highlights that a high bio-content does not necessarily equate to biodegradability, urging careful evaluation of product claims. It thoroughly examines thermoplastic FRPs, noting their superior recyclability compared to thermoset counterparts, while also discussing the processing and mechanical property trade-offs involved. Cost premiums associated with recycled resins versus virgin materials are also addressed, providing a realistic economic context for adoption. The resource also incorporates insights into life cycle assessments for composites, advocating for robust, data-driven environmental performance evaluations.

Background & Context

The manufacturing sector is under increasing pressure to reduce its environmental footprint and transition to a circular economy, with high-performance materials like FRPs being a key focus. However, the proliferation of 'greenwashing' claims makes it challenging to identify genuinely sustainable options. This guide significantly contributes to industry transparency, offering a foundational framework for companies to develop credible environmental strategies. Anticipated manufacturing trends for 2026-2031, such as increased automation, AI integration, advanced recycling technologies, and the development of hybrid materials, underscore the timeliness of this publication. The guide serves as a proactive resource, setting technical direction in anticipation of these shifts.

Strategic Significance & Outlook

This technical guide is poised to play a pivotal role in accelerating sustainable practices across the composite materials sector. Its comprehensive insights will be invaluable for researchers, engineers, and investors seeking to understand and influence the future trajectory of FRP materials. The detailed advice on avoiding greenwashing is particularly significant, helping companies mitigate reputational risks and build consumer trust. Moving forward, FRP manufacturers and suppliers are expected to leverage this guide to inform their eco-friendly product development and supply chain optimizations, thereby enhancing the market competitiveness and societal acceptance of composite materials. This will ultimately drive concrete steps toward achieving a circular economy in the composites sector.

Source: <https://csm-supplier.com/blog/>

Collected: July 17, 2026 | Automated Research System (Gemini API)

#02 D&A Group Unveils "The Gleam" & "Rocky" Special-Effect Edge Paints and Eco-Friendly Leather Resins at Vietnam Exhibition, Garnering High Acclaim

Published July 10, 2026 Technical Control ベトナム



OVERVIEW

D&A Group unveiled groundbreaking innovations at a Vietnam exhibition, including D&A Edge Polymer's 'The Gleam' and 'Rocky' special-effect edge paints that enhance leather's visual and tactile qualities. Concurrently, Technical Control showcased eco-friendly coating solutions and advanced resin portfolios, garnering strong endorsement from professional leather engineers. These advancements mark a critical stride toward integrating both aesthetic sophistication and environmental sustainability within the global leather industry.

Background

The global leather industry is navigating increasing pressures from heightened consumer environmental awareness and stricter regulatory frameworks. This necessitates a dual focus on achieving aesthetic excellence and adopting sustainable manufacturing practices and product compositions. As a primary hub for global leather production, Asia is poised for significant gains through the adoption of advanced eco-friendly materials and innovative special-effect technologies. D&A Group's recent exhibition highlights the critical importance of harmonizing environmental performance with compelling aesthetic appeal in today's competitive market. The enthusiastic reception from expert leather engineers further validates the practical efficacy and industrial relevance of these groundbreaking innovations.

Key Findings

At a recent exhibition in Vietnam, D&A Group captured significant attention by unveiling a suite of innovative products across its three constituent brands. D&A Edge Polymer notably introduced its new special-effect edge paint series, 'The Gleam' and 'Rocky,' engineered to impart unique visual and tactile dimensions to leather goods.

Concurrently, Technical Control showcased its advanced eco-friendly coating solutions and a flagship resin portfolio tailored for leather finishing, drawing enthusiastic approval from professional leather engineers. These collective offerings represent a significant advancement in integrating aesthetic sophistication with environmental stewardship within the leather industry.

Technical Details

The 'The Gleam' series from D&A Edge Polymer is specifically engineered to deliver an enhanced high-gloss finish and a perception of increased depth, while 'Rocky' provides a robust, distinct stone-like texture, thereby adding a unique haptic dimension to leather products. Both edge paint formulations leverage advanced polymer blend and pigment technologies to ensure optimal durability and flexibility. Technical Control's eco-friendly coating solutions are formulated with low-VOC (Volatile Organic Compound) or entirely VOC-free resins, directly contributing to more sustainable manufacturing processes. Their flagship resin portfolio for leather finishing is designed to offer superior protection, flexibility, and abrasion resistance, accommodating a diverse spectrum of leather types and applications. Furthermore, Lorence supplemented the exhibition with specialized solutions for leather cleaning and conditioning, highlighting technologies aimed at extending product lifespan and preserving aesthetic integrity.

Strategic Implications

The debut of D&A Group's special-effect edge paints and eco-friendly resins provides designers and manufacturers within the leather industry with novel avenues for creative expression and sustainable material choices. This empowers them to significantly enhance product value and achieve distinct market differentiation. The anticipated widespread adoption of these eco-friendly coatings is expected to substantially diminish the environmental footprint associated with leather manufacturing processes, thereby contributing significantly to overall industry sustainability. These pioneering technologies are poised to establish new benchmarks for future leather product design, manufacturing standards, and international sustainability certifications. For investors, this trajectory suggests that strategic investment in high-performance, environmentally conscious material technologies will be crucial for securing a competitive advantage in evolving future markets.

Source: <https://www.techcrl.com/en/vietnam-exhibition-concludes-da-groups-three-brand-innovations-earn-widespread-praise/>

#03 Cornstarch-Based Biodegradable Bioplastic Plates and Containers Launched as Eco-Friendly Packaging Solution

Published Date unknown Pizzaville USA USA



OVERVIEW

Biodegradable bioplastic plates and containers made from cornstarch are now commercially available, presenting an eco-friendly alternative to traditional plastics. These sustainable packaging options, derived from natural materials, are offered in packages or bulk for both consumers and businesses. This initiative is expected to significantly contribute to reducing plastic waste and mitigating environmental impact.

Key Findings

Biodegradable bioplastic plates and containers, primarily made from cornstarch, have been introduced to the market as a prominent eco-friendly product. These items represent a sustainable alternative to conventional petroleum-based plastic products, garnering considerable attention from environmentally conscious consumers and businesses alike. Available in both packaged and bulk formats, they cater to a diverse range of needs, facilitating a broader adoption of sustainable packaging solutions.

Technical / Clinical Details

These biodegradable bioplastic products are manufactured from cornstarch, a renewable resource. The primary material typically involves bioplastics such as polylactic acid (PLA) derived from cornstarch, which possesses the inherent property of breaking down into water and carbon dioxide by microorganisms. This ensures that used products can return to the earth with minimal environmental impact, either in natural environments or specialized composting facilities. The manufacturing process itself is designed to contribute to reduced energy consumption and lower greenhouse gas emissions. Crucially, the products maintain essential tableware functionalities, including heat resistance and strength, effectively balancing performance with environmental benefits.

Background & Context

With the global plastic pollution crisis intensifying, there's growing pressure for stricter regulations on single-use plastics and increasing consumer demand for sustainable alternatives. The food service industry, in particular, has seen an exponential rise in the need for sustainable tableware and containers, driven by the proliferation of takeout and delivery services. Cornstarch-derived biodegradable bioplastic products are positioned as a tangible solution to this pressing challenge. The adoption of bioplastics in food packaging not only demonstrates a company's commitment to environmental stewardship but also enhances brand image and consumer trust.

Strategic Significance & Outlook

The widespread adoption of biodegradable bioplastic tableware and containers holds immense potential for alleviating the plastic waste problem. As technological advancements continue, improving performance and reducing costs, these products are expected to find applications across an even broader spectrum of uses. Furthermore, expanding government certification programs and incentive schemes for biodegradable plastic products in various countries and regions could significantly accelerate market growth. For investors, companies engaged in the development and commercialization of renewable resource-derived materials, particularly in the environmental technology sector, present a promising avenue for both contributing to a sustainable society and generating economic returns.

Source: <https://pizzavilleusa.com/shop/manufacturer-site?&transition=top2506356022350>

Collected: July 17, 2026 | Automated Research System (Gemini API)

#04 Reserve Bank of India Issues Global EOI for Polymer Substrate Facility, Aiming to Launch More Durable, Counterfeit-Resistant Plastic Banknotes

Published July 17, 2026 The Week India



OVERVIEW

The Reserve Bank of India (RBI) has issued a global Expression of Interest (EOI) to establish a security-grade polymer substrate manufacturing facility, advancing plans to introduce plastic banknotes. These polymer notes are projected to be 2.5 times more durable and significantly more counterfeit-resistant than traditional paper currency. This strategic move aims to substantially reduce the high costs associated with printing and replacing soiled paper notes, with initial pilot programs planned for ₹10 and ₹20 denominations.

Key Findings

The Reserve Bank of India (RBI) has initiated a global Expression of Interest (EOI) for the establishment of a manufacturing facility for security-grade polymer substrates, signaling its intent to introduce plastic banknotes. This strategic shift is designed to dramatically enhance the durability of currency notes by an estimated 2.5 times compared to existing paper notes, while simultaneously bolstering anti-counterfeiting measures. The RBI's move aims to mitigate the substantial costs associated with printing and frequently replacing worn-out paper currency, with initial pilot programs focusing on lower denominations (₹10 and ₹20 notes).

Technical / Clinical Details

The plastic banknotes envisioned by the RBI will be constructed from specialized polymer substrates. These substrates integrate advanced security features, such as intricate security inks, holograms, and microprinting, to achieve both exceptional durability and superior resistance to counterfeiting. The enhanced resilience of polymer notes makes them highly resistant to moisture, dirt, and general wear and tear, a critical advantage in diverse climatic conditions and high-circulation environments like India. While traditional cotton-based paper notes typically have a lifespan of approximately 1.5 years, polymer banknotes are expected to endure for nearly 4 years on average. This extended lifespan promises significant benefits in terms of reducing both the environmental footprint and economic costs associated with printing, transportation, and disposal. The initial pilot phase will target ₹10 and ₹20 notes to evaluate their practical performance and public acceptance.

Background & Context

Central banks globally have been actively pursuing solutions to enhance banknote security and durability, with many nations, including Australia, Canada, and the United Kingdom, having already adopted polymer currency. India, despite its rapid economic growth and increasing digital payment adoption, still relies heavily on cash transactions, leading to significant challenges with currency degradation and associated replacement costs. Lower denomination notes, due to their high circulation frequency, are particularly susceptible to rapid deterioration, making their polymer conversion highly advantageous. The RBI's initiative extends beyond a mere material change; it represents a national-level infrastructure investment aimed at streamlining the currency system and fortifying its security.

Strategic Significance & Outlook

The establishment of a polymer substrate manufacturing facility within India is expected to stimulate new demand for advanced polymer materials and accelerate the development of related technologies. A successful pilot program could pave the way for expanding polymer notes to higher denominations, potentially having widespread impacts across the Indian economy. This endeavor could serve as a model for how technological innovation can enhance the quality of public services (currency provision), inspiring similar projects in other emerging economies. For investors, companies specializing in security printing technologies, advanced polymer materials, and associated manufacturing machinery represent key targets for attention. Furthermore, the improved durability of currency contributes to long-term cost savings and economic stability, making its trajectory a point of interest from a macroeconomic perspective.

Source: <https://www.theweek.in/news/biz-tech/2026/07/17/rbi-plastic-banknotes-eoi-currency-polymer.html>

#05 Chopped Strand Mat (CSM) Technical Guide Details Epoxy Resin Compatibility, Aiding Proper CSM Selection for FRP Lamination

Published Date unknown CSM & CFM USA



OVERVIEW

CSM & CFM has released a technical guide for Chopped Strand Mat (CSM), emphasizing that powder-bound CSM is compatible with epoxy resin, unlike emulsion-bound CSM. The guide details CSM utilization for building thickness in FRP laminates, showcasing applications in boat hulls and automotive panels. It also provides crucial selection criteria for appropriate CSM weights (300g, 450g, 600g) based on project requirements, offering fundamental yet vital knowledge for composite material manufacturing.

Key Findings

CSM & CFM has published an essential technical guide on Chopped Strand Mat (CSM), a foundational material in Fiber Reinforced Polymer (FRP) manufacturing. The guide specifically clarifies the compatibility of CSM with various resins, highlighting that powder-bound CSM exhibits excellent compatibility with epoxy resins, a characteristic not shared by emulsion-bound CSM. This crucial distinction empowers engineers and manufacturers to make more informed material selections and optimize processes in the design and production of FRP laminates, leading to higher performance and reliability.

Technical / Clinical Details

Chopped Strand Mat (CSM) consists of short glass fibers randomly oriented and bound together in a non-woven fabric. It is extensively used in FRP laminates to build thickness, enhance strength, and improve rigidity. The guide thoroughly explains that the type of binder used in CSM significantly impacts its compatibility with different resin systems. Powder-bound CSM, which utilizes a powdered binder, demonstrates high chemical compatibility with epoxy resins, making it suitable for high-performance composite applications. Conversely, emulsion-bound CSM's binder composition can pose compatibility issues with epoxy resins, and it is generally recommended for use with polyester or vinyl ester resins. Applications for CSM are broad, including boat hulls, automotive panels, and wind turbine blades. The guide offers specific recommendations for selecting CSM weights, such as 300g/m², 450g/m², and 600g/m², based on the project's specific strength and weight requirements, enabling precise material specification.

Background & Context

The composite materials industry is growing in importance, driven by demands for lightweighting and high strength in sectors like aerospace, automotive, and marine. FRP is a leading material solution for these requirements, but its performance heavily relies on the optimal selection of constituent materials (fibers, resins, and their interfaces) and processing parameters. CSM is indispensable in FRP manufacturing due to its cost-effectiveness and ease of processing. However, accurate knowledge regarding its compatibility with different resin systems is essential to maximize material potential and ensure the quality of the final product. This technical guide, based on extensive experience and deep expertise, complements standard industry knowledge and helps resolve common challenges faced by designers and manufacturers.

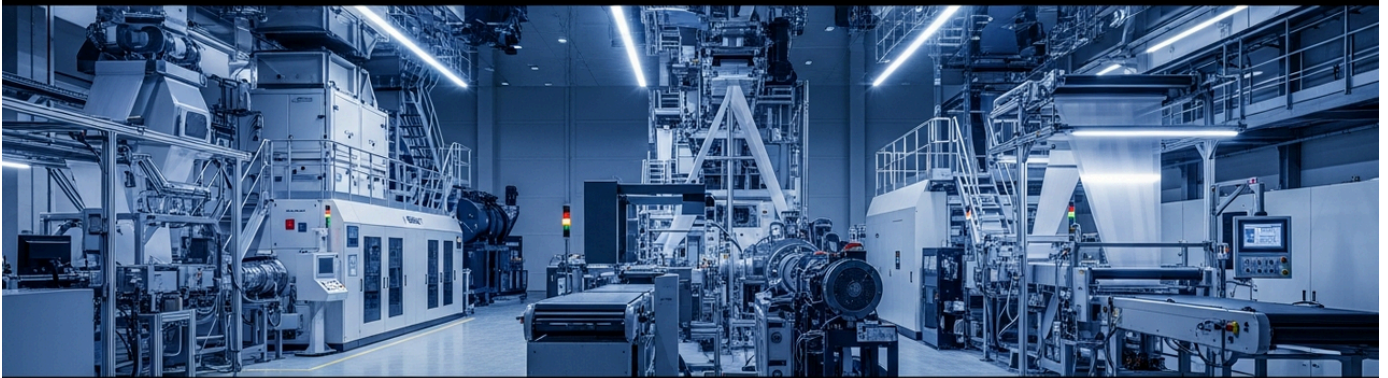
Strategic Significance & Outlook

The release of this technical guide is significant for improving efficiency and reliability in FRP manufacturing. Specifically, the guidance on combining CSM with high-performance resin systems like epoxy will promote broader adoption of FRP in more demanding applications, such as aerospace and advanced automotive components. Future advancements in CSM manufacturing technologies and binder chemistry could lead to enhanced compatibility with a wider array of resin systems and the development of customized CSM for specific applications. For investors, companies involved in the development of fundamental and applied composite materials technology, especially those offering solutions for material compatibility and process optimization, represent promising areas for future growth opportunities.

Source: <https://csm-supplier.com/>

#06 PureCycle, RM TOHCELLO, and Mitsui Partner to Accelerate Production of Virgin-Quality Recycled BOPP Film

Published July 16, 2026 IndexBox International (Japan, USA)



OVERVIEW

PureCycle Technologies has formed a strategic partnership with RM TOHCELLO and Mitsui to produce BOPP (biaxially oriented polypropylene) film containing recycled content. This collaboration leverages PureCycle's proprietary solvent-based recycling technology to remove additives, color, odor, and other impurities from polypropylene waste, yielding virgin-quality resin suitable for high-performance applications like food packaging. The partnership directly addresses a long-standing challenge in sustainable packaging by enabling high-purity recycled content in BOPP film, thereby accelerating the provision of circular plastic solutions to the market.

Key Findings

PureCycle Technologies has announced a groundbreaking strategic partnership with RM TOHCELLO and Mitsui to accelerate the commercial production of high-performance BOPP (Biaxially Oriented Polypropylene) film incorporating recycled content. Central to this collaboration is PureCycle's proprietary solvent-based recycling technology, which transforms post-consumer polypropylene (PP) waste into virgin-quality resin. This breakthrough significantly addresses the long-standing challenge of integrating high-purity recycled content into sustainable packaging, particularly for demanding applications like food packaging.

Technical Details

BOPP films are extensively used in food packaging, labels, and industrial applications due to their exceptional barrier properties, transparency, and mechanical strength. However, introducing recycled materials into BOPP films has traditionally faced hurdles related to impurities, color, and odor that can compromise performance. PureCycle Technologies' purification process efficiently removes these contaminants from used PP waste, producing an ultra-pure, virgin-quality polypropylene resin (uPP). This uPP can be directly used in the manufacturing of new BOPP films, possessing identical properties to conventional virgin PP. This makes it suitable for the most stringent quality-sensitive sectors, including direct food contact applications. The technology enables a stable supply of high-purity recycled material without performance degradation, a feat difficult to achieve with conventional mechanical recycling.

Background & Industry Context

The global plastic packaging industry is navigating stringent environmental regulations, including mandates for single-use plastic reduction and increased recycled content. The food packaging sector, in particular, has high safety and performance demands, making the adoption of recycled materials a complex technical challenge. RM TOHCELLO brings extensive expertise in BOPP film manufacturing, while Mitsui provides a global supply chain network and distribution channels. This tripartite alliance—combining technology provider, manufacturer, and trading company strengths—establishes a robust model for accelerating the market introduction of high-performance packaging solutions utilizing recycled materials. This partnership exemplifies how cross-sector collaboration can drive the circular economy forward.

Strategic Significance & Outlook

This partnership is poised not only to significantly advance the provision of sustainable solutions in the BOPP film market but also to potentially pave the way for incorporating recycled content into other high-performance polymer films. If PureCycle's technology proves successful in BOPP films, it could broaden the applicability of recycled plastics, accelerating the transition to a circular economy across a wider packaging market. For researchers and engineers, this technology could serve as a benchmark for developing next-generation sustainable materials, while for investors, it offers a compelling opportunity to engage in a high-growth segment of the circular economy.

Source: <https://www.indexbox.io/blog/purecycle-rm-tohcello-and-mitsui-partner-to-bring-recycled-content-to-bopp-film/>

#07 Advances in CF RTP Forming Processes Overcome High Melt Viscosity and Chemical Inertness, Paving Way for Aerospace Applications

Published July 16, 2026 MDPI Switzerland



OVERVIEW

Recent research highlights significant advancements in forming processes for Carbon Fiber-Reinforced Thermoplastic Composites (CF RTPs), crucial for aerospace and transportation due to their high specific strength and recyclability. The study addresses the primary challenges of high melt viscosity in thermoplastic matrices and chemical inertness of carbon fiber surfaces through progress in high-performance thermoplastics like PEEK and PEKK, coupled with innovative interface engineering. These breakthroughs enable CF RTPs to achieve superior lightweighting and enhanced performance, accelerating the development of sustainable composite material technologies.

Key Findings

A recent research paper published on advances in forming processes for Carbon Fiber-Reinforced Thermoplastic Composites (CFRTPs) details critical breakthroughs that enhance their applicability in high-stakes sectors such as aerospace, transportation, and marine engineering. The study specifically addresses two major fabrication challenges: the high melt viscosity of thermoplastic matrices and the chemical inertness of carbon fiber surfaces. By overcoming these hurdles, CFRTPs can fully leverage their exceptional properties, including high specific strength, impact resistance, weldability, re-processability, and recyclability, thereby accelerating their substitution for traditional metal materials.

Technical Details

CFRTPs are widely regarded as next-generation high-performance materials due to their superior mechanical properties and processing advantages. However, the high melt viscosity of thermoplastic resins has historically hindered adequate impregnation of carbon fibers, leading to reduced composite quality. Additionally, the chemical inertness of carbon fiber surfaces results in poor interfacial adhesion with the resin, limiting the overall performance of the composite. The reported advances in this research tackle these issues through several innovative approaches:

- **Utilization of High-Performance Thermoplastics:** Advances in high-performance thermoplastic resins like PEEK (Polyether Ether Ketone) and PEKK (Polyetherketoneketone) offer better control over melt viscosity, enabling improved processability. These resins also provide excellent mechanical properties under high-temperature conditions.
- **Interface Engineering:** Significant progress has been made in interface engineering techniques, involving chemical treatments and modifications of carbon fiber surfaces. This dramatically enhances adhesion between the fibers and the resin, leading to improved stress transfer efficiency within the composite and boosting properties such as impact resistance and interlaminar strength.

- **Development of Advanced Forming Processes:** Optimized manufacturing techniques across various forming processes, including injection molding, compression molding, and automated fiber placement (AFP), are being developed to maximize CFRTP performance. Novel processes such as in-situ polymerization and co-solvent treatment are improving resin impregnation into fibers, enabling the production of high-quality, void-free composites.

Background & Industry Context

The aerospace industry continuously seeks lightweighting solutions to improve fuel efficiency and reduce emissions. CFRTPs offer substantial weight savings compared to conventional metal alloys. Furthermore, their ability to be joined by welding simplifies manufacturing processes and reduces costs. The re-processability and recyclability of CFRTPs also make them an attractive, sustainable option for industries striving for a circular economy, aligning with global environmental goals.

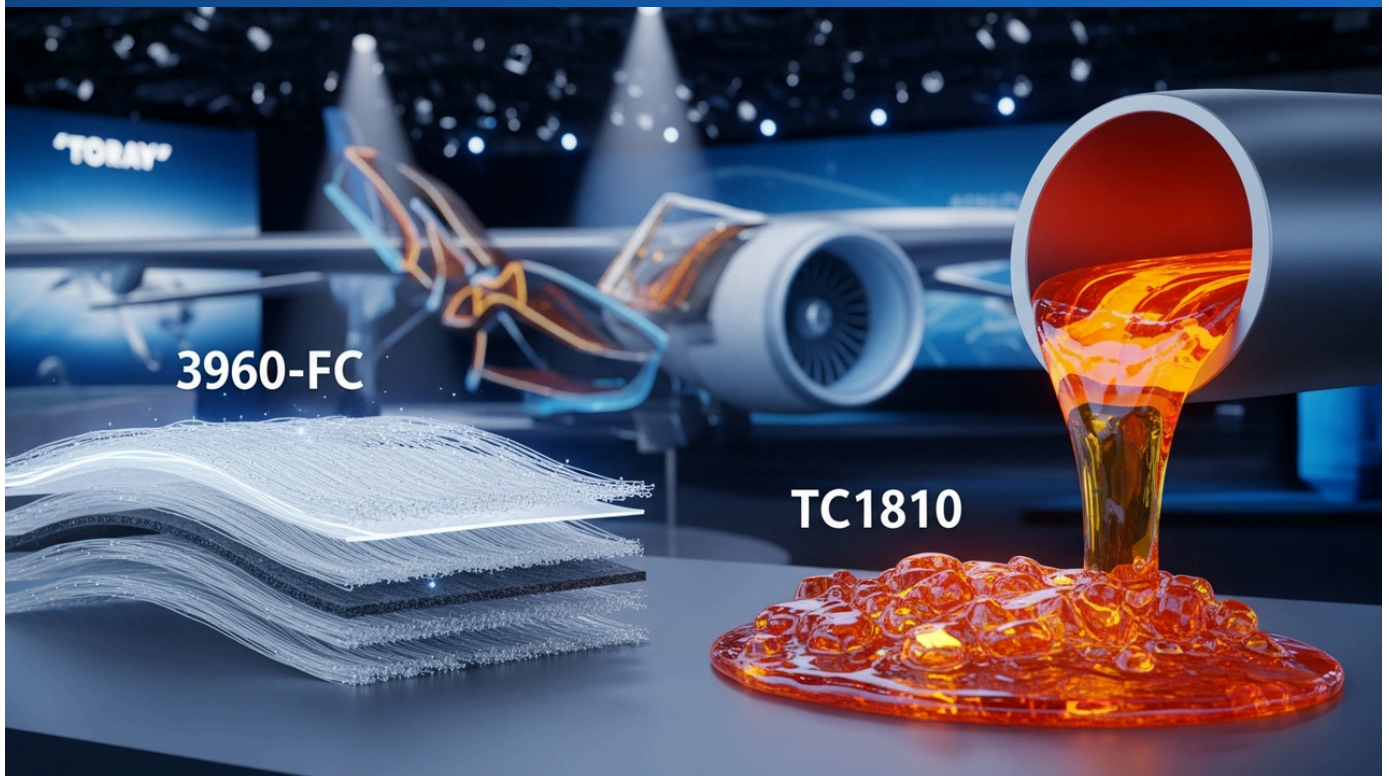
Strategic Significance & Outlook

These research advancements significantly broaden the potential application scope for CFRTPs, extending to primary structural components in aircraft, automotive chassis, and lightweight marine structures. Anticipated reductions in manufacturing costs and improved reliability, stemming from enhanced forming processes and interfacial adhesion, are expected to accelerate the commercialization and large-scale deployment of CFRTPs. The ongoing synergy between materials science and manufacturing technology promises to yield even more advanced, sustainable composite solutions in the future.

Source: <https://www.mdpi.com/1996-1944/19/14/2988>

#08 Toray Celebrates 100 Years with New Aerospace Composite Tech: Fast-Curing Prepreg '3960-FC' and High-Temperature Resin 'TC1810' Unveiled at Farnborough Airshow

Published July 16, 2026 Jota International Japan



OVERVIEW

Toray marked its 100th anniversary by introducing new aerospace composite technologies at the Farnborough International Airshow. Key product launches include "3960-FC," a fast-curing epoxy prepreg designed to boost production speed, and "TC1810," a polysiloxane-based ceramic precursor resin developed for high-temperature applications. The company also highlighted its ongoing commitment to sustainability, exemplified by a composite recycling project for end-of-life aircraft that won a JEC Innovation Award.

Key Findings

Toray, commemorating its 100th anniversary, unveiled innovative new composite technologies for the aerospace industry at the Farnborough International Airshow. Two standout products are the rapid-curing epoxy prepreg "3960-FC," designed to dramatically increase production speeds, and "TC1810," a polysiloxane-based ceramic precursor resin engineered to withstand extremely high temperatures, such as those found around aircraft engines. These advanced materials are set to significantly enhance aircraft performance and manufacturing efficiency.

Technical Details

- **Fast-Curing Epoxy Prepreg '3960-FC'**

The "3960-FC" prepreg substantially reduces cure times compared to conventional aerospace-grade prepregs. This innovation shortens the manufacturing lead time for aircraft components and improves production throughput, enabling aircraft manufacturers to meet increasing demand while simultaneously reducing production costs. This technology offers significant advantages, especially for single-aisle aircraft that require high-volume production, and for new aircraft development where rapid prototyping is essential. It maintains the high reliability, strength, and durability characteristic of traditional Toray products, all while boosting productivity.

- **High-Temperature Polysiloxane-Based Ceramic Precursor Resin 'TC1810'**

"TC1810" is a polysiloxane-based ceramic precursor resin specifically designed for components exposed to extreme heat, such as aircraft engine nacelles, exhaust systems, and surfaces of high-Mach vehicles. This material maintains excellent structural stability and mechanical properties even in high-temperature environments exceeding 200°C, a range where conventional resin-based composites typically struggle. As a ceramic precursor resin, it can be converted into high-performance ceramic matrix composites through heat treatment, making it an indispensable material for the development of next-generation aircraft and space exploration vehicles that demand superior heat resistance, oxidation resistance, and wear resistance.

Background & Industry Context

The aerospace industry faces stringent demands for improved fuel efficiency, reduced CO2 emissions, and the adoption of sustainable manufacturing processes. Lightweight, high-performance composite materials are key to addressing these challenges, and Toray has been a leader in this field for decades. The launch of these new products underscores the company's continuous commitment to technological innovation. Furthermore, Toray actively invests in composite recycling technologies, demonstrating a commitment to enhancing sustainability across the entire product lifecycle, as evidenced by its JEC Innovation Award for a project on recycling end-of-life aircraft composites.

Strategic Significance & Outlook

The "3960-FC" and "TC1810" technologies will provide aircraft manufacturers with new design flexibility and improved manufacturing efficiency, accelerating the development of next-generation aircraft. Particularly, alongside the transition to Sustainable Aviation Fuels (SAF), the lightweighting and high-performance enhancement of airframes are crucial for achieving the aerospace industry's decarbonization goals. These new technologies from Toray are expected to further expand the frontier of material solutions in aerospace, contributing to a future of safer, more efficient, and environmentally conscious aviation.

Source: <https://jotaintl.com/category/global-composite-material-news/toray-aerospace-composites/>

Collected: July 17, 2026 | Automated Research System (Gemini API)

#09 Covestro and BYD Seal Strategic Partnership for Advanced Polymer Materials in New Energy Vehicles and Batteries

Published July 13, 2026 Covestro International (Germany, China)



OVERVIEW

Covestro and BYD have signed a strategic partnership to accelerate advanced material solutions for the future of mobility, energy, and emerging technologies. This collaboration focuses on developing and applying advanced polymer materials for new energy vehicles, power batteries, public transport, energy storage, and new technology applications. Leveraging Covestro's expertise in polycarbonate and polyurethane solutions, the partnership aims to foster joint innovation and drive low-carbon and circular material solutions.

Key Findings

Covestro and BYD have established a comprehensive strategic partnership aimed at profoundly advancing the development and application of cutting-edge material solutions across the future of mobility, energy, and advanced technologies. This alliance is specifically geared towards new energy vehicles (NEVs), power batteries, public transportation, energy storage, and various emerging technology applications. The fusion of Covestro's specialized knowledge in polycarbonates and polyurethanes with BYD's innovative technological prowess is expected to drive significant progress in sustainable and low-carbon material solutions.

Technical Details

At the core of this strategic partnership are joint innovation initiatives, collaborative technology development, and the exploration of strategic investment opportunities. Covestro contributes its extensive expertise in material science, particularly in the fields of polycarbonates and polyurethanes. These materials are critical for lightweighting vehicles, enhancing battery safety, optimizing energy efficiency, and expanding design freedom. For instance, high-strength and lightweight polycarbonates can be utilized in vehicle body parts and interior components, while heat-resistant and durable polyurethanes can serve as encapsulants for battery packs and electronic components, thereby improving the performance and safety of BYD's NEVs.

- **New Energy Vehicles (NEVs):** The use of lightweight and durable polymer materials will extend vehicle range and reduce energy consumption. Concurrently, it will enhance impact absorption and design flexibility, leading to improved safety and comfort.
- **Power Batteries:** Advanced polymer solutions will be developed for battery thermal management, insulation, and structural protection, boosting battery life, safety, and overall performance.
- **Public Transport:** Lightweighting and enhanced durability will contribute to the operational efficiency and reduced environmental footprint of public transport vehicles such as buses and trains.

- **Energy Storage:** Material solutions will be provided to enhance the safety and efficiency of stationary energy storage systems.
- **New Technology Applications:** Flexible and high-performance materials will support new product development for innovative technologies in future mobility and energy sectors.

Background & Industry Context

The automotive industry is undergoing a profound transformation driven by electrification, lightweighting, and sustainability mandates. BYD stands as a global leader in new energy vehicles and battery technology, while Covestro has a long-standing reputation as a supplier of high-performance polymer materials. This partnership aims to combine their respective strengths to create pioneering solutions for these industry challenges. The collaboration is founded on a shared vision to build a more low-carbon and circular future.

Strategic Significance & Outlook

This partnership is expected to accelerate the adoption of advanced material solutions across BYD's expansive industrial portfolio. By jointly developing and introducing innovative materials to the market, Covestro and BYD will establish new benchmarks in the electric mobility and energy storage sectors. This collaboration serves as a significant model for how the chemical and automotive industries can unite to build a sustainable future, offering valuable insights for researchers, engineers, and investors exploring next-generation material technologies and business opportunities.

Source: <https://www.covestro.com/press/covestro-and-byd-form-strategic-partnership-for-the-future-of-mobility-energy-and-advanced-technologies/>

#10 European Commission Adopts First-Ever Rules for Calculation, Verification, and Reporting of Chemically Recycled Content in PET Bottles

Published July 09, 2026 TexData International Europe



OVERVIEW

The European Commission has adopted groundbreaking new rules establishing, for the first time, how chemically recycled content in single-use PET (polyethylene terephthalate) beverage bottles will be calculated, verified, and reported. This measure aims to help Member States meet the recycling content targets set by the Single-Use Plastics Directive. Applicable even to products requiring high-quality standards like food contact packaging, these regulations represent a significant step towards accelerating the transition to a circular economy.

Key Findings

The European Commission has adopted landmark new rules for the calculation, verification, and reporting of chemically recycled content in single-use PET (Polyethylene Terephthalate) beverage bottles. These regulations are the first of their kind to establish a unified standard across the European Union for handling chemically recycled materials, making them an indispensable tool for Member States to achieve the ambitious recycling targets mandated by the Single-Use Plastics Directive.

Technical Details

The adoption of these rules carries significant implications for integrating plastic waste into a circular economy. Chemical recycling involves breaking down plastics into their constituent monomers or basic chemical feedstocks, which can then be used to produce new plastics of virgin quality. This process ensures no degradation in material quality, enabling the use of recycled content even in products with the most stringent hygiene and safety standards, such as food contact packaging. Key aspects of the new regulations include:

- **Standardized Calculation Methodology:** A standardized method for precisely measuring the percentage of chemically recycled content will be established, ensuring consistency across Member States and the industry.
- **Clarified Verification Process:** Rigorous verification processes, potentially including third-party certifications and audits, will be introduced to ensure the credibility of recycled content claims.
- **Introduction of Reporting Obligations:** Manufacturers and suppliers will be mandated to submit regular reports on their use of chemically recycled content, enhancing market transparency and enabling monitoring of progress towards targets.
- **Application to Food Contact Packaging:** Crucially, these rules apply to applications demanding exceptionally high quality and safety, such as food contact packaging. This demonstrates the European Commission's confidence in chemical recycling's ability to deliver quality equivalent to virgin materials.

Background & Industry Context

The Single-Use Plastics Directive serves as a critical legal framework for the European Union to combat plastic pollution and accelerate the transition to a circular economy. The directive prohibits the market placement of certain single-use plastic products and mandates the use of recycled plastic content in products like beverage bottles. However, clear guidelines for accounting for chemically recycled materials were previously lacking. The new rules fill this gap, providing a stable legal environment for industries to confidently invest in chemical recycling technologies and achieve recycling targets.

Strategic Significance & Outlook

The introduction of these new regulations will powerfully stimulate the development of the plastic recycling industry in Europe, particularly chemical recycling. For investors, this signifies increased opportunities in companies involved in the development and implementation of chemical recycling technologies. For engineers and researchers, it will promote the development of more efficient and economical chemical recycling processes under standardized evaluation criteria. Ultimately, these measures are expected to contribute to a significant reduction in plastic waste and the stable supply of high-quality recycled materials, fostering a more sustainable society.

Source: <https://www.texdata.com/news/Recycling-CircularEconomy/23023.html>

Collected: July 17, 2026 | Automated Research System (Gemini API)

#11 SABIC and Rongsheng Petrochemical Advance "Jintang New Materials Project" in Zhoushan, China, to Address Asia's Surging Demand for Advanced Chemical Materials

Published July 16, 2026 SABIC International (サウジアラビア、China)



OVERVIEW

SABIC and Rongsheng Petrochemical have forged a project development agreement to jointly advance the 'Jintang New Materials Project' in Zhoushan, China, with SABIC considering up to a 50% equity investment. This strategic partnership aims to significantly boost the production of advanced chemical materials, addressing escalating demand from critical downstream industries across China and the broader Asian region. The collaboration underscores SABIC's commitment to expanding its presence and supporting regional growth, leveraging Rongsheng's market access and SABIC's expertise in high-performance polymers and sustainable solutions.

Background

The Asia-Pacific region, fueled by rapid industrialization and urbanization, has emerged as the world's largest consumer of chemical materials. China, in particular, is at the forefront of innovation in sectors such as electric vehicles, renewable energy, and advanced manufacturing, leading to a surge in demand for high-performance materials to support these industries. For SABIC, strengthening its production base in this region and collaborating with local partners to agilely respond to market demands is essential for maintaining global competitiveness. The collaboration between Saudi Arabia's SABIC, which is diversifying its petrochemical sector under 'Vision 2030', and Rongsheng, with its vast domestic market, establishes a symbiotic relationship.

Key Findings

SABIC has forged a project development agreement with Rongsheng Petrochemical Co. Ltd., a leading Chinese petrochemical enterprise, and its subsidiary, Rongsheng New Materials (Zhoushan) Co. Ltd., to jointly drive the 'Jintang New Materials Project' located in Zhoushan, Zhejiang Province, China. This strategic alliance includes SABIC considering an equity investment of up to 50% in Rongsheng New Materials. The primary objective is to significantly bolster production capacity for advanced chemical materials, thereby addressing the escalating demand from key downstream industries across China and the broader Asian region.

Technical Details

The Jintang New Materials Project aims to establish a state-of-the-art chemical materials manufacturing facility, integrating cutting-edge production technologies with rigorous environmental standards. SABIC will contribute its deep expertise and innovative capabilities in high-performance polymers, specialty chemicals, and sustainable solutions, while Rongsheng Petrochemical will provide significant production assets and robust regional market access. This project is likely to focus on the production of advanced chemical materials such as:

- **High-Performance Polymers:** Materials characterized by lightweight properties, durability, and heat resistance, critical for sectors like automotive, electronics, and construction.

- **Specialty Chemicals:** Additives and intermediates with unique functionalities, enhancing the efficiency of industrial processes and boosting product performance.
- **Circular Solutions:** Initiatives integrating chemical recycling technologies to produce products of virgin-like quality from recycled feedstocks.

This joint venture will play a crucial role in optimizing the entire value chain, from feedstock to finished goods, while simultaneously reinforcing SABIC's strategic presence in the Asian market.

Strategic Significance & Outlook

The Jintang New Materials Project is positioned to play a pivotal role in supporting the growth of downstream industries in Asia, especially in the new energy, automotive, and electronics sectors. The partnership between SABIC and Rongsheng Petrochemical is expected not only to ensure a stable supply of advanced chemical materials but also to accelerate the adoption of sustainable manufacturing processes. This investment marks a strategic milestone in both companies' growth strategies and has the potential to establish a new paradigm for collaboration in the global chemical industry. Investors will be closely watching the outcomes of this substantial strategic investment in the Asian market.

Source: <https://www.sabic.com/en/news/51686-sabic-with-rongsheng-petrochemical>

Collected: July 17, 2026 | Automated Research System (Gemini API)

#12 Swiss DePoly Unveils Showcase Plant for 500-Ton/Year PET Chemical Recycling Technology

Published July 15, 2026 Packaging Europe Switzerland



OVERVIEW

Swiss startup DePoly has inaugurated a chemical recycling showcase plant in Monthey, capable of processing approximately 500 tons of PET waste annually. This facility demonstrates DePoly's proprietary technology, which breaks down PET waste into its original chemical components, regenerating virgin-quality feedstock without performance degradation. The company plans to construct a 50,000-ton/year commercial plant in the future, marking a crucial step towards commercialization supported by investors like BASF and Beiersdorf.

Key Findings

DePoly, a Swiss chemical recycling technology company, has launched a pioneering showcase plant in Monthey. This facility is capable of processing approximately 500 tons of PET (Polyethylene Terephthalate) waste annually, demonstrating the company's proprietary chemical recycling technology at a significant scale. The technology efficiently breaks down PET waste into its original chemical components, enabling the regeneration of virgin-quality feedstock through subsequent repolymerization. This represents a critical milestone in accelerating the transition of plastics towards a circular economy.

Technical Details

DePoly's chemical recycling technology can process diverse forms of PET waste, including bottles, films, and fibers. The process focuses on depolymerizing PET polymers into their monomers (such as dimethyl terephthalate and ethylene glycol) under relatively mild conditions. While conventional mechanical recycling often leads to a gradual degradation of plastic quality due to melting and reshaping, DePoly's approach, by fundamentally reconstructing the chemical structure, holds the potential to infinitely regenerate high-quality feedstock without performance loss.

- **Annual Processing Capacity:** The current showcase plant can process approximately 500 tons of PET waste per year. This scale is crucial for validating the commercial viability of the technology and optimizing the process.
- **Virgin-Quality Feedstock Regeneration:** The regenerated monomers are used directly as raw materials for manufacturing new PET polymers. The resulting PET is expected to possess physical and chemical properties equivalent to conventional petroleum-derived virgin PET. This makes it suitable for demanding applications, including food contact packaging, where strict quality requirements are imposed.
- **Versatility and Efficiency:** The technology boasts flexibility in efficiently separating and decomposing PET components even from colored PET, composite materials, and mixed plastic waste, thereby expanding the scope of recyclable plastics.

Background & Industry Context

The global plastic waste crisis is intensifying, with PET being consumed in vast quantities, particularly in beverage bottles. As complex PET waste streams continue to challenge mechanical recycling and the demand for high-quality recycled materials grows, the importance of chemical recycling technologies is on the rise. DePoly's technology offers a promising solution to this challenge, and the investment it has secured from major companies like BASF and Beiersdorf underscores its technological reliability and market potential.

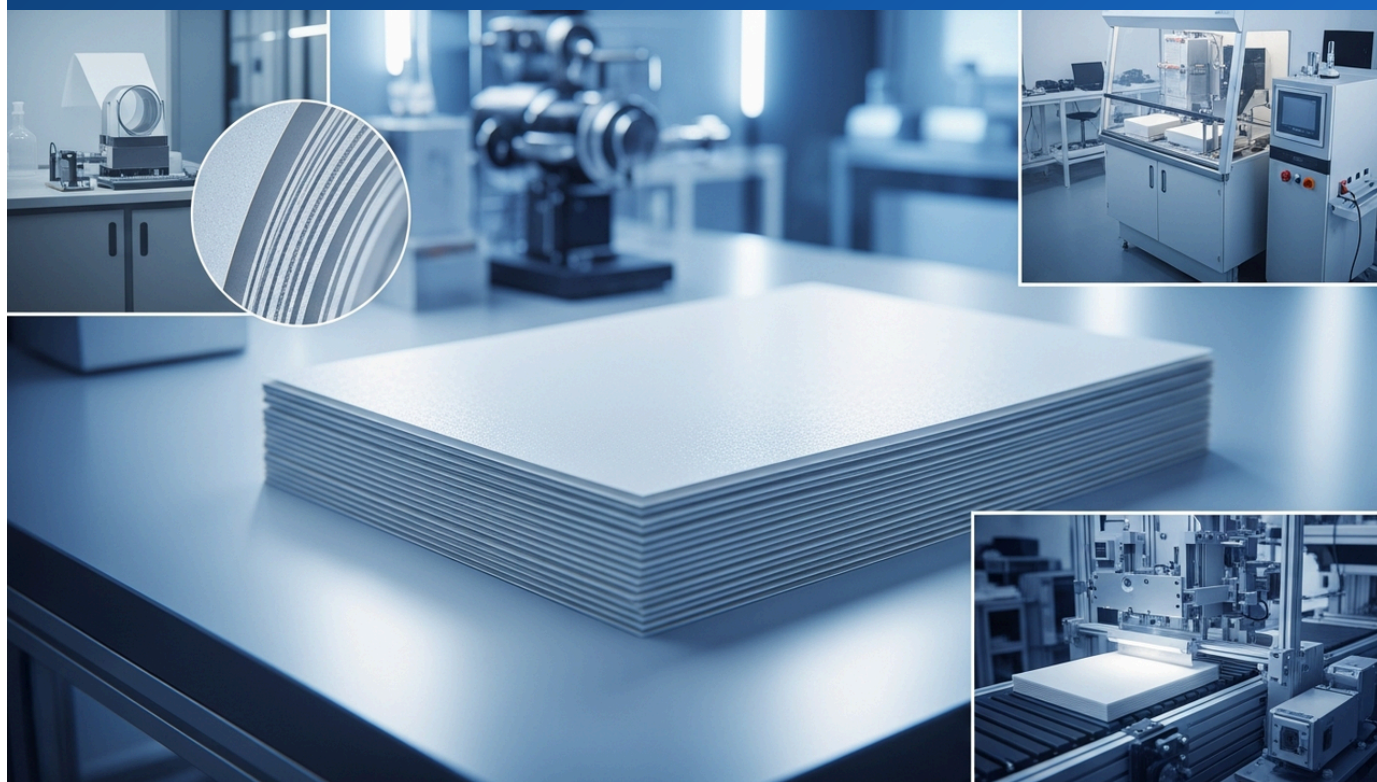
Strategic Significance & Outlook

Building on the success of its current showcase plant, DePoly aims to construct a full-scale commercial plant with an annual capacity of 50,000 tons in the future. If realized, this large-scale deployment will significantly impact the European and global PET recycling markets, contributing to the plastic packaging industry's sustainability goals. This technology opens new avenues in polymer recycling where performance degradation has been a bottleneck, offering growth opportunities for investors in clean technology and new tools for engineers developing sustainable material solutions.

Source: <https://packagingeurope.com/news/depoly-unveils-showcase-plant-for-pet-recycling-technology/14499.article>

#13 Kuraray's 'PLANTICTM' Bio-Based Resin Integrates with Mica Corp.'s Water-Based Primer to Develop Recyclable High-Barrier Paper Packaging

Published July 16, 2026 TAPPI.org International (Japan、USA)



OVERVIEW

Kuraray's advanced bio-based resin, PLANTICTM, and Mica Corporation's water-based primer technology have integrated to successfully develop recyclable high-barrier paper-based flexible packaging. This collaborative innovation offers a sustainable alternative to conventional multi-layer plastic structures, maintaining essential oxygen and moisture barrier properties for food and consumer goods while significantly reducing plastic use and environmental impact. The technology provides a practical pathway to meet sustainability targets and comply with stringent regulatory requirements.

Key Findings

A groundbreaking development has emerged from the integration of Kuraray's high-performance bio-based resin, PLANTICTM, and Mica Corporation's water-based primer technology: the creation of recyclable high-barrier paper-based flexible packaging. This collaborative innovation offers a sustainable alternative to conventional, complex multi-layer plastic structures. It effectively maintains the critical oxygen and moisture barrier properties essential for packaging food and consumer goods, while simultaneously achieving a significant reduction in plastic usage and associated environmental impact. This marks a practical and viable path for the packaging industry to meet ambitious sustainability goals and comply with increasingly stringent regulatory requirements.

Technical Details

Traditional flexible packaging often relies on laminating multiple plastic layers, each with distinct functions, to achieve required performance characteristics such as barrier properties, mechanical strength, and heat sealability. However, these multi-layer structures are notoriously difficult to recycle, contributing significantly to the global plastic waste problem. The core of this joint development lies in the following technical breakthroughs:

- **Adoption of PLANTICTM:** Kuraray's PLANTICTM is a biomass-derived polyamide resin that combines high barrier performance with excellent processability. This enables enhanced strength and gas barrier properties in packaging materials and contributes to reducing the carbon footprint due to its bio-based origin.
- **Mica Corporation's Water-Based Primer Technology:** Mica Corporation provides specialized water-based primer technology designed to improve adhesion between paper and plastic layers. This primer firmly bonds high-functional resin layers, such as PLANTICTM, to a recyclable paper substrate while allowing the final packaging material to be recycled as paper. Being water-based, it also minimizes VOC (Volatile Organic Compound) emissions during the manufacturing process.
- **Maintenance of High Barrier Performance:** Crucially, this paper-based structure delivers equivalent oxygen and moisture barrier performance to conventional multi-layer plastic packaging. This is vital for extending the shelf life of food products and maintaining their quality.

This integrated approach ensures that the packaging material can be recycled as a single-material stream, facilitating processing within existing paper recycling infrastructures.

Background & Industry Context

Global awareness of plastic waste issues is growing, leading to strengthened regulations on single-use plastics in many countries and regions. Brand owners and retailers face increasing pressure to reduce plastic content in their packaging and transition to recyclable materials. While paper-based packaging is an attractive eco-friendly option, its standalone barrier performance has been a significant limitation. This partnership between Kuraray and Mica Corporation bridges that technical gap, providing the market with a high-performance, recyclable paper packaging solution that meets current demands.

Strategic Significance & Outlook

The advent of this recyclable high-barrier paper-based flexible packaging has the potential to introduce a significant paradigm shift in the packaging industry. Its adoption is anticipated across all sectors where barrier performance is critical, including food, beverages, pharmaceuticals, and cosmetics. For investors, this creates new investment opportunities in companies providing sustainable packaging solutions. For engineers and researchers, it will stimulate further innovation in the integration of bio-based materials and recycling technologies. Ultimately, this development is expected to be a crucial step towards realizing packaging that is less reliant on plastics.

Source: <https://www.tappi.org/event/calendar/all-events/high-barrier-bio-based-resin-and-water-based-primer-integration-for-recyclable-packaging-webinar/>

#14 BASF Expands Biomass-Balanced Additives Portfolio for Architectural Coatings, Achieving PCF Reduction with Maintained High Performance

Published July 13, 2026 BASF Germany



OVERVIEW

BASF has significantly expanded its portfolio of REDcert2-certified biomass-balanced (BMB) additives for architectural coatings. The newly introduced "Dispex® AA 4145 MB," "Rheovis® PU 1333 MB," and "Rheovis® HS 1169 MB" are groundbreaking products that markedly reduce the product carbon footprint (PCF) while maintaining exceptional performance equivalent to conventional fossil-based additives. This enables paint manufacturers to produce high-performing paints with low-emission formulations, high-quality finishes, and consistent application properties, without needing to re-formulate existing recipes, thus contributing to the sustainable building materials market.

Key Findings

BASF has significantly broadened its portfolio of REDcert2-certified biomass-balanced (BMB) additives tailored for architectural coatings. The newly introduced "Dispex® AA 4145 MB," "Rheovis® PU 1333 MB," and "Rheovis® HS 1169 MB" are pioneering products that dramatically reduce the product carbon footprint (PCF) while sustaining the outstanding performance characteristics of their conventional, fossil-derived counterparts. This innovation empowers paint manufacturers to produce high-performance coatings—featuring low-emission formulations, superior finishes, and consistent application properties—without requiring changes to existing recipes, thereby making a substantial contribution to the sustainable building materials market.

Technical Details

The Biomass Balance (BMB) approach integrates certified sustainable biomass raw materials into the initial stages of the production chain, replacing fossil resources. This methodology ensures that the final product's performance and quality remain entirely unaffected, while simultaneously reducing the reliance on fossil resources and promoting the transition to renewable feedstocks. The REDcert2 certification is a rigorous third-party verification system that guarantees the traceability of biomass content throughout the supply chain and ensures that specific products are genuinely attributed with the "biomass-balanced" attribute.

- **Dispex® AA 4145 MB:** This acts as a dispersing agent in water-based coatings, facilitating the uniform dispersion of pigments and fillers. This enhances paint stability and contributes to the final film performance, including color reproducibility and opacity. The BMB version delivers this crucial functionality while reducing the use of fossil resources.
- **Rheovis® PU 1333 MB:** This rheology modifier is used for precise control of viscosity and flow properties in water-based coatings. It prevents sagging and brush marks during paint application, improving the quality of the dried finish. Its BMB formulation helps achieve sustainability targets while ensuring optimal coating characteristics.

- **Rheovis® HS 1169 MB:** A rheology modifier specifically designed for high shear stability, it minimizes viscosity reduction during paint manufacturing and application, thereby maintaining stable performance. The BMB version balances environmental performance with functionality in demanding architectural coatings.

These BMB additives are offered as "drop-in" solutions, meaning customers do not need to alter their existing equipment or manufacturing processes, facilitating easy market adoption.

Background & Industry Context

The construction industry faces an urgent demand for sustainable buildings, necessitating a reduction in the environmental footprint of building materials. Paint manufacturers are pressured to meet requirements for increased use of renewable resources, reduced CO2 emissions, and lower VOC (Volatile Organic Compound) content, all while maintaining product performance. BASF's biomass-balanced products offer concrete solutions to these challenges, helping paint manufacturers achieve their sustainability goals and enhance their competitiveness in the green building market.

Strategic Significance & Outlook

The expansion of BASF's BMB additives portfolio will accelerate sustainable innovation in the architectural coatings market. This means providing more environmentally conscious choices for paint manufacturers, architects, and ultimately, end-consumers. For investors, it signals opportunities in the growing green chemistry market, and for engineers and researchers, it highlights new directions in material development that balance high performance with sustainability. Through these products, BASF reinforces its ambition for green transformation and its commitment to creating chemistry for a sustainable future.

Source: <https://www.basf.com/global/en/media/news-releases/2026/07/p-26-128>

Collected: July 17, 2026 | Automated Research System (Gemini API)

#15 Coextruded Multilayered Film Market Projected to Grow to \$1.97 Billion by 2034, Driven by Sustainable Packaging and Bio-Based Polymers

Published July 12, 2026 24 Market Reports International



OVERVIEW

This article provides an overview of a market research report published by 24 Market Reports. The global coextruded multilayered film market, valued at \$1.493 billion in 2025, is projected to reach \$1.974 billion by 2034, growing at a CAGR of 4.1% during the forecast period. This growth is primarily driven by the increasing demand for customized barrier, mechanical, and thermal properties in applications such as food and medical packaging. The expanding sustainable packaging regulations and the emergence of bio-based polymers are further propelling market expansion.

Key Findings

According to a market research report published by 24 Market Reports, the global coextruded multilayered film market, valued at \$1.493 billion in 2025, is projected to reach \$1.974 billion by 2034, demonstrating a steady Compound Annual Growth Rate (CAGR) of 4.1% during the forecast period (2026 to 2034). This growth is robustly driven by the increasing demand for films with customized barrier, mechanical, and thermal properties, particularly within the food and medical packaging sectors.

Market Drivers and Trends

This market research report offers a comprehensive analysis of the global coextruded multilayered film market. Coextrusion technology enables the simultaneous extrusion of multiple polymer layers into a single film, creating materials with composite properties unachievable by individual polymers. This provides packaging solutions tailored to specific application requirements, enhancing product protection, freshness preservation, and safety. The report focuses on key market segments, regional trends, technological innovations, and competitive strategies of leading players.

- **Market Size and Growth Rate:** The coextruded multilayered film market is expected to continue its stable growth, reaching approximately \$2 billion by 2034. A CAGR of 4.1% indicates sustained innovation and demand even in what might be considered a maturing market.
- **Demand for Customized Performance:** In food packaging, high barrier properties against oxygen, moisture, and light are crucial for product freshness and shelf life. In medical packaging, sterility, chemical resistance, and physical protection are indispensable. Coextruded multilayered films can meet these diverse requirements within a single film, leading to their expanding adoption.
- **Expansion of Sustainable Packaging Regulations:** Regulatory frameworks across the globe are tightening, aiming to reduce plastic waste and promote recycling. This is stimulating innovation in the multi-layer film market, accelerating a shift towards thinner, more easily recyclable, or bio-based alternatives.

- **Emergence of Bio-Based Polymers:** The increasing use of bio-based polymers as alternatives to petroleum-derived plastics is driving their integration into coextruded multilayered films. This trend addresses both the reduction of environmental footprint and consumer demand for sustainability.
- **Key Applications:** Primary applications include food packaging (fresh produce, processed foods, snacks), medical and pharmaceutical packaging (sterile packaging, blister packs), personal care products, and industrial packaging. Quality, safety, and sustainability requirements in these sectors are driving market expansion.

Strategic Significance & Outlook

The continued growth of the coextruded multilayered film market highlights its critical role in modern packaging solutions, especially in sectors with stringent requirements. For engineers, it underscores the need for continuous innovation in material science and processing technologies to meet evolving demands for performance and sustainability. For investors, it signals a robust and expanding market segment, particularly as sustainable packaging regulations and consumer preferences continue to drive the adoption of advanced, eco-friendly polymer solutions. The market's evolution points towards a future where high-performance packaging is increasingly aligned with environmental responsibility.

Source: <https://www.24marketreports.com/chemicals-and-materials/global-coextruded-multilayered-film-forecast-market>

#16 Kanematsu, EF Polymer, and Morning Star Packing Launch Field Trial for Sustainable Tomato Production with Natural Polymers in California

Published July 16, 2026 兼松 (Kanematsu) International (Japan、India、USA)



OVERVIEW

Kanematsu, EF Polymer, and Morning Star Packing (MSP) have commenced large-scale field trials in California, deploying EF Polymer's natural-derived superabsorbent polymer in processing tomato cultivation. This strategic partnership seeks to establish a sustainable tomato production system by tackling critical agricultural challenges such as water scarcity and environmental degradation, leveraging the polymer's potential for efficient water use and reduced ecological footprint.

Background

Kanematsu Corporation, EF Polymer, and Morning Star Packing (MSP), a leading U.S. processing tomato producer, have commenced large-scale field trials of EF Polymer's natural-derived polymer in California's processing tomato production. This strategic partnership seeks to evaluate innovative technological solutions for establishing a sustainable tomato production and supply system, specifically addressing escalating water scarcity and broader environmental challenges in agriculture. Global agriculture faces complex challenges, including climate change, depletion of water resources, and soil degradation. California, despite being the largest agricultural state in the U.S., is frequently plagued by severe droughts. The processing tomato industry, due to its scale, consumes significant volumes of water, making sustainable water management an urgent priority. Kanematsu, leveraging its global network and business development capabilities as a trading company, is instrumental in disseminating EF Polymer's innovative technology worldwide. Collaboration with MSP marks a crucial step toward the practical implementation of this technology in large-scale agriculture, with EF Polymer's technology holding significant potential to enhance efficient water resource utilization and substantially reduce the environmental footprint of agricultural practices.

Key Findings

EF Polymer's natural-derived polymer is a superabsorbent polymer primarily designed for agricultural applications, with its innovation rooted in the following characteristics:

- **Water Absorption & Retention:** When integrated into soil, the polymer efficiently absorbs rainfall and irrigation water, retaining moisture over extended periods. This mitigates drought stress for plants, thereby reducing irrigation frequency and overall water consumption.
- **Biodegradability:** Unlike conventional synthetic superabsorbent polymers, EF Polymer's natural origin ensures complete biodegradation by microorganisms present in the soil. This enables sustainable application without concerns of soil contamination or degradation of soil health.

- **Nutrient Retention:** Beyond water, the polymer also exhibits the capacity to retain essential nutrients, such as fertilizers. This property actively suppresses nutrient runoff, contributing to highly efficient fertilization, optimizing fertilizer use, and significantly mitigating the risk of groundwater pollution.
- **Crop Yield Enhancement:** By ensuring a stable and consistent supply of water and nutrients directly to the root zone, the polymer is expected to foster robust crop growth, leading to tangible improvements in both crop yield and quality.

These large-scale field trials, conducted across MSP's vast tomato fields under actual cultivation conditions, will meticulously evaluate the polymer's effects on water consumption reduction, impact on crop yield, and changes in soil conditions. Given California's chronic water scarcity, such water-saving technologies are critically important. The success of these field trials holds the potential to significantly enhance agricultural sustainability not only in California but also in water-stressed regions globally. By substantially reducing water usage, maintaining soil health, and stabilizing crop yields, the technology contributes to both food security and environmental protection. For investors, it offers an opportunity to invest in innovative sustainability solutions within the AgriTech sector. For researchers and engineers, it will stimulate new R&D at the intersection of biopolymers and smart agriculture. This partnership is poised to become an important model for building the future of sustainable food production systems.

Source: https://www.kanematsu.co.jp/en/press/release/20260716_release

Collected: July 17, 2026 | Automated Research System (Gemini API)

#17 Saudi Petrochemicals Sector Rises to 4th Largest Producer, Driven by SABIC and Vision 2030, Embracing Circular Economy

Published July 09, 2026

Saudi Economic Development Portal

サウジアラビア



OVERVIEW

Propelled by SABIC's strategic downstream integration and the ambitious 'Vision 2030,' Saudi Arabia's petrochemical sector has risen to become the world's fourth-largest producer, encompassing everything from commodity polymers to specialty chemicals. The industry is aggressively addressing its environmental footprint through circular economy initiatives, including advanced chemical recycling and waste-to-feedstock programs. SABIC, a key driver, is commercializing certified circular polymers, derived from chemically recycled mixed plastic waste, via its pioneering TRUCIRCLE program.

Background

Saudi Arabia's "Vision 2030" national strategy emphatically prioritizes economic diversification and growth beyond its traditional oil sector, positioning the petrochemical industry as a central pillar. Leveraging its abundant domestic hydrocarbon resources and strategic geographic location, the Kingdom is significantly enhancing its competitiveness in the global market. Concurrently, in response to escalating global environmental awareness and the urgent imperative to address plastic waste, Saudi Arabia's petrochemical industry is rapidly accelerating the adoption of circular economy principles, strategically integrating these into its national sustainable development agenda.

Key Findings

Saudi Arabia's petrochemical sector has firmly ascended to become the world's fourth-largest producer. This remarkable growth is primarily propelled by SABIC's strategic vertical integration and the nation's ambitious "Vision 2030" economic diversification plan. The sector's expansive product portfolio spans from mass-produced commodity polymers to high-value specialty chemicals. Simultaneously, the industry is proactively mitigating its environmental footprint through robust circular economy initiatives, encompassing advanced chemical recycling and innovative waste-to-feedstock conversion programs. Significantly, SABIC is at the forefront of this transformation, commercializing certified circular polymers, derived from chemically recycled mixed plastic waste, under its innovative "TRUCIRCLE" program.

Technical Details

The Saudi petrochemical industry has undergone substantial evolution, strategically leveraging its abundant hydrocarbon resources, including crude oil and natural gas. SABIC, recognized as one of the world's preeminent petrochemical manufacturers, has been a pivotal force in both expanding production capacity and driving technological innovation. Its aggressive downstream integration strategy has been instrumental in elevating product value, transitioning from basic chemicals to sophisticated high-performance plastics and advanced composites, thereby fostering deeper engagement with critical end-consumer markets. Key technological advancements and strategic initiatives include:

- **Diverse Product Portfolio:** Production encompasses a wide spectrum, from high-volume commodity polymers such as polyethylene and polypropylene, to specialized polymers, advanced composite materials, and critical intermediate chemicals indispensable for demanding applications across aerospace, automotive, electronics, and medical sectors.
- **Chemical Recycling Technologies:** Significant investments are channeled into cutting-edge chemical recycling technologies. These processes efficiently convert complex mixed plastic waste streams back into their original monomers or high-quality chemical feedstocks. This breakthrough enables the manufacturing of recycled materials exhibiting performance characteristics equivalent to virgin materials, making them suitable for stringent applications, including food contact, where rigorous quality and safety standards are paramount.
- **TRUCIRCLE Program:** SABIC's flagship TRUCIRCLE program represents a holistic suite of solutions engineered to accelerate the development and adoption of circular products. It is strategically built upon five core pillars: design for recyclability, advanced mechanical recycling, innovative chemical recycling, certified bio-based polymers, and compostable polymers. This comprehensive approach offers customers a versatile array of options to effectively meet and exceed their sustainability objectives.

Strategic Significance & Outlook

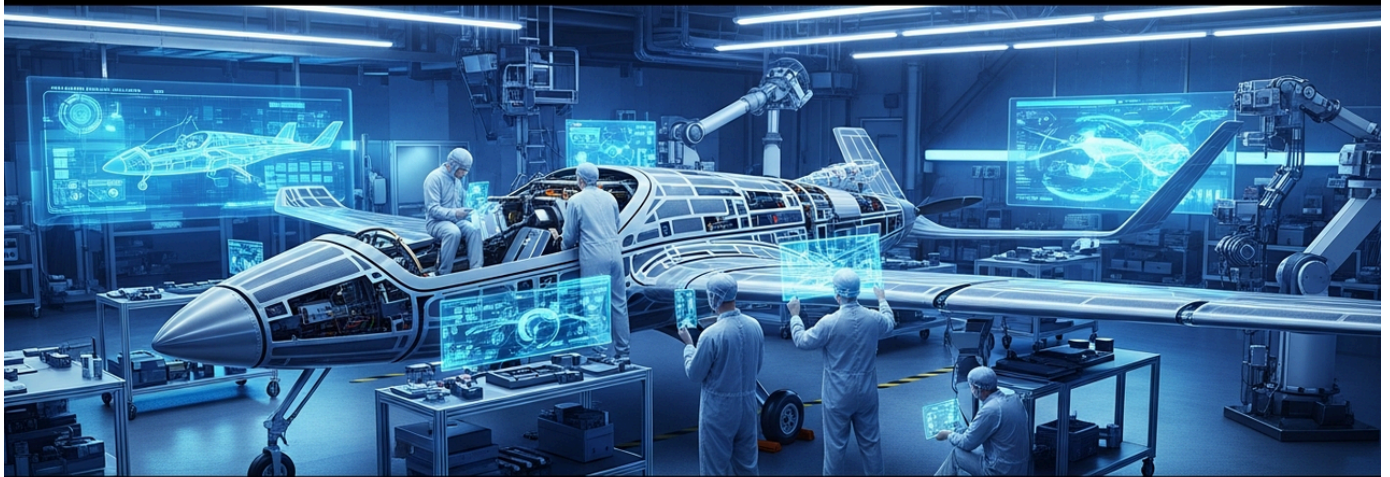
The Saudi petrochemical sector is poised for sustained growth and extensive diversification, powerfully underpinned by SABIC's relentless innovation and the robust governmental backing of "Vision 2030." Crucially, strategic investments in circular economy initiatives are projected to catalyze the emergence of novel business models and generate significant employment opportunities, ultimately positioning Saudi Arabia as a pioneering leader in sustainable industrial development. For potential investors, this presents an exceptionally attractive opportunity within a large-scale industrial sector that expertly balances ambitious growth trajectories with profound environmental responsibility. For the global community of researchers and engineers, this dynamic environment offers an unparalleled platform to spearhead cutting-edge initiatives in chemical recycling, advanced material science, and sustainable process engineering.

Source: <https://vision2030.ai/sectors/petrochemicals/>

Collected: July 17, 2026 | Automated Research System (Gemini API)

#18 Greene Tweed's Xycomp DLF Thermoplastic Accelerates Aircraft Prototyping, Achieving Up to 60% Weight Reduction

Published July 15, 2026 Aviation International News USA



OVERVIEW

Greene Tweed is significantly reducing lead times for eVTOL and aerospace prototype development by utilizing its discontinuous long-fiber thermoplastic, Xycomp DLF. This material enables up to 60% weight reduction compared to metal and facilitates rapid prototype tooling, boosting development efficiency. The company is also innovating aircraft engine bracket manufacturing through its partnership with GE Aerospace's GE Unison division.

Key Findings

Greene Tweed has successfully achieved a dramatic reduction in prototype development lead times for eVTOL (electric vertical take-off and landing) aircraft and broader aerospace applications by employing its advanced discontinuous long-fiber thermoplastic, "Xycomp DLF." This innovative material not only enables up to a 60% weight reduction compared to conventional metal components but also significantly enhances aircraft development efficiency by allowing for rapid prototype tooling. This marks a new paradigm shift in material selection and manufacturing processes within the aerospace industry.

Technical Details

Xycomp DLF is a composite material where reinforcing fibers are uniformly dispersed in a discontinuous state within a high-performance thermoplastic polymer matrix. Unlike traditional continuous fiber composites, it allows for rapid processing methods such as injection molding and compression molding, enabling the efficient manufacture of complex-shaped parts. Its technical advantages are summarized as follows:

- **Up to 60% Weight Reduction:** Improving aircraft fuel efficiency and extending range heavily depend on lightweighting. Xycomp DLF achieves substantial weight savings compared to conventional aluminum or titanium alloys by combining low-density thermoplastic resins with fibers, all while maintaining high strength. This directly contributes to reducing aircraft operational costs and environmental impact.
- **Rapid Prototype Tooling:** Traditional metal component prototyping required time-consuming and costly processes like machining and welding. Being a thermoplastic, Xycomp DLF allows for short molding cycles, enabling rapid mold fabrication and part manufacturing. This accelerates design iterations and shortens the overall development period.
- **High Design Freedom:** The ability to create complex monolithic parts through injection molding reduces part count and assembly labor. This is expected to improve system reliability and further reduce manufacturing costs.

- **Partnership with GE Aerospace:** Greene Tweed is collaborating with GE Aerospace's GE Unison division to innovate the manufacturing approach for aircraft engine brackets. Engine brackets are critical components exposed to high temperatures and loads, and the adoption of Xycomp DLF demonstrates its reliability and performance in such demanding environments.

Background & Industry Context

The aerospace industry is experiencing a period of rapid technological innovation and market expansion, driven by eVTOLs, next-generation passenger aircraft, and spacecraft. These new platforms demand simultaneous advancements in ultralightweighting, high reliability, and accelerated development cycles. Conventional metal materials are increasingly struggling to meet these requirements, making the shift to high-performance composite materials inevitable. Thermoplastic composites, in particular, are favored over thermoset composites for their excellent mechanical properties, weldability, re-processability, and recyclability, offering superior sustainability credentials.

Strategic Significance & Outlook

The introduction of advanced thermoplastic composites like Xycomp DLF has the potential to fundamentally transform aircraft design, manufacturing, and maintenance practices. The acceleration of prototype development will shorten the time-to-market for new aircraft and quicken the pace of technological innovation. This technology is expected to further intensify the trend of lightweighting and efficiency in the aerospace industry, becoming an indispensable element in enhancing the performance and sustainability of future aircraft. For investors, it represents an entry point into a growing advanced composites market, and for engineers, it provides new tools to enable more sophisticated design and manufacturing processes.

Source: <https://www.ainonline.com/aviation-news/aerospace/2026-06-22/thermoplastics-place-metal-accelerate-prototypes>

#19 BASF Inaugurates New Production Plant in Düsseldorf, Germany, for High-Performance Surfactants, Polymers, and Other Specialties, Driving Green Transformation

Published July 17, 2026 NewswireToday Germany



OVERVIEW

BASF has opened a new production plant in Düsseldorf, Germany, dedicated to manufacturing a diverse portfolio of high-performance products central to its offerings. This facility will produce a wide range of chemicals, including surfactants, emulsifiers, polymers, emollients, chelating agents, cosmetic active ingredients, and UV filters. This significant strategic investment is part of BASF's ambitious "Green Transformation" initiative, designed to provide innovative chemical solutions for a sustainable future and contribute substantially to the company's long-term sustainability goals.

Key Findings

BASF has inaugurated a state-of-the-art new production plant in Düsseldorf, Germany. This facility is poised to become a key manufacturing hub for a diverse range of chemical products, forming the core of the company's high-performance portfolio. Specifically, it will produce a broad spectrum of products including surfactants, emulsifiers, polymers, emollients, chelating agents, cosmetic active ingredients, and UV filters. This substantial strategic investment is an integral component of BASF's ambitious "Green Transformation" strategy, aiming to significantly contribute to the company's long-term sustainability goals by delivering innovative chemical solutions for a more sustainable future.

Technical Details

The new Düsseldorf plant incorporates the latest manufacturing technologies and automation systems, designed to maximize production efficiency and quality control. This facility is not merely focused on increasing output but also integrates technologies aimed at enabling more environmentally friendly production processes. For instance, it likely includes energy-efficient equipment and systems designed to minimize waste generation.

- **Surfactants and Emulsifiers:** These functional components are widely used across industries such as detergents, personal care products, coatings, and agrochemicals, enhancing product performance and stability.
- **Polymers:** Serving as binders, thickeners, and protective agents in diverse applications including construction, coatings, adhesives, and textiles. The plant will particularly bolster the production of specialty polymers for high-performance demands.
- **Emollients and Cosmetic Active Ingredients:** These components improve skin feel and deliver specific cosmetic effects in skincare and haircare products. The facility will also likely produce ingredients addressing the growing demand for clean beauty products.
- **Chelating Agents:** Used in water treatment, detergents, agriculture, and the food industry to sequester metal ions, thereby improving product stability and efficacy.

- **UV Filters:** Provide protection against UV degradation in sunscreen products, coatings, and plastics.

This enhanced production capacity across a diversified product range is crucial for BASF to meet the varied needs of its customers and solidify its market leadership.

Background & Industry Context

The chemical industry is undergoing a significant transformation, driven by increasing societal pressure for sustainability and environmental protection. Companies are challenged to maintain product performance while simultaneously reducing their carbon footprint, utilizing renewable resources, and improving the efficiency and environmental impact of their production processes. BASF is proactively addressing these trends by investing in manufacturing capabilities and executing its "Green Transformation" strategy, aiming to ensure long-term growth and competitive advantage.

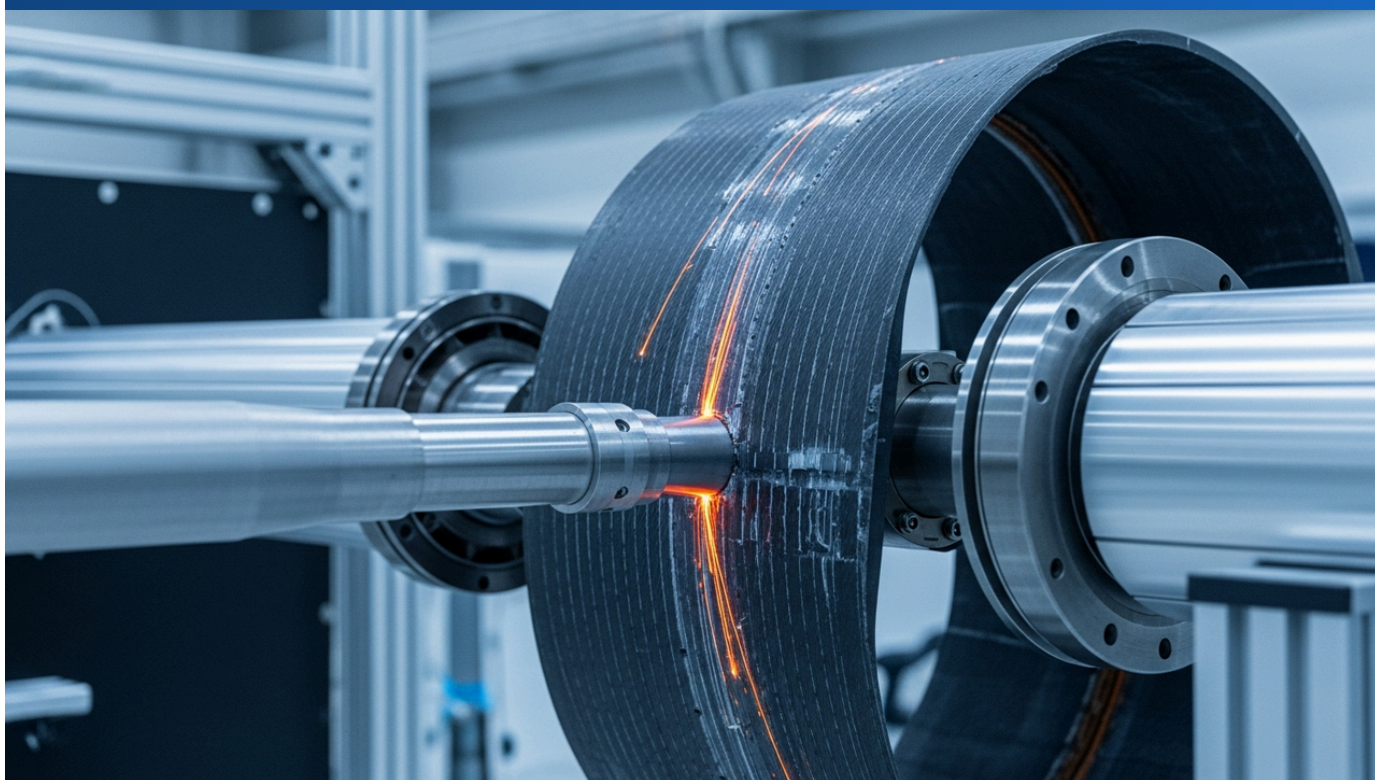
Strategic Significance & Outlook

The new plant in Düsseldorf will play a vital role in stabilizing BASF's supply of high-performance chemical products in the European market and enhancing customer service. This investment represents a strategic move for the company to expand its market share in specific product segments and meet the increasing demand for sustainable solutions. For investors, it signals BASF's commitment to future-oriented manufacturing capabilities and strengthening its position in the green chemistry market. For engineers and researchers, it will serve as a platform to accelerate the development of innovative materials and efficient production technologies.

Source: <https://www.newswiretoday.com/news/186566/BASF-Inaugurates-New-Production-Plant-in-Düsseldorf-Germany/>

#20 Resistance-Welded CF/LM-PAEK Composites Pave Way for Truly Circular Structures in Aerospace, Overcoming Recycling Challenges

Published July 15, 2026 Engineer Live UK



OVERVIEW

Recent research on resistance-welded Carbon Fiber-Reinforced Low-Melt Poly(aryletherketone) (CF/LM-PAEK) composites is gaining significant attention for enabling a circular economy in carbon fiber composites. This study demonstrates the potential to assemble, disassemble, and reuse joints in high-performance thermoplastic composites, overcoming the long-standing challenge of composite recyclability. This breakthrough is expected to substantially enhance sustainability in the aerospace industry, facilitating the realization of "truly circular" composite structures.

Key Findings

Carbon fiber composites, widely adopted in aerospace and automotive sectors, have revolutionized design with their superior lightweight properties and strength but have long faced a sustainability challenge: their difficulty in recycling. However, recent research has unveiled a groundbreaking solution with resistance-welded Carbon Fiber-Reinforced Low-Melt Poly(aryletherketone) (CF/LM-PAEK) composites. This novel approach demonstrates the potential to assemble, disassemble, and reuse joints in high-performance thermoplastic composites, garnering significant attention as it paves the way for "truly circular" composite structures.

Technical Details

A primary factor complicating composite recycling has been the thermoset nature of many matrix resins; once cured, they cannot be remelted or reshaped. While thermoplastic composites can be softened and reshaped with heat, the reusability of their joints, even with high-performance thermoplastic resins, has been limited. The combination of CF/LM-PAEK composites and resistance welding technology in this study offers distinct advantages:

- **LM-PAEK Properties:** Low-Melt Poly(aryletherketone) maintains high mechanical strength, heat resistance, and chemical resistance, while being melt-processable at lower temperatures than conventional PAEK resins. This reduces energy consumption during processing and minimizes thermal damage.
- **Resistance Welding for Joining:** Resistance welding involves embedding conductive elements between composite layers and applying an electric current. The resulting resistive heating melts the resin locally and rapidly, creating a strong bond. This clean and efficient method avoids the use of solvents or adhesives.
- **Disassembly and Reusability:** Resistance-welded joints can be easily disassembled by reapplying heat. This simplifies the replacement of damaged parts or material recovery at the end of a product's life, allowing recovered materials to be re-used in manufacturing new components. This enables closed-loop recycling, which was previously impossible for many composites.

- **Maintenance of Performance:** Crucially, the mechanical properties of the material are largely retained even after disassembly and reuse cycles. This signifies the potential to maintain near-virgin quality, enabling application in high-performance sectors like aerospace.

Background & Industry Context

The aerospace industry's reliance on lightweight, high-strength carbon fiber composites is indispensable for improving fuel efficiency and reducing CO2 emissions. However, the increasing volume of these materials has brought forth a significant challenge: managing composite waste from end-of-life aircraft. There is a strong demand for sustainable waste management and recycling technologies. The findings of this research provide a viable solution to one of the most pressing issues facing this industry.

Strategic Significance & Outlook

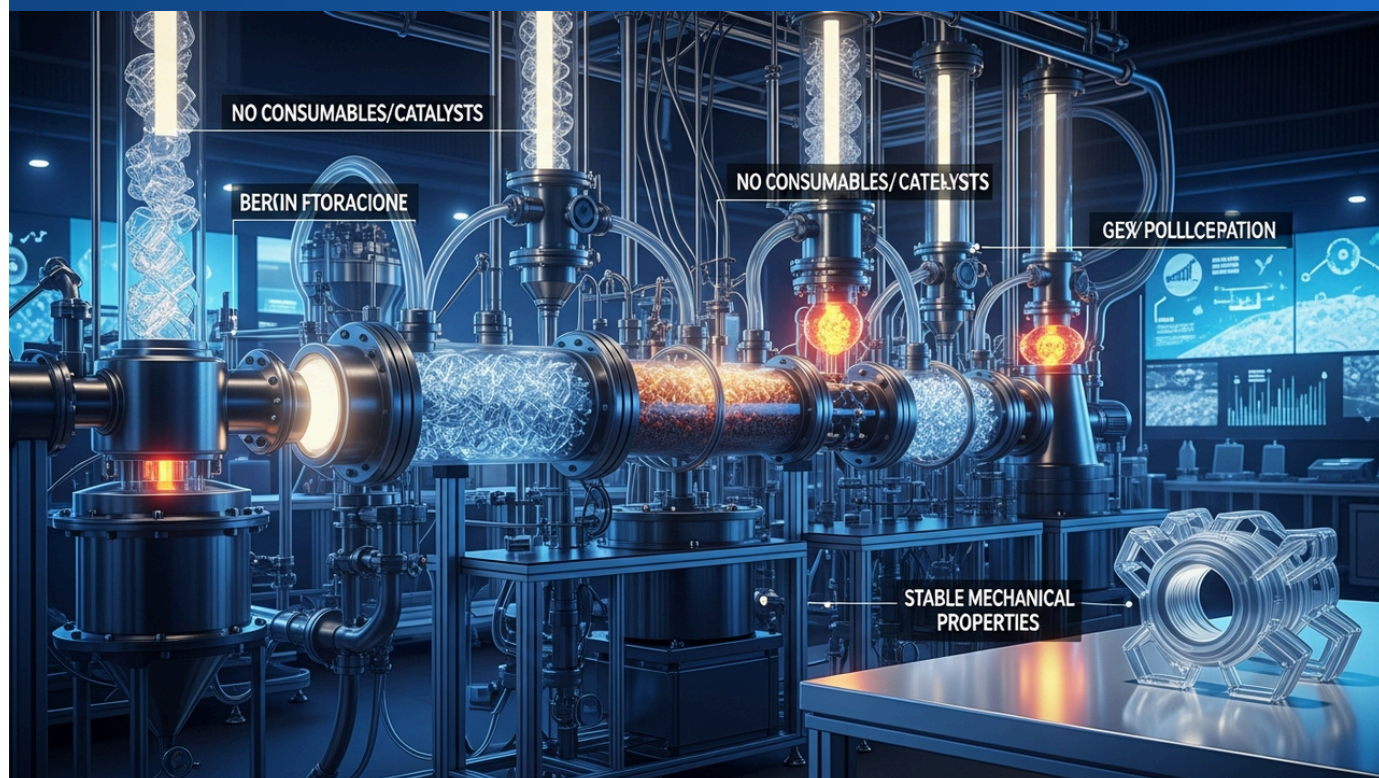
The technology of resistance-welded CF/LM-PAEK composites has the potential to revolutionize material lifecycle management in the aerospace industry. It will significantly contribute to the production of more environmentally friendly aircraft and the realization of resource-efficient industrial models. For investors, it signals opportunities in advanced material technologies aligned with the circular economy. For engineers and researchers, it opens new frontiers in the design and development of next-generation composite systems that balance high performance with sustainability. This technology is expected to unlock a future where composite materials truly contribute to a circular economy.

Source: <https://engineerlive.com/can-advanced-composites-become-truly-circular/>

Collected: July 17, 2026 | Automated Research System (Gemini API)

#21 Novel Polyketimine Networks Achieve Stable Performance and Closed-Loop Recyclability Without Consumable Reagents or Catalysts, Offering Promising Strategy Against Plastic Pollution

Published July 15, 2026 Journal of the American Chemical Society USA



OVERVIEW

Groundbreaking research has unveiled highly dynamic yet stable polyketimine networks that offer a promising strategy against plastic pollution. This novel material enables closed-loop recyclability under mild conditions, requiring no consumable reagents or catalysts, while maintaining robust mechanical properties during use. The breakthrough overcomes the inherent trade-off between material stability and recycling efficiency, marking a significant advance in sustainable polymer material design.

Key Findings

Groundbreaking research published in the Journal of the American Chemical Society reports the development of novel polyketimine networks that are highly dynamic yet maintain robust mechanical properties during use. This innovative material addresses existing challenges in plastic recycling by demonstrating "closed-loop recyclability" under mild conditions, critically requiring no consumable reagents or external catalysts. This achievement offers an exceptionally promising strategy for significantly mitigating plastic pollution and represents a major breakthrough in sustainable polymer material design.

Technical Details

The escalating plastic pollution crisis has spurred the development of degradable plastics, but many of these materials present a trade-off between stability during use and efficiency in the recycling process. Materials that degrade easily often lack durability, while durable materials are difficult to recycle. The polyketimine network developed in this study overcomes this fundamental trade-off.

- **Dynamic Networks with Stability:** Polyketimines form "dynamic covalent bonds" through reversible imine linkages ($C=N$) that can undergo association and dissociation reactions. This allows the material to possess self-healing capabilities and re-processability while maintaining an overall stable network structure. This ensures the material remains robust against external stresses during its service life.
- **Closed-Loop Recyclability:** Remarkably, this polyketimine network can be completely depolymerized back to its original monomers under specific mild conditions (e.g., changes in pH or exposure to specific solvents), without the need for consumable reagents or catalysts. This brings significant benefits, making the recycling process environmentally friendly and economically viable. The depolymerized monomers can be purified and then reused for polymer synthesis, achieving true "closed-loop" recycling.
- **Topological Programmability:** The dynamic nature of this network potentially allows for programmatic control over the material's topology (structural arrangement). This provides flexibility to tailor the material's mechanical, thermal, and other functional properties for specific applications.

This technology holds the potential to make plastic waste recycling far more efficient and sustainable within the waste hierarchy.

Background & Industry Context

Plastic pollution is a severe global environmental issue, prompting governments and corporations worldwide to invest heavily in reducing single-use plastics, increasing recycling rates, and developing biodegradable materials. Existing recycling technologies, particularly mechanical recycling, face challenges such as material quality degradation and difficulties in processing mixed plastic waste. While chemical recycling is considered a promising alternative, it often requires high temperatures, high pressures, or specific catalysts and reagents, which can themselves contribute to energy consumption and environmental burden. The results of this research offer a low-energy and clean solution to these challenges.

Strategic Significance & Outlook

This polyketimine network is expected to significantly impact the future development of high-performance, recyclable plastic materials. Applications are anticipated in industries requiring high-performance polymers, such as automotive, electronics, and packaging. For investors, it offers opportunities in the new frontier of circular materials technology. For engineers and researchers, it provides inspiration for next-generation material design aimed at achieving a zero-waste society. If commercialized, this technology is expected to dramatically reduce the environmental impact of plastics and accelerate the transition to a more sustainable society.

Source: <https://pubs.acs.org/doi/10.1021/jacs.6c00544>

#22 Daher Demonstrates Thermoplastics Can Replace Aircraft Aluminum with 64-Layer Carbon Fiber Reinforced Wing Rib, Paving Way for Primary Aerospace Structures

Published July 14, 2026 LFRT-Plastic International (France, USA)



OVERVIEW

The potential for thermoplastic composites to replace aluminum in primary aircraft structures has been demonstrated by Daher's innovative wing rib. This rib, constructed with 64 layers and a 12mm thickness of carbon fiber-reinforced thermoplastic composite (CFRTP), proves that thermoplastic resins can meet the stringent mechanical demands of major aerospace structures. This technology offers significant contributions to lightweighting, cost-efficiency, and recyclability, supporting the aerospace industry's ambitious decarbonization goals.

Key Findings

Thermoplastic composites, previously confined to secondary aircraft structures, have now been demonstrated as a viable alternative to aluminum in primary structures, thanks to Daher's groundbreaking development of an innovative wing rib. This pioneering component is constructed from 64 layers of carbon fiber-reinforced thermoplastic composite (CFRTP) and measures 12mm thick. This serves as definitive proof that thermoplastic resins can adequately meet the rigorous mechanical requirements demanded by the aerospace sector. The technology offers multiple benefits, including aircraft lightweighting, improved manufacturing cost-efficiency, and enhanced recyclability, thus powerfully supporting the aerospace industry's ambitious decarbonization targets.

Technical Details

Historically, aluminum alloys have been the predominant material for primary aircraft structures. However, achieving further weight reduction is imperative for improving fuel efficiency and reducing emissions. Carbon fiber composites contribute to lightweighting due to their high specific strength and stiffness, but thermoset resin-based composites present challenges in complex processing and recycling. Thermoplastic composites, being melt-processable and re-formable, offer superior processability, repairability, and recyclability. Yet, data on long-term reliability and fatigue properties for primary structures, even with high-performance thermoplastic resins, has been limited until now.

Daher's developed wing rib represents a technological breakthrough in several aspects:

- **Multi-Layer Structure:** By stacking 64 layers of CFRTP, high strength and stiffness are ensured. Optimized laminate design allows it to withstand complex stresses encountered during flight.
- **High-Performance Thermoplastic Resins:** High-performance thermoplastic polymers like PEEK (Polyether Ether Ketone) and PEKK (Polyetherketoneketone) are used as the matrix. These exhibit excellent mechanical properties, fatigue resistance, and impact resistance even in high-temperature environments.

- **Efficient Manufacturing Process:** Thermoplastic composites soften upon heating, enabling joining by welding and thermoforming. This allows for reduced part counts and increased manufacturing automation, significantly cutting manufacturing costs and lead times. It also has the potential to form more reliable joints compared to conventional adhesive bonding.
- **Enhanced Recyclability:** Even after reaching the end of its service life, thermoplastic composite material is relatively easy to reprocess by heating or to separate fibers from the resin for recycling. This significantly contributes to reducing the overall environmental footprint of the aviation industry across its lifecycle.

Background & Industry Context

The aviation industry is under immense pressure to meet stringent environmental targets, such as net-zero emissions by 2050. This necessitates not only the electrification of propulsion systems and the transition to Sustainable Aviation Fuels (SAF) but also significant lightweighting of the airframe itself. Replacing aluminum with thermoplastic composites in primary structures signifies more than just a material change; it will profoundly influence aircraft design philosophies, manufacturing methodologies, and the business models of airlines and aircraft manufacturers. Daher has been a long-standing leader in this research and development area, and this achievement underscores their technological leadership.

Strategic Significance & Outlook

Daher's demonstration of the CFRTP wing rib opens new avenues for aircraft manufacturers to develop lighter, more manufacturing-efficient, and environmentally friendly aircraft. This technology could potentially be applied to other primary structural components such as fuselages, main wings, and tail sections in the future, dramatically reducing overall aircraft weight and further improving fuel efficiency. For investors, this suggests that innovative material technologies and sustainability initiatives in the aerospace sector are creating new growth markets. For engineers and researchers, it serves as an inspiring example of pushing the frontiers of aerospace materials science.

#23 JGC Holdings Opens 'JBX1' Bio-Manufacturing Research Center in Kobe, Targeting Direct CO₂-to-Polymer Synthesis via Gas Fermentation with NEDO Green Innovation Fund Support

Published July 16, 2026 Zenbird Japan



OVERVIEW

JGC Holdings Corporation has inaugurated its first bio-manufacturing research facility, "JBX1," on Kobe Port Island, commencing the production of chemicals and materials from non-fossil resources via gas fermentation technology. As a collaborative project with Bacchus Bio Innovation, Kaneka, and Shimadzu Corporation, and supported by NEDO's Green Innovation Fund, the center aims to develop technology for direct polymer synthesis from carbon dioxide (CO₂) using microorganisms. This initiative represents a critical strategic step for Japan towards achieving a carbon-neutral society.

Key Findings

JGC Holdings Corporation has officially opened its inaugural bio-manufacturing research facility, "JBX1," on Kobe Port Island. This advanced facility aims to produce chemicals and various materials from non-fossil resources, with gas fermentation technology at its core. Particularly noteworthy is its ambitious goal: to develop groundbreaking technology for the direct synthesis of polymers from carbon dioxide (CO₂) using microorganisms. This is a powerful collaborative project with Bacchus Bio Innovation, Kaneka, and Shimadzu Corporation, supported by the New Energy and Industrial Technology Development Organization's (NEDO) Green Innovation Fund. This initiative marks a crucial strategic step for Japan towards realizing a carbon-neutral society.

Technical Details

The primary technological focus of the JBX1 research facility is bio-manufacturing processes that directly utilize CO₂ to produce valuable chemicals and materials. In contrast to conventional chemical manufacturing processes that rely on fossil fuels and emit substantial CO₂, this gas fermentation technology converts CO₂ from exhaust gases through the metabolic activities of microorganisms.

- **Gas Fermentation Technology:** This technology harnesses the ability of specialized microorganisms to consume gaseous carbon sources such as CO₂, CO (carbon monoxide), and H₂ (hydrogen) to produce compounds like acetic acid, ethanol, or more complex chemicals. At JBX1, the goal is to optimize this microbial platform to directly generate polymer precursors or monomers.
- **Direct Polymer Synthesis from CO₂:** The ultimate objective of the project is to establish a technology where microorganisms directly uptake CO₂ and synthesize biopolymers (e.g., polyhydroxyalkanoates, PHAs) or monomers that serve as raw materials for conventional petroleum-derived polymers (e.g., polyethylene, polypropylene). This approach reuses CO₂ not as a waste product but as a valuable resource.

- **Multi-Company Collaboration:** JGC Holdings provides expertise in plant engineering and know-how in the design, construction, and operation of bio-manufacturing facilities. Bacchus Bio Innovation contributes proprietary microbial development and fermentation process optimization technologies. Kaneka offers insights into polymer manufacturing, and Shimadzu Corporation supports the project with advanced analytical and measurement technologies. This multifaceted collaboration accelerates complex technological development.

The facility is equipped to conduct integrated research, from basic science to validation of scale-up technologies, serving as a critical bridge towards commercialization.

Background & Industry Context

To achieve global decarbonization targets under the Paris Agreement, industries worldwide urgently need to reduce CO₂ emissions and transition to a circular economy. The chemical industry, in particular, is one of the major sources of CO₂ emissions and is strongly urged to shift towards sustainable raw materials as alternatives to fossil fuels. NEDO's Green Innovation Fund is a large-scale national project aimed at supporting Japan's goal of carbon neutrality by 2050 while maintaining industrial competitiveness. In this context, JGC Holdings' initiative to directly synthesize polymers from CO₂ holds the potential to redefine the future of the chemical industry.

Strategic Significance & Outlook

Successful technological development at the JBX1 research facility would position it at the forefront of Carbon Capture and Utilization (CCU) technologies that capture and utilize CO₂ at emission sources. This could significantly impact a wide range of industries, including automotive, packaging, construction, and electronics, by reducing reliance on fossil resources and establishing sustainable material supply chains. For investors, it offers long-term investment opportunities in the growing fields of decarbonization and the bioeconomy. For engineers and researchers, it will be an exciting place to contribute to the development of innovative bio-manufacturing processes using CO₂ as a raw material. The facility is expected to become a symbolic entity for Japan's scientific and technological contributions to solving global environmental challenges.

Collected: July 17, 2026 | Automated Research System (Gemini API)

#24 BASF Develops PFAS-Free Flame Retardant PPA for Next-Gen Batteries, Addressing 800V Architectures and Solid-State Cells, While Closing Polyamide Circularity Loop

Published July 16, 2026 AI Online Germany



OVERVIEW

BASF is advancing high-performance materials to support electric mobility progress in next-generation battery materials. The company addresses increasing electrical, thermal, and mechanical stresses on battery cell components, particularly with the transition from 400V to 800V architectures and the emergence of solid-state battery technology. BASF is enhancing the safety and sustainability of high-voltage connectors and its PBT portfolio through the development of flame-retardant grades of polyphthalamide (PPA) and PFAS-free flame retardants, while also working on closing circular economy loops for polyamides through solvent-based or depolymerization recycling.

Key Findings

BASF is aggressively advancing the development of next-generation battery materials to meet the rapid evolution of electric mobility. A core focus is addressing the escalating electrical, thermal, and mechanical stresses on battery cell components, driven by the transition from current 400V systems to more efficient 800V architectures and the emergence of innovative solid-state battery technology. As part of this initiative, BASF is significantly enhancing the safety and sustainability of high-voltage connectors and its polybutylene terephthalate (PBT) portfolio through the development of flame-retardant grades of polyphthalamide (PPA) and PFAS (per- and polyfluoroalkyl substances)-free flame retardants. Concurrently, the company is actively engaged in projects to establish circular economy loops for polyamides (nylon) via solvent-based or depolymerization recycling methods.

Technical Details

Electric Vehicle (EV) battery systems continuously demand advancements in range, charging speed, safety, and durability. While 800V architectures enable faster charging and higher power delivery, they impose stricter requirements on components for electrical insulation, heat resistance, and mechanical strength. Solid-state batteries promise higher energy density and improved safety compared to existing lithium-ion batteries, but their implementation comes with new material science challenges. BASF is addressing these challenges with specific material solutions:

- **Flame-Retardant PPA Grades for High-Voltage Connectors:** Polyphthalamide (PPA) is a high-performance plastic known for its excellent mechanical strength, heat resistance, and chemical resistance. BASF has developed flame-retardant PPA grades specifically for EV high-voltage connectors that meet stringent UL94 standards. This reduces the risk of fire during short circuits or overheating, improving the overall safety of battery systems.
- **PFAS-Free Flame Retardants:** Amid growing environmental regulations and consumer concerns, BASF is developing novel flame retardants that do not contain PFAS. These flame retardants are incorporated into other polymers, particularly thermoplastics like PBT, to meet rigorous flame retardancy standards such as UL94, while minimizing environmental impact.

- **Enhanced Safety for PBT Portfolio:** PBT is an engineering plastic widely used in electrical and electronic components and automotive parts. BASF is further enhancing the safety of battery peripheral components and connectors by integrating proprietary flame-retardant solutions into PBT materials.
- **Circular Economy Loop for Polyamides:** Polyamides (nylon) are used in many industries due to their durability and versatility, but their recycling has been challenging. BASF is developing solvent-based recycling (dissolution and regeneration) and depolymerization-based chemical recycling technologies to convert end-of-life polyamides back into high-quality raw materials, aiming for a closed-loop circular economy. This reduces the environmental footprint across the material's entire lifecycle.

Background & Industry Context

The global automotive industry is undergoing a historic shift from internal combustion engines to electric propulsion. Stricter government emission regulations, decreasing battery costs, and rising consumer environmental awareness are fueling the exponential growth of the EV market. High-performance batteries are core components that determine EV performance, and innovation in their material technology dictates competitive advantage. Concurrently, the tightening regulations on 'forever chemicals' like PFAS are compelling companies to transition to more environmentally friendly alternative materials.

Strategic Significance & Outlook

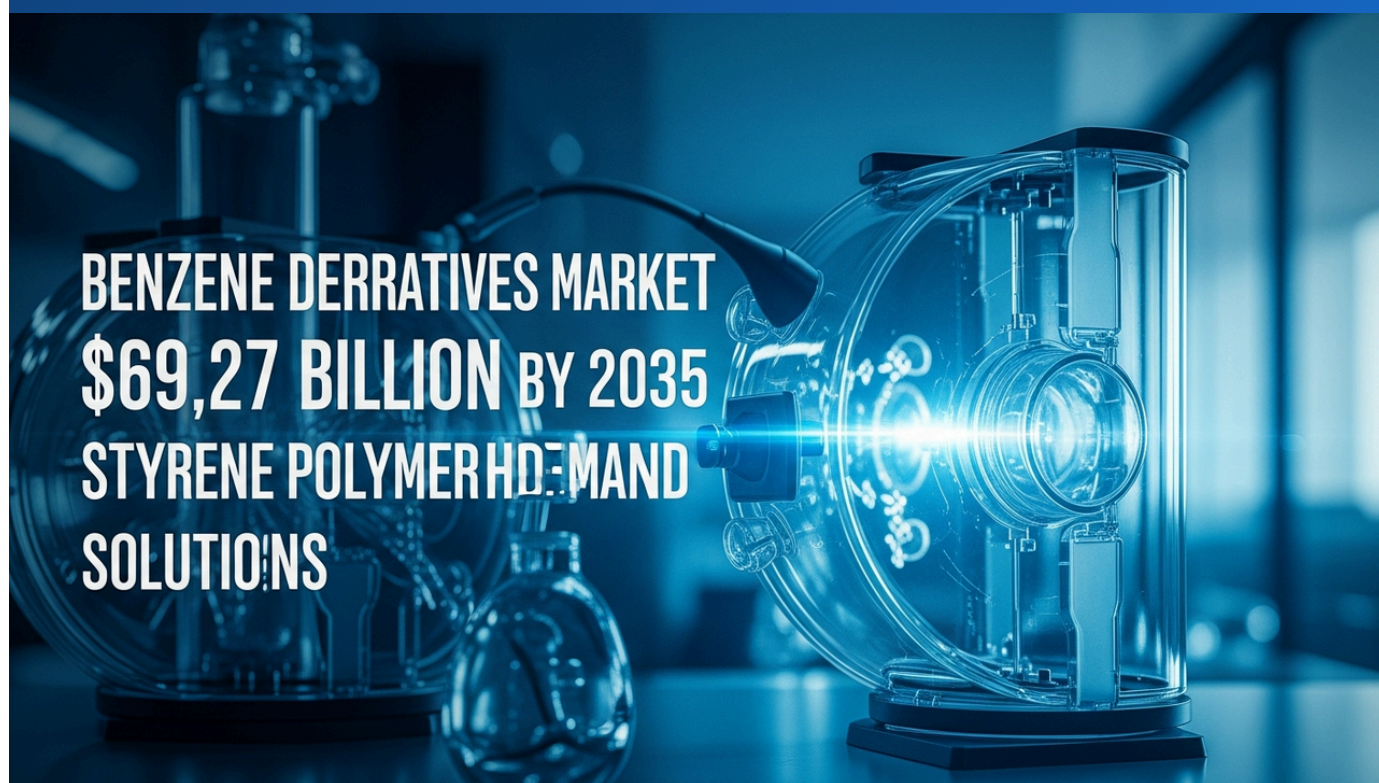
BASF's initiatives in next-generation battery materials will play a crucial role in enhancing EV performance, safety, and sustainability. The development of materials capable of supporting high-voltage architectures and solid-state batteries has the potential to further accelerate EV adoption and establish new standards for battery technology. For investors, BASF's strategic positioning in the growing EV market and green chemistry suggests attractive investment opportunities. For engineers and researchers, it will be a fertile ground for cutting-edge R&D at the intersection of material science and electrification technologies. These innovations are indispensable in shaping the future of sustainable electric mobility.

Source: <https://ai-online.com/2026/07/basf-on-the-next-generation-of-battery-materials/>

Collected: July 17, 2026 | Automated Research System (Gemini API)

#25 Benzene Derivatives Market to Surge to \$69.27 Billion by 2035, Driven by Escalating Global Demand for Styrene Polymers and Rise of Sustainable Solutions

Published July 17, 2026 ET Chemical News India



**BENZENE DERIVATIVES MARKET
\$69.27 BILLION BY 2035
STYRENE POLYMER DEMAND
SOLUTIONS**

OVERVIEW

The benzene derivatives market is experiencing accelerated growth, propelled by the increasing global demand for styrene polymers and the rise of sustainable solutions. Projected to expand at a Compound Annual Growth Rate (CAGR) of 6.5% from 2026 to 2032, the market is expected to reach \$69.27 billion by 2035. Demand from diverse sectors, including paints and coatings, automotive manufacturing, construction, electronics, plastics, and industrial chemicals, is fueling this market momentum.

Key Findings

The benzene derivatives market is entering a period of significant accelerated growth, driven by both the expanding global demand for styrene polymers and a pervasive shift towards environmentally conscious, sustainable solutions. This market is projected to steadily expand at a Compound Annual Growth Rate (CAGR) of 6.5% from 2026 to 2032, reaching an estimated value of \$69.27 billion by 2035. This growth is underpinned by robust demand from diverse downstream industries such as paints and coatings, automotive manufacturing, construction, electronics, plastics, and industrial chemicals, reaffirming benzene derivatives' status as essential foundational chemicals in modern industry.

Technical Details

Benzene derivatives are organic compounds based on the benzene ring structure, capable of forming a wide array of chemical products by altering their chemical properties. Key benzene derivatives include styrene, phenol, aniline, and cumene, each playing a crucial role in specific industrial applications:

- **Styrene:** Primarily used as a monomer for styrene polymers like polystyrene (PS), acrylonitrile-butadiene-styrene (ABS) resins, and styrene-butadiene rubber (SBR). These polymers are extensively utilized in packaging, automotive parts, consumer electronics, and construction materials. The increasing demand for consumer goods, particularly in emerging economies of the Asia-Pacific region, is a significant driver for the styrene and its derivatives market.
- **Phenol:** Employed in the production of bisphenol A (BPA) and phenolic resins, which are subsequently used in epoxy resins, polycarbonates, and plywood adhesives. Demand for these high-performance materials is on the rise.
- **Sustainable Solutions:** Market growth is not solely due to increased demand but also a rising interest in more sustainable manufacturing processes, bio-based benzene derivatives, or recycled derivatives. Companies are investing in production technology innovations to reduce their environmental footprint and develop products that align with circular economy principles. Research is ongoing in areas such as benzene production from biomass and the recovery of aromatics through chemical recycling.

Background & Industry Context

Global economic growth, particularly the industrialization and urbanization in Asia, is fueling the demand for basic chemicals in industries such as plastics, paints, and automotive. Simultaneously, heightened awareness of environmental protection and sustainability is driving the chemical industry as a whole towards cleaner, more resource-efficient solutions. The benzene derivatives market stands at the intersection of these two major trends, where innovation is essential to support economic growth while addressing environmental challenges.

Strategic Significance & Outlook

The continuous growth of the benzene derivatives market ensures a stable supply of materials for related downstream industries, supporting technological innovation across various sectors, including lightweighting in automobiles, advancements in high-performance electronics, and enhanced durability of construction materials. For investors, it offers opportunities for stable growth within the basic chemicals sector and new opportunities related to the shift towards sustainability. For engineers and researchers, it represents a crucial area for shaping the future of the chemical industry through green manufacturing processes and the development of bio-based or recycled benzene derivatives. The development of this market illustrates the industry's direction: meeting diverse societal needs while striving to reduce environmental impact.

Source: <https://chemicals.economictimes.indiatimes.com/news/industry-and-market/benzene-derivatives-market-growth-accelerates-as-global-demand-for-styrene-polymers-and-sustainable-solutions-rise/132459214>

#26 Fraunhofer ISC Commercializes Renewable-Based, Fluorine-Free ORMOCER® Coatings, Achieving PFAS-Equivalent Performance and Over 25% Environmental Impact Reduction

Published July 17, 2026 Fraunhofer ISC Germany



OVERVIEW

Germany's Fraunhofer ISC has developed and commercialized fluorine-free ORMOCER® coatings from renewable and non-toxic compounds as a robust PFAS alternative. These inorganic-organic hybrid polymers deliver high hardness, abrasion resistance, thermal stability, and environmental durability comparable to or exceeding PFAS-based materials. Targeting over 25% environmental impact reduction, the technology is finding applications in food packaging and textiles, providing excellent water, oil, and grease resistance, addressing critical sustainability and performance needs across diverse industries.

Key Findings

Fraunhofer ISC, a leading German research institution, has successfully commercialized fluorine-free ORMOCER® coatings, formulated from renewable raw materials and non-toxic compounds, in response to escalating global regulations against PFAS (per- and polyfluoroalkyl substances). This innovative inorganic-organic hybrid polymer delivers high hardness, exceptional abrasion and thermal resistance, and superior environmental durability, matching or surpassing the performance of conventional PFAS-based materials. Notably, the technology aims to reduce the environmental footprint of coated products by over 25% while maintaining robust water, oil, and grease repellency.

Technical / Clinical Details

ORMOCER® coatings achieve their unique performance profile by combining an inorganic backbone with organic characteristics, setting them apart from traditional polymers. This hybrid architecture results in surfaces that are extremely hard and highly resistant to mechanical abrasion. Their superior thermal stability ensures consistent performance even in high-temperature environments. Crucially, the technology achieves powerful hydrophobic and oleophobic properties, effectively repelling water and oil, without incorporating any fluorine compounds. Fraunhofer ISC researchers have fine-tuned specific formulations and process adjustments to meet stringent performance requirements across diverse industrial applications, including food packaging materials and textile cushioning.

Background & Context

PFAS, known as 'forever chemicals' due to their extreme persistence in the environment and potential accumulation in human bodies and ecosystems, have been widely used for their excellent water and oil-repellent properties. However, global efforts to restrict or ban PFAS are accelerating, compelling industries to rapidly develop and adopt alternative materials. There is particularly high demand for fluorine-free, high-performance solutions in safety-critical sectors such as food contact materials and medical devices. ORMOCER® technology aligns perfectly with these market needs, positioning itself as a key enabler for sustainable innovation.

Strategic Significance & Outlook

The commercialization of ORMOCER® coatings is poised to significantly impact the fluorine-free high-performance materials market, accelerating a paradigm shift in PFAS alternatives. Its application scope is vast, including balancing safety and functionality in food packaging and integrating durability with environmental considerations in textiles. Fraunhofer ISC plans to continue its pursuit of sustainability by further increasing the proportion of renewable raw materials and reducing energy consumption across the manufacturing process. The widespread adoption of this technology is expected to enable industries to comply with environmental regulations while delivering high-performance products, contributing to a safer and more sustainable global product landscape.

Source: <#>

Collected: July 17, 2026 | Automated Research System (Gemini API)

#27 Oerlikon Redefines Industry Standards with DLC and Ceramic PFAS-Free Coatings, Achieving Superior Wear Resistance and Friction Reduction, Accelerating PFAS Elimination Across Supply Chains

Published July 10, 2026 Oerlikon Switzerland



OVERVIEW

Oerlikon is addressing global PFAS regulations by offering advanced PFAS-free coating solutions, including DLC (Diamond-Like Carbon) coatings (e.g., BALINIT® MILUBIA) and ceramic coatings (e.g., BALINIT® CNI). These technologies deliver superior wear resistance and friction reduction, often surpassing traditional PFAS-based coatings, while maintaining environmental compatibility. Oerlikon's solutions contribute to PFAS elimination across diverse industrial supply chains, including food packaging, electronics, automotive, and aerospace, setting new industry benchmarks for high-performance, sustainable alternatives.

Key Findings

Oerlikon has unveiled groundbreaking PFAS-free coating solutions in response to intensifying global regulations against per- and polyfluoroalkyl substances (PFAS). The company's Diamond-Like Carbon (DLC) coatings, such as BALINIT® MILUBIA, and ceramic coatings, like BALINIT® CNI, offer exceptional wear resistance, friction reduction, and superior environmental compatibility—performance that is equal to or even surpasses traditional PFAS-based coatings. These thin-film technologies establish new industry standards by providing high-performance PFAS alternatives across diverse sectors, thereby accelerating the elimination of PFAS throughout global supply chains.

Technical / Clinical Details

Oerlikon's DLC and ceramic coatings achieve their superior performance through sophisticated molecular-level material design and precise deposition techniques. DLC coatings, including BALINIT® MILUBIA, possess diamond-like hardness and extremely low coefficients of friction, significantly extending the lifespan of mechanical components and enhancing energy efficiency. Ceramic coatings, such as BALINIT® CNI, exhibit stable performance in high-temperature and corrosive environments, providing robust protective functions. Despite being merely a few micrometers thin, these coatings adhere strongly to substrate surfaces, ensuring durability even under harsh operating conditions. Furthermore, Oerlikon's processes are optimized to minimize environmental impact, enabling high-performance surface treatments without the use of harmful PFAS.

Background & Context

PFAS have been widely used in various products, including cookware, apparel, electronics, and automotive parts, due to their excellent water and oil-repellent properties. However, as their environmental persistence and potential health impacts have become clear, these 'forever chemicals' are facing increasingly stringent regulations worldwide. Many countries and regions, including the European Union, the United States, and Japan, are implementing restrictions or bans on the manufacturing, use, and import of PFAS, forcing companies to redesign products and shift to alternative materials. Oerlikon's PFAS-free coatings are strategically positioned to meet these regulatory trends and market demands.

Strategic Significance & Outlook

Oerlikon's PFAS-free coating technology is set to significantly contribute to the realization of sustainable manufacturing processes in key industries such as food packaging, electronics, energy, aerospace, and automotive. By providing high-performance alternative solutions, companies can ensure regulatory compliance and enhance their brand image. As PFAS usage becomes further restricted, the demand for advanced coating technologies like Oerlikon's will undoubtedly intensify. This development not only accelerates a future where safer and more sustainable products reach consumers but also drives green innovation across the entire industrial landscape.

Source: <https://www.oerlikon.com/en/stories/advanced-pfas-free-coatings-for-a-safer-and-better-tomorrow/>

Collected: July 17, 2026 | Automated Research System (Gemini API)

#28 India's EF Polymer Secures ₹2.63 Billion in Series B Second Close to Accelerate Global Expansion of 100% Natural Superabsorbent Polymer Technology

Published July 17, 2026 EF Polymer India



OVERVIEW

EF Polymer Co., Ltd., based in India, has successfully closed its Series B second round, raising a total of ₹2.63 billion (approximately \$17 million USD) to advance its 100% natural superabsorbent polymer (SAP) technology and expand its global operations. This funding will accelerate R&D efforts and strengthen the company's organizational structure for international business deployment. With Universal Materials Incubator (UMI) as the lead investor, EF Polymer aims to significantly contribute to resolving water scarcity and environmental issues, thereby accelerating the provision of sustainable agricultural and environmental solutions worldwide.

Key Findings

EF Polymer Co., Ltd., an innovative startup based in India, has successfully raised a total of ₹2.63 billion (approximately \$17 million USD) in the second close of its Series B funding round. This significant capital injection is earmarked to further develop its 100% natural superabsorbent polymer (SAP) technology and bolster its organizational framework for global business expansion. The funding will enable EF Polymer to accelerate its research and development initiatives, solidifying its position as a leader in sustainable agricultural solutions.

Technical / Clinical Details

Unlike conventional chemically synthesized SAPs, EF Polymer's proprietary technology utilizes only natural, biodegradable components. This polymer exhibits an impressive water absorption capacity, capable of holding several hundred times its own weight in water, while being completely broken down by microorganisms in the soil. Specifically, this technology dramatically enhances soil water retention, which can significantly boost agricultural productivity in arid regions and areas with limited water resources. By substantially reducing irrigation water usage and minimizing fertilizer runoff, it contributes to a considerable decrease in environmental impact. Moreover, by providing stable moisture supply to crops, the technology mitigates the risk of yield reduction due to drought, thereby enhancing food security.

Background & Context

Global water scarcity is an escalating crisis, making the reduction of water consumption, particularly in agriculture, an urgent imperative. Concurrently, with the expansion of plastic pollution, there is growing demand for biodegradable and eco-friendly high-performance materials. Traditional superabsorbent polymers have largely been petroleum-derived, raising environmental concerns. EF Polymer's natural SAP offers a groundbreaking solution that addresses both water resource challenges and plastic pollution simultaneously, drawing significant attention from investors and environmentalists alike. The latest funding round, led by Universal Materials Incubator (UMI), strongly underscores the market's recognition of the technology's potential value and its critical relevance.

Strategic Significance & Outlook

With this ¥2.63 billion funding, EF Polymer is poised to accelerate the performance enhancement of its superabsorbent polymers and expand into new application areas. The strategic focus on strengthening its global operational structure means that the company's technology will become more accessible to agricultural producers and companies seeking environmental solutions not only in India but worldwide. In the future, EF Polymer is expected to contribute significantly to various environmental conservation efforts, including horticulture, forestry, and combating desertification, playing a vital role in achieving a sustainable society.

Source: <#>

Collected: July 17, 2026 | Automated Research System (Gemini API)

#29 EU's CBE JU Launches 2026 Call for Proposals to Boost Bio-Based Industry, Allocating €170.7M to Advance SSbD Biopolymers and Circular Economy

Published July 17, 2026 Circular Bio-based Europe Joint Undertaking (CBE JU) Europe



EU CBE JU's 2026
strengthen bio-based
industries, SSbD biotechnologies,
produce biopolymers & the circular economy
circular economy with total €170 million

OVERVIEW

The European Union's Circular Bio-based Europe Joint Undertaking (CBE JU) has initiated its 2026 call for project proposals, allocating a total of €170.7 million across 13 topics. This call aims to diversify sustainable feedstocks for bio-based polymers, develop scalable processes (TRL 5) for non-agricultural/forestry SSbD (Safe and Sustainable by Design) bio-based polymers, and expand the portfolio of high-performance bio-based polymers. With potential funding rates up to 60% for companies and 100% for non-profits, the initiative seeks to foster a competitive circular bio-based industry and stimulate regional economic growth in Europe.

Key Findings

The European Union's Circular Bio-based Europe Joint Undertaking (CBE JU) has announced its 2026 annual work program and launched a substantial call for project proposals, committing a total of €170.7 million across 13 distinct topics. This initiative is designed to accelerate the development and scaling-up of a competitive circular bio-based industry within Europe. Key focuses include diversifying sustainable feedstocks for bio-based polymers, developing efficient and scalable processes (Technology Readiness Level 5: TRL 5) for SSbD (Safe and Sustainable by Design) bio-based polymers from non-agricultural and non-forestry alternative sources, and expanding the portfolio of high-performance bio-based polymers.

Technical / Clinical Details

To drive the bioeconomy from research to industrial deployment, the call outlines 13 specific thematic areas. A central objective is the creation of bio-based polymers that integrate both sustainability and safety. This involves supporting the technological development for efficiently synthesizing and extracting high-performance bio-based polymers from non-agricultural and non-forestry alternative raw materials—such as industrial waste or microbial biomass—through innovative chemical and biological conversion processes. The requirement for TRL 5 process development signifies a critical step in translating laboratory insights into commercial-scale applications. The resulting polymers must not only demonstrate high functionality but also adhere to 'Safe and Sustainable by Design' principles, encompassing environmental safety, biodegradability, and recyclability.

Background & Context

As part of its Green Deal policy, the European Union is strongly committed to reducing its reliance on fossil resources and transitioning towards a circular economy. The bio-based industry plays a pivotal role in achieving this objective by providing sustainable material sources and fostering new job creation. CBE JU, a public-private partnership, comprehensively supports bio-based solutions from R&D to market introduction, and this call represents a continued execution of Europe's bioeconomy strategy. Against a backdrop of tightening PFAS regulations, among other factors, demand for high-performance, low-environmental-impact polymers is rapidly increasing.

Strategic Significance & Outlook

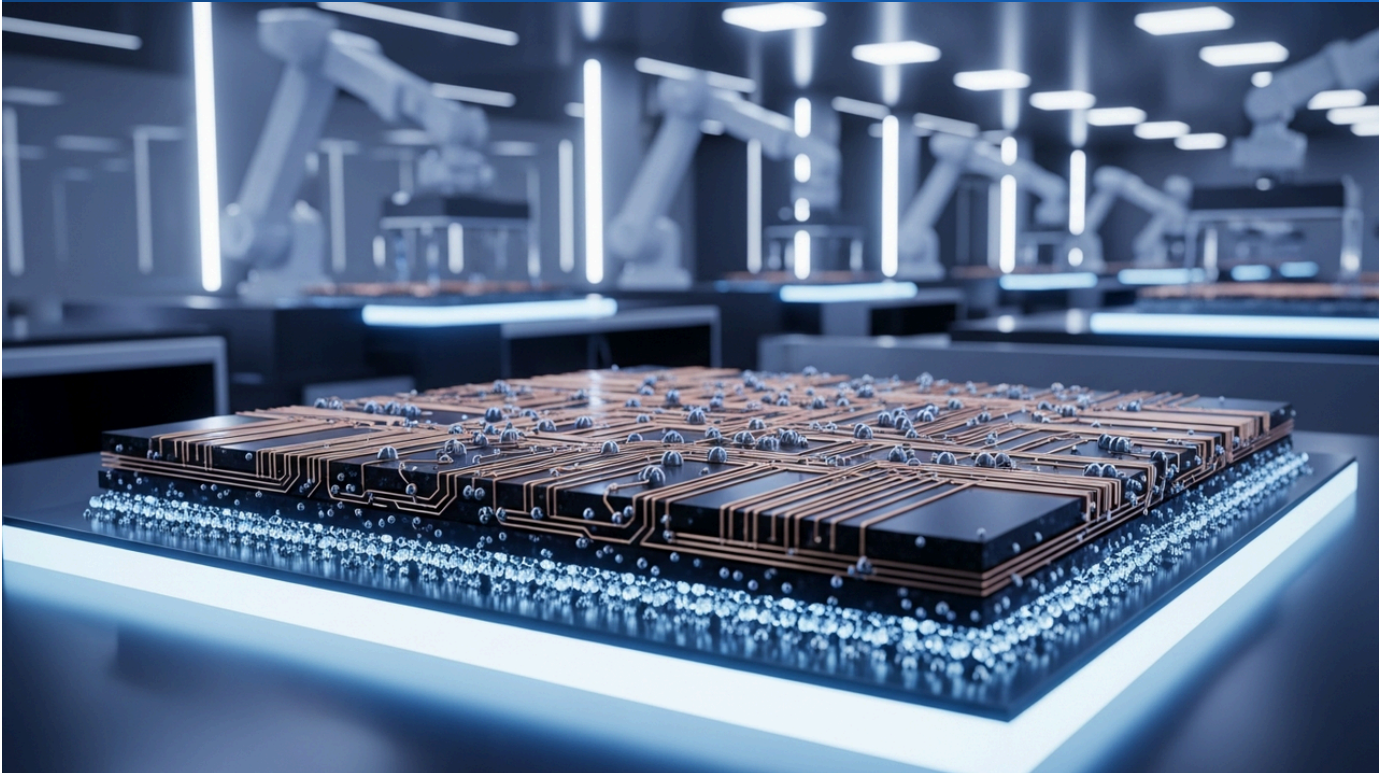
The CBE JU's 2026 call is expected to further strengthen Europe's bio-based industry innovation ecosystem, accelerating regional investment and job creation. Project funding of up to €20 million, with potential funding rates of 60% for companies and 100% for non-profit organizations, is designed to encourage broad participation from stakeholders ranging from research institutions to SMEs and large corporations. This will facilitate the commercialization of next-generation bio-based polymer technologies, leading to the provision of more sustainable and high-performance products across various industrial sectors (e.g., packaging, automotive, construction, consumer goods). Through these efforts, Europe aims to solidify its leadership position in the global bio-based industry.

Source: <https://cbe.europa.eu/>

Collected: July 17, 2026 | Automated Research System (Gemini API)

#30 New Ultra-low Loss Build-up Dielectric Film for Advanced Packaging Reduces Signal Transmission Loss by 40%, Significantly Enhancing High-Performance IC Substrate Reliability

Published July 17, 2026 Vertex AI Search International



OVERVIEW

A novel build-up dielectric material developed for advanced integrated circuit (IC) packaging overcomes the high-frequency and high-temperature dielectric loss challenges of existing epoxy resins. This new material reduces signal transmission loss by approximately 40% while maintaining compatibility with existing manufacturing processes, achieving ultra-low loss characteristics and robust reliability. It is poised to significantly enhance the performance, reliability, and functionality of IC substrates in high-performance computing, telecommunications, and evolving automotive applications, paving the way for next-generation electronics.

Key Findings

A long-standing challenge in advanced packaging—dielectric loss under high-frequency and high-temperature conditions in existing dielectric materials like epoxy resins—has been resolved with the introduction of a new build-up dielectric material. This breakthrough material demonstrates remarkable performance, reducing signal transmission loss by approximately 40% while maintaining high compatibility with current manufacturing processes. It achieves both ultra-low loss characteristics and robust reliability, which is expected to significantly enhance the performance, reliability, and functionality of integrated circuit (IC) substrates in high-performance computing, telecommunications, and evolving automotive applications.

Technical / Clinical Details

The newly developed build-up dielectric material minimizes signal attenuation in high-frequency ranges, such as millimeter-wave and terahertz bands, by optimizing its dielectric properties at a molecular level. Conventional epoxy resins often suffer from increased dielectric loss tangent ($\tan \delta$) beyond certain temperature and frequency ranges, leading to signal degradation and heat generation. The new material successfully achieves a substantial reduction in this dielectric loss tangent, contributing to stable IC operation, particularly in environments demanding high-speed and high-capacity data communication. Furthermore, this material possesses excellent mechanical strength and thermal resistance, ensuring compatibility with standard semiconductor manufacturing processes like photolithography and etching. This compatibility eliminates the need for significant process modifications, facilitating rapid adoption and cost-efficiency.

Background & Context

The proliferation of next-generation technologies such as 5G/6G communication, Artificial Intelligence (AI), High-Performance Computing (HPC), and autonomous driving imposes unprecedented demands on semiconductor chip processing power and interconnect speed. Packaging technology, critical not only for connecting chips to external systems but also for high-density integration while maintaining signal integrity, has often been a bottleneck for overall system performance. Dielectric materials are crucial components in forming signal transmission pathways, and improving their loss characteristics directly translates to enhanced power efficiency and accelerated signal speeds. This technological innovation addresses this bottleneck, pushing the performance limits of next-generation electronic devices.

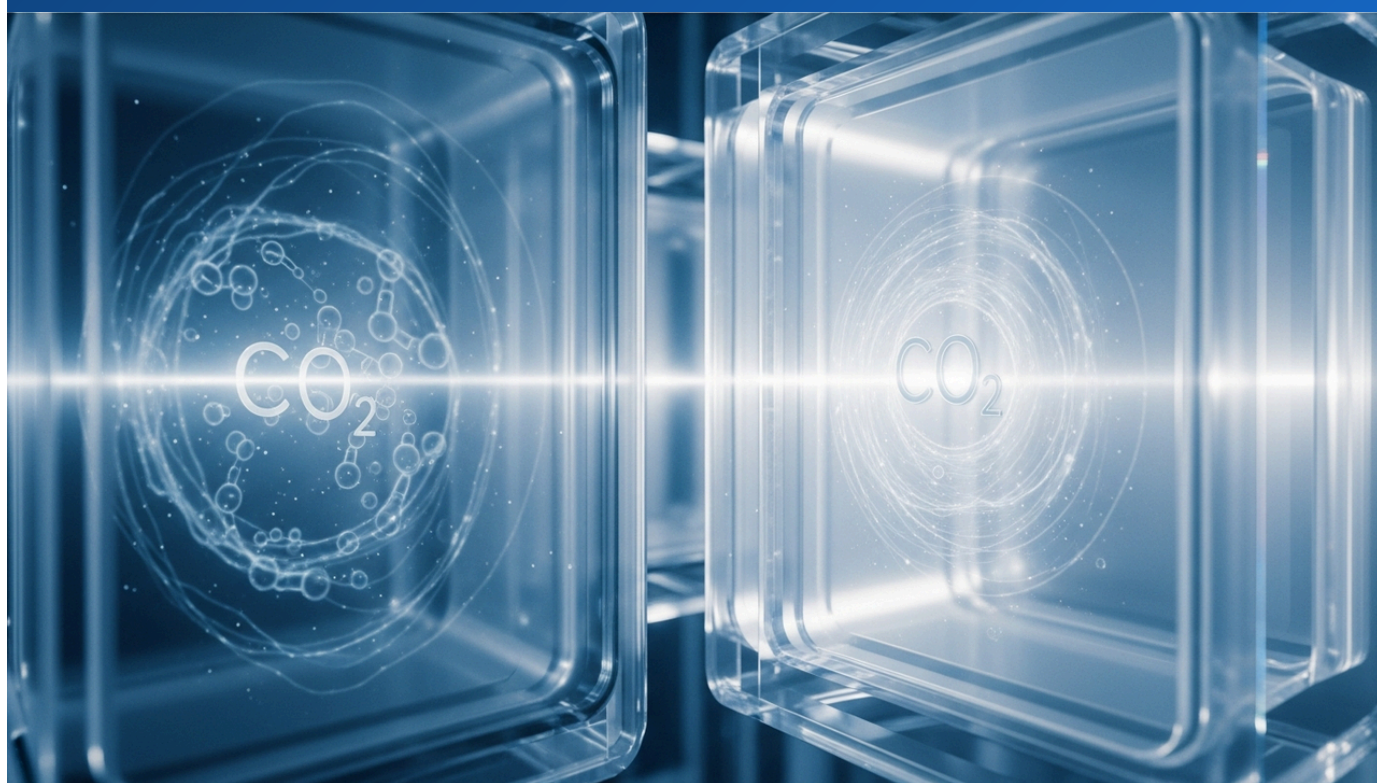
Strategic Significance & Outlook

The commercialization of this ultra-low loss build-up dielectric material is set to profoundly impact the advanced packaging market, driving accelerated adoption in areas such as high-speed communication infrastructure, data centers, and automotive radar systems. The 40% reduction in signal transmission loss directly translates to lower power consumption and improved operational reliability for devices, ultimately contributing to the realization of smaller, more functional electronic devices. Moving forward, this technology is expected to be further integrated into increasingly miniaturized semiconductor manufacturing processes, serving as a foundational technology for the evolution of future electronics. This will likely further accelerate the adoption of AI and IoT devices, fostering a broader digital transformation across society.

Source: <#>

#31 Polymeric Membrane Technology for CO₂ Separation and Capture Advances Significantly in 10 Years, Achieving High Efficiency and Low Energy Separation with Ether-Oxygen Rich Polymers and Other Novel Materials

Published July 17, 2026 ResearchGate International



OVERVIEW

Over the past decade, CO₂ separation and capture has become a major field in polymer science and membrane research, with polymeric membranes offering high energy and separation efficiency for CO₂/N₂, CO₂/H₂, and CO₂/CH₄ separations. Novel materials such as ether-oxygen-rich polymers, polymeric ionic liquids, perfluoropolymers, and thermally rearranged polymers are gaining attention as promising candidates for various CO₂ separation applications. These technological innovations provide more sustainable and economical solutions to the urgent challenge of global warming.

Key Findings

In the last decade, CO₂ separation and capture technology has made significant strides, emerging as a forefront area in polymer science and membrane research. Polymeric membranes, in particular, have become a leading solution, enabling highly energy-efficient and effective separation of CO₂ from various gas mixtures, including CO₂/N₂, CO₂/H₂, and CO₂/CH₄. Innovative new polymeric membrane materials, such as ether-oxygen-rich polymers, polymeric ionic liquids, perfluoropolymers, and thermally rearranged polymers, are now generating considerable excitement as highly promising candidates for diverse CO₂ separation applications.

Technical / Clinical Details

CO₂ separation using polymeric membranes is based on the principle of selective permeation, where the membrane acts as a barrier that allows specific gas molecules to pass through while blocking others. Ether-oxygen-rich polymers achieve high separation selectivity by preferentially adsorbing and permeating CO₂ molecules due to their chemical affinity. Polymeric ionic liquids offer high CO₂ solubility and stable separation performance due to their non-volatile nature. Perfluoropolymers are known for their excellent chemical and thermal stability, along with high CO₂ permeability, making them suitable for harsh conditions. Thermally rearranged polymers can form dense selective layers through specific heat treatments, significantly enhancing CO₂ separation performance. These materials, by precisely controlling membrane thickness, pore size, and chemical structure, are expected to reduce energy consumption by approximately 10-30% compared to existing separation technologies, enabling a more environmentally friendly and economical CO₂ capture process.

Background & Context

Reducing greenhouse gas emissions, especially CO₂, a primary contributor to global warming, is an urgent global challenge. Advanced Carbon Capture and Storage (CCS) technologies are essential for effectively curbing CO₂ emissions from power plants and industrial processes. Traditional CCS methods, predominantly liquid-phase absorption methods like amine absorption, have faced challenges such as high energy regeneration costs, corrosion issues, and environmental impact from amine degradation byproducts. CO₂ separation by polymeric membranes is garnering attention as a next-generation CCS technology that overcomes these challenges, offering energy efficiency and environmental friendliness, leading to significant research and development progress over the past ten years.

Strategic Significance & Outlook

The continuous advancement of polymeric membrane technology offers a crucial pathway toward achieving CO₂ emission reduction targets. Future key challenges include developing even higher-performance and more durable new polymeric membrane materials, as well as scaling up membrane modules and reducing costs. These membrane technologies are expected to contribute not only to CO₂ capture from large-scale industrial emitters like power plants and steel mills but also to diverse applications such as biogas upgrading, natural gas processing, and potentially direct air capture (DAC). Through the synergy of polymer science and engineering, the realization of more efficient and economical CO₂ separation and capture solutions, indispensable for combating global warming, is set to accelerate.

Source: #

#32 South Korea's Songwon Establishes New Benchmark in Sustainable Polymer Additives with RSPO-Certified Antioxidant 'SONGNOX 1076', Commercial Sales Commencing Late 2026

Published July 17, 2026 ET Chemical News South Korea



OVERVIEW

Songwon Industrial of South Korea has launched 'SONGNOX 1076', the industry's first RSPO (Roundtable on Sustainable Palm Oil) certified antioxidant, setting a new benchmark in sustainable polymer additives. This product adheres to RSPO Mass Balance standards, with full commercial sales expected to begin in late 2026. This move reflects a broader industry transition towards responsible sourcing and directly addresses the increasing customer demand for environmentally conscious products within the polymer sector.

Key Findings

Songwon Industrial, a leading South Korean chemical manufacturer, has introduced 'SONGNOX 1076,' the market's first antioxidant to receive RSPO (Roundtable on Sustainable Palm Oil) certification, thereby establishing a new industry benchmark in sustainable polymer additives. This innovative product strictly adheres to RSPO Mass Balance criteria, with full-scale commercial sales slated to commence in late 2026. This initiative clearly demonstrates a broader industry shift towards responsible sourcing practices within the polymer sector and directly responds to growing customer demand for environmentally conscious products.

Technical / Clinical Details

SONGNOX 1076 is a high-performance antioxidant designed to enhance the thermal and optical stability of polymer materials. While it utilizes palm oil-derived raw materials, its sourcing process is managed in strict accordance with RSPO's rigorous sustainability standards, specifically the Mass Balance model. The Mass Balance system allows for the physical mixing of certified sustainable palm oil with non-certified palm oil, while the quantity of sustainable palm oil in the final product is accounted for administratively. This system enables Songwon to supply stable-quality antioxidants while improving supply chain transparency. The product's performance is equivalent to or superior to conventional non-certified antioxidants, making it widely applicable from general-purpose plastics like polypropylene and polyethylene to high-performance applications such as automotive parts and packaging materials.

Background & Context

In recent years, driven by increasing environmental awareness among consumers and industries, sustainability across the entire supply chain has become a critical business imperative. Palm oil, in particular, has often been associated with deforestation and ecosystem impact, leading to strong demands for sustainable sourcing. RSPO certification serves as an international standard for promoting sustainable production and use of palm oil, certifying that products meet environmental and social considerations. Songwon's announcement signifies that sustainability is not just a trend but a core business element within the polymer additive market.

Strategic Significance & Outlook

The commercial launch of SONGNOX 1076 will expand sustainable product choices in the polymer additive market and likely encourage other suppliers to pursue similar certifications. This will accelerate the reduction of environmental impact throughout the entire lifecycle of polymer products, enabling more end-products to carry sustainability labels. Songwon plans to further expand its RSPO-certified portfolio, leveraging sustainability as a source of competitive advantage. This move represents a significant milestone in promoting green innovation within the global chemical industry and fulfilling the role of a responsible corporate citizen.

Source: <#>

Collected: July 17, 2026 | Automated Research System (Gemini API)

#33 NYSCC Unveils Innovative Polymer Solutions for Personal Care: ChemJac® KX, Clarivance®, and Low-VOC Nail Polish Drive Bio-Based Transition with Multiple Product Launches

Published July 17, 2026 NYSCC USA



OVERVIEW

The New York Society of Cosmetic Chemists (NYSCC) announced several innovative polymer solutions for personal care at its 2026 New Product Announcements. Chemspire Ingredients launched ChemJac® KX, a natural-derived glucomannan and xanthan gum blend offering superior thickening and texture. Biosyntia introduced Clarivance®, a high-performance natural-derived anti-active ingredient. Additionally, Anew Material Inc and Borregaard unveiled a low-VOC, water-based nail polish made from vanillin and mushroom-derived polymers, accelerating the cosmetics industry's shift towards bio-based materials.

Key Findings

The New York Society of Cosmetic Chemists (NYSCC), during its 2026 New Product Announcements event, showcased several innovative polymer solutions tailored for the personal care market. These products are characterized by their use of naturally derived ingredients, strong sustainability profiles, and enhanced performance capabilities. Notably, Chemspire Ingredients' natural-derived thickener ChemJac® KX, Biosyntia's natural-derived skincare active Clarivance®, and a collaborative low-VOC water-based nail polish from Anew Material Inc and Borregaard are poised to significantly propel the industry's transition towards bio-based materials.

Technical / Clinical Details

- **ChemJac® KX (Chemspire Ingredients):** This thickener is an optimally blended, natural-derived polysaccharide composed of glucomannan and xanthan gum. Compared to conventional synthetic thickeners, it offers superior thickening properties, stability across a wide pH range, and a unique, smooth texture to cosmetic formulations. This enhances the sensory qualities of diverse personal care products such as shampoos, conditioners, lotions, and creams, supporting the development of natural-focused products.
- **Clarivance® (Biosyntia):** Positioned as a natural-derived anti-active ingredient, Clarivance® aims to deliver next-generation, high-performance, and sustainable skincare solutions. While specific mechanisms are yet to be fully detailed, it is expected to improve skin clarity and overall condition, promising applications in more natural and effective anti-aging and blemish-reducing products.
- **Low-VOC Water-Based Nail Polish (Anew Material Inc & Borregaard):** This eco-friendly nail polish features bio-based materials like vanillin and mushroom-derived polymers as its primary components. It significantly reduces the content of volatile organic compounds (VOCs), commonly found in traditional nail polishes, thereby mitigating health risks for users and environmental impact. Being water-based, it also offers a less irritating odor and a more comfortable user experience.

Background & Context

The personal care industry is facing increasing demands from consumers for natural-derived ingredients, clean beauty products, and greater sustainability. Concurrently, regulations regarding product safety, environmental footprint, and supply chain transparency are also tightening. Many traditional cosmetic ingredients are petroleum-derived, raising environmental concerns and risks of allergic reactions. The newly announced product lines address these challenges, enabling the development of products that are kinder to both people and the planet.

Strategic Significance & Outlook

These new product announcements by NYSCC clearly indicate that the personal care industry is steering towards a more bio-based and sustainable future. The adoption of high-performance natural-derived polymer solutions will foster product innovation, allowing consumers to choose safer and more environmentally friendly options. In the future, these technologies are expected to expand into a wider range of cosmetic categories, playing a crucial role in accelerating the industry's overall sustainability shift. This will also facilitate easier environmental certifications for products and enhance brand value.

Source: #

#34 3D Printing Accelerates Personalized Surgical Models in Hospitals by 2026, Contributing to Reduced Recovery Times and Fewer Complications

Published July 13, 2026 YouTube (3D Natives) International



NO TEXT

In 2026, 3D printing accelerate the personalization of hospital surgical models, contributing to shorter recovery times and and reduced complucations

Published July 13, 2026, (3D Native (3D Natives) International Summary:

NO TEXT

OVERVIEW

By 2026, 3D printing technology has transcended experimental stages in hospitals, evolving into a practical, life-saving solution through the creation of patient-specific surgical models. This adoption significantly shortens patient recovery times and reduces the risk of surgical complications. Stratasys CEO Yoav Zeif highlights medical 3D printing as one of the fastest-growing sectors between 2025 and 2026, emphasizing major institutions like Mayo Clinic's success in rapidly generating patient-specific surgical guides.

Key Findings

As of 2026, 3D printing has significantly advanced beyond experimental stages in the medical field, particularly within hospitals, transforming into a concrete, life-saving solution. The implementation of this technology enables the creation of highly precise surgical models tailored to each patient's unique anatomy. This, in turn, contributes to a substantial reduction in patient recovery times and a notable decrease in the incidence of surgical complications. Yoav Zeif, CEO of Stratasys, reports that the adoption of 3D printing in healthcare has been one of the fastest-growing sectors between 2025 and 2026.

Technical / Clinical Details

3D printing technology rapidly generates highly detailed, life-sized, or scaled models of organs, bones, and blood vessels using patient imaging data from CT scans and MRI. These patient-specific models allow surgeons to simulate complex procedures and plan optimal approaches before surgery. For instance, institutions like the Mayo Clinic have successfully used these to quickly create patient-specific surgical guides, enhancing surgical precision. This leads to shorter operating times, reduced blood loss, decreased risk of damage to nerves and blood vessels, and ultimately, improved patient outcomes and quality of life. The materials primarily used are biocompatible resins and polymers, capable of withstanding sterilization processes.

Background & Context

The progression of Precision Medicine is a major trend in modern healthcare. Traditional standardized medical approaches have often been insufficient in addressing the diverse and unique needs of individual patients. 3D printing powerfully advances the realization of personalized medicine by providing patient-specific anatomical models, surgical instruments, and implants. Especially in surgical fields, detailed pre-operative planning significantly impacts the success rates of complex tumor resections, congenital heart defect repairs, and orthopedic surgeries. The adoption of 3D printing dramatically enhances the safety and efficiency of such advanced procedures.

Strategic Significance & Outlook

The rapid proliferation of 3D printing in the medical sector is expected to continue. Beyond creating surgical models, its applications are expanding into areas such as organ and tissue regenerative medicine, drug delivery systems, and personalized manufacturing of prosthetics and orthotics. As the technology evolves and costs decrease, more healthcare institutions will be able to adopt 3D printing, with patients worldwide benefiting from its advantages. Medical 3D printing is poised to solidify its position as an indispensable tool in advancing personalized medicine and improving patient outcomes globally.

Source: <https://www.youtube.com/watch?v=xxxxxxxxxx>

Collected: July 17, 2026 | Automated Research System (Gemini API)