

Recyclable Thermoset Composites Market Forecasts to 2032 – Global Analysis By Resin Type (Epoxy, Unsaturated Polyester (UPR), Polyurethane, Phenolic, Vinyl Ester and Other Resin Types), Recycling Technology, Fiber Type, Technology, Application and By Geography

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Abstracts

According to Statistics MRC, the Global Recyclable Thermoset Composites Market is accounted for \$672.78 million in 2025 and is expected to reach \$1116.19 million by 2032 growing at a CAGR of 7.5% during the forecast period. Recyclable thermoset composites introduce a new era of eco-efficient high-performance materials by overcoming the major drawback of standard thermosets, which permanently cure and cannot be reshaped. These innovative materials use dynamic chemical networks or reversible cross-links that allow thermosets to be recovered and reused after product end-life. They are increasingly chosen in wind turbine blades, automotive parts, aircraft structures, and building components to minimize waste and reduce reliance on virgin resources. Despite being recyclable, they retain strength, heat tolerance, and long-term durability similar to traditional options. Their adoption promotes circular manufacturing systems and makes sustainability achievable in demanding industrial environments.

According to the EURECOMP project summary, “solvolysis allows to remove up to 90% of the resin, to retrieve a liquid containing potentially interesting chemicals, and to recover glass fibres with a satisfactory aspect” from fibre-reinforced thermoset composites.

Market Dynamics:

Driver:

Rising demand for sustainable and circular materials

The shift toward environmentally responsible production strongly boosts the recyclable thermoset composites market. Companies are under growing pressure to reduce waste and improve recyclability, which conventional thermosets cannot offer due to permanent curing. Recyclable types overcome this limitation using dynamic chemical bonds that enable reprocessing and material reuse. Sectors such as automotive, wind power, aerospace, consumer electronics, and construction are adopting these composites to lower disposal volumes and conserve raw materials. Government sustainability rules, carbon-reduction targets, and landfill reduction initiatives further accelerate adoption. By providing durability with end-of-life recovery, these composites support circular economy principles and help industries achieve environmental goals.

Restraint:

High production costs and limited large-scale manufacturing

The recyclable thermoset composites market struggles with high manufacturing expenses, making it difficult to compete with traditional thermosets. Producing these materials requires advanced resin chemistries, unique catalysts, specialized machinery, and recycling infrastructure, all of which increase overall production costs. Many factories are not equipped to handle recyclable thermoset systems, forcing companies to invest heavily in equipment upgrades and process adjustments. Smaller manufacturers are hesitant to adopt them due to financial constraints and uncertain return on investment. Limited raw material suppliers also keep costs elevated. Until large-scale production becomes common and expense levels decline, cost challenges will continue affecting market expansion.

Opportunity:

Growing use in wind energy and large-scale infrastructure

Renewable energy and large infrastructure development provide substantial growth prospects for recyclable thermoset composites. Conventional wind blades and structural components generate disposal challenges after retirement, but recyclable thermosets enable resin recovery and material reuse. With global investments in wind power and environmentally responsible construction, industries are searching for durable,

lightweight, and recyclable alternatives. These composites offer weather resistance, structural toughness, and long-term reliability while minimizing waste. Sustainable building programs and circular-economy policies further strengthen adoption. As wind farms expand and new infrastructure projects prioritize eco-friendly materials, recyclable thermosets are well-positioned to replace conventional systems and support greener engineering practices.

Threat:

Competition from established thermoplastics and bio-composites

The market for recyclable thermoset composites is threatened by the strong position of recyclable thermoplastics and bio-composites. Thermoplastics are easier to reprocess since they soften under heat and can be reused without complex chemical steps, making them cost-effective and well-understood. Bio-composites attract eco-oriented manufacturers because they utilize natural fillers and deliver lower environmental impact. These competing materials benefit from established supply networks, recycling facilities, and engineering standards, giving them a commercial advantage. If recyclable thermosets fail to demonstrate superior performance or economic benefits, customers may continue selecting thermoplastics or bio-composites that already support large-scale sustainable manufacturing.

Covid-19 Impact:

Covid-19 influenced the recyclable thermoset composites market in both negative and positive ways. Lockdowns and transportation restrictions slowed the supply of resins, curing agents, and recycling additives, increasing production costs and causing delivery delays. Major end-use sectors, including automotive and aviation, experienced shutdowns or reduced manufacturing, temporarily lowering material consumption. At the same time, the pandemic strengthened global interest in circular materials and waste reduction strategies, encouraging research into recyclable thermosets. Wind power installations continued to advance, creating steady composite demand. As industries recover and governments prioritize sustainability, adoption of recyclable thermoset solutions is expected to grow more rapidly in the post-pandemic period.

The epoxy segment is expected to be the largest during the forecast period

The epoxy segment is expected to account for the largest market share during the forecast period due to its excellent strength, toughness, and environmental resistance,

combined with compatibility for chemical recycling. It is widely used across wind turbine blades, aircraft structures, automotive parts, electronics, and marine components because it offers dependable performance and long service life. Recyclable epoxy formulations allow the resin network to be broken down and reprocessed, helping industries recycle high-value parts instead of disposing of them. Its reliable adhesion, heat stability, and fatigue resistance give it an advantage in applications that require long-term safety. With growing sustainability commitments, epoxy-based recyclable thermosets are favored for meeting circular production goals.

The chemical recycling segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the chemical recycling segment is predicted to witness the highest growth rate due to its ability to chemically unlock cured resin bonds and restore raw materials. Unlike mechanical methods that create lower-grade recycled products, chemical techniques recover fibers and resins with near-original performance characteristics. Technologies such as solvent-based processing, thermal depolymerization, and catalyst-assisted reactions help convert cured composites into reusable ingredients for new components. High-performance industries adopt chemical recycling to reduce waste and support circular economy targets. As environmental standards increase and companies seek greener manufacturing solutions, chemical recycling becomes an attractive long-term solution for true closed-loop recycling of thermoset materials.

Region with largest share:

During the forecast period, the Europe region is expected to hold the largest market share because of its advanced sustainability framework and strong commitment to circular manufacturing. The region's automotive, aerospace, marine, and wind power sectors actively shift toward recyclable materials to comply with environmental standards and industry certifications. Government initiatives promoting waste minimization, eco-design, and green technology investment further encourage companies to adopt recyclable thermosets in high-performance components. Collaboration between universities, manufacturers, and composite processors positions Europe as a major center for scalable recycling solutions, ensuring the region remains ahead in industrial deployment of recyclable thermoset technologies.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR due to booming production sectors and increasing focus on sustainable engineering. Automotive, wind energy, aerospace components, and marine parts manufacturers are adopting recyclable thermosets to meet environmental expectations and reduce end-of-life waste. Government-backed clean energy initiatives and growing investment in lightweight materials further stimulate market expansion. Research institutions and composite producers in the region are working on affordable resin chemistry and efficient chemical recycling systems, making commercial adoption easier. With stronger sustainability policies, infrastructure development, and circular manufacturing goals, Asia-Pacific continues progressing as the fastest-growing market for recyclable thermoset materials.

Key players in the market

Some of the key players in Recyclable Thermoset Composites Market include Connora Technologies, Covestro, Arkema, Aditya Birla Chemicals, BASF, Huntsman Corporation, Evonik Industries, SABIC, Adesso Advanced Materials Inc., Mobius Technologies GmbH, Northstar Recycling Company, Inc., Gr3n Recycling Inc, The Dow Chemical Company, EcoActiv Pty Ltd and Mallinda, LLC.

Key Developments:

In August 2025, Covestro has signed an agreement with Vencorex Holding SAS, a subsidiary of Thai chemical company PTT Global Chemical Public Company Limited, to acquire two legal entities with stand-alone production sites for HDI derivatives in Rayong, Thailand and Freeport, USA. The legal entities and sites were formerly part of the French aliphatics specialist Vencorex.

In June 2025, Aditya Birla Group expands US footprint with acquisition of Cargill's chemical facility. The agreement was finalised through Aditya Birla Chemicals (USA) Inc., a subsidiary of Aditya Birla Chemicals (Thailand) Ltd, further expanding the Indian conglomerate's diverse \$15 billion US portfolio that includes Novelis and Birla Carbon.

In March 2025, Arkema signs a new Biomethane supply agreement with ENGIE. Arkema continues its transformation towards a more sustainable industrial model with the signing of a new, eight-year contract with ENGIE for the supply of biomethane for several Bostik sites in France.

Resin Types Covered:

Epoxy

Unsaturated Polyester (UPR)

Polyurethane

Phenolic

Vinyl Ester

Other Resin Types

Recycling Technologies Covered:

Mechanical Recycling

Chemical Recycling

Energy Recovery

Fiber Types Covered:

Glass Fiber

Carbon Fiber

Aramid Fiber

Natural Fiber

Applications Covered:

Automotive & Transportation

Aerospace & Defense

Construction & Infrastructure

Electrical & Electronics

Renewable Energy

Marine

Consumer Goods

End Users Covered:

OEMs

Tier 1 & Tier 2 Suppliers

Composite Part Manufacturers

Recycling & Recovery Facilities

Regions Covered:

North America

US

Canada

Mexico

Europe

Germany

UK

Italy

France

Spain

Rest of Europe

Asia Pacific

Japan

China

India

Australia

New Zealand

South Korea

Rest of Asia Pacific

South America

Argentina

Brazil

Chile

Rest of South America

Middle East & Africa

Saudi Arabia

UAE

Qatar

South Africa

Rest of Middle East & Africa

What our report offers:

- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2024, 2025, 2026, 2028, and 2032
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments
- Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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Note: Tables for North America, Europe, APAC, South America, and Middle East & Africa Regions are also represented in the same manner as above.

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