

Recyclable Thermosets Market Forecasts to 2034 – Global Analysis By Resin Type (Epoxy Resins, Polyurethane Resins, Unsaturated Polyester Resins, Phenolic Resins, Vitrimers, Covalent Adaptable Networks, and Bio-Based Thermosets), Recycling Method, Form, Technology, Application, End User, and By Geography

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Abstracts

According to Statistics MRC, the Global Recyclable Thermosets Market is accounted for \$4.6 billion in 2026 and is expected to reach \$12.3 billion by 2034 growing at a CAGR of 13.0% during the forecast period. Recyclable thermosets are a new generation of polymer materials that combine the excellent thermal stability, chemical resistance, and mechanical performance of traditional thermoset plastics with the ability to be chemically or thermally recycled at the end of their service life. Achieved through dynamic covalent chemistry in vitrimers, covalent adaptable networks, and similar material architectures, these polymers allow reprocessing and remolding without permanent degradation. Recyclable thermosets are enabling more sustainable composites and resins for applications in aerospace, automotive, wind energy, and electronics where conventional thermosets create significant end-of-life waste challenges.

Market Dynamics:

Driver:

Growing regulatory pressure to reduce polymer waste

Escalating regulatory pressure from governments and multilateral bodies on plastic waste management, landfill restrictions, and circular economy compliance is creating direct incentives for manufacturers using thermoset composites to adopt recyclable material formulations that satisfy end-of-life recovery requirements. EU directives on waste from electrical equipment, end-of-life vehicles, and construction products, combined with carbon footprint reporting requirements for industrial materials, are making recyclable thermosets an increasingly necessary procurement choice.

Restraint:

Higher material cost versus conventional thermosets

Recyclable thermoset resins and composite systems incorporating dynamic covalent chemistry, vitrimer networks, or other reversible bonding mechanisms typically command a significant price premium over conventional thermoset epoxies, polyesters, and polyurethanes produced through established industrial processes at scale. This cost differential reflects the complexity of sustainable chemistry development, smaller production volumes, and less mature manufacturing processes for recyclable formulations. For cost-sensitive applications including commodity composite structures, standard electrical laminates, and construction materials, the price premium remains.

Opportunity:

Expanding applications in sustainable composites

Fiber-reinforced composite materials including glass fiber and carbon fiber thermoset composites are used extensively in wind turbine blades, automotive structural components, aircraft structures, and sporting goods, generating substantial volumes of end-of-life composite waste currently landfilled or incinerated with limited material recovery. The development and commercialization of recyclable thermoset systems enabling economically viable fiber and resin recovery at end of life addresses a critical sustainability challenge in high-volume composite applications.

Threat:

Competitive pressure from alternative sustainable materials

Recyclable thermosets compete not only with conventional non-recyclable thermosets but also with a range of alternative sustainable material approaches including

thermoplastic composites, bio-based polymers, natural fiber composites, and metals that can be recycled through established industrial processes. Thermoplastic composites in particular offer recyclability through remelting and reforming without specialized chemical recycling infrastructure and are gaining traction in automotive, consumer electronics, and sporting goods applications. If thermoplastic composites achieve performance and cost parity with thermoset alternatives.

Covid-19 Impact:

The COVID-19 pandemic moderately disrupted the recyclable thermosets market, primarily through supply chain bottlenecks, raw material shortages, and temporary shutdowns of composite manufacturing facilities. Aerospace and automotive production slowdowns constrained short-term demand, impacting revenue realization across key segments. However, the post-pandemic recovery phase witnessed renewed emphasis on sustainable materials and resilient supply networks. Stimulus-driven infrastructure spending and green transition initiatives subsequently revitalized procurement cycles, positioning recyclable thermosets as strategic materials in long-term sustainability and decarbonization roadmaps.

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

The epoxy resins segment holds the largest share in the recyclable thermosets market. Epoxy-based formulations are the most widely used thermoset matrix in high-performance composite structures for aerospace, wind turbine blades, automotive, and electronics applications. The development of recyclable epoxy systems with dynamic covalent networks is receiving significant investment as a pathway to address end-of-life challenges in composite materials. The segment's established commercial scale and critical role across major industries sustain its dominant market position.

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

The chemical recycling segment is expected to register the highest CAGR in the recyclable thermosets market. Chemical recycling methods including solvolysis and depolymerization enable recovery of high-quality monomers and reinforcement fibers from thermoset composites, delivering superior material recovery value compared to mechanical or thermal approaches. Growing investment in circular economy infrastructure, increasing regulatory mandates for composite material recovery, and expanding commercial interest in closed-loop composite manufacturing are driving

chemical recycling to the highest growth rate in the market.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share owing to strong adoption of advanced composite materials across aerospace, automotive, and wind energy verticals. Robust R&D investments in sustainable polymer chemistry and circular economy frameworks have accelerated commercialization of recyclable thermoset resins. In addition, stringent environmental compliance standards and corporate ESG commitments are stimulating demand for high-performance, reprocessable materials. The presence of established resin manufacturers and technology innovators further consolidates regional revenue concentration and supply chain maturity.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR, due to rapid industrialization and expanding end-use manufacturing clusters in China, Japan, South Korea, and India. Escalating infrastructure development and electric vehicle production are amplifying demand for lightweight, durable composites. Government-backed sustainability mandates and increasing foreign direct investment in advanced materials production are further strengthening market penetration. Moreover, cost-competitive manufacturing ecosystems and growing domestic consumption are creating favorable conditions for accelerated capacity expansion.

Key players in the market

Some of the key players in Recyclable Thermosets Market include BASF SE, Dow Inc., DuPont de Nemours, Inc., Evonik Industries AG, Arkema S.A., Solvay S.A., Huntsman Corporation, SABIC, Celanese Corporation, LG Chem Ltd., Mitsubishi Chemical Group Corporation, Toray Industries, Inc., DSM-Firmenich AG, Wacker Chemie AG, Asahi Kasei Corporation, Sumitomo Chemical Co., Ltd., Covestro AG, and 3M Company.

Key Developments:

In February 2026, Evonik Industries AG announced recyclable thermoset resins for 3D printing. These resins combine high mechanical strength with recyclability, advancing additive manufacturing technologies while promoting circular economy practices.

In January 2026, BASF SE introduced recyclable thermoset composites for marine applications. These materials enhance corrosion resistance and durability in harsh environments while enabling recycling, supporting sustainability in shipbuilding and offshore industries.

In April 2025, Covestro AG launched recyclable thermoset polyurethane coatings for industrial applications. These coatings deliver high resistance and durability while enabling recycling, aligning with industry demand for eco-friendly protective solutions.

Resin Types Covered:

Epoxy Resins

Polyurethane Resins

Unsaturated Polyester Resins

Phenolic Resins

Vitrimers

Covalent Adaptable Networks

Bio-Based Thermosets

Recycling Methods Covered:

Chemical Recycling

Mechanical Recycling

Thermal Recycling

Solvolytic

Depolymerization

Forms Covered:

Composites

Adhesives

Coatings

Foams

Molded Components

Technologies Covered:

Resin Transfer Molding (RTM)

Compression Molding

Additive Manufacturing

Pultrusion

Injection Molding

End Users Covered:

Automotive OEMs

Aerospace Manufacturers

Wind Turbine Manufacturers

Construction Companies

Electronics Manufacturers

Regions Covered:**North America**

United States

Canada

Mexico

Europe

United Kingdom

Germany

France

Italy

Spain

Netherlands

Belgium

Sweden

Switzerland

Poland

Rest of Europe

Asia Pacific

China

Japan

India

South Korea

Australia

Indonesia

Thailand

Malaysia

Singapore

Vietnam

Rest of Asia Pacific

South America

Brazil

Argentina

Colombia

Chile

Peru

Rest of South America

Rest of the World (RoW)

Middle East

Saudi Arabia

United Arab Emirates

Qatar

Israel

Rest of Middle East

Africa

South Africa

Egypt

Morocco

Rest of 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 2023, 2024, 2025, 2026, 2027, 2028, 2030, 2032 and 2034
- 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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