

Epoxy Resins

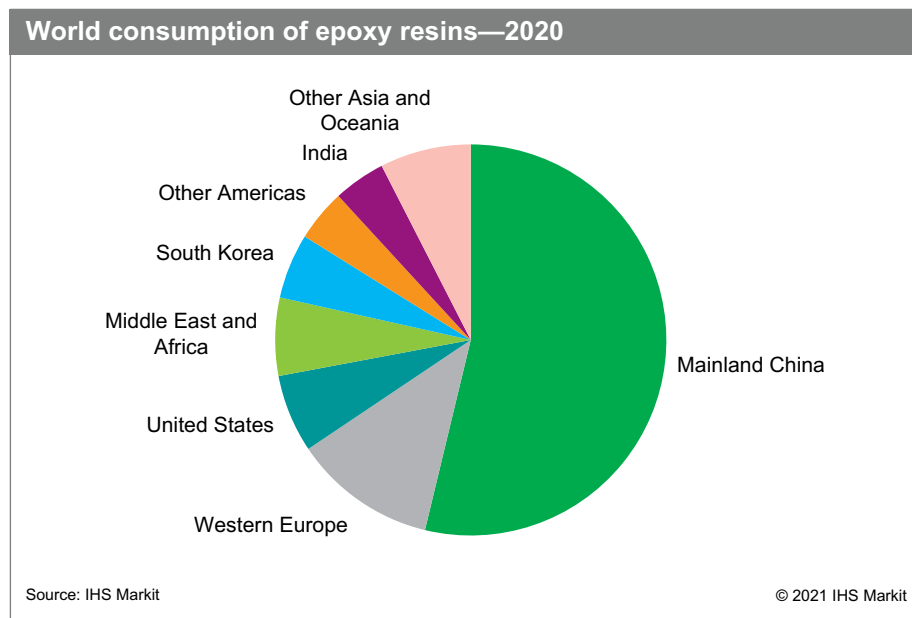
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Abstract

Epoxy resins are thermosetting resins, meaning that they do not develop useful properties until they are reacted with suitable cross-linking agents. There is a limited amount of high-molecular-weight epoxy resin that forms useful properties as a thermoplastic coating. Epoxy resins can be used in various forms, including as liquids (liquid epoxy resins [LERs]) and solids, as well as dissolved in solvents, such as water and organic solvents. Production and consumption data are usually expressed as a combination of all resin forms from basic producers like Olin, Hexion, and Huntsman.

Producers of epoxies also sell basic forms of resin (mainly LER) to customers such as coatings producers that modify them to achieve certain properties. The leading market for epoxies is coatings, which account for 45–50% of consumption. Other large markets are electrical/electronics, adhesives, construction, and composites. About 80% of epoxies are considered commodities; the other 20% are specialties (e.g., industrial adhesives for automotive and composites for aerospace and wind turbine blades).

The following chart shows world consumption of epoxy resins:



Growth markets for epoxies include

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- Composites, produced by the carbon fiber reinforcement of plastics like epoxy resins (CFRP epoxies). The principal uses are in aircraft, wind turbine blades, sporting goods, pressure vessels, and automotive. These superstrong, lightweight CFRP epoxies are used to make part of the structure of Boeing 787 Dreamliners and Airbus A350 models, as well as other aircraft. Use in offshore wind turbine blades is expected to grow by 10% or more in the next few years. The pressure vessel market is expanding as a result of greater use of compressed natural gas for vehicles. In automotive, BMW currently uses CFRP epoxy for some parts used in its 3 and 7 series models, and adoption by other brands is expected in the near future.
- Adhesives, which are being used in greater quantities in automotive assembly operations to bond dissimilar materials of construction (such as steel, plastics, and aluminum), which are difficult to bond with mechanical fasteners.

The three leading Western producers of epoxy resins are Olin, Hexion, and Huntsman, which have dominant positions in North America and Western Europe, but much less interest in Asia. Starting in 2010, there was considerable expansion of capacity in mainland China and South Korea, which led to falling prices and poor profitability, especially in the commodity-based resins business. As a result, Dow Chemical divested its base epoxy interests in mid-2015. In addition, Huntsman and Hexion recently closed some of their plants in Europe and North America.

The specialty epoxies business is currently the more attractive portion of the industry since there are higher barriers to entry and requirements, like formulating skills and technical support, are highly valued.

Global epoxy resin demand is forecast to grow at an average annual rate of 3.4% during 2021–26. The fastest-growing markets will continue to be in Asia.

For more detailed information, see the table of contents, shown below.

IHS Markit's Chemical Economics Handbook – *Epoxy Resins* is the comprehensive and trusted guide for anyone seeking information on this industry. This latest report details global and regional information, including



Global summary;
regional coverage



Producers with
annual capacities
and plant sites



Production figures
and trends



Consumption and
forecasts by end use
application



Manufacturing
processes and
environmental issues



Trade – imports
and exports

Key benefits

IHS Markit's Chemical Economics Handbook – *Epoxy Resins* has been compiled using primary interviews with key suppliers and organizations, and leading representatives from the industry in combination with IHS Markit's unparalleled access to upstream and downstream market intelligence and expert insights into industry dynamics, trade, and economics.

This report can help you

- Identify trends and driving forces influencing chemical markets

- Forecast and plan for future demand
- Understand the impact of competing materials
- Identify and evaluate potential customers and competitors
- Evaluate producers
- Track changing prices and trade movements
- Analyze the impact of feedstocks, regulations, and other factors on chemical profitability

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