

# Global Liquid Encapsulation Market Size Study & Forecast, by Material (Epoxy Resin and Epoxy-Modified Resin), by Product (Integrated Circuits, Optoelectronics, and Sensors), by Application (Automotive, Telecommunication, and Electronics) and Regional Forecasts 2025–2035

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## Abstracts

The Global Liquid Encapsulation Market is valued at approximately USD 8.5 billion in 2024 and is anticipated to grow at a CAGR of more than 5.5% during the forecast period 2025–2035. Liquid encapsulation refers to the process of protecting delicate semiconductor components such as integrated circuits, sensors, and optoelectronic devices by surrounding them with a protective resin material in liquid form. Once cured, the encapsulant provides insulation, structural integrity, and moisture resistance, ensuring the longevity and reliability of electronic components. The growing complexity of electronic devices, the miniaturization trend across the semiconductor industry, and the increasing adoption of advanced packaging technologies are major drivers of the liquid encapsulation market. Moreover, as the world becomes increasingly dependent on digital ecosystems—spanning from connected vehicles to high-speed communication devices—the demand for encapsulated microelectronics continues to surge.

The proliferation of automotive electronics, high-performance computing, and 5G telecommunication infrastructure has amplified the need for high-reliability encapsulation materials. Manufacturers are increasingly focusing on developing resin systems that can withstand extreme thermal and mechanical stress while maintaining optimal electrical insulation. According to SEMI, global semiconductor manufacturing capacity is projected to grow at record pace through 2030, with chipmakers investing heavily in advanced packaging technologies. Additionally, the surge in demand for

consumer electronics, electric vehicles, and IoT-enabled devices further amplifies the use of liquid encapsulants for ensuring long-term performance and protection. However, the industry faces challenges such as fluctuating raw material prices and environmental concerns associated with epoxy resin production. Nevertheless, ongoing innovations in bio-based and epoxy-modified resin systems are expected to mitigate these restraints and create substantial opportunities for market expansion during 2025–2035.

The detailed segments and sub-segments included in the report are:

By Material:

Epoxy Resin

Epoxy-Modified Resin

By Product:

Integrated Circuits

Optoelectronics

Sensors

By Application:

Automotive

Telecommunication

Electronics

By Region:

North America

U.S.

Canada

Europe

UK

Germany

France

Spain

Italy

Rest of Europe

Asia Pacific

China

India

Japan

Australia

South Korea

Rest of Asia Pacific

Latin America

Brazil

Mexico

Middle East & Africa

UAE

Saudi Arabia

South Africa

Rest of Middle East & Africa

Among the materials, Epoxy Resin is expected to dominate the liquid encapsulation market throughout the forecast period. Epoxy resins have long been the cornerstone material for encapsulation due to their superior adhesion, mechanical strength, and electrical insulation properties. Their cost-effectiveness, ease of processing, and adaptability to diverse operating environments make them indispensable across high-volume electronics manufacturing. Moreover, epoxy resins are widely used in the encapsulation of semiconductor chips and sensors, where durability and precision are critical. However, Epoxy-Modified Resins are emerging as the fastest-growing sub-segment, driven by the increasing need for high-temperature performance, enhanced moisture resistance, and low ionic contamination. This evolution reflects a gradual industry shift toward advanced formulations tailored for next-generation electronics.

In terms of product, Integrated Circuits (ICs) currently account for the largest share of the global market, leading in revenue contribution. The relentless expansion of the semiconductor industry, coupled with the increasing integration of microchips into nearly every electronic device, has cemented ICs as the core application of liquid encapsulation. With the continuous evolution of AI processors, automotive chips, and miniaturized sensors, encapsulation plays a pivotal role in protecting these vital components from external stress and environmental degradation. Meanwhile, Optoelectronics and Sensors are projected to be the fastest-growing product segments, driven by the rise of electric mobility, smart lighting, and industrial automation. The growing utilization of optical sensors and photonic components in communication and automotive safety systems further accelerates this trend, positioning optoelectronic encapsulation as a high-growth niche within the overall market landscape.

The key regions considered for the Global Liquid Encapsulation Market include Asia Pacific, North America, Europe, Latin America, and the Middle East & Africa. Asia Pacific dominates the market, holding the largest share owing to its robust semiconductor manufacturing ecosystem and the presence of major electronics producers in China, Japan, South Korea, and Taiwan. The region benefits from abundant raw material availability, cost-efficient labor, and strong government support for electronics and automotive industries. Meanwhile, North America is witnessing steady growth driven by high investment in advanced packaging technologies, a surge in electric vehicle production, and expanding demand for high-performance sensors. Europe, on the other hand, is evolving as a key innovation hub, focusing on sustainability and environmental compliance in resin formulations. As global electronics manufacturing becomes more geographically diversified, these regions are poised to strengthen their foothold in liquid encapsulation production and technological innovation.

Major market players included in this report are:

Henkel AG & Co. KGaA

Hitachi Chemical Co., Ltd.

Sumitomo Bakelite Co., Ltd.

Nichia Corporation

Nitto Denko Corporation

Mitsui Chemicals, Inc.

Shin-Etsu Chemical Co., Ltd.

Toray Industries, Inc.

ASE Group

Huntsman International LLC

Kyocera Corporation

Samsung Electro-Mechanics Co., Ltd.

Panasonic Corporation

Texas Instruments Incorporated

ChipMOS Technologies Inc.

### Global Liquid Encapsulation Market Report Scope:

Historical Data – 2023, 2024

Base Year for Estimation – 2024

Forecast period - 2025–2035

Report Coverage - Revenue forecast, Company Ranking, Competitive Landscape, Growth factors, and Trends

Regional Scope - North America; Europe; Asia Pacific; Latin America; Middle East & Africa

Customization Scope - Free report customization (equivalent to up to 8 analysts' working hours) with purchase. Addition or alteration to country, regional & segment scope\*

The objective of the study is to define market sizes of different segments & countries in recent years and to forecast the values for the coming years. The report is designed to incorporate both qualitative and quantitative aspects of the industry within the countries involved in the study. The report also provides detailed information about crucial aspects, such as driving factors and challenges, which will define the future growth of the market. Additionally, it incorporates potential opportunities in micro-markets for stakeholders to invest, along with a detailed analysis of the competitive landscape and product offerings of key players. The detailed segments and sub-segments of the market are explained below:

### Key Takeaways:

*Global Liquid Encapsulation Market Size Study & Forecast, by Material (Epoxy Resin and Epoxy-Modified Resin),...*

Market Estimates & Forecast for 10 years from 2025 to 2035.

Annualized revenues and regional-level analysis for each market segment.

Detailed analysis of the geographical landscape with country-level analysis of major regions.

Competitive landscape with information on major players in the market.

Analysis of key business strategies and recommendations on future market approach.

Analysis of the competitive structure of the market.

Demand side and supply side analysis of the market.

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