

Global Glycerol Carbonate Market to Reach USD 3.5 Billion by 2034, Expanding at 7.9% CAGR from 2024 - TMR

Global glycerol carbonate market valued at US\$ 1.6 Bn in 2023, projected to grow at 7.9% CAGR and reach US\$ 3.5 Bn by 2034.

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EINPresswire.com/ -- The demand for sustainable, bio-based chemicals is transforming the global specialty chemicals sector. Among the notable advancements in green chemistry, glycerol carbonate (GC) has emerged as a highly versatile compound with applications across industries such as

cosmetics, pharmaceuticals, polymers, fuels, and coatings. Derived primarily from glycerol, a by-product of biodiesel production, glycerol carbonate has the advantage of being renewable, eco-friendly, and aligned with global goals for sustainability and reduced environmental impact.

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Growing demand for eco-friendly, bio-based chemicals positions glycerol carbonate as a key player in cosmetics, pharma, and polymers, driving sustainability and innovation.”

*Transparency Market
Research*

Glycerol Carbonate Market Outlook 2034

The global glycerol carbonate market was valued at **US\$ 1.6 Bn** in 2023

It is estimated to expand at a CAGR of **7.9%** from 2024 to 2034



The global glycerol carbonate industry is expected to reach a value of **US\$ 3.5 Bn** by the end of 2034

In 2023, the global [glycerol carbonate market](https://www.transparencymarketresearch.com/sample/sample.php?flag=S&rep_id=63957) was valued at US\$ 1.6 billion. With growing interest in sustainable and biodegradable chemical solutions, the market is projected to expand at a compound annual growth rate (CAGR) of 7.9% between 2024 and 2034, reaching a value of US\$ 3.5 billion by the end of 2034.

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Analysts' Viewpoint on the Glycerol Carbonate Market

The glycerol carbonate market is moving into a growth phase fueled by its multi-functionality, eco-friendly profile, and renewable origins. Analysts highlight several factors shaping the market scenario:

Diverse Industrial Applications – Glycerol carbonate functions as a solvent, reactive diluent, chemical intermediate, emulsifier, and stabilizer, making it an essential ingredient in sectors ranging from cosmetics to advanced polymers.

Sustainability Alignment – As industries move toward low-toxicity, bio-based, and biodegradable chemicals, glycerol carbonate's green chemistry credentials make it an attractive alternative to petrochemical-based compounds.

Consumer Demand for Clean Beauty – The cosmetics and personal care industry is undergoing a shift toward clean, natural, and environmentally responsible formulations, where glycerol carbonate is playing an integral role.

Plastic & Polymer Applications – With the world moving toward recyclable and bio-based materials, glycerol carbonate is becoming an important input for the plastics industry, contributing to lighter, durable, and eco-friendly end products.

Manufacturing Innovation – Continuous improvements in production technologies, including CO₂-based synthesis processes, are enhancing efficiency and cost-effectiveness.

Overall, the glycerol carbonate market is expected to expand as industries prioritize renewable feedstocks and green chemistry.

Global Glycerol Carbonate Market Overview

Glycerol carbonate (C₅H₁₀O₃) is a biodegradable, low-toxicity compound that is gaining traction across multiple industrial applications. Traditionally, glycerol—the raw material—is a by-product of biodiesel production. By valorizing glycerol into high-value derivatives such as glycerol carbonate, the industry not only addresses waste management but also supports circular economy principles.

Key Features of Glycerol Carbonate:

Bio-based and renewable origin.

Low environmental impact compared to petrochemical alternatives.

High solvency power for use in adhesives, paints, coatings, and cosmetics.

Role as an intermediate for advanced polymers and battery electrolytes.

Its versatility has positioned glycerol carbonate as an important compound for the specialty chemicals industry that is moving rapidly toward sustainability-driven solutions.

Market Drivers

Rising Adoption of Sustainable and Biodegradable Chemicals in Cosmetics & Personal Care

Consumer awareness of the environmental and health impacts of cosmetics has grown sharply in the last decade. The “clean beauty movement” emphasizes products with fewer synthetic ingredients, transparency in formulation, and environmentally friendly materials.

Glycerol carbonate serves as a solvent, moisturizer, emulsifier, and stabilizer in cosmetic formulations.

Its biodegradable and renewable nature aligns with eco-labeling requirements.

Compatibility with sustainable packaging enhances its acceptance in green beauty markets.

The increasing preference for natural and organic cosmetics will significantly bolster glycerol carbonate's demand in this segment.

Growing Use of Glycerol Carbonate in Plastic and Polymer Manufacturing

The plastics industry is undergoing a paradigm shift toward lightweight, recyclable, and eco-friendly materials.

Glycerol carbonate is utilized in polyesters, polycarbonates, polyamides, and polyurethane coatings.

It enables the development of durable, corrosion-resistant, and lightweight materials.

Applications include vehicles, appliances, medical devices, packaging, and consumer goods.

Plastics made with glycerol carbonate are recyclable, supporting circular economy initiatives.

Bio-based Production Pathways and Green Chemistry

Advances in synthesis methods are enhancing the commercial viability of glycerol carbonate. For example:

Production from CO₂ and glycerol by-products reduces reliance on fossil-based inputs.

Improved catalytic methods allow faster, cleaner, and more efficient reactions.

Integration into biodiesel production cycles creates synergies for sustainable fuel and chemicals.

Demand for Green Solvents

As industries face restrictions on volatile organic compounds (VOCs), glycerol carbonate is increasingly used as a green solvent in coatings, adhesives, and cleaning formulations.

Benefits of Glycerol Carbonate in Plastic Production

Plastic is indispensable in modern society due to its versatility, lightweight nature, and durability. Glycerol carbonate-based plastics offer several benefits:

Recyclability – Promotes circular economy by extending product life cycles.

Lightweight – Supports industries like automotive and consumer appliances in reducing weight and improving efficiency.

Freedom of Design – Provides flexibility for ergonomic, aesthetic, and functional designs.

Durability – Enhances corrosion resistance and mechanical strength.

These advantages make glycerol carbonate a preferred raw material for next-generation plastics.

Application Segmentation: Solvent Dominance

Among applications, solvents dominate the glycerol carbonate market.

Its strong solvency, eco-friendly nature, and compliance with VOC reduction regulations make it an attractive replacement for petroleum-based solvents.

It is used widely in coatings, adhesives, resins, and personal care formulations.

The trend toward sustainable industrial solvents is expected to continue supporting market expansion.

Other applications include:

Fuel Additives – Improves combustion efficiency and reduces emissions.

Monomers & Chemical Intermediates – Serves as a precursor for advanced polymers.

Battery Electrolytes – Research is exploring glycerol carbonate's role in lithium-ion batteries for improved energy storage.

Regional Outlook

Asia-Pacific – Leading Region

Asia-Pacific holds the largest share of the glycerol carbonate market, supported by:

Rapid industrialization in China, India, and ASEAN countries.

Strong demand from cosmetics, pharmaceuticals, and polymer sectors.

Government emphasis on reducing dependence on petroleum-based solvents.

Europe

Strong regulatory frameworks promoting green chemistry.
Significant R&D investment in sustainable polymers and clean cosmetics.

North America

Growth in pharmaceuticals and bio-based chemicals.
Rising focus on green solvents in industrial applications.

Latin America & Middle East/Africa

Emerging adoption in biodiesel-rich regions.
Focus on circular economy and value-addition to glycerol by-products.

Competitive Landscape

The glycerol carbonate market is relatively concentrated, with a few major players leading innovation and capacity expansion.

Key Players Include:

UBE Industries
Inkemia Green Chemicals Inc.
TCI Chemicals (India) Pvt. Ltd.
Carbone Scientific Co., Ltd.
GLACONCHEMIE GmbH
ANHUI MEISENBAO CHEMICAL CO., LTD.
Cambridge Isotope Laboratories, Inc.
Eurisotop
Acros Organics B.V.B.A.

Strategies of Leading Players:

Developing cost-effective, bio-based production processes.
Expanding into emerging markets with rising demand for green solvents.
Partnerships with biodiesel producers to secure glycerol feedstock.
Strengthening R&D for advanced applications such as battery electrolytes and fuel additives.

Recent Market Developments

February 2024 – The Center for Integrated Technology and Organic Synthesis demonstrated a novel production method using CO₂ and cooking oil recycling by-products, achieving reaction completion in less than 30 seconds.

August 2022 – Researchers explored glycerol carbonate as an innovative alkylating agent for phenolic compounds under solvent-free conditions.

June 2018 – Studies highlighted the potential of glycerol carbonate as a fuel additive, addressing the oversupply of crude glycerol from biodiesel production.

These advancements highlight the increasing research focus on expanding the versatility of glycerol carbonate beyond current mainstream applications.

Challenges in the Glycerol Carbonate Market

High Production Costs – Despite progress, bio-based production methods remain more expensive than petrochemical alternatives.

Limited Large-Scale Commercialization – Industrial adoption is still at an emerging stage in several regions.

Feedstock Availability – Dependence on biodiesel-derived glycerol may create fluctuations in supply.

Competition from Other Green Solvents – Alternatives like ethyl lactate may compete for market share.

Market Outlook to 2034

Looking ahead, the glycerol carbonate market is expected to transform significantly by 2034:

Mainstream Green Solvent – As regulations tighten on petrochemical solvents, glycerol carbonate will establish itself as a go-to eco-friendly option.

Polymer Revolution – Its role in bio-based, recyclable plastics will expand, particularly in automotive and packaging sectors.

Cosmetics Leadership – Clean beauty trends will accelerate adoption in personal care products.

Fuel & Energy Applications – Potential growth in use as a fuel additive and in lithium-ion battery electrolytes will broaden its scope.

Asia-Pacific Dominance – The region will continue to lead demand due to manufacturing strength and sustainability policies.

The global glycerol carbonate market is poised for substantial growth, doubling in size by 2034 as industries shift toward sustainable, bio-based alternatives. Its eco-friendly profile, versatility, and compatibility with green chemistry trends position it as a key enabler of clean beauty, bio-based plastics, and green solvents.

With strong growth drivers, expanding research, and rising adoption across multiple industries, glycerol carbonate is set to become a cornerstone of sustainable specialty chemicals, supporting global efforts toward decarbonization and circular economy goals.

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