

Global Rhamnolipid Market Assessment, By Type [Mono-Rhamnolipids, Di-Rhamnolipids], By Application [Surfactants, Lubricants, Agriculture, Food Industry, Others], By Region, Opportunities and Forecast, 2018-2032F

Market Report | 2025-07-18 | 223 pages | Market Xcel - Markets and Data

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Report description:

Global rhamnolipid market is projected to witness a CAGR of 7.13% during the forecast period 2025-2032, growing from USD 2.14 billion in 2024 to USD 3.71 billion in 2032. The rhamnolipid market will continue to grow due to sustainable, biodegradable surfactants growing demand. Changes in cosmetic, agriculture, and household cleaning sectors, including stronger demand among industries for more sustainable formulations, and aquaculture movements are leading to more rhamnolipid applications; rhamnolipids are toxic, biodegradable, non-toxic, and eco-friendly surfactants, as they readily emulsify products. As governments and organizations facilitate activities to reduce environmental impacts, rhamnolipids interest will continue to grow as they become alternative substances to synthetic surfactants, e.g. bioremediation and industrial cleaning applications.

Additionally, with the rise of microbial fermentation and extraction innovations, the production technologies are furthering the potential for economies of scale, extraction considerations and production costs for rhamnolipids. Private organisations are investing and/or acquiring private biotech solutions, with intentions on optimizing yields, utility and purity of rhamnolipids for food processing or pharmaceutical firms. Rhamnolipids will continue to be of high interest in new industries searching for 'more natural' alternatives by proven natural solutions, and the rhamnolipid market is well situated to further develop and implement innovations around bio-based surfactants with economic, environmental, health and safety considerations under green chemistry principles, and sustainable development goals.

For example, in February 2025, AGAE Technologies broke ground on Asia's largest industrial plant producing rhamnolipid biosurfactants. At 41,000 square feet and an annual production ramping up over 1,000 metric tons, the plant is designed to meet the increasing demand for sustainable and biodegradable surfactants. As various industries are moving toward options that have lower environmental impact, AGAE is establishing itself as a key supplier of biodegradable surfactants to help manufacturers transition away from petroleum-derived chemical surfactants. Moreover, the firms' commitment to fermentation engineering and scalable production is increasingly emphasizing environmentally and socially influenced surfactant solutions, demonstrating the

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market's direction toward green chemistry and sustainable industrial applications.

Rising Demand for Sustainable and Biodegradable Surfactants Augmenting Market Growth

The sizable growth in market development for rhamnolipids is because of the increase in industries wanting sustainable and biodegradable surfactants. Corporations are shifting to biodegradable and sustainable biosurfactants such as rhamnolipids instead of using traditional petroleum-based surfactants. Regulations on the environmental impacts of products, and consumer demand for sustainable alternatives have been the main drivers of corporate use of biodegradable biosurfactants like rhamnolipids. This new trend for sustainable products is emerging in more industries and in more personal products. An increasing amount of focus on environmental impacts is emerging in many industries, such as cosmetics, agriculture, household products, and oil remediation. An attribute of rhamnolipids, as a biosurfactant, is that naturally derived surfactants, which environmental factors earlier mentioned are able to create potential alternatives. Rhamnolipids also possess surfactant properties, including enhanced emulsifying and antimicrobial properties. Due to this, biosurfactants and rhamnolipids tend to have a smaller impact in comparison to a petroleum-derived surfactant.

For example, in January 2024, Evonik produced the first product from the world's first industrial scale rhamnolipid biosurfactant plant in Slovakia. This step represents the increasing demand for sustainable and biodegradable surfactants, as industries attempt to move away from traditional petrochemically-based chemical surfactants to greener options. Evonik's rhamnolipids are fully biodegradable and produced by fermentation-based routes without petrochemical feedstocks Industry. Such activities are supporting the growth of the market in personal care, cleaning and industrial sectors.

Moreover, the ongoing exploration of green chemistry advancements and the increased adoption of large-scale fermentation technology will further drive rhamnolipid production enabling companies to meet international sustainability targets. If the conversion away from concern about biobased biodegradable products depends on commercial focus in the business sector, we anticipate the rhamnolipid market will continue to grow rapidly boosting rhamnolipid and advancing clean renewable industrial practices.

Expanding Advancements in Production Technologies Creating Market Opportunity

The updated advancement towards production technologies has opened considerable opportunities within the market for rhamnolipids and unfolded an opportunity to develop a cost-effective and scalable means to accomplish production. With many exciting developments in the microbial fermentation processes we have biologically engineered, advances in genetic engineering, and the increased usage of agricultural inputs to deliver more sustainable feedstocks, it has achieved some level of production efficiencies at a low cost, including a range of other factors which should be tailored to develop these into commercial products. There is an average amount of funding commitment made in this sector to pursue biotech enablement to improve yield and purification levels factor of production which increases commercially viable options for rhamnolipids into several premium products and formulations within the cosmetics, cleaning, agricultural, and pharmaceutical sectors. Innovations via tools, processes and thinking with rhamnolipids are establishing this for rhamnolipids as a biosurfactant for generating fantastic demand globally, with a good level of focus placed on sustainability and regulation towards biodegradable products.

For instance, in August 2024, Unilever launched Sunlight's RhamnoClean, an environment friendly dishwashing product (100% plant based). Unilever's invention is the first to completely replace 'pet-chemistry' based surfactants entirely with a biodegradable, renewable put-feed product used for home cleaning via rhamnolipid biosurfactants. Unilever partnered with Evonik which built the first ever industrial scale rhamnolipid production plant in Slovakia, which will produce the green surfactant on a larger, industrial scale.

Dominance of Surfactants Segment in Global Market

The rhamnolipid that is most often seen commercially is the di-rhamnolipid. Di-rhamnolipids are the preferred biosurfactant by a large margin because they have improved emulsification properties, with increased surface activity and greater yield in microbial fermentation. Di-rhamnolipid is used in agriculture, pharmaceuticals and personal care products where di-rhamnolipids are attractive because of their biodegradability and antimicrobial properties making them suitable for eco-friendly applications. Rhamnolipid-based surfactants are rapidly gaining traction as eco-friendly alternatives to traditional petroleum-based surfactants. Their biodegradability and low environmental impact make them ideal for a wide range of applications, including household detergents, industrial cleaning agents, and specialized formulations. Major manufacturers are actively investing in their large-scale production, recognizing their potential to revolutionize the cleaning industry. This shift is driven by growing consumer

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demand for sustainable products and increasingly stringent environmental regulations that favor bio-based solutions. As such, rhamnolipid surfactants are not only delivering excellent cleaning performance but also playing a crucial role in promoting a greener, more sustainable chemical landscape.

Europe Region Registering Significant Growth in the Global Rhamnolipid Market

The European region is registering significant growth in the global rhamnolipid market, driven by strong environmental regulations and a commitment to green chemistry innovations. Governments and regulatory bodies in Europe actively promote the use of biodegradable surfactants, encouraging industries to adopt sustainable alternatives in sectors such as personal care, cleaning, and industrial applications. European companies are leading in large-scale biosurfactant production, investing in advanced fermentation technologies to ensure cost-effective manufacturing. Additionally, ongoing research initiatives and funding programs focus on developing bio-based surfactants from renewable feedstocks, reinforcing the region's position as the frontrunner in rhamnolipid innovation and commercial adoption. With increasing emphasis on reducing environmental impact, Europe continues to set global standards for sustainable biosurfactants, strengthening its market leadership.

For instance, in May 2024, the Circular Bio-based Europe Joint Undertaking (CBE JU) launched the SURFs UP project, aimed at developing safe and sustainable biosurfactants from agri-food and forestry waste. This initiative highlights Europe's strong regulatory support for biodegradable surfactants, reinforcing the region's leadership in green chemistry and sustainable industrial applications. The project focuses on microbial and lignin-based biosurfactants, ensuring cost-efficient and environmentally friendly production methods. By prioritizing renewable feedstocks and advanced bioprocessing, Europe continues to drive innovation in biosurfactant development, solidifying its dominance in the global rhamnolipid market.

Impact of the United States Tariffs on Global Rhamnolipid Market

□□ Tariffs on imported raw materials used in rhamnolipid production can raise manufacturing costs, making biosurfactants less competitive in the United States.

□□ Trade restrictions can limit access to essential fermentation feedstocks, affecting global supply chains and slowing production.

□□ Higher tariffs may encourage the United States based manufacturers to invest in domestic biosurfactant production, reducing reliance on foreign suppliers.

□□ Tariff pressures may drive research into alternative feedstocks and efficient fermentation technologies, fostering new advancements in biosurfactant production.

Key Players Landscape and Outlook

Manufacturers of rhamnolipids have different approaches to find compatibility in the increased market interest in revenues. Their strategic expenditure on research and development (R&D) for product performance ranging from biodegradability, for example, to increased emulsifying efficiency, or new antimicrobial characteristics for higher value applications have taken investments to exciting levels. Biosurfactants are appealing to a growing sub-sector of pharmaceutical, agricultural, and personal care markets, and are inspiring new forms of production and microbial ferments for these potentially more profitable markets. Manufacturers are increasing their product offerings to match different criteria from criteria used in regulation and industry. This means that their future sky's the limit will be partially dependent on the specialized and unique attributes of rhamnolipid as used in medicine, innovative biopesticides, as well as green detergents, for example.

In addition to diversifying levels and types of products, rhamnolipid manufacturers are also collaborating with biotech and agricultural companies and pharmaceutical companies to expand their international distribution, as well as migration towards commercialization.

For instance, in January 2023, Holiferm Limited partnered with Sasol Chemicals to develop fermentation-derived rhamnolipids for personal care products. This collaboration aims to accelerate the commercialization of biosurfactants, supporting the industry's shift toward sustainable and biodegradable alternatives.

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