Acrolein Market Size and Share Outlook - Forecast Trends and Growth Analysis Report (2025-2034)

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Report description:

The global acrolein market was valued to reach a value of USD 1230.82 Million in 2024. The industry is expected to grow at a CAGR of 4.50% during the forecast period of 2025-2034. An important factor driving the market for acrolein is its rising demand in agriculture as a herbicide and biocide, along with its usage in chemical production to produce methionine and acrylic acid derivatives, thus aiding the market to attain a valuation of USD 1911.43 Million by 2034.

Acrolein Market Overview

The global acrolein market is growing steadily, driven by its wide range of applications in various industries, such as agriculture, chemical manufacturing, and water treatment. Acrolein's main application as a key intermediate in the production of chemical derivatives like glycerol, glutaraldehyde, and superabsorbent polymers boosts its market potential. Its application in herbicides and biocides also strengthens its demand in the agrochemical sector.

Key market drivers are the growing demand for water treatment chemicals as a result of increasing global water scarcity and contamination issues. Acrolein is highly effective in controlling microbial growth in industrial water systems and oil pipelines due to its antimicrobial properties. Growing investments in chemical research and innovation have led to the development of advanced acrolein-based products, further expanding its application scope and propelling the acrolein market growth.

To cope with growing consumer demand, manufacturers have been focusing on process efficiency, adopting greener production technologies, and expanding capacities. Strategic partnerships, mergers, and acquisitions between major players have also been helpful in streamlining the supply chain and boosting market presence. Additionally, the regulation policies which promote environmental sustainability have prompted safer, bio-based acrolein alternatives that would meet environmentally conscious consumers. All these factors combine to drive the acrolein market along the growth curve while keeping the balance between industrialization and environmental protection.

Acrolein Market Growth

The pesticide industry is a primary driver of the acrolein industry. Acrolein is used as a powerful herbicide to control unwanted vegetation in agricultural applications, thereby bolstering the growth of acrolein market. As global demand for food production rises, more farmers use acrolein-containing herbicides to control weeds and maximise crop harvests. This growing need for effective weed control solutions in the agricultural sector is a major factor driving the continuous demand for acrolein, ensuring its widespread use in the pesticide industry.

A niche driver of the acrolein market is its application in specialty chemical synthesis, particularly in fragrance and pharmaceuticals. Acrolein is a precursor for the synthesis of fine chemicals, such as pyridines and aldehydes, which are used in aroma compounds and APIs. For instance, Evonik Industries, a major chemical producer, applies acrolein in its production of methionine intermediates and specialty chemicals for the fragrance industry. This increased demand for such customized, high-value chemicals in the personal care and healthcare sectors has encouraged companies, such as Evonik, to invest in advanced synthesis processes based on acrolein, enhancing the performance and competitiveness of the products offered in specific applications.

Key Trends and Developments

Bio-based production, technological advancements, expanding applications, and strategic collaborations drive acrolein market growth.

January 2024

Evonik launched VISIOMER HEMA-P 100, a versatile, flame-retardant monomer for coatings and adhesives. Its development, leveraging acrolein derivatives, and offering advanced, sustainable chemical solutions.

April 2024

DAICEL Corporation and ITRI signed a Virtual Accelerator Service Agreement to support Taiwan-based startups, focusing on business development and commercialization of DAICEL's research technologies and innovations.

September 2023

BASF launched bio-based 2-Octyl Acrylate with 73% bio-content, offering a reduced carbon footprint using its biomass balance approach, alongside a certified ISCC Plus variant.

November 2022

Arkema launched bio-attributed acrylic monomers and specialty additives, certified under ISCC+ mass-balance framework, positioning itself as a leader in sustainable materials and supporting the transition to a low-carbon economy.

Shift Toward Bio-Based Production

The acrolein market is shifting toward bio-based production because of the increasing concern over environmental sustainability and regulatory pressure. Manufacturers are using renewable feedstocks, such as glycerol produced from biodiesel, to decrease carbon emissions and reliance on fossil fuels. Governments and environmental agencies are supporting bio-based chemicals

through subsidies and policy incentives. Companies like Arkema and Evonik are investing in bio-refinery technologies with the intent of scaling up eco-friendly acrolein production. This development aligns well with the climate goals at the global level, which attracts green investors and environmentally conscious customers and enhances the corporate sustainability profiles, thus augmenting the acrolein demand growth.

Technological Advancements in Production

Acrolein production is being revolutionized by technological innovation in processes such as catalytic oxidation, continuous flow systems, and automation. These innovations ensure improved efficiency in production, reduction in energy usage, and decreased manufacturing cost. It also ensures constant product quality, as automation and monitoring in real-time provide adequate production quality to achieve very strict industry standards. This factor encourages companies to rely more on proprietary technologies, enhancing overall industry growth. Some major players, such as Dow and BASF, invested in R&D and process optimization, which brought the market toward more efficient and scalable, cost-effective manufacturing.

Expanding Applications in Specialty Chemicals

Increased application of acrolein is driving market growth due to its large-scale application in specialty chemicals such as pyridines, biocides, and chemical intermediates. Its versatility in chemical applicability increases the demand of acrolein in various applications including water treatment agent, pharmaceuticals, agrochemicals, performance chemicals for agricultural, medicinal, and industrial processing applications further increase the demand of acrolein's relevance. The companies are profiting by this trend where they diversify their port folio by offering derivatives of acrolein, increasing profitability and market resistivity in the specialized chemicals segment, thereby boosting the acrolein market revenue.

Strategic Industry Collaborations

The market for acrolein is being transformed by strategic alliances, which promote innovation and increase production capacity. Alliance among chemical manufacturers, technology providers, and research houses speed up the development of environmentally friendly processes and innovative applications. Industry majors, such as Solvay and Eastman Chemical are partnering to improve supply chain effectiveness and enhance market positions. Joint ventures allow access to advanced technologies, reduce R&D costs, and facilitate entry into emerging markets, ensuring a robust and sustainable acrolein industry poised for long-term growth.

Acrolein Market Trends

Acrolein is an important intermediate for chemical products, including acrylic acid, methionine, and glycerol. These products bolster the demand from various sectors like automotive, healthcare, and building. It also finds extensive applications in the water treatment system as a biocide that controls microorganisms. It is thus vital for industries like power generation and oil & gas and hence propels the acrolein demand growth. Growing environmental concerns have led to a move toward bio-based production techniques, which use renewable feedstocks to limit the environmental impact of acrolein production and lessen dependency on fossil fuels.

Recent advances in biomedical research have given acrolein new importance and applications, especially in tissue engineering and drug delivery systems. Its reactive chemical structure allows for the development of biocompatible polymers used in creating scaffolds that support cell growth and tissue regeneration. Moreover, materials derived from acrolein are studied as means for targeted drug delivery because of their ability to form stable, functionalized nanoparticles. This niche trend drives investments in medical research. The chemical manufacturing companies collaborate more with biotechnology companies for new frontiers for healthcare and life sciences beyond what acrolein is widely known for-industrial purposes.

Acrolein Market Restraints

 Increasing demand for biocides and water treatment agents presents significant growth potential for acrolein producers.
 Growing use of acrolein in agricultural applications, particularly as a pesticide and herbicide, offers expansion opportunities, thus opening up acrolein market opportunities.
 The shift towards more sustainable production methods, like glycerol dehydration, allows players to cater to environmentally conscious consumers.
 Rising industrialization and urbanisation, especially in developing regions, will drive higher consumption of acrolein in various chemical and manufacturing sectors.

Acrolein Industry Segmentation

Acrolein Market Report and Forecast 2025-2034 offers a detailed analysis of the market based on the following segments:

On the basis of product type, the market can be divided into the following:

 Propylene Oxidation Method
 Glycerol Dehydration Method

On the basis of application, the market can be divided into the following:

 Glutaraldehyde
 Biocides
 Pesticide
 Methionine
 Water Treatment Agent
 Others

Based on region, the market can be segregated into:

 North America
 Europe
 Asia Pacific
 Latin America
 Middle East and Africa

Acrolein Market Share

By Product Type Analysis

The propylene oxidation method is increasingly gaining traction in the global acrolein industry as it is more efficient in its practice and widely adopted in the petrochemical industries. It is a cost-effective way to make acrolein on a large scale, thus pushing the acrolein market growth. The glycerol dehydration method is the latest trend in making acrolein due to its sustainability. It then uses glycerol, the byproduct of biodiesel production, and thereby finds a bio-based solution which is in line with the increasing environmental regulations as well as the increasing demand for more environmentally friendly chemical processes.

Market Analysis by Application

Acrolein is utilised as one of the key precursors in the glutaraldehyde product line. It is used in the form of a bactericidal and fungicidal agent in biocides, mainly to control bacteria and fungi in various industries. As per acrolein industry analysis, in pesticides, acrolein is used as an herbicide controlling unwanted vegetation in agriculture. The intermediate is also used in the form of methionine and represents the primary product in its line involved in animal feed. Acrolein is also used as a water treatment agent as it helps in controlling the growth of algae and bacteria in water systems besides its applications in chemical syntheses and polymer production.

Acrolein Market Regional Insights

North America Acrolein Market Opportunities

North America is likely to hold a leading position in the global market for acrolein. The United States is anticipated to hold a sizable portion of the market, which can be attributed to the flourishing industrial sector. The United States is also one of the largest importers of acrolein biocide. In addition, acrolein is also considered an important chemical for controlling germs and bacteria in oil wells, liquid hydrocarbon fuels, and water treatment ponds, which further enhances the market value.

Europe Acrolein Market Dynamics

EU's Green Deal and Farm to Fork Strategy are key drivers in the Europe acrolein industry. These policies encourage sustainable agricultural practices, boosting demand for bio-based chemicals like acrolein in herbicides, pesticides, and water treatment. As part of this shift, companies like BASF are exploring eco-friendly acrolein production methods. This aligns with the EU's goal to reduce carbon emissions and promote circular economies within the chemical and agricultural industries by 2030, driving innovation and demand for sustainable solutions.

Asia Pacific Acrolein Market Trends

The Asia Pacific market for acrolein is seeing increased demand driven by industrial growth and sustainability initiatives. China, India, and Southeast Asian countries are expanding their chemical and water treatment industries, boosting acrolein consumption. For example, China National Petroleum Corporation (CNPC) is investing in eco-friendly acrolein production technologies to meet growing demand in water treatment and agriculture. Additionally, India's focus on expanding its agricultural sector has increased the need for acrolein-based herbicides and biocides, supporting market growth.

Latin America Acrolein Market Insights

In Latin America, the acrolein market share is driven by increasing demand from the chemical manufacturing and water treatment sectors. Countries like Brazil and Argentina are experiencing growth in industrial activities, particularly in agriculture and oil & gas, which require acrolein-based products. According to the Latin American Chemical Industry Association (ALIQ), the region's chemical industry saw a 3.5% growth in 2022, indicating rising demand for chemical intermediates like acrolein. Additionally, expanding urbanisation is driving water purification requirements across major cities.

Middle East and Africa Acrolein Market Drivers

A key driver of the acrolein market in the Middle East and Africa is the region's growing demand for water treatment solutions. As many countries in the region face water scarcity, acrolein is increasingly used in water treatment chemicals, including algicide and biocide formulations. For instance, Saudi Basic Industries Corporation (SABIC) is exploring eco-friendly acrolein derivatives for

improving water purification systems, contributing to both industrial growth and addressing the region's water security challenges.

Competitive Landscape

Global acrolein market players are focusing towards higher sustainability and a lower carbon footprint due to bio-based acrolein production. Organisations are investing more into eco-friendly processes and innovative solutions such as bio-based feedstocks and renewable sources which can meet the booming demand for green chemicals. Further, the acrolein companies are focusing on better performance characteristics of derivatives made out of acrolein in water treatment, plastics, and pharmaceuticals to establish themselves in an upper echelon of the consciousness-based business lines.

Daicel Corporation

Daicel Corporation is a prominent Japanese chemical company known for its expertise in manufacturing and advancing high-performance materials and industrial products. The company was founded in 1919 as the first producer of celluloid in Japan. Since its foundation, the company has significantly diversified its product portfolio, focusing on the development of cutting-edge materials and technologies across various industries.

Merck KGaA

Merck KGaA, also known as Merck, is a German multinational pharmaceutical, chemical, and life sciences company. It is one of the oldest pharmaceutical and chemical companies in the world, with a history dating back to 1668. The company has research and development centres, manufacturing facilities, and sales offices worldwide.

Evonik Industries AG

Evonik Industries AG, a globally operating German speciality chemicals company, was established in 2007 through the merger of Degussa AG and the speciality chemicals division of the RAG Group. Renowned for its extensive array of inventive products and solutions, Evonik caters to diverse industries. The company specialises in the development and production of advanced materials for diverse sectors, including automotive, electronics, and healthcare. Evonik's product portfolio also includes polymer materials, high-performance plastics, and composite materials.

Other market players include Hubei Jinghong Chemical Co., Ltd, Puyang ShengHuaDe Chemical Co.,Ltd., Hubei Shengling Technology Co., Ltd., and Hubei Xinjing New Material Co. Ltd, among others.

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