

# **Gas Treatment Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By Type (Amines and Non-Amines), By Application (Acid Gas Removal and Dehydration), By Region and Competition, 2019-2029F**

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## **Abstracts**

Global Gas Treatment Market was valued at USD 4.48 billion in 2023 and is anticipated to project robust growth with a CGAR of 5.23% through 2029. Gas treatment processes play a crucial role in various industries, ensuring the removal of impurities and the maintenance of equipment efficiency and longevity. Industries such as oil gas, chemicals, and power generation have a particularly high demand for gas treatment solutions, which in turn contributes to the overall growth of the market. Advancements in technology and an increased focus on sustainability have sparked innovation in the gas treatment sector. This has led to the development of more efficient and eco-friendly gas treatment solutions, addressing the growing need for environmentally conscious practices in industries worldwide. These factors, combined with the rising industrial needs and environmental concerns, are expected to continue driving the global gas treatment market in the foreseeable future.

The global gas treatment market is experiencing a positive growth trajectory. With the increasing importance placed on environmental sustainability and the continuous advancement of technology, the demand for effective gas treatment solutions is only set to rise. As we move towards a more eco-conscious world, the significance of gas treatment processes in maintaining clean and efficient operations across industries will continue to grow.

## **Key Market Drivers**

## Increase in Production of Shale Gas

Shale gas has accounted for a staggering 63% of the total increase in natural gas production globally. This rise in shale gas production can be attributed to significant advancements in exploration and drilling technologies, such as hydraulic fracturing (fracking) and horizontal drilling. These cutting-edge techniques have revolutionized the industry, boosted production volumes, and reduced costs. The extraction of shale gas from underground rock formations has become increasingly efficient and economically viable.

The growth in shale gas production has not only transformed the energy landscape but also had a direct impact on the global gas treatment market. Gas treatment processes play a crucial role in removing impurities, such as hydrogen sulfide and carbon dioxide, from shale gas. By ensuring the efficiency and longevity of equipment used in its extraction, processing, and transportation, gas treatment solutions are essential for maintaining the quality and safety of shale gas.

The environmental concerns associated with shale gas production have necessitated the use of advanced gas treatment methods. As the industry strives for sustainability and reduced environmental impact, innovative techniques like carbon capture and storage (CCS) and membrane separation are gaining traction. These developments present further opportunities for growth and innovation within the gas treatment market.

The increase in shale gas production is not only a significant driver of the global gas treatment market but also a game-changer for the entire energy sector. As the demand for shale gas continues to surge, it is expected to further stimulate the gas treatment market, paving the way for new advancements, collaborations, and opportunities. The future of shale gas and gas treatment holds immense potential for addressing energy needs while minimizing environmental impact.

## Growth in Industrialization

Industrialization plays a pivotal role in this expansion. As industries proliferate and new manufacturing plants are established, the demand for gas treatment solutions increases proportionately. These treatment processes are essential in various sectors, including oil gas, power generation, and chemical industries, to remove impurities from gases, ensuring the efficiency and longevity of equipment.

As the demand for industrial gases continues to grow in sectors such as food

beverages, electronics, and healthcare, the global market for gas treatment is experiencing a significant boost. The expanding industrial activities in these sectors, driven by industrialization, necessitate the use of high-quality industrial gases. This drives the demand for gas treatment solutions to ensure the purity and reliability of these gases.

The surge in industrialization is a significant driver of the global gas treatment market. With increasing industrial activities and the rising demand for high-quality industrial gases, the gas treatment market is set to continue its upward trajectory in the coming years. The continuous advancements in gas treatment technologies and the adoption of sustainable practices in the industry contribute to the overall growth and development of this market.

### Key Market Challenges

#### Volatility in Cost of Raw Materials and Availability of Chemicals

Raw materials frequently experience market volatility, often resulting from supply disruptions, pent-up demand, or significant peaks and troughs. This volatility directly impacts the production costs in the gas treatment market.

Price increases and supply chain instability are expected to continue but are difficult to predict. The availability of raw materials can be impacted by various factors, including world events, economic disruption, and climate changes. These factors not only affect the cost of production but also disrupt the regular supply of essential raw materials, posing a significant challenge to the global gas treatment market.

The volatility in global commodity markets is expected to intensify in the coming years, driven by lingering geopolitical concerns and the rapid transition to low-carbon technologies. This increased volatility extends to the chemicals essential for gas treatment processes, further complicating the market scenario.

The availability of chemicals used in gas treatment is another critical factor impacting the market dynamics. The raw materials utilized in the production of these chemicals are particularly vulnerable to price fluctuations and shortages. Limited access to known mineral deposits poses a significant risk factor, contributing to the challenge of ensuring a stable supply chain for gas treatment operations.

The gas treatment market overall faces multifaceted challenges arising from the

volatility of raw material prices, disruptions in the supply chain, and the increasing market uncertainties driven by geopolitical factors and the transition to low-carbon technologies. Addressing these challenges requires proactive strategies and close monitoring of global market trends.

## Key Market Trends

### Growth in Adoption of Renewable Energy

Renewable energy, with its ability to harness natural resources like sunlight, wind, and water, has emerged as a promising solution to meet the ever-increasing global energy demand. It is estimated that renewable energy sources can potentially supply two-thirds of the total global energy demand, making a significant contribution towards reducing greenhouse gas emissions and combating climate change. This shift towards renewable energy has not only transformed the energy landscape but has also brought about a profound impact on various sectors, including the gas treatment market.

When we talk about the intersection between renewable energy and gas treatment, one area that stands out is the renewable natural gas (RNG) sector. RNG, also known as biogas, is a type of bioenergy generated from organic waste materials such as agricultural residues, food waste, and wastewater. RNG is well-known due to its renewable nature, as well as its ability to reduce greenhouse gas emissions when compared to traditional fossil fuels. RNG can be seamlessly integrated into existing natural gas infrastructure, making it a viable and sustainable energy option.

In the production of RNG, gas treatment processes play a crucial role. These processes involve the removal of impurities and contaminants from the biogas to ensure that it meets regulatory standards and is safe for use. As the RNG market continues to expand, driven by the growing demand for cleaner and greener energy sources, the gas treatment market experiences a parallel growth trajectory. This presents an exciting investment opportunity for stakeholders and drives innovation in gas treatment technologies.

### Rising Adoption of Carbon Capture and Storage (CCS)

The global gas treatment market is experiencing a significant and transformative trend that is the increasing adoption of Carbon Capture and Storage (CCS) technology. This innovative approach enables the capture of carbon dioxide (CO<sub>2</sub>) emissions from various sources such as power plants and industrial processes, effectively preventing

their release into the atmosphere.

Carbon Capture and Storage (CCS) is a groundbreaking technology that has the potential to capture up to 90% of CO<sub>2</sub> emissions generated from the use of fossil fuels in electricity generation and industrial operations. By capturing and securely storing CO<sub>2</sub> underground, CCS plays a crucial role in mitigating climate change and reducing greenhouse gas emissions. This technology not only addresses the urgent need for sustainable practices but also allows industries to maintain their production levels while minimizing their environmental impact.

CCS has gained recognition as a highly effective method for tackling climate change and ensuring a low-carbon future. Its implementation aligns with global efforts to transition towards sustainable energy sources and reduce reliance on fossil fuels. As governments and industries worldwide intensify their focus on sustainability, CCS emerges as a key solution to achieve ambitious emission reduction targets.

Within the gas treatment market, CCS represents a critical component in the value chain. Before CO<sub>2</sub> can be transported and stored, it must undergo a comprehensive gas treatment process. Gas treatment technologies play a pivotal role in this process by removing impurities, conditioning the gas, and ensuring it meets the necessary transportation and storage requirements. These advanced gas treatment solutions are essential to ensure the safe and efficient implementation of CCS projects.

The growth of CCS presents immense opportunities within the gas treatment market. As more industries embrace CCS technology to fulfill their sustainability goals, the demand for reliable and effective gas treatment solutions will inevitably surge. This trend not only drives innovation in gas treatment technologies but also stimulates the development of new solutions and strategies to optimize the CCS value chain.

## Segmental Insights

### Type Insights

The amine gas removal segment is projected to experience rapid growth during the forecast period. Amines, particularly alkanolamines like monoethanolamine (MEA), diethanolamine (DEA), and methyl diethanolamine (MDEA), are highly effective at removing acid gases such as carbon dioxide (CO<sub>2</sub>) and hydrogen sulfide (H<sub>2</sub>S) from natural gas and industrial gas streams. Acid gases are corrosive and can damage pipelines and equipment, so their removal is critical.

Amine-based gas treatment processes have been used for many decades and are considered a well-established and reliable technology. This history of successful use has built trust among industry professionals. These processes involve the use of specialized equipment, including absorbers and regenerators, to capture and separate acid gases from the gas streams.

The amine-based gas treatment process can be customized to meet specific gas stream requirements. By selecting the appropriate amine formulation and process conditions, it is possible to achieve the desired levels of gas purity and meet regulatory standards. The customization options include variations in the type and concentration of amines used, as well as the operating temperature and pressure.

Amine-based gas treatment processes can be easily scaled up or down to accommodate varying gas flow rates and impurity concentrations. This scalability makes them suitable for both large industrial facilities and smaller applications. The flexibility of these processes allows for efficient and cost-effective gas treatment solutions for a wide range of industries.

In addition to their role in removing acid gases from natural gas and industrial gas streams, amines also play a crucial role in the production of high-purity hydrogen gas. Hydrogen gas is used in a variety of industries, including petrochemicals and fuel cells. Amines are used to remove impurities like CO<sub>2</sub> and H<sub>2</sub>S from hydrogen-rich gas streams, ensuring the production of high-quality hydrogen.

### Application Insights

The acid gas removal segment is projected to experience rapid growth during the forecast period. Stringent environmental regulations, implemented by governments worldwide, are aimed at reducing air pollution and greenhouse gas emissions, particularly the emission of sulfur dioxide (SO<sub>2</sub>) and other acid gases from industrial processes, power plants, and refineries. These regulations have become a driving force behind the development and implementation of effective acid gas removal systems. Compliance with these regulations is crucial to ensure environmental sustainability and protect public health.

Acid gas removal technologies are particularly important for power plants, especially those fueled by coal and natural gas. These plants are major contributors to SO<sub>2</sub> and NO<sub>x</sub> (nitrogen oxides) emissions, which need to be effectively removed to meet



emissions regulations and prevent the formation of acid rain. By employing advanced acid gas removal systems, power plants can significantly reduce their environmental footprint and contribute to a cleaner and healthier atmosphere.

In the oil and gas industry, acid gas removal is also essential in the upstream, midstream, and downstream sectors. Gases produced during oil and gas operations often contain hydrogen sulfide (H<sub>2</sub>S) and carbon dioxide (CO<sub>2</sub>), which pose significant safety risks and can damage equipment if not properly managed. Through the implementation of reliable acid gas removal processes, the industry can ensure the safety of personnel, protect critical equipment, and meet the stringent pipeline specifications for gas quality.

By addressing the challenges associated with acid gas removal and implementing effective solutions, industries and governments can work together to achieve sustainable development goals, promote environmental stewardship, and safeguard the well-being of both present and future generations.

## Regional Insights

Asia Pacific emerged as the dominant player in the Global Gas Treatment Market in 2023, holding the largest market share in terms of value. The Asia Pacific region, including countries like China and India, experienced rapid industrialization, and economic growth. Growing environmental concerns and the need for sustainable development in the Asia Pacific region drove the demand for advanced gas treatment technologies. Governments in the region, recognizing the urgency to address air pollution, imposed strict emissions limits on industries, power plants, and vehicles. This regulatory framework compelled industries to adopt effective gas treatment solutions to reduce pollutants and comply with the stringent emissions requirements.

In addition to the increasing focus on emissions reduction, the Asia Pacific region also witnessed a surge in the demand for energy, particularly natural gas and renewable gases. This growing energy demand was driven by various factors, including population growth, urbanization, and the transition towards cleaner energy sources. Gas treatment processes played a vital role in purifying and conditioning gases for diverse applications, such as power generation, industrial processes, and transportation, ensuring the efficient and sustainable utilization of these energy resources.

Countries like China make substantial investments in natural gas infrastructure, including the development of pipelines, liquefied natural gas (LNG) terminals, and gas-

fired power plants. Gas treatment technologies have often become crucial to process and transport natural gas safely and efficiently, meeting the increasing demand for clean and reliable energy across the region.

### Key Market Players

BASF SE

Huntsman International LLC

Ecolab Inc.

The Dow Chemical Company

Eunisell Limited

Algoma Central Corporation

Advance Petrochemicals Ltd

Akzo Nobel N.V.

Exxon Mobil Corporation

Dorf ketal Chemicals (I) Pvt. Ltd.

### Report Scope:

In this report, the Global Gas Treatment Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

### Gas Treatment Market, By Type:

oAmines

oNon-Amines

### Gas Treatment Market, By Application:



oAcid Gas Removal

oDehydration

Gas Treatment Market, By Region:

oNorth America

United States

Canada

Mexico

oEurope

France

United Kingdom

Italy

Germany

Spain

oAsia Pacific

China

India

Japan

Australia

South Korea

#### oSouth America

Brazil

Argentina

Colombia

#### oMiddle East Africa

South Africa

Saudi Arabia

UAE

#### Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Gas Treatment Market.

#### Available Customizations:

Global Gas Treatment Market report with the given market data, Tech Sci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

#### Company Information

Detailed analysis and profiling of additional market players (up to five).

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