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India Industrial Specialty and Shielding Gases Market By Application (Metallurgy, Refinery, Chemical & Petrochemical, Others), By Mode of Distribution (Tonnage, Bulk, Packaged), By Region, Competition Forecast & Opportunities, 2020-2030F

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Abstracts

India Industrial, Specialty & Shielding Gases Market was reached USD 1.58 billion by 2024 is expected to reach USD 2.14 Billion by 2030 with a CAGR of 5.12% during the forecast period. The India market for industrial, specialty, and shielding gases offers a broad array of products, including oxygen, nitrogen, argon, helium, carbon dioxide, hydrogen, acetylene, and specialty gases. Air Liquide India, a global leader in industrial gases and services, is making a significant investment in Gujarat, India. The upcoming air separation unit (ASU) is designed to meet the growing demand for oxygen and nitrogen. With a production capacity of 1,500 tons per day of oxygen and 1,000 tons per day of nitrogen, the ASU is set to play a crucial role in supporting various industries and sectors. The commissioning of this state-of-the-art facility is anticipated in 2024, marking a significant milestone in Air Liquide's commitment to providing sustainable solutions for India's industrial gas needs. These gases serve various sectors such as metallurgy, refinery, chemical, and petrochemical industries, playing a significant role in driving market growth.

The market benefits from continuous advancements in the metal industries, which fuel the demand for these gases. This consistent demand, combined with the current momentum of the market, ensures steady expansion. In July 2024, Air Liquide India inaugurated a new air separation unit (ASU) in Mathura, Uttar Pradesh, with an investment of USD 4.18 million. This facility is designed to bolster industrial and healthcare operations in the region, catering to clients across northern India, including Rajasthan, Madhya Pradesh, and Delhi. The ASU will enable Air Liquide to address the

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increasing demand from sectors such as automotive, metal fabrication, heat treatment, photovoltaics, electronics, and local hospitals. Furthermore, the plant is slated to transition to renewable energy operations by 2030.

The market is on a positive trajectory, poised for substantial growth in the upcoming years due to increased demand from key industries. Given this favorable outlook, the India market for industrial, specialty, and shielding gases presents attractive opportunities for both existing market players and potential newcomers. With its diverse product range, broad application scope, and growing demand, the market holds considerable potential for sustained growth and profitability.

Key Market Drivers

Growing Demand of Industrial, Specialty & Shielding Gases in Food & Beverage Industry

The industrial, specialty, and shielding gases market in India is experiencing robust growth, primarily driven by the increasing demand from the thriving food & beverage industry. These gases serve various applications across different segments of the food & beverage sector, playing a pivotal role in driving market expansion. In particular, food-grade gases are essential in the food & beverage industry, contributing significantly to processes such as freezing, chilling, carbonation, and packaging of food and beverages. Incorporating these gases ensures the freshness, quality, and safety of products, meeting the growing consumer expectations for superior quality, diverse variety, and optimal freshness.

Notably, the COVID-19 pandemic has influenced market dynamics. Despite a decrease in restaurant dining, there has been a notable increase in the use of CO2 in the food sector, where it is a significant consumer of liquid CO2.The rising demand for industrial, specialty, and shielding gases in the food & beverage industry is a key driver of India's market for these gases. As the food & beverage sector continues to evolve and expand, it will further stimulate market growth, presenting promising opportunities for industry players. Through continuous innovation and adaptation to evolving consumer preferences, the industry is poised for a bright future.

Growth In Welding and Fabrication Industries

The growth in welding and fabrication industries is a key driver for the demand for shielding gases in India, particularly argon, helium, and carbon dioxide. These gases

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are integral to processes like TIG (tungsten inert gas) and MIG (metal inert gas) welding, which are widely used across several key sectors, including automotive, construction, and shipbuilding. The ability of shielding gases to protect welds from contaminants in the air ensures stronger, cleaner, and more durable joints, making them indispensable in high-precision fabrication and welding tasks.

The Indian automotive industry is one of the most significant contributors to the increased demand for welding and fabrication gases. With the growing production of vehicles, including electric vehicles (EVs), the need for advanced welding technologies that require shielding gases has escalated. Similarly, India’s expanding infrastructure projects, particularly in the construction of roads, bridges, and buildings, rely heavily on welding to ensure structural integrity. This surge in infrastructure development is propelling the demand for high-quality welding materials, which in turn drives the consumption of shielding gases like argon and carbon dioxide.

Shipbuilding is another prominent industry benefiting from the increased demand for welding gases. The expansion of India’s maritime sector and the construction of larger, more complex vessels require welding technologies that ensure precision and strength. The use of specialized gases in welding ensures that the materials used in shipbuilding meet high standards of durability and safety, making them crucial to the sector’s growth.

Growing Demand of Industrial, Specialty & Shielding Gases in Healthcare Industry

Industrial and specialty gases are indispensable in the healthcare sector, serving critical roles beyond providing life-supporting oxygen in hospitals. These gases are essential for various medical applications, including the production of medical devices requiring sterile gases to uphold stringent quality and safety standards. Linde India operates 33 production facilities and filling stations nationwide, including the country's largest air separation plant in Jamshedpur. The company offers a diverse portfolio of gases and gas mixtures, along with a comprehensive range of related equipment, pipeline solutions, and engineering services to meet the requirements of various industries.

As the healthcare industry undergoes rapid expansion, the demand for industrial and specialty gases continues to escalate, particularly for medical-grade gases crucial for optimal healthcare facility operations and patient care. Heightened awareness of these gases' importance in delivering safe and effective medical treatments further propels market growth. The COVID-19 pandemic underscored the pivotal role of industrial and specialty gases in healthcare. The unprecedented surge in demand for medical oxygen

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during the pandemic's peak highlighted these gases' life-saving significance, reshaping market dynamics. India's market for industrial, specialty, and shielding gases experiences significant growth driven by the healthcare industry's continuous evolution and expansion. As the sector progresses, new opportunities emerge for industry stakeholders to meet escalating demand and advance healthcare technologies and treatments.

Key Market Challenges

Volatility in Availability of Raw Materials

The industrial, specialty, and shielding gases market in India is witnessing substantial growth, primarily fueled by increased demand from metal industries, particularly the steel sector. However, amidst this promising growth, challenges have surfaced, notably concerning raw material availability volatility.

The production of industrial gases relies heavily on raw materials such as natural gas, air, and various feedstocks. Fluctuations in the availability and prices of these raw materials can significantly impact production costs and market dynamics. For instance, the cost of components used in producing specialty carbon black, a critical ingredient in certain industrial gases, is influenced by the prices of feedstock oil, natural gas, and high-sulfur fuel. Any fluctuations in these prices directly affect industrial gas production costs.

Broader economic factors contribute to this challenge. Volatile raw material prices, inflation, geopolitical risks, and inadequate manufacturing capacities relative to domestic demand all influence market dynamics. The industrial gases market in India thus presents a delicate balance between growth opportunities and challenges. Diligent monitoring and strategic approaches are essential to navigate these complexities and ensure sustained success in this evolving landscape.

Key Market Trends

Rise in Hydrogen Economy

The industrial, specialty, and shielding gases market in India is currently experiencing rapid transformation, primarily propelled by the significant emergence of the hydrogen economy. As societies worldwide strive for cleaner and more sustainable energy sources, hydrogen has gained prominence across various sectors, including the

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industrial gases market. Hydrogen, a long-standing element, is now being thrust into the forefront of the global energy transition. Its demand has surged remarkably, increasing more than threefold since 1975, with a substantial portion of hydrogen supplied from fossil fuels.

India, with its ambitious renewable energy goals and firm commitment to the Paris Agreement, is actively exploring hydrogen's potential as an alternative energy source. This keen interest is evident in the growing demand for hydrogen within India's industrial gases market.

Within the industrial gases market, hydrogen is utilized across diverse sectors, including refining, chemical production, metallurgy, and more recently, as a clean energy carrier. The expanding presence of the hydrogen economy is thus significantly influencing the growth and development of this market. The ascent of the hydrogen economy represents a prominent and transformative trend within India's industrial, specialty, and shielding gases market. As the country continues to investigate and invest in hydrogen as a clean and sustainable energy solution, this trend is poised to shape the market's future, offering exciting opportunities for industry stakeholders.

The Increasing Focus on Environmental Sustainability

The increasing focus on environmental sustainability is becoming a significant driver for the India Industrial Specialty and Shielding Gases Market as industries seek to reduce their environmental footprint and enhance operational efficiency. Environmental concerns, including rising carbon emissions and the depletion of natural resources, are prompting companies in India to adopt greener and more sustainable practices. As industries embrace sustainability, the demand for specialty gases that facilitate cleaner and more efficient processes is growing rapidly.

One of the key examples of this is the use of carbon dioxide (CO2) in enhanced oil recovery (EOR). In the oil and gas sector, CO2 is injected into aging oil reservoirs to improve oil extraction and reduce energy consumption. This method allows for more efficient use of natural resources while reducing the environmental impact of extraction processes. As India's energy sector moves toward sustainable practices, the demand for CO2 and other specialty gases used in EOR is expected to rise.

Another significant driver is the use of nitrogen in creating inert atmospheres, particularly in the handling and storage of hazardous materials, such as explosives and chemicals. Nitrogen is an essential gas in reducing the risk of fires or explosions during

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manufacturing processes, ensuring a safer and more environmentally-friendly approach to hazardous material management. Its increasing use in industries like pharmaceuticals, chemicals, and food processing, where environmental regulations are stringent, is further pushing the demand for specialty gases. In addition to these applications, technological advancements like carbon capture and storage (CCS) are playing a critical role in reducing emissions and mitigating climate change. CCS technologies capture carbon dioxide produced during industrial processes and store it underground, reducing overall emissions. As India focuses on meeting its sustainability goals, the demand for gases used in CCS systems, such as CO2 and other specialty gases, is growing.

Segmental Insights

Application Insights

Based on the category of application, the metallurgy segment emerged as the dominant player in the Indian market for Industrial, Specialty & Shielding Gases in 2024. Industrial gases play a vital role in metallurgical processes, offering essential functionalities and advantages. For instance, argon, commonly used as a shielding gas, provides optimal protection during electric arc welding for both nonferrous and some ferrous metals. This shielding gas creates a controlled environment that prevents oxidation and ensures high-quality welds. Welding gases, like acetylene, serve multiple purposes in metal cutting and welding applications. Acetylene, renowned for its high heat output, enables efficient and precise metal cutting, making it an ideal choice for various industrial processes. Its versatility and reliability make it a preferred option in many welding operations.

The increasing demand from metal industries, particularly the steel sector, is significantly boosting the usage of industrial gases. The Indian steel industry, acknowledged as one of the fastest-growing globally, heavily depends on industrial gases for diverse processes, including oxygen steelmaking. These gases, such as oxygen, play a pivotal role in facilitating the production of high-quality steel, ensuring efficient combustion and heat transfer, and contributing to the overall productivity and competitiveness of the steel industry.

Regional Insights

West India emerged as the dominant region in the India Industrial, Specialty & Shielding Gases Market in 2024, holding the largest market share in terms of value. West India, known for its diverse industrial base, encompasses sectors such as metallurgy, refinery,

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chemical, petrochemical, and more, all of which play a significant role in the region's economic growth. These industries, driven by their unique requirements, have a high demand for various types of industrial gases to support their operations. For instance, argon, a versatile gas, finds its application as a shielding gas for electric arc welding, ensuring the quality and integrity of the welding process.

The region witnesses a consistent and substantial demand for industrial gases from end-user industries, particularly the metal industry, with a special emphasis on steel production. The critical processes involved in these industries, including refining, smelting, and shaping, rely heavily on the availability of significant volumes of industrial gases. Whether it's oxygen for the oxygen-enhanced combustion process or nitrogen for inerting and purging applications, the industrial gas requirements in West India are vital to sustain and propel the region's industrial growth.

Key Market Players

Praxair India Private Limited

Linde India Limited

Bhuruka Gases Limited

Bombay Oxygen Investments Ltd.

SICGIL India Limited

Report Scope:

In this report, the India Industrial, Specialty & Shielding Gases Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

India Industrial, Specialty & Shielding Gases Market, By Application:

Metallurgy

Refinery

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Chemical & Petrochemical

Others

India Industrial, Specialty & Shielding Gases Market, By Mode of Distribution:

Tonnage

Bulk

Packaged

India Industrial, Specialty & Shielding Gases Market, By Region:

North India

East India

West India

South India

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the India Industrial, Specialty & Shielding Gases Market.

Available Customizations:

India Industrial, Specialty & Shielding Gases Market report with the given market data, TechSci 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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