

Molybdenum Superalloys Market Assessment, By Application [Mineral processing, Waste incineration, Desalination, Thermal Application, Others, By End-use Industry [Chemical Industry, Construction, Pharmaceutical, Oil & Gas, Pulp & paper, Electrical & Electronics, Metal processing, Military & Defense Industry, Others], By Region, Opportunities and Forecast, 2016-2030F

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# **Abstracts**

Molybdenum Superalloys market size was estimated to be 14.32 kilo tons in 2022, which is expected to reach 25 kilo tons in 2030, with a CAGR of 7.2% for the forecast period between 2023 and 2030. Molybdenum superalloys play a pivotal role across diverse applications due to their remarkable high-temperature and corrosion resistance properties. These alloys are integral to critical components in the aerospace and defense sectors, including aircraft engines, rocket propulsion systems, and military hardware.

Simultaneously, the energy sector heavily relies on molybdenum superalloys in applications such as power plants and nuclear reactors, where their capacity to perform in high-temperature environments is paramount. As the global pursuit of cleaner and more efficient energy gains momentum, the demand for these alloys remains resolute, further strengthening their significance in the market.

Additionally, in the oil and gas industry, molybdenum superalloys find applications in crucial equipment, from drilling components to pipelines, where resistance to extreme conditions is essential for longevity and performance. Similarly, the electronics industry



consumes molybdenum superalloys, especially in semiconductor manufacturing, where their ability to excel in high-temperature and vacuum environments ensures the reliable production of advanced electronic components.

Strong Demand from the Chemical Sector to Drive the Market

Molybdenum superalloys exhibit impressive resistance to a wide spectrum of corrosive substances including chromic, sulfuric, hydrochloric, hydrofluoric, and nitric acids. This exceptional corrosion resistance broadens the spectrum of potential applications and makes them invaluable in critical roles, from essential components in chemical processing to the rigorous conditions encountered in gas turbines and oil and gas production. Consequently, the resilience of molybdenum superalloys to corrosive agents positions them as essential drivers of efficiency and reliability in these industries.

For instance, The Al-Jubail Ethylene Plant, managed by Saudi Aramco Total Refining and Petrochemical Company, is a major petrochemical project set for completion in Saudi Arabia by 2027 which has a substantial capacity of 1.50 million tons and comes with a budget of USD 2.7 billion. Huge developments in the chemical sector will raise the requirement for molybdenum superalloys globally.

Strong Resistive Properties to Gain Traction in the Market

Molybdenum superalloys' exceptional high-temperature strength, corrosion resistance, and enduring mechanical integrity drive their usage in varied industries. Moreover, their remarkable resistance to corrosion in harsh environments through chemical processing and oil and gas applications by extending the lifespan of these materials make them indispensable. Maintaining peak performance under challenging conditions further maintains the significance of molybdenum superalloys across diverse sectors, fueling their continuous market growth.

For instance, Alloy X, one of the molybdenum superalloys, is used in applications where it is subjected to high temperatures up to 2200-degree Fahrenheit. Superior physical properties like high thermal and corrosion resistance to drive the market of molybdenum superalloys.

Growing Demand from Electronics Sector

Semiconductor manufacturing processes often involve incredibly high temperatures and precise control over the materials used. Molybdenum superalloys are preferred because



they maintain their structural integrity and mechanical properties even at elevated temperatures, ensuring the reliability and consistency of semiconductor components. Moreover, their exceptional resistance to corrosion and material degradation in vacuum conditions further solidifies their role in semiconductor production.

For instance, the expansion of the Soitec - Pasir Ris SOI Wafer Fab Manufacturing Facility in Northeast, Singapore has a projected value of USD 500 million, construction work commenced in Q4 2022 and is expected to reach completion by Q4 2026. The increase in global semiconductor manufacturing projects raises the requirement for molybdenum superalloys.

### Impact of COVID-19

The COVID-19 pandemic significantly disrupted global supply chains, impacting the production and distribution of molybdenum superalloys and their essential raw materials. Molybdenum Superalloys encountered delays and shortages due to factory shutdowns and transportation constraints. The pandemic-induced lockdowns and economic downturns further exacerbated the situation, reducing demand in various industries, including construction, chemical, and aerospace. However, while some sectors witnessed a decline in demand, others underwent notable transformations. For instance, the semiconductor and electronics industries observed heightened demand for molybdenum superalloys driven by the rapid adoption of remote work and the acceleration of digitalization trends during the pandemic.

#### Impact of Russia-Ukraine War

The Russia-Ukraine conflict notably impacted the molybdenum superalloys market, particularly in Europe. Russia served as a significant supplier of raw materials such as nickel, the import ban on Russian goods by several countries tightened the supply of nickel and the production costs associated with molybdenum superalloys increased in these countries, leading to reduced procurement activities including the conflict triggering shifts in the global distribution of oil and gas resources. This shift necessitated new offshore construction and pipeline projects, subsequently increasing the demand for molybdenum superalloys in these applications.

### Key Players Landscape and Outlook

Major global molybdenum superalloys market players are solidifying their market positions through strategic expansion initiatives. These initiatives encompass



establishing new facilities to cater to the growing demand and capitalize on market opportunities. Additionally, many of these players are acquiring other companies to bolster their market presence further and diversify their product offerings.

For instance, Plansee Group acquired a US company, Mi-Tech Tungsten Metals in Indianapolis during November 2022. Through the acquisition, Plansee is enhancing its market presence in North America, this move will result in an expanded portfolio of products and services, ultimately benefiting customers with a wider array of offerings.

The molybdenum superalloys market presents a resilient outlook with steady demand anticipated from critical sectors such as defense, energy, and construction. Sectors such as oil and gas, chemical processing, desalination, and infrastructure development continue to propel the need for corrosion-resistance and high-performance materials like duplex stainless steel. Additionally, the growing emphasis on renewable energy and sustainable technologies offers new avenues for these alloys. However, the market remains influenced by geopolitical factors, price volatility, and the need for continuous technological advancement to meet evolving industry demands, making adaptability and strategic planning key to prospects.



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