

Global Hafnium Market Outlook to 2027

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Abstracts

Hafnium (Hf) is a lustrous, silvery gray, tetravalent transition metal, Hafnium chemically resembling Zirconium, and is found in many Zirconium minerals. According to BlueQuark Research & Consulting, the Global Hafnium market is expected to witness a significant growth rate during the forecasted period. Hafnium metal has excellent welding, processing, high-temperature resistance, corrosion resistance, and a large cross-section to capture a thermal neutron and is an ideal neutron absorber, making it appropriate for the manufacture of atomic reactor control rods protective devices are expected to drive the global Hafnium market. In addition to this, Hafnium is used as a getter in many inflation systems because it can remove unwanted gases such as oxygen and nitrogen from the system and has strong anti-volatility, making it suitable for use as an additive in hydraulic oil to prevent hydraulic oil volatilization during high-risk operations during the chemical formation process is estimated to drive the global Hafnium market. Further, the characteristic ductility, oxidation resistance, and high-temperature resistance of Hafnium make it an excellent alloy material for various applications such as a hafnium-niobium alloy containing 10% hafnium is used as a rocket nozzle, while a tantalum-tungsten alloy containing 2% hafnium is used as a spacecraft protective material, and Hafnium is used in the production of tungsten wire is projected to drive the Global Hafnium market. However, the difficult and expensive separation process for Hafnium and the decrease in the number of nuclear plants is estimated to hamper the growth of the Hafnium market.

Hafnium emits electrons readily and is used as a cathode in X-ray tubes, alloys of Hafnium and tungsten, or molybdenum are also used as electrodes in high-voltage discharge tubes and isotopes of Hafnium and lutetium are used in isotope geochemistry and geochronological applications as a tracer of the isotopic evolution of the Earth's mantle over time. Hafnium-based compounds are employed in gate insulators in the 45 nm generation of integrated circuits.

The Alloy manufacturing industry is the vital consumer of Hafnium and is projected to drive the global market. With its strong affinity for carbon, nitrogen, and oxygen, Hafnium produces alloys with iron, titanium, niobium, tantalum, and other metals, and the metal also provides strengthening through second-phase particle dispersion, the industry is expected to grow. This is due to Hafnium's high melting point, which helps strengthen grain boundaries and improves both high-temperature creep and tensile strength and it is also used in environments with extremely high temperatures, pressures, and stresses, and small amounts of Hafnium increase the adherence of protective oxide scales and improve corrosion resistance. The production of superalloys accounts for more than a third of global hafnium demand, and more than 40% of Hafnium is produced using The Van Arkel process, which meets the majority of Hf's need for superalloys in the form of exceptionally pure crystal bars. In addition to this, the use of hafnium alloys is being influenced by the growing demand from turbines as Hafnium-bearing alloys improve engine efficiency while also lowering pollutants and taking into account the level of pollutants.

Some of the market's key players are ATI Metals, ACI Alloys, Alkane Resources Ltd., Phelly Materials Inc., China Nuclear Jinghuan Zirconium Industry Co., Ltd., Nanjing Youtian Metal Technology Co., Ltd. and Baoji Chuangxin Metal Materials Co. Ltd., among others.

The North American region is poised to be the leader in the production and the subsequent consumption of Hafnium, with most of the consumption in countries like the U.S. and Canada. The region is home to Admat, Inc., All Metal Sales, Inc. Inorganic Ventures, Michigan Metals & Manufacturing, Inc., and ACI Alloys companies that are prominent manufacturers and distributors of Hafnium. In addition to this, the inclined demand for applications such as gas turbines and the aerospace industry and in nuclear, photographic, and semiconductors will fuel the consumption of Hafnium in the region. With the increase in demand, companies are also increasing their supply, such as high-quality nuclear-grade hafnium oxides, sponges, etc., suitable for nuclear reactor applications, and the Hafnium-iron alloys, Hafnium - aluminum alloys possessing excellent chemical properties have superior chemical properties and is resistant to chemicals and oxidation. The region operates large numbers of Nuclear power plants that account for the production of Hafnium as a by-product of the nuclear industry, separated from the Zirconium alloys used to clad fuel rods. Factors like these have made North America a lucrative region for growth in the Hafnium market.

In July 2021, For USD 250 million, a group of South Korean investors agreed to buy a 20% stake in the Dubbo rare earths project (a polymetallic deposit of rare earth,

Zirconium, niobium, Hafnium, tantalum, and yttrium) from Australian Strategic Materials (ASM).

Global Hafnium Market report provides deep insight into the market's current and future state across various regions. The study comprehensively analyses the Hafnium market by segmenting based on the type (Hafnium metal, Hafnium oxide, Hafnium Carbide, Others), Application (Super Alloy, Optical, Nuclear, Plasma cutting, Catalysts, Others), and Geography (Asia-Pacific, North America, Europe, South America, and Middle-East and Africa). The report examines the market drivers and restraints and the impact of Covid-19 on the market growth in detail. The study covers and includes emerging market trends, developments, opportunities, and challenges in the industry. This report also covers extensively researched competitive landscape sections with prominent companies and profiles, including their market shares and projects.

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