

# Global Ruthenium Market Outlook to 2027

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## Abstracts

Ruthenium, the last of the platinum group metals to be discovered, is a polyvalent silvery-white metal. This element is generally found in ores with other platinum group metals (PGM) in North and South America. At the same time, a commercial share is extracted from Canada and South Africa as well. Yanarta? in Turkey is the site of dozens of small fires that have been burning for over 2500 years. Ruthenium present in the igneous rocks under the flame is believed to act as a catalyst, permitting methane formation at lower temperatures (i.e., below 100 °C), constantly fueling the flame. This rare element is used in wear-resistant electrical contacts and thick-film resistors. A minor application for ruthenium is in chemical catalysis and platinum alloying. A fairly recent application of ruthenium is as the capping layer for extreme ultraviolet photomasks.

According to BlueQuark Research & Consulting, the global ruthenium market is expected to witness growth at a somewhat significant rate during the forecast period. The major factors responsible for the global ruthenium market's growth would be increasing demand in the electrical sector to produce hard disks, thick film chip resistors, and plasma display panels. The demand for ruthenium as a catalyst, especially in the Chlor-alkali process, is anticipated to propel global growth to more extent. Other than these major applications, emerging applications in thin-film solar cells and superalloys will contribute their fair bit. However, ruthenium's rarity and government regulations are restraining factors to this market's growth. Though ruthenium is not known to have any biological role, ruthenium(IV) oxides are highly toxic and pose a challenge to the global ruthenium market.

North America is expected to be the largest market for global ruthenium owing to the majority of the production and consumption of this metal taking place in theregion. Apart from the chemical and electronic industries' consumption, the medical sector, with the recently developed ruthenium-based cancer therapy, is expected to aid in the domestic

consumption of the ruthenium produced. With Russia and Brazil having commercially viable PGM resources, Europe and South America are also expected to serve as attractive markets. The Asia Pacific is expected to witness significant growth due to increasing demand in electronics and semiconductor applications.

The global ruthenium market is quite consolidated. Major players in the market were found to be Johnson Matthey, American Elements, Tanaka Kikinzoku Kogyo K.K., Anglo American, and Heraeus, among others.

Certain materials like iron form permanent magnets or get attracted to such materials. At room temperature, this property called ferromagnetism was exhibited only by three elements (or at least was thought so until 2018) in the periodic table, namely, iron (Fe), cobalt (Co), and nickel (Ni) with the rare-earth element gadolinium (Gd) nearly missing this room temperature criterion by just 8°C. Ruthenium became the fourth eligible single-element to force the ferromagnetic phase in the material using ultra-thin films, expanding its application as a magnetic material.

Precursors are metal-organic compounds used in chemical vapor deposition (CVD), atomic layer deposition (ALD), and other processes in order to form thin metal films or metal wiring on substrates. TANAKA, a Japan-based company, developed 'TRuST,' a liquid ruthenium precursor for CVD/ALD processes, whose vapor pressure beats the previous liquid ruthenium's vapor pressure to potentially reach the number 1 spot in the world as per the company's internal evaluation.

Besides these niche applications, ruthenium also has loads of research scope in electronics and electrochemistry. Some of the recent findings involve applications in quantum computing and water splitting for producing fuel cell hydrogen.

Global Ruthenium Market report provides deep insights into the current and future state of the ruthenium market across various regions. The study comprehensively analyzes the ruthenium market by segmenting based on form (Dry Metal/ Metal Powder, Sponge Metal/ Metal Foam, Metal Salts/ Compounds, and Others), source (Mining, Extracting, and Refining, and Recycling), application (Electrical, Chemical, Electrochemical, Automotive, and Others), and geography (North America, Europe, Asia-Pacific, South America, and Middle-East and Africa). The report examines the market drivers and restraints, along with the impact of Covid-19 on the market's growth, in detail. The study covers & includes emerging market trends, developments, opportunities, and challenges in the industry. This report also covers extensively researched competitive landscape sections with profiles of major companies, including their market shares and

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American  
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sol ?€“ GreatCell Solar  
aeus  
ala  
nson

Da Technology Limited  
a Chemie  
anye-Stillwater  
erck KGaA  
rdt  
rnickel  
KEM  
ssian Platinum  
em Chemicals  
naka Kikinzoku Kogyo K.K.  
nicore

RUYA METAL Co., Ltd. *\*List of  
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