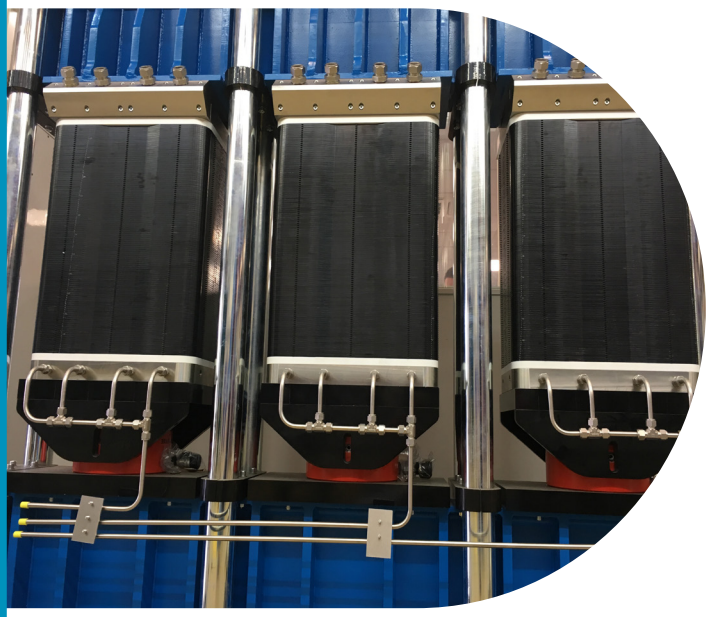
Platinum is a critical mineral due to its use in technologies that are enabling the clean energy transition, such as PEM electrolysers. Picture credit: ITM Power



CRITICAL MINERAL

Platinum's strategic and economic importance is underlined with the United States, European Union and China recognising its critical mineral status

Earlier this year, the United States Geological Survey (USGS), the science agency for the United States (US) government's Department of the Interior, released an updated list of 50 mineral commodities deemed critical to the US economy and national security.

In the US, critical minerals are defined by the Energy Act of 2020 as those non-fuel minerals which have a supply chain that is vulnerable to disruption and which serve as an essential function in the manufacturing of a product, the absence of which would have significant consequences for the economic or national security of the US.

This year's list – which will be updated again in three years' time – features the platinum group metals (PGMs) platinum, palladium, iridium, rhodium and ruthenium as individual elements for the first time, reflecting the increasing importance of PGMs as raw materials in technologies that support the clean energy transition.

Platinum, in conjunction with iridium, is used as a catalyst in proton exchange membrane (PEM) electrolysers that use polymer electrolyte, one of the two leading electrolysis technologies available in the market. PEM electrolysers are used to make 'green' hydrogen, a carbon-free fuel, from renewable energy. Platinum and ruthenium are used as catalysts in hydrogen fuel cells to provide power in applications including zero-emissions fuel cell electric vehicles.

In Europe, the European Commission's Action Plan on Critical Raw Materials has been in existence since 2020. Its focus is on developing secure, resilient, diversified and sustainable supply chains that foster the transition towards a green and digital economy. The plan incorporates a list of 30 critical raw materials, designated as such based on economic importance and perceived supply risk, which include the same PGMs as those recently identified by the USGS, citing their use as chemical and automotive catalysts as well as their use in electronic applications and fuel cells.

Supply of PGMs is constrained, with long lead times associated with mining and refining projects aimed at increasing production capacity. Picture credit: PGMs being processed, Anglo American Platinum

In China, platinum is recognised as a metal of strategic importance for its use in PEM technologies. Along with lithium, nickel and cobalt, platinum is specifically mentioned in the China State Council's New Energy Vehicle Industrial Development Plan (2021-2035), which encourages Chinese companies to improve their capacity to secure long-term supplies of these rare and in-demand elements.

Tightening markets for critical minerals

It is increasingly being appreciated that having a secure stake in the value chains of climate-safe energy technologies, such as green hydrogen production, can boost a country's economic competitiveness, national security and energy independence. Russia's invasion of Ukraine has shone a further spotlight on this need, with the European Union looking to accelerate and expand its capacity to generate green hydrogen as one means of improving its energy independence.

In its recent report 'Geopolitics of the Energy Transformation - The Hydrogen Factor', The International Renewable Energy Agency points to the impact the increased need for material security could have on demand for critical minerals including platinum. In its view, while geological supplies for most minerals and metals are presently sufficient, markets are bound to tighten with rapidly rising demand and the long lead times associated with mining and refining projects.

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