



# PLATINUM USE IN INDUSTRY

Platinum's many industrial uses are the overlooked cornerstone of demand – up by nearly four times in three decades

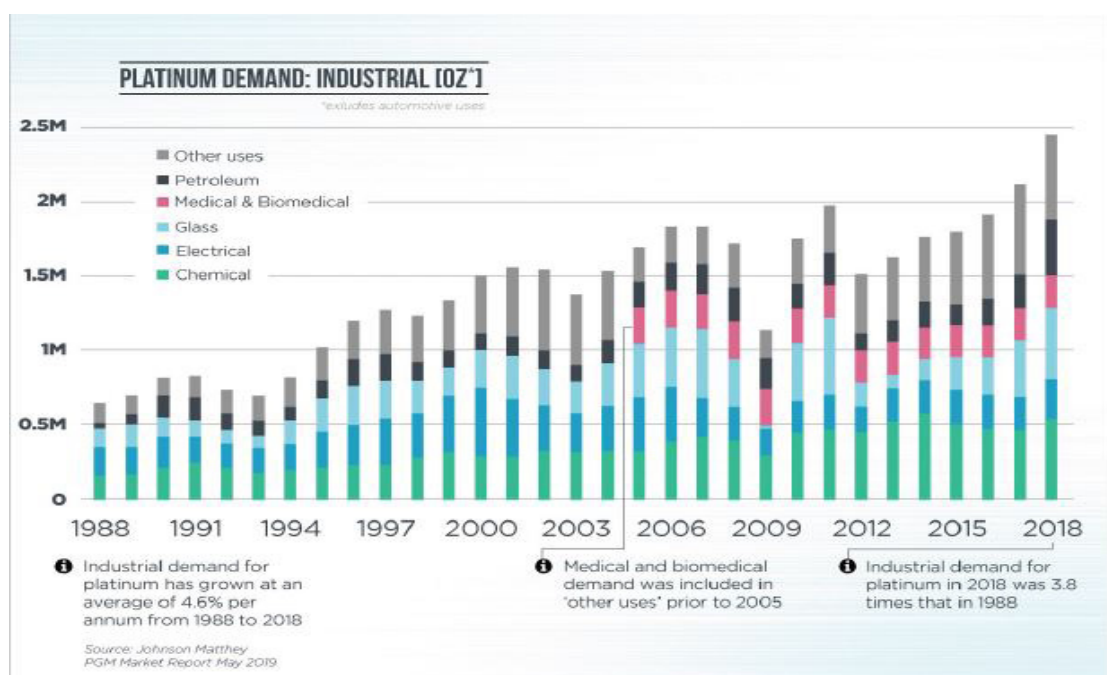
Last year industrial use of platinum narrowly overtook other demand segments for the first time since 2011, reaching 35 per cent of net demand – that is, gross demand net of recycling.

To put this into context, in 2018 the next two categories of demand, namely automotive and jewellery, contributed 31 and 34 per cent of total net demand respectively.

Industrial use of platinum has achieved this leading position by stealth – quietly sustaining an annual average growth rate of 4.6 per cent for the last thirty years, which is perhaps why it has not always received the attention it deserves.

As a result, industrial demand is seldom the focus of market analysis or commentary relative to automotive, jewellery and investment demand. However, its growth has almost quadrupled platinum volumes, mainly due to its great strengths; diversity and range.

This can make its growth harder to explain, encompassing as it does such a broad range of sectors. Industrial demand comprises platinum used in the production of chemicals, petroleum, glass, electrical and electronic components and medical and bio medical applications. It also includes demand from the growing platinum-based hydrogen fuel cell market.



## Platinum the noble metal

It is platinum's versatility, borne of its unique chemical and physical properties, that makes it so important to a wide range of industrial and manufacturing processes today. As one of a handful of elements classified by chemists as noble metals, platinum resists corrosion and oxidation. In addition to this ultra-stability, it is valued also for its high melting point – for example in the glass making industry, where it can withstand the high temperatures necessary without causing contamination. Light emitting diode screens and glass fibre are produced using platinum.

One of platinum's most important uses is as a catalyst – speeding up chemical reactions and improving yields, while remaining unchanged itself in the process. Since the early 20th century it has been used as a catalyst in the commercial production of nitric acid,

a key component of fertiliser. It is also essential to the technology that is behind the growing numbers of fuel cell electric vehicles which rely on using a proton exchange membrane coated with a platinum catalyst.

Platinum is used in numerous healthcare treatments and medical devices. Its purity means it is well tolerated by the body and it is radiopaque due to its density, giving high x-ray visibility, especially important in stents and clot-retrieval devices used to treat cardiovascular disease. In addition, it is an excellent electrical conductor when used in pacemakers and cochlear implants. Compounds made from platinum are used in the treatment of many cancers.

In 2018 net demand\* for platinum in industrial uses was 1,910 koz compared to total net demand of 5,450 koz. Industrial demand is expected to again contribute the largest share of net demand in 2019.

*\*Platinum catalysts in industrial applications usually experience 'wear' of a few percent per annum before the entire catalyst is replaced. The worn catalyst is recycled. Annual platinum demand reflects the (relatively small) worn volume only for catalysts in service as well as the (sometimes large) entire catalyst for construction of new plant capacity. Platinum from recycled industrial catalysts is typically used to produce the new catalyst and this process is known as closed-loop recycling. The opposite, or open-loop recycling, would be a recycled car autocatalyst which is sold with the car and only returned for recycling at the end of the life of the vehicle.*

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