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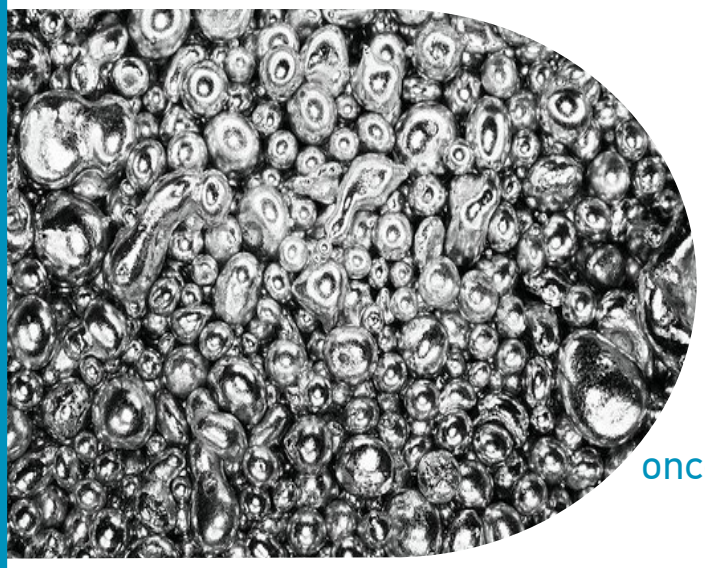

WORTH THE WEIGHT

Casting platinum to fabricate jewellery and other products only became possible relatively recently, once scientists unlocked platinum's unique physical and chemical properties

Platinum is renowned as both an industrial and precious metal because of its unique physical and chemical properties. Not only is it the metal of choice for fabricating fine jewellery due to its purity, lustre and strength, but it is also invaluable in a range of industrial and medical applications thanks to its high melting point, density and stability.

However, unlike other precious metals such as gold, which has been worked, melted and moulded by mankind for thousands of years, platinum was only identified as a separate element in the mid-18th century. In fact, it is the very qualities that make platinum so desirable from a manufacturers' perspective that make it difficult to isolate.

Platinum's high melting point proved especially challenging, until a breakthrough came in April 1782 which saw platinum melted for the very first time, paving the way for platinum casting. Casting is a technique that has been used for over 5,000 years in which a liquid material is poured into a casing, allowed to solidify and then broken out of the mould to create a specific shape. The oldest known casting is a copper frog dating from 3200 BC.

Today, casting is a highly-sophisticated manufacturing process used to create many objects that it would not be practical or economical to produce any other way. A casting of multiple items can be made cost-effectively in one go - a huge benefit, for example, in the production of jewellery, removing the need for intermediate stages such as soldering, sawing and filing while enabling intricate, bespoke designs.

Casting is also used to produce large or complex products for use in a wide range of sectors including automotive, aerospace, power generation and medical where items can be made in one piece to the required size.

Platinum rings on a casting 'tree' - a mould that allows a number of rings to be cast at the same time

The platinum challenge

The expertise required for casting platinum jewellery was developed over decades. More recently, platinum

casting has benefited from new technologies leading to even higher quality finishes – necessary to create the world's finest jewellery.

These include high-temperature casting methods that were originally pioneered for the aerospace industry, as well as introducing a new densification process which helps eliminate shrinkage as the platinum changes state from a liquid to a solid.

In 2018, industrial use of platinum, including casting, overtook other demand segments for the first time since 2011, reaching 35 per cent of net demand. Jewellery was the next largest demand segment in 2018, at 34 per cent of net demand for platinum.

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