

# NOBLE METALS



## ACT<sup>®</sup> Coatings, Fabrications and Linings For the glass industry

### Platinum/rhodium fabrications & linings

### ZGS platinum/rhodium alloys fabrications & linings

### Iridium fabrications & linings

### ACT<sup>®</sup> platinum/rhodium coatings

Johnson Matthey Noble Metals is a long-established supplier of platinum group metals (PGM). These alloys are inert in contact with molten glass and provide unequalled resistance to erosion.

Johnson Matthey glass products offer financial benefits, such as, increased output, reduced downtime, extended campaign life, ceramic shape retention and lower glass defects. Johnson Matthey is the only global fabricator offering a complete range of complementing technologies for glass manufacturers.

- Fabrications (self-supporting parts) or linings are made of welded sheets of platinum/rhodium alloys.
- ZGS (Zirconia Grain Stabilised) gives increased strength and service life to platinum/rhodium fabrications & linings.
- Iridium, one of the platinum group metals, is used in fabrications or linings for the most innovative and demanding applications.
- ACT<sup>®</sup> (Advanced Coating Technology) consists of a thin layer of platinum or platinum/rhodium applied to the surface of the ceramic.

Fabrications or linings withstand thermal cycling, ceramic cracking and exchange of contacting parts. For the most demanding applications, the use of platinum/rhodium alloys with dispersed zirconia particles (ZGS) can give increased mechanical strength and durability.

Iridium fabrications or linings are an ideal alternative to platinum/rhodium alloys in reducing environments. Iridium can be used at temperatures up to 2000°C in air. It has higher mechanical strength than ZGS platinum/rhodium alloys but may require some oxidation protection (available from Johnson Matthey). Any iridium solution can give competitive advantages and open doors to new glass applications.

ACT<sup>®</sup> (Advanced Coating Technology) is our proven technology for ceramic protection, with coating thickness from 200 to 500 microns in platinum and 10% rhodium/platinum. ACT<sup>®</sup> relies strongly on the integrity of the ceramic substrate. It is ideal for long runs and limited thermal cycling. Zircon mullite ceramics are routinely coated and are supplied as single items, or sets of forehearth and feeder consumables. In critical furnace areas, such as throats, Johnson Matthey provides ACT<sup>®</sup> coatings on fused cast ceramic blocks.

### Johnson Matthey Glass Products

Glass type	All types, including the most corrosive
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### Platinum/rhodium fabrications and linings

Benefits	Withstands thermal cycling, ceramic cracking and exchange of contacting parts
Typical metal return	Greater than 98%*

### ZGS Platinum/rhodium fabrications and linings

Benefits	Increased strength for the most demanding applications
Typical metal return	Greater than 98%*

### Iridium fabrications and linings

Benefits	Maximum strength, reducing environment, applications up to 2000°C
Typical metal return	Greater than 96%*

### ACT<sup>®</sup> Platinum Coated Ceramics

Benefits	100% shape retention for the lifetime of the coating
Typical metal return	Greater than 95%*

\* Based on estimated returned weight

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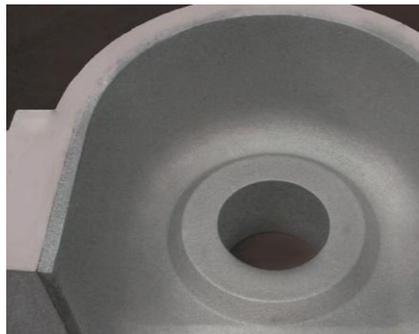
Different PGM solutions might apply to a glass process but only one will deliver the optimum costs/benefits. Johnson Matthey will assist and objectively recommend the PGM technology that best fits each customer's need.

Johnson Matthey offers full precious metal recovery with typical metal returns of greater than 95%\* for ACT<sup>®</sup> coatings and greater than 98%\* for all fabrications & linings.

\* Based on estimated returned weight



**Fabricated tube made of platinum/rhodium sheet**



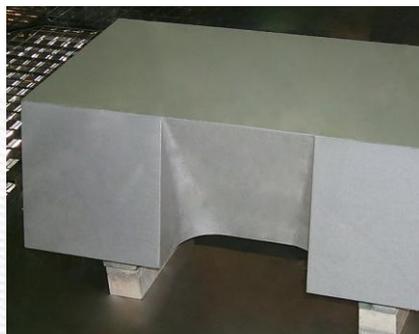
**Spout bowl, ACT<sup>®</sup> coated with a platinum/rhodium alloy**



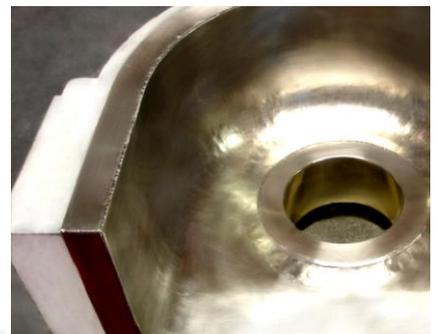
**Fabricated chamber made of iridium sheet**



**Stirring plunger, ACT<sup>®</sup> coated with platinum**



**Furnace throat, ACT<sup>®</sup> coated with a platinum/rhodium alloy**



**Spout bowl, protected with a lining made of ZGS platinum/rhodium sheet**

If you require more information on Johnson Matthey Noble Metals products please contact our technical support team.

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