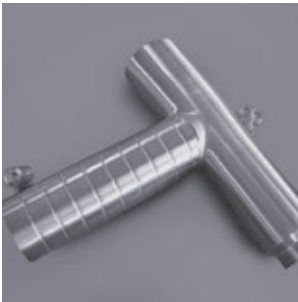
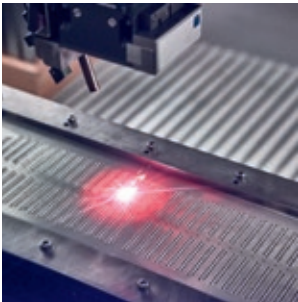




SAXONIA[®]
EDELMETALLE

For the glass and chemical industries SAXONIA produces special equipment made of precious metals. Due to their special material properties they are characterised by excellent temperature and corrosion resistance. We supply precious metal equipment produced individually or as a series, construct according to customer designs

or apply our engineering resources to converting individual specifications into customised user solutions. As a result you will always receive a device that is manufactured with high technical skills from certified materials and subjected to accurate quality testing.



BUSHINGS FOR THE GLASS- / BASALT-FIBRE-INDUSTRY

Worldwide SAXONIA bushings produce glass fibres from Basalt, E-glass, C-glass and other glasses in single-stage or two-stage processes for the following applications:

- /// Reinforcement of plastics for PC boards, tank contructions, pipes, automotive panels, automotive sunroofs, transparent coverings, boat and yacht building
- /// Textile glass fabrics for technical, electrical and acoustic insulation
- /// glass decorative fabrics (wallpaper)
- /// Fibre-glass mesh for plaster reinforcing
- /// Bitumen roof linings
- /// Reinforcing mesh
- /// Basaltrebars

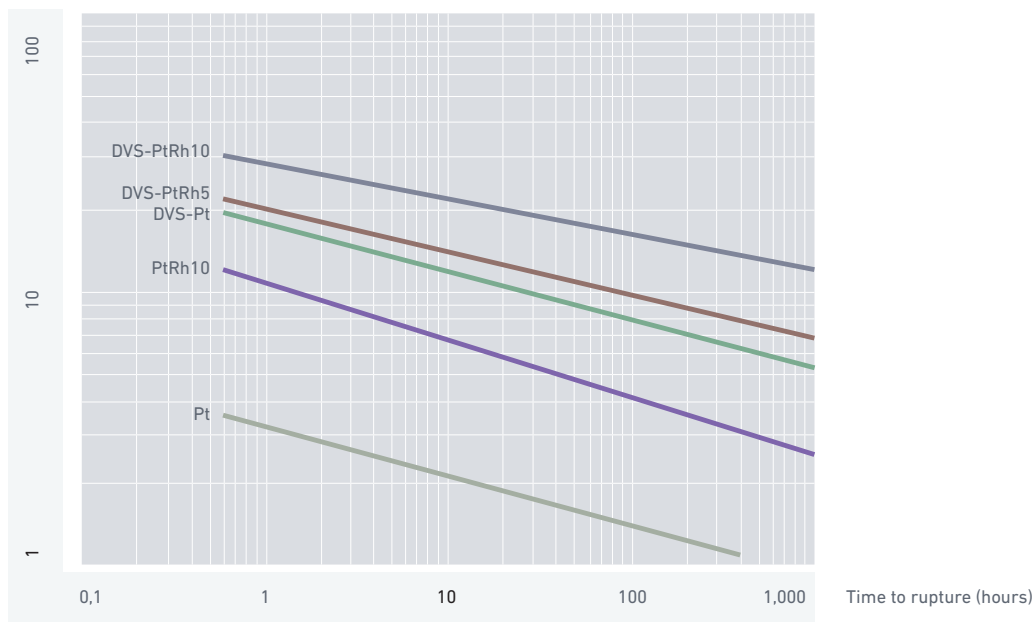
Bushings	
Materials	PtRh5, PtRh10, PtRh20 dispersion strengthened (DVS-Pt, DVS-PtRh5, DVS-PtRh10)
Number of nozzles	800-6.000
Nozzle geometry	high flexibility (outside / inside conical, cylindrical, customized)
Nozzle length	2 – 7 mm
Nozzle inner diameter	flexibly produced to customer request
Nozzle base production	pressed or laser welded



STRESS RUPTURE STRENGTH OF PLATINUM MATERIALS AT 1400 °C

SAXONIA Edelmetalle has been manufacturing equipment from fine grain stabilized platinum materials for a long time now. Towards this end, the product family of dispersion-strengthened alloys has been further optimized over the years. The ideal solution is DVS (dispersion-strengthened platinum), a perfect material for manufacturing glass forming devices. For quite some time now, both DVS-Pt and DVS-PtRh10 have been the material of choice in the glass industry for applications involving very high temperatures.

CREEP RUPTURE STRENGTH OF PLATINUM MATERIALS AT 1,400 °C
Applied stress (N/mm²)



Encouraged by several fiberglass producers, SAXONIA has developed a high-performance platinum alloy with a low rhodium content. The wish to reduce the rhodium stock had been a challenge for the existing platinum alloys. To meet the technical specification, SAXONIA introduced DVS-PtRh5 as a new ZrO₂-stabilized alloy in 2020.

By applying a sophisticated method, the submicroscopic zirconium oxide is processed into the platinum alloy before it finally reaches the desired crystallographic structure. The flat and elongated micrograins (less than 100 pm) help obtain the anticipated strength and the ability to compensate thermal variations. The picture below shows the newly created oxide dispersion alloy whose crystal growth rate is significantly lower than that of a non-doped alloy.

The following requirements were considered during the development phase:

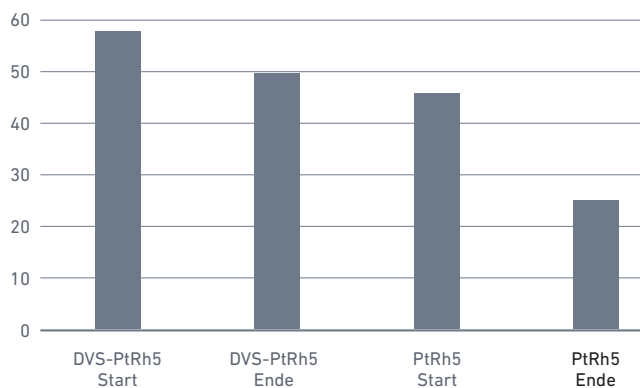
- | | | |
|---------------------------------------|-----------------------------|-----------------------------|
| /// High-temperature rupture strength | /// Mechanical ductility | /// Glass influence |
| /// Thermal conductivity | /// Electrical conductivity | /// Mechanical properties |
| /// Weldability | /// Glass wetting behavior | /// Resistance to corrosion |

The creep tendency of our new alloy was tested by analyzing its long-term exposure to high temperatures. The rate of deformation is a critical function of platinum alloys which is why we wanted to produce a stable crystal structure to increase the mechanical properties of the alloy.

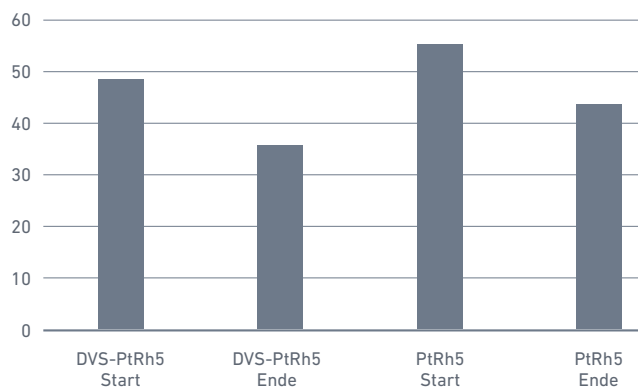
The tendency of the solid material to deform permanently under the influence of persistent heat and load is highlighted in the graph. Creep deformation is minimized substantially when compared to standard alloys. The laboratory test results show the specific properties of the alloy during a persistent temperature and exposure time.



TENSILE STRENGTH OF PLATINUM MATERIALS AT 1,200 °C
LONG-TERM HEAT TREATMENT
Tensile strength (N/mm²)



ELONGATION OF PLATINUM MATERIALS AT 1,200 °C
LONG-TERM HEAT TREATMENT
Elongation (%)



The DVS-PtRh5 shows a higher creep rupture strength than conventional platinum materials.

Over the past 12 months, practical applications in glass fiber production have been underway. The results were analyzed and compared in diverse laboratory tests.



DVS-PtRh5 MICROSCOPIC VIEW

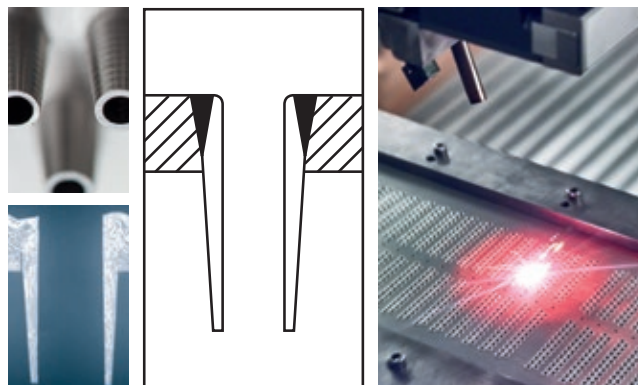
Melting range	1,810 – 1,820 °C
Chemical Purity	ASTM Grade 99,95
Electrical conductivity at 625 °C	1.399 m / Ohm mm ²
high temperature strength at 1,200 °C	58,0 N / mm ²
density	20,40 g / cm ³
thermal expansion coefficient at 1,500 °C	11.4 * 10 ⁻⁶ / K

Weldability:

In a bushing used for glass fiber production, the welding joint is a particularly critical aspect. With optimized laser welding, it is possible to attain homogeneous connections between the bottom plate and the bushing tips.

Summary:

The customers are fully satisfied with the improved properties of this new DVS material. SAXONIA has grown to become Europe's largest manufacturer of bushings and glass melting equipment. To this end, we are constantly improving our platinum materials and working alongside our engineering partners to develop bespoke designs for large-scale platinum equipment. As a customer, you are part of this success story – join us.



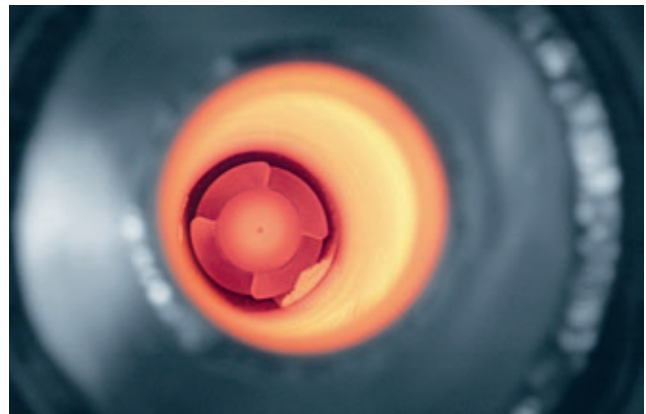
GLASS MELTING EQUIPMENT

Glass melting equipment by SAXONIA is used as a melting system for producing high-quality glasses or on special positions in the production flow which are decisive for the glass quality. The scope of supply also includes large equipment with more than 250 kg of platinum use (feeder, stirrer cell, refiner cell, cooling tube, plunger cell or vello cell) and accessories made of platinum materials like stirrers, plungers, bubblers, drains, stone cladding, orifices and nozzles. Glass melting equipment by SAXONIA is found worldwide in the following areas of application:

Glassschmelzgeräte von SAXONIA finden weltweit Anwendung in den Bereichen:

- /// Automotive headlight glass
- /// Projection lenses
- /// Crystal glass
- /// Tableware
- /// TFT and LCD glass
- /// Lamp glass tubes
- /// Borosilicate glass
- /// Glass ceramics
- /// Pharmaceutical tubes

Glass melting equipment	
Materials	PtPh5, PtRh10, PtRh20, dispersion strengthened DVS-PtRh10, DVS-PtRh5, DVS-Pt
Dimensions	Single devices up to 500 mm in diameter according to drawing and customer design



LABORATORY

SAXONIA produces a wide range of equipment and products for the laboratory. We are specialised in the manufacture of customised applications and special designs in accordance to customers specification. Our product programme includes:

- /// Moulds and crucibles in various designs and volumes made of Pt99.9, PtRh10, PtAu5, DVS-Pt, DVS-PtRh10 and other alloys
- /// Other laboratory equipment (e.g. stirrers or electrodes) on request

SERVICES / PRECIOUS METAL MANAGEMENT

In addition to the manufacturing SAXONIA also offers support and advanced services regarding our equipment.

- /// Design, development and optimisation of large-scale equipment, bushings and glass melting equipment – in cooperation with competent engineering partners
- /// Toolmaking workshop for own pressing tools
- /// Deglassing of used equipment and bushings
- /// Repairing damaged precious metal equipment
- /// Inspection of damage
- /// Recovering of precious metals equipment at end of life time
- /// Fixing of precious metal
- /// Holding and administration of metal accounts
- /// Procurement of precious metals
- /// Price information
- /// Refining for the extraction of pure precious metals
- /// Insured transport and collection of customer material

MEMBER OF THE SAXONIA GROUP



LONDON
PLATINUM &
PALLADIUM
MARKET



LBMA
GOOD DELIVERY
REFINER



SAXONIA[®]
EDELMETALLE

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