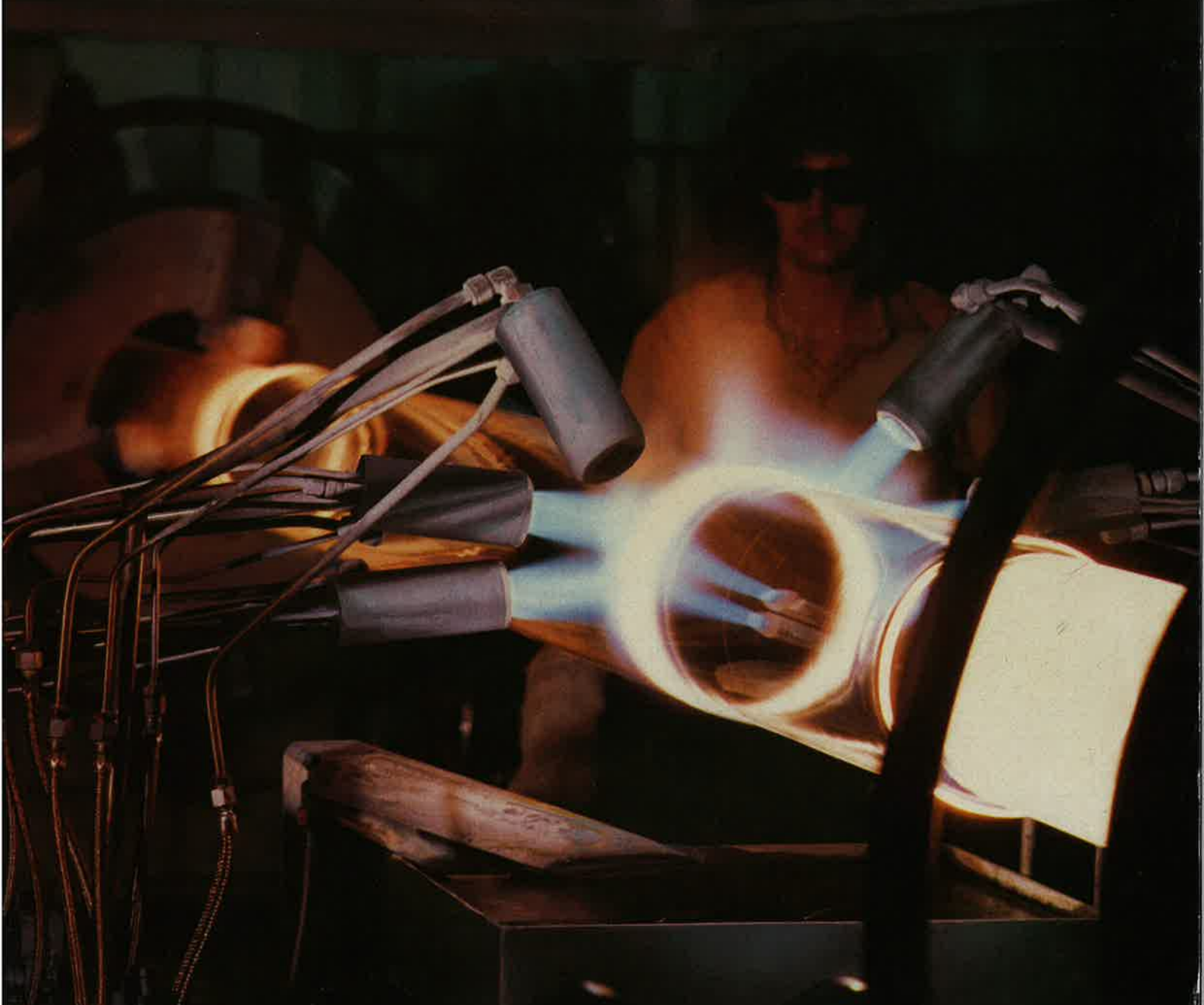


QUARTZ GLASS



Westdeutsche Quarzschmelze GmbH & Co. KG

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Deutsche Quarzschmelze was founded in Berlin in 1922; at that time few people could have foreseen the rate of growth and the significance this company would attain. The company moved to Geesthacht near Hamburg in 1949, changed its name to Westdeutsche Quarzschmelze and developed into a leading influence in the field. The transfer of technology which resulted from amalgamation with General Electric's Quartz Operation, U.S.A. in 1977 ensured continued rapid growth and the joint WQS/GE research and development program has resulted in products of the highest quality. WQS compliments the excellence of these products with an innovative consultancy and problem solving service based on its decades of experience.

WQS products from the raw material stage to finished product are subject to a strict quality control procedure to ensure consistent high quality.

The lamp, semiconductor and chemical industry, optics makers and research and development institutions all welcome the high quality quartz glass from WQS and an increasing number of customers are now reliant upon the excellence of these products.

The production and research workforce at Geesthacht consists of 250 people. The production area has recently been extended and is now 10,000 m². In addition the 4 branches – WQS Garching/Munich, WQS France/Melun, WQS France/Sud and WQS UK/Warrington contribute a further 3,000 m² of production areas.

Below: Headquarters in Geesthacht near Hamburg

We supply to:

The Lamp Industry

- Tight tolerance tubing and rod.
- Low OH content tubing.
- Tubing for ozone free lamps.
- Lamp bodies and parts.

The Semiconductor Industry

- Process quartzware furnace tubes and accessoires, paddles, boats, elephants, tanks etc.
- High temperature quartzware.
- Low alkali furnace tubes for the MOS process.
- Optics, windows and substrates.
- Special high-tech designs.

The Silicon Industry

- Snowball and clear quartz crucibles.

Research and Development Organisations

- Apparatus.
- Optics.
- Custom designed specials.

The Optics Industry

- Synthetic and natural grades of quartz glass.
- Devices – plates, windows, prisms, lenses etc

The Optical Fibres Industry

- Support tubes.
- Process quartzware.





WQS quartz glass tubes and rods.



2 WQS quartzware for the semiconductor industry.



Quartz glass has a variety of applications in many industries. WQS has the correct quartz glass for a multitude of applications.

Type 214

Ultra pure electrically fused quartz glass with a low hydroxyl (OH) content. Available as tubing from 2.5 to 50 mm diameter direct from the furnace and also 51 to 500 mm diameter after lathe working. Also available in plate form. Type 214 is our standard product for the lamp and semiconductor industries.

Type 214 HP

An ultra pure low sodium quartz product made using the same technology as for Type 214 but with significantly reduced iron, sodium, calcium and lithium contents. Recommended for submicron technology and MOS processing.

Type 214 HT

Heat process treatment of Type 214 or Type 214 HP quartz reduces the hydroxyl (OH) content to the point where it is undetectable on the inner surface of a tube. This provides the material with a high resistance to sag at high temperatures. Type 214 HT is recommended for high temperature processes and may replace other high cost or low purity alternatives.

Type 214 HPT

A tube with both high purity and high temperature characteristics.

Type 219

Doped quartz glass especially suitable for the production of ozone free discharge lamps. Available from 10 to 50 mm diameter.

A complete vertical manufacturing integration supported by state of the art production methods and an in depth knowledge of the industries requirements enables us to offer a complete range of the current products required by the microelectronics industry and to develop the products of the future. A documented quality control system according to DIN-ISO 9000 is our guarantee that the high quality of these products is consistently reproduced.

Crucible

WQS snowball crucibles for the production of single crystal silicon are available in 2 types. Type S, a standard quality crucible and Type SF-HP which has a significantly reduced alkali metal content and was specially developed for megabit technology.

Crucibles from 12" to 16" diameter are made at our Geesthacht works and from 18" to 24" by General Electric USA.





3 WQS quartz glass for research and optics.



The comprehensive standard range of WQS laboratory equipment and apparatus for research laboratories is supported by a custom fabrication facility and problem solving design service.

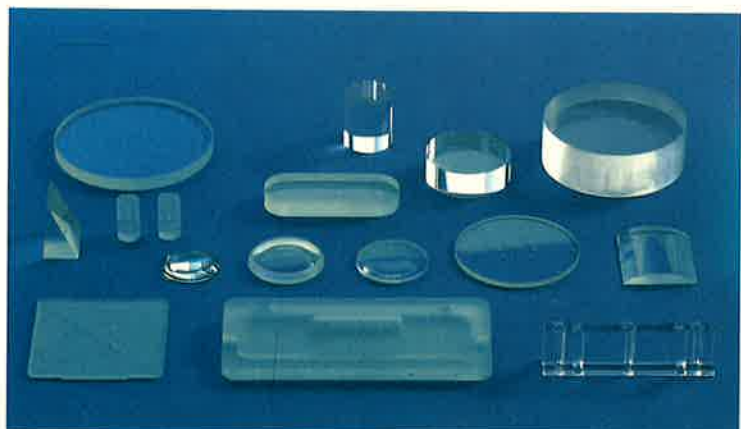
For the optics industry WQS produces natural Type 124 quartz and synthetic synsil in optically finished, semi-finished and blank form.

Type 124

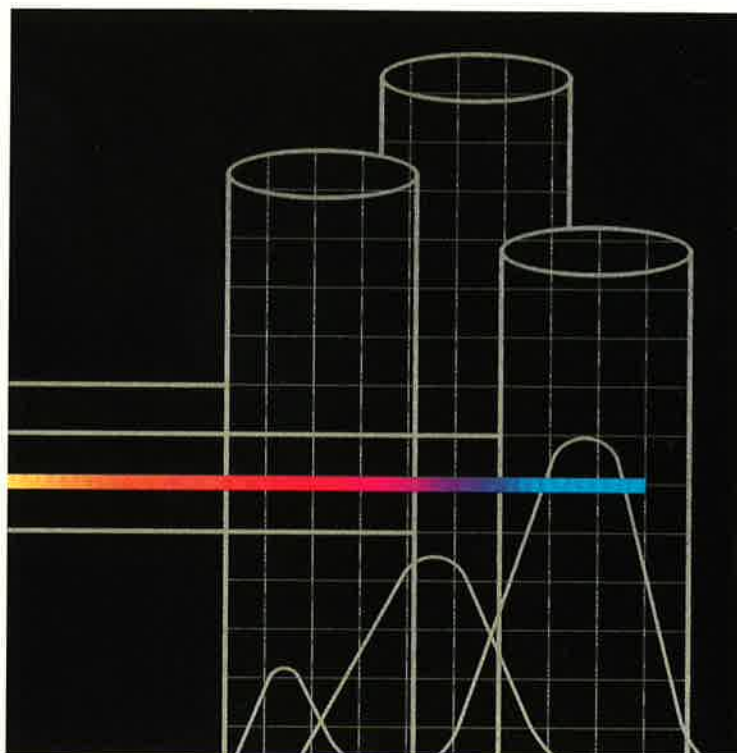
This natural quartz glass is electrically fused and of high quality. In addition to applications in optics it is being increasingly used in the semiconductor industry.

Type Synsil

The optics industry welcomes this grade of synthetic quartz. It has a high purity and excellent optical characteristics. Also used by the semiconductor industry to manufacture photomasks and substrate plates in sizes up to 7" x 7".



4 WQS quartz glass for the fibre optic industry.



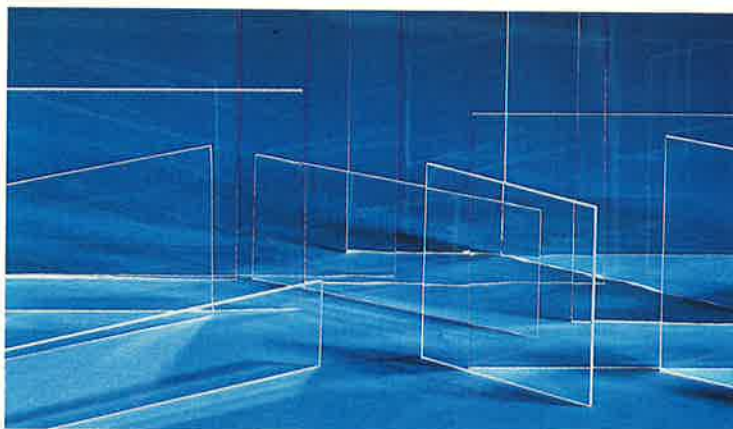
Optiq 100

This grade of natural quartz glass was especially developed for the MCVD method of optical fibre manufacture. Optiq 100 has excellent optical properties and a superior tensile strength. Tight individual and batch tolerances characterize this glass and it has a low OH content. Standard fibre optic industry sizes are available plus other dimensions on request.

Type 214 P

The Quartz Glass Plate 214 P combines the chemical/physical properties of the GE/WQS 214 Quartz Glass Tube quality.

These plates are used in the Semiconductor/Chemical industry as well as protecting plates in the Infrared Drying Process.



Production



Top: Production hall 6, quartz glass manufacture for the semiconductor industry.

Left: Quartz machining.

Right: Inspection.





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