MECHANICAL ENGINEERING

KYBURZ SAPPHIRE

custom made
optical components
OUR SERVICES IN THE MECHANICAL ENGINEERING SECTOR

We produce wear-resistant components from sintered ceramics or carbide metals for industrial use such as bearing rings, ultrasound welding moulds, isolators for high-voltage engineering and guiding elements. Thanks to our experience, our modern machinery and our quality control we can guarantee precise, quick production.

With us, you get everything from a single source. We will support you during the whole production process, from the development of the prototype to assembly.
OUR WORKFLOW

DEVELOPMENT AND SUPPORT
Our team provides comprehensive support in the development of new products. This includes the selection of suitable materials, definition of the working techniques, prototype development and establishing of serial production. We ensure the prototype’s suitability for series production, we document all the steps necessary for series production, and we define and implement suitable qualification methods.

PRODUCTION
First we cut the crystals into blanks. Therefore we use ID saws, wire saws, circular saws and multiblade saws.

Then we grind the blanks into the desired form. We can realize the most varied geometrical shapes using CNC-processing technologies, complex combinations are also possible. We possess a large number of tools or develop client-specific tools when necessary. Thanks to double-sided processing technology we are in a position to realize large quantities.

After grinding, we polish the parts. We offer a multitude of different polishing processes that make it possible to fulfil client-specific surface-finishing requirements according to DIN/ISO and also MIL standards.

ENGRAVINGS, COATINGS AND ASSEMBLIES
We offer laser engravings, part identification and reference marking. We also offer specific optical coatings such as AR coatings, ITO coatings and also mirror coatings. When joining sapphire parts to a casing or mounting, choosing the right technology is decisive. Besides mechanical mounting, the other usual joining technologies are gluing, soldering, welding and shrinkage.

QUALITY CONTROL
Our core focus is on the quality of the finished pieces which includes the material and the technological precision. From choosing the raw materials through production to assembly, each step of our work is subject to the highest requirements and is documented and traceable according to international standards.
TECHNICAL SPECIFICATIONS FOR MECHANICAL ENGINEERING

BEARING JEWELS
- Dimension range of round geometries from \( \phi 1\text{mm} \) to \( \phi 200\text{mm} \)
- Dimension range of square or rectangular geometries up to \# 150\text{mm} \times 150\text{mm}

RAW MATERIAL
- Aluminium oxide ceramics
- Zirconium oxide ceramics
- Rubies
- Carbides

SURFACE QUALITY
- Fine ground or polished

TYPICAL COMPONENTS
- Ultrasonic welding moulds
- High voltage insulators
- Matrices
- Support skids
- Electrodes
- Bearing rings

All products are made in-house by the Kyburz Sapphire Team, using materials of Mohs 9 hardness.