

TECHNICAL DATA SHEET – FUSED QUARTZ CRUCIBLE

Product Description

- Name: Fused quartz crucible (fused silica crucible)
- Shape: Cylindrical / conical / spherical crucible
- Manufacturing method: Made from ultra-pure fused silica (amorphous silica glass)
- Typical purity: $\geq 99.98\%$ SiO₂

Typical Chemical Composition (%)

Component	% (w/w)
SiO ₂	≥ 99.98
Fe ₂ O ₃	< 0.002
Al ₂ O ₃	< 0.01
Na ₂ O + K ₂ O	< 0.005
TiO ₂	< 0.01
CaO + MgO	< 0.003

Physical Properties

- Density: 2.20 g/cm³
- Porosity: 0% (non-porous glass)
- Softening point: ~ 1680 °C
- Maximum service temperature: 1100–1200 °C continuous
- Thermal conductivity: 1.3 W/m·K at 20 °C
- Thermal expansion (CTE): 0.5×10^{-6} /°C (20–1000 °C)
- Young's modulus: ~ 72 GPa
- Thermal shock resistance: Excellent ($\Delta T > 800$ °C)
- Electrical resistivity: $> 10^{16}$ Ω·cm at 20 °C
- Chemical resistance: Very good (except HF)
- UV/visible light transmission: Very high (depends on grade)

Typical Applications

- Silicon melting for photovoltaic industry (Czochralski crucibles)
- High-temperature laboratory use
- Thermal treatment under controlled atmosphere

- Spectroscopy, thermal analysis (DTA, TGA)
- Optical and laser glass (in doped versions)

Chemical Compatibility

Reagent	Resistance
Strong acids (HCl, H ₂ SO ₄)	Excellent
Strong bases (NaOH...)	Good
Hydrofluoric acid (HF)	WARNING – rapid attack
Molten metals (Al, Cu...)	Compatible depending on atmosphere