

Heraeus



**Opaque Fused Materials
OFM 70 – Rotosil®**



Heraeus Quarzglas

Opaque Fused Materials - OFM 70 – Rotosil®

Description

OFM 70 is an opaque quartz glass, which like all other OFM grades, is produced by an arc melting process.

The production process primarily produces rotationally symmetrical objects such as tubes and crucibles.

Rectangular shapes such as plates, dishes, blocks, etc. may also be manufactured by machining and hot re-forming.

Parts made from OFM 70 are opaque white due to the scattering of light on fine bubbles.

Crucibles and tubes have a wear resistant, glazed and non-porous inner surface. The outer surface is not glazed and slightly rough as a result of the manufacturing process.

The quality can be further increased by providing OFM 70 with an inner lining of pure translucent quartz glass (OFM 370), containing significantly fewer traces impurities.

It is used primarily in processes requiring high temperature and / or high resistance to corrosion.

The structure of the material (micropores) also make it an outstanding thermal insulator.

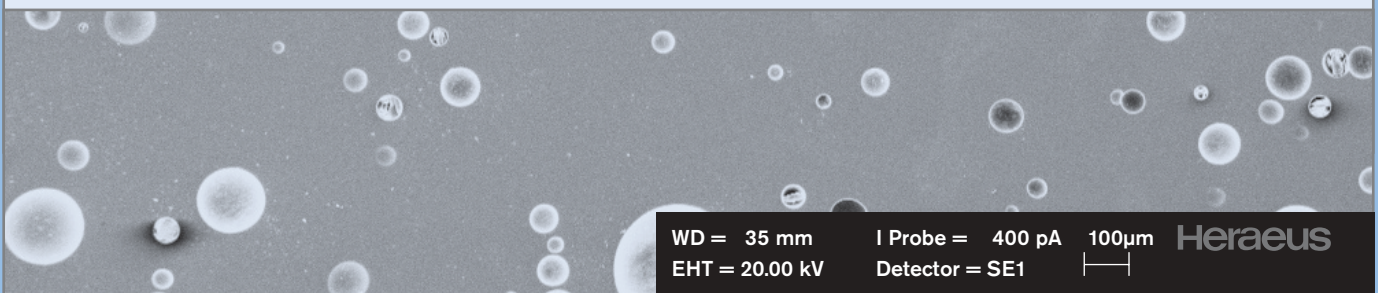
OFM 70 is an effective electrical insulator even at very high temperatures and is therefore a preferred material for use in electrostatic filters.

Applications

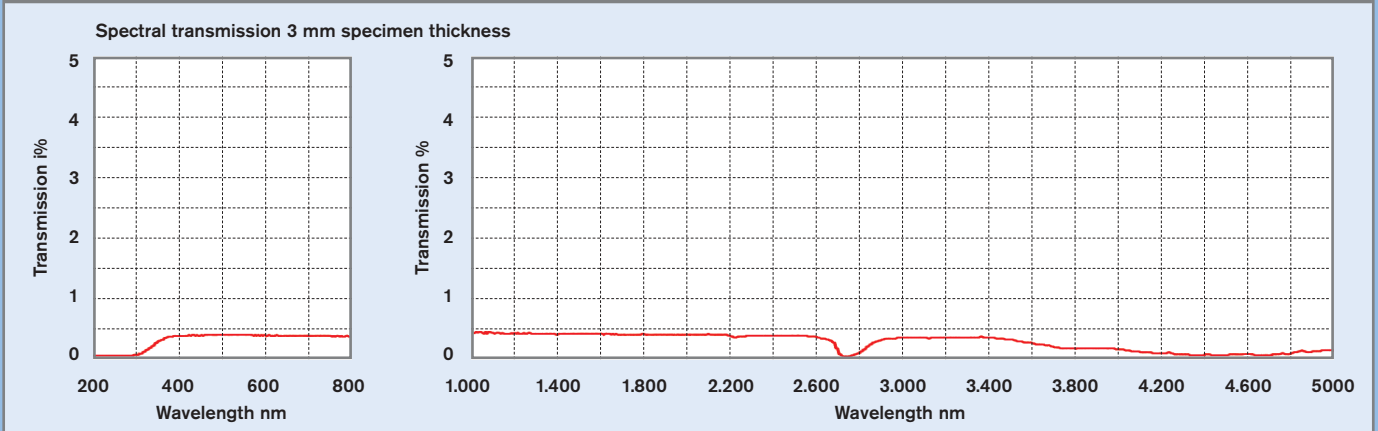
The characteristic properties of OFM 70 are its high temperature stability and resistance to nearly all acids (except hydrofluoric acid-HF).

Technical Specifications

Typical pore distribution



Spectral transmission



UV/VIS-SPECTROMETER: PERKIN ELMER Lambda 900 / MEASURE NO.: STD_03
IR-SPECTROMETER: PERKIN ELMER FTIR 2000 OPTICA / MEASURE NO.: ROS

Characteristics

OFM 70 has a number of properties that are not found in combination in any other material:

- extremely low thermal expansion
- high resistance to thermal shock
- high deformation point
- low heat conductivity
- low dielectric loss
- high resistance to corrosive media
- high resistance to corrosive melts (e.g., Au, Ag)
- low spectral transmission



Characteristics	
External appearance	opaque-white
Inner surface	fire-glazed
Outer surface	typical of material, fine-pored
Physical properties	
Density	~ 2.0 g / cm ³
Modulus of elasticity	~ 6 x 10 ⁴ N / mm ²
Mechanical properties	
Mechanical machining	good
Welding	good
Electrical properties	
Specific resistivity [Ωcm]	~ 3.2 x 10 ¹⁵
Dielectric strength [KV / mm]	~ 15 ... 20
Thermal properties	
Mean linear coefficient of thermal expansion 0 ... 300 °C [1 / K]	~ 0.6 x 10 ⁻⁶
Thermal conductivity [W / m x K] at 20 °C / 1,000 °C	~ 1.1 / 2.3
Specific heat [J / kg x K] at 20 °C	~ 7.70
Deformation point [°C]	~ 1,730
Max. service temperature [°C]	~ 1,000 / 1,300 (short term)
Transmission (see previous page)	
SiO ₂ Content	
	> 99.8%

Typical dimensions	
Crucible	
Diameter	60 – ~ 1.000 mm
Height	100 – ~ 2.200 mm
Wall thickness	8 – 25 mm
Tubes	
Diameter	50 – ~ 1.000 mm
Length	100 – ~ 4.000 mm
Wall thickness	8 – 30 mm
Plates	
Diameter	200 – ~ 1.000 mm.
Thickness	20 – 40 mm.
<i>Products are usually made to customer specifications. Other sizes are available on request.</i>	

Chemical purity - typical values – [ppmw]											
Li	Na	K	Mg	Ca	Fe	Cu	Cr	Mn	Ti	Al	Zr
4	24	31	8	28	45	0,5	0,4	1	120	200	20
<i>Testing method: ICP - MS</i>											

Viscosity (typical values)	
Temperature [°C]	Log [poise]
1.070	13,2
1.145	12,4
1.180	12,0
1.230	11,4

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