Heraeus

Chemical Purity – Typical trace elements and OH content (ppm by weight oxide)

Grade	Prod. Route	Al	Ca	Cl	Cr	Cu	Fe	K	Li	Mg	Mn	Na	Ti	Zr	OH
HSQ 100	E	15	0.5	n.s.	<0.05	<0.05	0.1	0.4	0.6	0.05	<0.05	0.3	1.1	0.7	n.s.
HSQ 300*	E	15	0.5	n.s.	<0.05	<0.05	0.1	0.4	0.6	0.05	<0.05	0.3	1.1	0.7	<30
HSQ 400	E	HSQ 300 with chemical precursor													
HSQ 700	E	15	0.5	n.s.	<0.05	<0.05	0.1	0.1	0.05	0.05	<0.05	0.3	1.1	0.7	<30
HSQ 800	E	HSQ 700 with chemical precursor													
HSQ 351	F	15	0.6	n.s.	0.05	0.07	0.2	0.7	0.4	0.1	0.05	0.8	1.1	1.1	175
HSQ 751	F	8	0.5	n.s.	<0.05	<0.06	0.2	<0.1	0.2	<0.05	0.05	<0.05	1.4	0.1	175
HSQ 900	S	<0.04	<0.02	1500	<0.001	<0.001	<0.03	<0.01	<0.002	<0.01	<0.0005	<0.01	<0.03	<0.04	0.2
HSQ 910	S	<0.04	<0.02	<50	<0.001	<0.001	<0.03	<0.01	<0.002	<0.01	<0.0005	<0.01	<0.03	<0.04	250

*E = electrically melted, F = Flame fused , S = Soot process *guaranteed values available as HSQ 330*

Technical Properties (typical values)

Mechanical Data	
Density	2.203 g/cm³
Mohs Hardness	5.5 … 6.5
Micro Hardness	8600 … 9800 N/mm²
Knoop Hardness	5800 … 6100 N/mm²
Modulus of elasticitiy (at 20°C)²	7.25 x 10^4 N/mm²
Modulus of torsion	3.0 x 10^4 N/mm²
Poisson's ratio	0.17
Compressive strength (approx.)	1150 N/mm²
Tensile strength (approx.)	50 N/mm²
Bending strength (approx.)	67 N/mm²
Torsional strength (approx.)	30 N/mm²
Sound velocity	5720 m/s

Thermal Data	electrically fused	flame fused	synthetic
Softening temperature °C	1710	1660	1600
Annealing temperature °C	1220	1160	1100
Strain temperature °C	1125	1070	1000
Max. working temperature continuous °C	1160	1110	950
short-term °C	1300	1250	1200

Mean specific heat J/kg·K	
0 … 100°C	772
0 … 500°C	964
0 … 900°C	1052

Heat conductivity W/m·K	
20°C	1.38
100°C	1.47
200°C	1.55
300°C	1.67
400 °C	1.84
950°C	2.68

Mean expansion coefficient K^{-1}	
0 … 100°C	5.1 x 10^{-7}
0 … 200°C	5.8 x 10^{-7}
0 … 300°C	5.9 x 10^{-7}
0 … 600°C	5.4 x 10^{-7}
0 … 900°C	4.8 x 10^{-7}
-50 … 0°C	2.7 x 10^{-7}

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Phone +81 (3) 3348 1913
division2@sqp.co.jp
division3@sqp.co.jp

Jincheon-Gun, ChungBuk, Prov., Korea
Phone +82 (0) 43-532-5373
HSAM@hs-am.com

www.base-materials.heraeu