

Silica Aerogel Insulation Sheet

High R value ~8 insulation, Flexible



DATASHEET

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Features

- High R-value insulation 7.2–9.6 / inch
- Durable and less prone to moisture degradation
- Young's Modulus of 0.6–12 MPa
- Environment-friendly

Applications

- Aerospace Insulation
- Cryogenic Insulation
- Sports Gear
- Instrumentation

Optowares' SAIS aerogels are advanced mesoporous silica materials engineered for exceptionally low density and thermal conductivity. They combine a lightweight, nanoporous structure with superior thermal insulation performance, providing a cost-effective solution for applications requiring ultra-high R-value insulation. SAIS aerogels are synthetic, amorphous, nanoporous silica materials derived from silicon alkoxide precursors through sol-gel processing followed by supercritical fluid drying. The resulting structure consists of a highly tortuous mesoporous network with typical pore diameters of approximately 20–40 nm. Because these pores are substantially smaller than the mean free path of air molecules (~70 nm under ambient conditions), gas-phase thermal conduction is strongly suppressed through the Knudsen effect. This nanoscale structure enables exceptionally low thermal conductivity while maintaining very low weight, making SAIS aerogels well suited for high-performance thermal insulation applications where space, weight, and energy efficiency are critical.

Specifications

Parameter	Min	Typical	Max	Unit
Thermal Conductivity	15	18	22	mW/m·K
R-Value	7.2	8	9.6	/inch
Density *	0.15	0.18	0.22	g/cm ³
Tensile Strength	0.01		0.05	MPa
Young's Modulus	0.6	3.5	12	MPa
Surface Area	600	700	800	M ² /g
Moisture Absorption	1		2	Wt%
Work Temperature	–200		+650	°C
Thickness *	0.2	0.3	0.5	inch
Size * (6mm thick)		1.5x38		m
Color *	White (typical), Grey (IR-opacified)			

* Customizable

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Ordering Information (Part Number)

	2	□ □ □	□ □	06	2	1
Prefix	Type	Size (m)	Thermal Conductivity	Thickness (mm)	Shape	
ARGL-	Silica = 2	1.5x38 = 038 1.5x76 = 076 Special = 000	0.17 W/mk = 17 Special = 00	6 = 06	Roll = 2	