

## Thermal Conductivity according to ASTM C 177

Test report No: F.2-1273b/06

**Applicant:** aspen aerogels, Northborough, MA 01532  
**Name of the product:** " Spaceloft 9251 "  
**Product identification:** Ca. 9 mm thick opacified silica aerogel blanket with reinforcing fibers.  
 (as given by applicant) Colour: dark grey  
**Sampling:** Sent by applicant in October 2006  
**Test equipment:** Guarded hot plate apparatus according to ASTM C 177:  
 Metering section 200 x 200 mm with guard section 340 x 340 mm

**Preparation:** <sup>+) Mean values (two specimens)</sup>  
 Tested thickness<sup>+)</sup> : 0.0402 m Mass<sup>+)</sup> : 0.7250 kg  
 Surface area tested: 0.1156 m<sup>2</sup> Density<sup>+)</sup> : 156 kg/m<sup>3</sup>  
**Remarks:** The two test specimens were built into the test apparatus in 5-plyes.

**Experimental data:**

Test No	Heat flow rate W	Temperature of the		Average temperature of the specimen °C	Temperature-difference of the specimen K	Thermal Conductivity W/(m·K)
		Warm Side °C	Cold Side °C			
1	1.554	-136.1	-176.2	-156.2	40.1	0.0116
2	0.331	-71.8	-85.7	-78.8	13.9	0.0119
3	0.359	-21.6	-35.7	-28.7	14.1	0.0128
4	0.395	29.0	14.5	21.8	14.5	0.0136
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Uncertainty: < 3%

**Properties of the material after conductivity-measurement up to -176.2 °C cold side:** <sup>+) Mean values (two specimens)</sup>  
 Thickness<sup>+)</sup> : 0.0402 m Mass<sup>+)</sup> : 0.7250 kg  
 Density<sup>+)</sup> : 156 kg/m<sup>3</sup> Change in mass: 0.0 %  
**Remarks:** --

**Results:**

Mean temperature °C	-160	-80	-30	0	10	20	---	---	---
Thermal conductivity W/(m·K)	0.012	0.012	0.013	0.013	0.013	0.014	---	---	---

**Final remarks:** These thermal conductivity values are material values applicable to material in a dry state. They represent thermal conductivity values  $\lambda_{Lab,P}$  as specified in the guidelines VDI 2055.

Gräfelfing, 27.03.07 Department Specialist Tester  
   
 Dipl.-Ing. R. Alberti M. Mayer

