Oil Resistant, Low-hardness Thermal Interface Pads

TC-FINE4

The TC-FINE4 is a line of low-hardness thermal interface pads that can withstand exposure to oil fluids without significantly compromising thermal conductivity.

1 Features

Oil resistance: Product retains thermal conductivity even when used in proximity to engine oil.
High thermal conductivity: Product exhibits 4.3 W/m·K.
Long-term reliability: Product provides long-term, consistent performance in temperature ranging from -40°C up to 180°C.

2 Applications

For drawing heat away from electronic components used in automobiles and industrial machinery.

3 General properties

Parameter / Test Method / Grade			TC-FINE4
Color		—	Coral
Structure		—	Single layer
Thickness	mm	—	0.5 to 1.5
Density at 23°C	g/cm^3	JIS K 6249	3.2
Hardness Asker C / Shore 00		JIS K 6249	40 / 70
Continuous Use Temp.	°C	—	-40 to 180
Volume Resistivity	Ω·cm	JIS K 6249	1.7 × 10^{12}
Dielectric Constant (ε)	50 Hz	ASTM D150	8.4
	1 kHz		7.9
	1 MHz		7.5
Dielectric Dissipation Factor (tanδ)	50 Hz	ASTM D150	9.5 × 10^{-2}
	1 kHz		2.7 × 10^{-2}
	1 MHz		0.7 × 10^{-2}
Dielectronic Breakdown Voltage in oil*1	kV	JIS K 6249	17
Dielectric Strength in oil*1	kV	JIS C 2110	11
Thermal Conductivity	W/m·K	ISO 22007-2	4.3
Thermal Resistance*1 50°C/100 psi	cm^2·K/W	ASTM D5470	0.79
Flame Retardence UL94		—	V-0 equivalent
Low-molecular-weight Siloxane Content $\Sigma D_{3\text{-}10}$	ppm	Shin-Etsu Method*2	130

*1 Uses 1.0 mm pad *2 Aceton extraction method. (Not specified values)

4 How to read Model Number

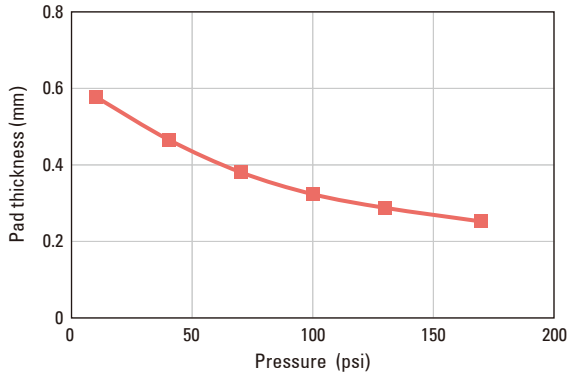
Example:

TC-100FINE4

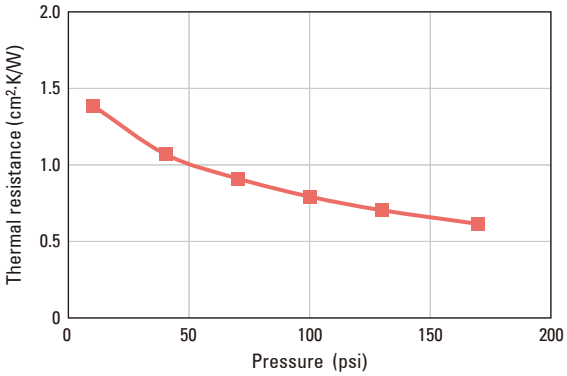
Thickness	Thermal conductivity
1.0 mm*	4.3 W/m·K

* The thickness of the TC-FINE4 product is specified by a two digital code corresponding to the thickness in milimeters multiplied by 100.

5 Presser and Thickness



6 Pressure and Thermal Resistance



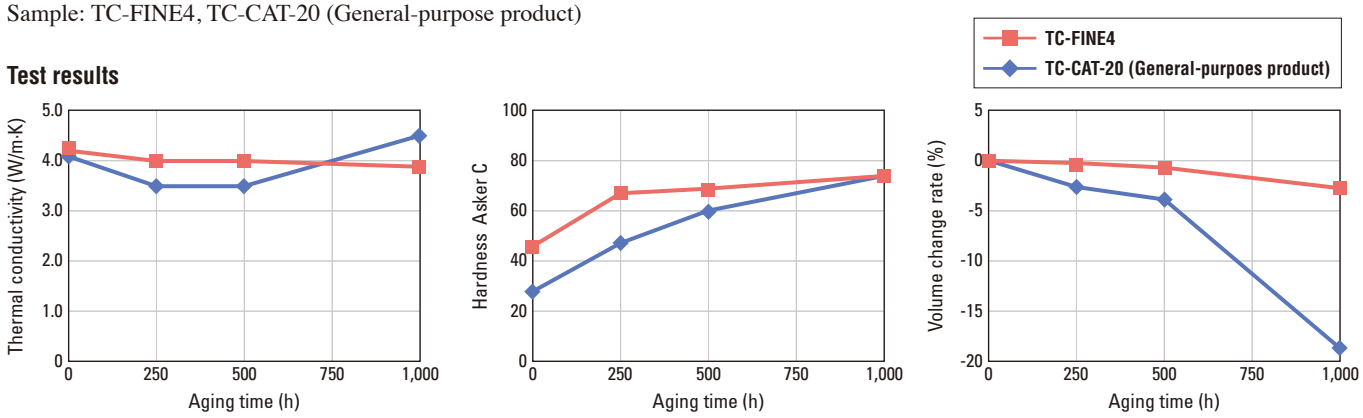
7 ATF compatibility Test

Test Method

Physical properties were measured after immersing samples in automatic transmission fluid (ATF) for a specified period at 150°C.

Sample: TC-FINE4, TC-CAT-20 (General-purpose product)

Test results



The properties such as volume and thermal conductivity of TC-CAT-20 were unstable.
On the other hand, their properties of TC-FINE4 were stable even after immersion in ATF at 150°C for 1,000 hours.

* These products are not suitable for use with all solvents. Be sure to test to check compatibility with specific oils and fluids before use.

8 Handling precautions

1) Products should be stored in a dry place out of direct sunlight.
2) Avoid contact with residual solvents or oils as they may deteriorate the properties of the product.
3) For better results, the substrate surface should be cleaned and dried to remove any dirt, moisture or oils before application.
4) Prior to using the product with a thermal interface grease, test a sample with a small amount to determine compatibility.
5) Keep out of reach children.
6) Be sure to read the Safety Data Sheets (SDS) for these products before use. SDS are available from the Shin-Etsu Silicone website. If the SDS is not listed on the website, please contact the sales department.

ShinEtsu
https://www.shinetsusilicone-global.com/

Shin-Etsu Chemical Co., Ltd.
Marunouchi Eiraku Bldg., 4-1, Marunouchi 1-chome,
Chiyoda-ku, Tokyo, 100-0005 Japan

Silicone Division, Sales and Marketing Department Ⅲ
Phone : +81-(0)3-6812-2409 Fax : +81-(0)3-6812-2415