

# 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 <sup>3</sup>	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 <sup>12</sup>
Dielectric Constant (ε)	50 Hz	ASTM D150	8.4
	1 kHz		7.9
	1 MHz		7.5
Dielectric Dissipation Factor (tan δ)	50 Hz	ASTM D150	9.5 × 10 <sup>-2</sup>
	1 kHz		2.7 × 10 <sup>-2</sup>
	1 MHz		0.7 × 10 <sup>-2</sup>
Dielectronic Breakdown Voltage in oil* <sup>1</sup>	kV	JIS K 6249	17
Dielectric Strength in oil* <sup>1</sup>	kV	JIS C 2110	11
Thermal Conductivity	W/m·K	ISO 22007-2	4.3
Thermal Resistance* <sup>1</sup> 50°C/100 psi	cm <sup>2</sup> ·K/W	ASTM D5470	0.79
Flame Retardence UL94		—	V-0 equivalent
Low-molecular-weight Siloxane Content ΣD <sub>3-10</sub>	ppm	Shin-Etsu Method* <sup>2</sup>	130

\*<sup>1</sup> Uses 1.0 mm pad \*<sup>2</sup> Aceton extraction method.

(Not specified values)

### 4 How to read Model Number

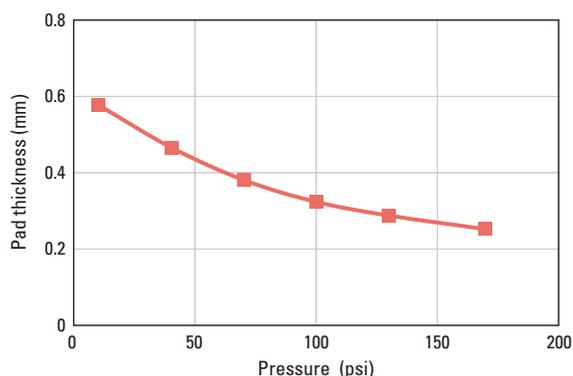
Example:

**TC-100FINE4**

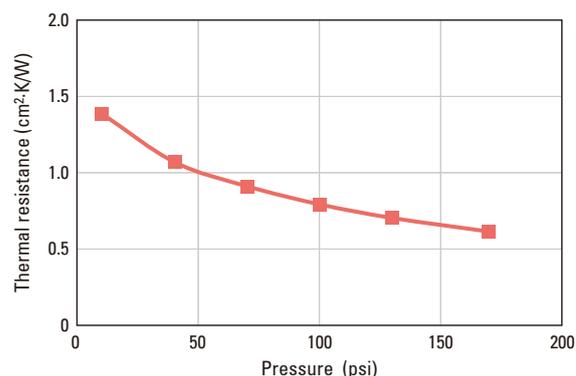
Thickness 1.0 mm\* Thermal conductivity 4.3 W/m·K

\* 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



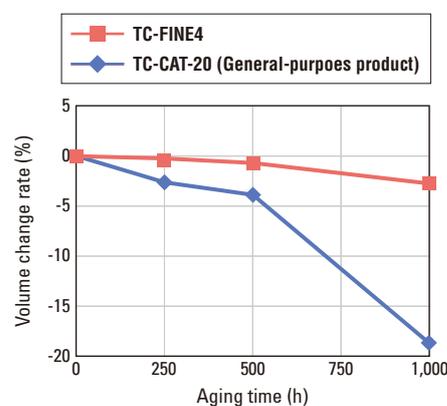
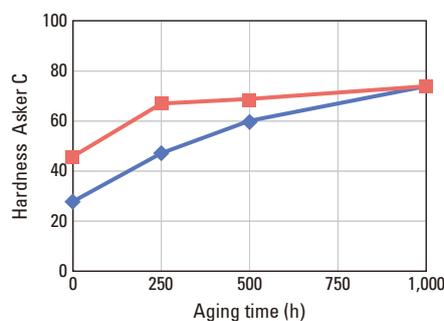
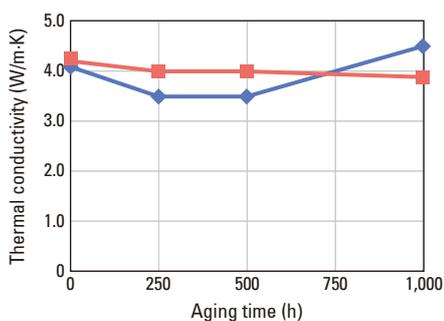
## 7 ATF compatibility Test

### 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.

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