High Thermally Conductive Silicone Pad

TC-UP6

TC-UP6 has good compressibility and higher thermal conductivity than our conventional products.

1 Features

1) High thermal conductivity; 6.3 W/m·K
2) Low hardness and good compressibility
3) Electrical insulation
4) Long term reliability
5) Single side less tackiness is available.

2 Applications

Thermal conductive pad for 5G base station and so on

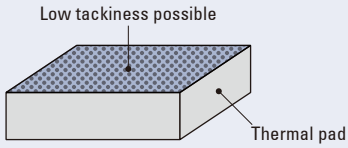
3 General properties

Parameter / Test Method / Grade			TC-UP6
Color		—	Vermillion
Structure*		—	Single layer
Thickness	mm	—	0.5 to 5.0
Thermal conductivity	W/m·K	Hotdisk (ISO22007-2)	6.3
Hardness		Asker C	15
		Shore 00	40
Thermal resistance	cm²·K/W@1.0 mm	50°C/100 psi ASTM D5470	0.48
Breakdown voltage in oil	kV	JIS C 2110-1@1 mmt	21
Volume resistivity	Ω·cm	JIS K 6249	4.9×10^{14}
Dielectric constant (ε)	50 Hz	ASTM D150	9.1
	1 kHz		8.5
	1 MHz		8.1
Dielectric dissipation factor (tan δ)	50 Hz	ASTM D150	1.7×10^{-1}
	1 kHz		3.1×10^{-2}
	1 MHz		6.8×10^{-3}
Low molecular Siloxane content D_3-D_{10}	ppm	Acetone extraction	40
Flame retardance		UL94	V-0 equivalent
Density at 23°C	g/cm³	JIS K 6249	3.3
Continuous use temp.	°C	—	-40 to 180

(Not specified values)

* For improving handling, we can prepare the product;
-TL which has less tackiness in one side by special treatment

4 Structure



5 How to read Model Number

Example:

TC-100UP6-TL

- 100: Thickness 1.0 mm*
- UP6: Thermal conductivity 6 W/m·K
- TL: Less tackiness (By customer request)

* The Thickness of the TC-UP Series product is specified by a two digital code corresponding to the thickness in millimeters multiplied by 100.

6 Thermal resistance

Thermal resistance (cm²·K/W) by ASTM D5470

Pressure (psi)	0.5 mmt	1.0 mmt	1.5mmt	2.0 mmt
10	0.82	1.27	1.78	2.12
40	0.51	0.78	0.93	1.01
70	0.39	0.60	0.67	0.71
100	0.32	0.48	0.52	0.54
130	0.30	0.41	0.41	0.43
170	0.27	0.36	0.34	0.35

(Not specified values)

7 Compression property

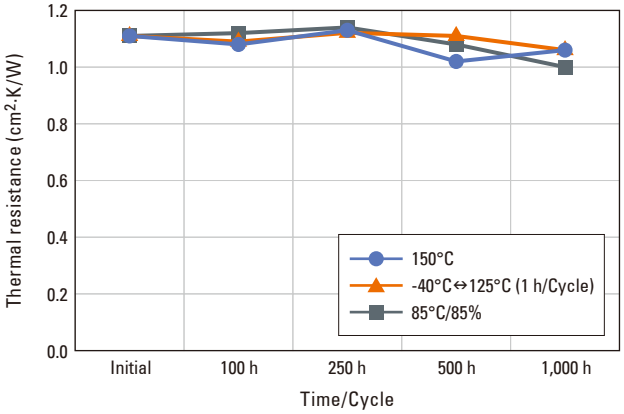
Compression ratio (%)

Pressure (psi)	0.5 mmt	1.0 mmt	1.5 mmt	2.0 mmt
10	—	20.4	22.8	30.3
40	37.0	52.1	61.6	68.9
70	51.2	63.7	72.7	78.4
100	58.9	71.2	79.5	84.0
130	61.9	75.6	83.9	87.7
170	64.9	78.8	86.8	90.0

(Not specified values)

8 Reliability data (1 mmt)

■ **Long-term reliability**

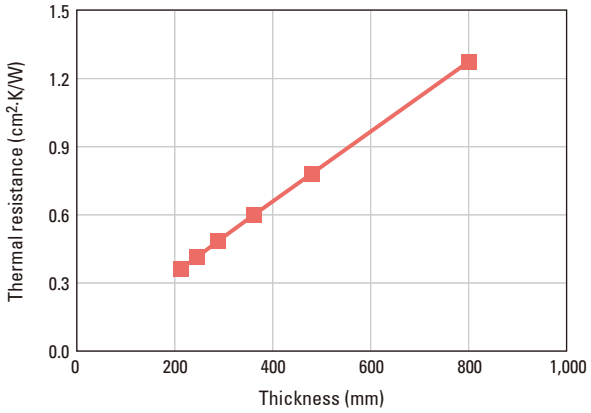


Thermal resistance (cm²·K/W) **with 30% compression**

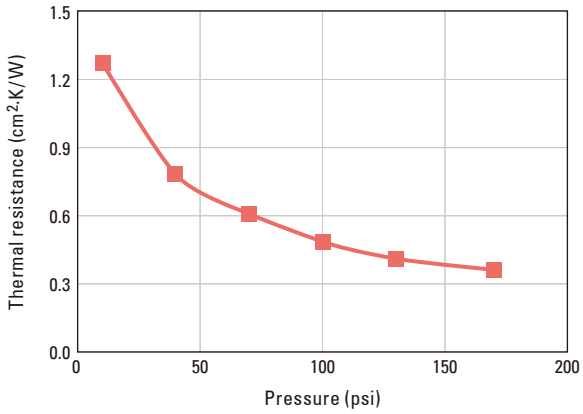
	Initial	100 h	250 h	500 h	1,000 h
150°C	1.11	1.08	1.13	1.02	1.06
-40°C↔125°C (1 h/Cycle)	1.11	1.09	1.12	1.11	1.06
85°C/85%	1.11	1.12	1.14	1.08	1.00

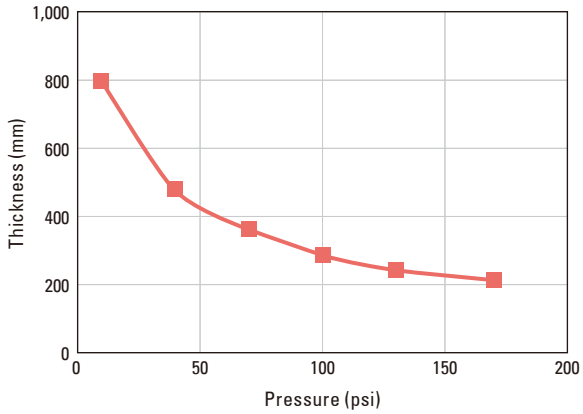
(Not specified values)

9 Thermal resistance vs. Thickness



10 Thermal resistance, Thickness vs. Pressure (1 mmt)





11 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 compataibility.
5) Keep out of reach of 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

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