Fujipoly Data Sheet

SARCON® SPG series

Form in Place Gap Filler Type

FEATURES

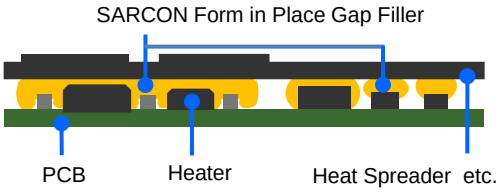
Highly Thermally Conductive and Electricity Insulative Silicone Compound.

SARCON® Form in Place Gap Filler Type is highly conformable and highly thermal conductive type silicone compound with very low compression force. It provides a thermal solution for the recent trends of higher frequencies and integration in the development of electronic device. SARCON® Form in Place Gap Filler Type is suitable for filling the delicate gaps and still provide superior thermal transfer.

CONSTRUCTIONS

Series	Characteristics	Packaging Options
SARCON® SPG-20B	Highly Heat Transferring and low viscosity Thermal Conductivity ; 2.1W/m-K by using Hot Disk	・Syringe : 30cc ・ Cartridge : 325cc ・Custom Packaging : Available on Request
SARCON® SPG-30B	Higher Heat Transferring Thermal Conductivity ; 3.1W/m-K by using Hot Disk	
SARCON® SPG-50A	Higher Heat Transferring Thermal Conductivity ; 5.0W/m-K by using Hot Disk	
SARCON® SPG-70A	Highest Heat Transferring and high flow rate Thermal Conductivity ; 7.0W/m-K by using Hot Disk	

RECOMMENDED APPLICATION



・Suitable for filling the delicate gaps and still provide superior thermal transfer.
・ Highly conformable with very low compression forces.
・Has excellent vibration absorption capabilities.
・Maintains thermal properties across a wide temperature range.
・Can be used to "Form-In-Place" and will remain form stable.
・Requires no heat curing.

THERMAL RESISTANCE

Test method FTM P-3030

Gap	SPG-20B	SPG-30B	SPG-50A
0.5mm / 0.02in	1.6 (0.25)	1.3 (0.20)	0.9 (0.14)
1.0mm / 0.04in	2.9 (0.45)	2.3 (0.36)	1.7 (0.26)

Measured by using ASTM D5470 modified,

Test method FATM P-3031 Unit : K-cm^2/W (K-in^2/W)

Gap	SPG-20B	SPG-30B	SPG-50A	SPG-70A
0.5mm / 0.02in	1.6 (0.24)	1.3 (0.20)	0.9 (0.13)	0.8 (0.12)
1.0mm / 0.04in	3.7 (0.57)	3.1 (0.48)	2.0 (0.31)	1.7 (0.26)

Measured by using ASTM D5470 modified,

TYPICAL PROPERTIES

Properties		unit		SPG-20B	SPG-30B	SPG-50A	SPG-70A	Test method
Physical Properties	Color	-		Light Gray	Apricot	Light Sky Blue	Sky Blue	Visual
	Specific Gravity	-		2.8	3.2	3.2	3.2	ASTM D792
	Viscosity	Pa-s	1.0(1/s)	1,000	2,750	4,100	2,750	ASTM D1824 modified
			0.5(1/s)	1,900	4,600	6,900	4,020	
	Flow rate	g		-	-	-	65	Fujipoly Original
	Weight Loss	wt%		0.06	0.05	0.06	0.08	Fujipoly Original
	Consistency	-		330	260	170	184	ASTM D1403
Electrical	Volume Resistivity	Ohm-m		$1x10^{13}$	$1x10^{12}$	$1x10^{12}$	$3.2x10^{9}$	ASTM D257modified
	Dielectric Constant	-	50Hz	10.50	10.34	14.85	-	ASTM D150
			1kHz	10.21	10.25	14.61	-	
			1MHz	9.96	10.18	14.27	-	
	Dissipation Factor	-	50Hz	0.0230	0.0065	0.0236	-	ASTM D150
			1kHz	0.0123	0.0042	0.0087	-	
			1MHz	0.0056	0.0032	0.0041	-	
Thermal Properties	Thermal Conductivity	W/m-K		2.1	3.1	5.0	7.0	by Hot Disk, ISO 22007-2
	Recommended Operating Temp.	℃		-40 to +150	-40 to +150	-40 to +150	-40 to +150	-
		°F		-40 to +302	-40 to +302	-40 to +302	-40 to +302	
	Extractable Volatiles	wt%	D_3 to D_{10} Total	-	-	-	0.0010	Gas Chromatography
			D_{11} to D_{20} Total	-	-	-	0.0025*1	
			D4 to D20 Total	0.0010	0.0010	0.0043	-	

a) Viscosity: Measured by Modular Advanced Rheometer System RV1 and the specimen flows to 0.5mm Gap between parallel plates.

b) Flow rate : Syringe PSY-30F, Time 100sec, Pressure 0.5MPa

c) Weight Loss at 150°C(302°F) x24hrs , amount of sample: $2cm^3$ ($0.12in^3$).

*1 : D_{11}-$D_{19\ total}$ （D_{20} cannot be measured)

COMPRESSION FORCE

Unit : $N/6.4cm^2$ (psi)

1.0mm Gap	SPG-20B	SPG-30B	SPG-50A	SPG-70A
0.9mm / 0.35in	10 (2.3)	24 (5.4)	34 (7.7)	25 (5.7)
0.8mm / 0.32in	12 (2.7)	28 (6.3)	38 (8.6)	29 (6.6)
0.7mm / 0.28in	14 (3.2)	34 (7.7)	45 (10.2)	34 (7.7)
0.6mm / 0.24in	17 (3.9)	41 (9.3)	54 (12.2)	42 (9.5)
0.5mm / 0.20in	21 (4.8)	53 (12.0)	69 (15.6)	52 (11.8)
Sustain	3 (0.7)	7 (1.6)	16 (3.6)	4 (0.9)

0.5mm Gap	SPG-20B	SPG-30B	SPG-50A	SPG-70A
0.45mm / 0.18in	20 (4.5)	53 (12.0)	80 (18.1)	58 (13.1)
0.40mm / 0.16in	22 (5.0)	62 (14.0)	89 (20.2)	63 (14.3)
0.35mm / 0.14in	24 (5.4)	67 (15.2)	100 (22.7)	73 (16.5)
0.30mm / 0.12in	29 (6.6)	82 (18.6)	119 (27.0)	87 (19.7)
0.25mm / 0.10in	33 (7.5)	96 (21.8)	141 (31.9)	109 (24.7)
Sustain	3 (0.7)	10 (2.3)	6 (1.4)	11 (2.5)

Test method: Measured by ASTM D575-91 for reference

- Specimen Area; DIA.28.6mm (1.13in) • Platens Area; DIA. 28.6mm (1.13in) • Sustain: Sustain at 0.5mm/0.25mm for 1 minute
- Compression Velocity; 5.0mm/minute • Setting Gap : 0.5mm or 1.0mm (Initial Gap)
- The specimen is pressed till setting a gap, and then waiting for the load to settle down.

DURABILITY

Thermal Resistance

Unit : K-cm^2/W (K-in^2/W)

Series	Gap	Initial	+70℃	+150℃	-40℃	+60℃/95%RH	-40℃⇔+125℃ /30min each
			After 1,000hrs	After 1,000hrs	After 1,000hrs	After 1,000hrs	After 1,000hrs
SPG-20B	0.5mm / 0.02in	1.6 (0.25)	1.6 (0.25)	1.6 (0.25)	1.6 (0.25)	1.5 (0.23)	1.5 (0.23)
SPG-30B	1.0mm / 0.04in	2.5 (0.39)	2.5 (0.39)	2.4 (0.37)	2.5 (0.39)	2.4 (0.37)	2.4 (0.37)
SPG-50A	0.5mm / 0.02in	0.9 (0.14)	1.0 (0.16)	1.2 (0.19)	1.1 (0.17)	0.9 (0.14)	0.9 (0.14)
	1.0mm / 0.04in	1.7 (0.26)	1.8 (0.28)	1.8 (0.28)	1.8 (0.28)	1.7 (0.26)	1.7 (0.26)
SPG-70A	0.5mm / 0.02in	0.8 (0.12)	0.7 (0.11)	0.7 (0.11)	0.8 (0.12)	0.7 (0.10)	0.7 (0.11)
	1.0mm / 0.04in	1.7 (0.26)	1.5 (0.23)	1.7 (0.26)	1.7 (0.27)	1.47 (0.23)	1.61 (0.25)

Thermal Conductivity ; Measured by using ASTM D5470 modified, refer to Fujipoly Test method FTM P-3030.
(Specimen is sandwiched between aluminum blocks.)
20B, 30B, 50A : FTM P-3030 70A : FATM P-3031

HANDLING NOTES

- It is recommended to compress the material with the equal ratio on the whole surface. Partial excessive stress may also result in excessive silicone oil exudation.

WARRANTY STATEMENT

- Fujipoly has been utilizing Hot Disk method and TIM Tester method since Fujipoly defined them as Fujipoly standard.
- Properties of the products may be revised due to some changes for improving performance.
- Properties values in this document are not specification or guaranteed.
- This product is made of silicone, and silicone oil may exude from the product.
- This product is made of silicone, and low molecular siloxane may vaporize depending on operating conditions.
- The product is designed, developed, and manufactured for general industrial use only. Never use for medical, surgical, and/or relating purposes. Never use for the purpose of implantation and/or other purposes by which a part of or whole product remains in human body.
- Before using, a safety must be evaluated and verified by the purchaser.
- Contents described in the document do not guarantee the performances and qualities required for the purchaser's specific purposes. The purchaser is responsible for pre-testing the product under the purchaser's specific conditions and for verifying the expected performances.
- Statements concerning possible or suggested uses made herein may not be relied upon, or be constructed, as a guaranty of no patent infringement.
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