

Fujipoly Data Sheet

SARCON® GR-d series

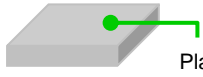
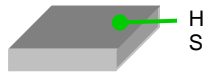
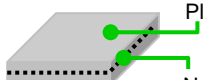
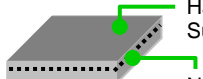
Gap Filler Type

FEATURES

Highly Conformable, Non-Flammable, Isolation and High Heat Conducting Gel materials.

- Gap filler materials are supplied in a fully cured state and remain pliable, easy conforming to minute surface irregularities.
- The basic Gap Filler Pad series can be further enhanced for special handling and die-cutting requirements.

CONSTRUCTIONS

Series	Characteristics	Constructions
SARCON® GR-d	Silicone compound with double sticky surfaces and Thermal Conductivity of GR-d material is 1.5W/m-K by using Hot Wire (1.3W/m-K by using Hot Disk)	 Plain Type
SARCON® GR-Hd	Silicone compound as above GR-d plus additional hardening of the top surface to facilitate handling and installation during complex assemblies	 Hardened Surface
SARCON® GR-F2d	Silicone compound with Nylon mesh reinforcement stiffener to prevent stretching	 Plain Type Nylon Mesh
SARCON® GR-HF2d	Silicone compound as above GR-F2d plus additional hardening of the top surface to facilitate handling and installation during complex assemblies	 Hardened Surface Nylon Mesh

THERMAL RESISTANCE

GR-d

Unit : K-cm²/W (K-in²/W)

Compression Force	0.5mmT	1.0mmT	1.5mmT	2.0mmT	2.5mmT	3.0mmT	4.0mmT	5.0mmT
100kPa(14.5psi)	4.5 (0.69)	6.6 (1.03)	9.0 (1.39)	9.8 (1.52)	13.6 (2.10)	15.2 (2.35)	21.0 (3.25)	22.7 (3.52)
300kPa(43.5psi)	3.4 (0.53)	5.3 (0.81)	6.3 (0.97)	7.3 (1.13)	11.0 (1.71)	11.4 (1.77)	15.6 (2.42)	16.7 (2.58)
500kPa(72.5psi)	3.00 (0.46)	4.7 (0.73)	5.6 (0.87)	6.2 (0.97)	9.5 (1.47)	9.6 (1.48)	13.1 (2.03)	14.0 (2.17)

GR-Hd

Compression Force	0.5mmT	1.0mmT	1.5mmT	2.0mmT	2.5mmT	3.0mmT	4.0mmT	5.0mmT
100kPa(14.5psi)	4.8 (0.74)	7.4 (1.15)	10.6 (1.64)	12.4 (1.92)	14.8 (2.29)	16.7 (2.59)	21.0 (3.26)	23.5 (3.64)
300kPa(43.5psi)	3.7 (0.57)	6.5 (1.01)	9.0 (1.39)	10.1 (1.57)	12.9 (2.00)	14.6 (2.26)	16.5 (2.56)	19.0 (2.95)
500kPa(72.5psi)	3.4 (0.53)	6.1 (0.95)	7.9 (1.22)	8.8 (1.36)	10.9 (1.69)	12.2 (1.89)	14.0 (2.17)	16.1 (2.50)

GR-F2d

Compression Force	0.5mmT	1.0mmT	2.0mmT
100kPa(14.5psi)	4.9 (0.76)	7.4 (1.15)	12.9 (2.00)
300kPa(43.5psi)	4.3 (0.66)	6.7 (1.03)	10.9 (1.69)
500kPa(72.5psi)	4.0 (0.63)	6.1 (0.94)	9.8 (1.52)

GR-HF2d

Compression Force	0.5mmT	1.0mmT	2.0mmT
100kPa(14.5psi)	4.9 (0.76)	7.6 (1.17)	13.3 (2.07)
300kPa(43.5psi)	4.3 (0.66)	6.9 (1.07)	11.6 (1.79)
500kPa(72.5psi)	4.1 (0.63)	6.4 (1.00)	10.5 (1.62)

Test method: Fujipoly Test method, FTM-P3050 by TIM Tester 1300 which is ASTM D5470 equivalent

- Specimen Area; DIA.33.0mm (1.30in)

TYPICAL PROPERTIES

Properties	unit	GR-d	Test method	Specimen		
Physical Properties	Color	-	Dark Gray	Visual	-	
	Specific Gravity	-	2.6	ASTM D 792	A	
	Hardness Highest Value	Shore OO (ASKER C)	50 (18)	ASTM D2240 (ISO 7619)	B	
	Tensile Strength	MPa (psi)	0.3 (43.5)	ASTM D 412	A	
	Elongation	%	100	ASTM D 412	A	
	Tear Strength	N/mm (ppi)	1.0 (5.7)	ASTM D 624	A	
Electrical Properties	Volume Resistivity	Ohm-m	1.0×10^{12}	ASTM D 257	C	
	Breakdown Voltage	kV/mm (volts/mil)	18 (457)	ASTM D 149	C	
	Dielectric Strength	kV/mm (volts/mil)	14 (356)	ASTM D 149	C	
	Dielectric Constant	-	50Hz	5.82	ASTM D 150	A
			1kHz	5.56		
			1MHz	5.46		
	Dissipation Factor	-	50Hz	0.0483	ASTM D 150	A
1kHz			0.0147			
1MHz			0.0029			
Thermal Properties	Thermal Conductivity	W/m-K	1.5 by Hot Wire	ASTM D 2326	-	
			1.3 by Hot Disk	ISO/CD 22007-2		
	Useful Temperature	°C (°F)	-40 to +150 (-40 to +302)		-	-
	Low molecular Siloxane	wt%	D ₄ to D ₂₀ Total	0.0099	Gas Chromatography	-
Flame Retardant	UL94	GR-d = V-0 (See.P4)		UL 94	-	

- Specimen A: 2mmT • Specimen B: 30mmW x 50mmL x 12mmT (3mmT x 4pcs) • Specimen C: 120mmW x 120mmL x 1mmT
- Test methods of Thermal Conductivity are based on Fujipoly Test Method, FTM P-1612 by Hot Disk and FTM P-1620 by Hot Wire.

COMPRESSION FORCE**GR-d**Unit : N/6.4cm² (psi)

Compression Ratio	0.5mmT	1.0mmT	1.5mmT	2.0mmT	2.5mmT	3.0mmT	4.0mmT	5.0mmT
10%	142 (32.2)	121 (27.4)	101 (23.0)	100 (22.7)	78 (17.7)	60 (13.6)	46 (10.3)	40 (9.1)
20%	250 (56.6)	198 (44.9)	172 (39.0)	155 (35.1)	140 (31.7)	124 (28.1)	98 (22.1)	84 (19.0)
30%	394 (89.3)	308 (69.8)	279 (63.1)	249 (56.4)	221 (50.2)	202 (45.8)	175 (39.7)	157 (35.6)
40%	558 (126.4)	441 (99.9)	417 (94.5)	385 (87.2)	346 (78.4)	309 (70.0)	270 (61.2)	236 (53.5)
50%	720 (163.1)	626 (141.8)	597 (135.3)	579 (131.2)	519 (117.5)	463 (104.9)	395 (89.5)	337 (76.4)
Sustain 50%	360 (81.6)	340 (77.0)	292 (66.1)	306 (69.3)	270 (61.2)	252 (57.1)	189 (42.8)	152 (34.4)

GR-Hd

Compression Ratio	0.5mmT	1.0mmT	1.5mmT	2.0mmT	2.5mmT	3.0mmT	4.0mmT	5.0mmT
10%	198 (44.9)	147 (33.3)	134 (30.4)	123 (27.9)	95 (21.5)	86 (19.5)	76 (17.2)	61 (13.8)
20%	468 (106.0)	342 (77.5)	241 (54.6)	201 (45.5)	180 (40.8)	152 (34.4)	133 (30.1)	116 (26.3)
30%	712 (161.3)	530 (120.1)	402 (91.1)	307 (69.6)	275 (62.3)	240 (54.4)	232 (52.6)	190 (43.0)
40%	949 (215.0)	720 (163.1)	588 (133.2)	452 (102.4)	406 (92.0)	361 (81.8)	319 (72.3)	292 (66.2)
50%	1167 (264.4)	955 (216.4)	788 (178.5)	645 (146.1)	582 (131.9)	530 (120.1)	489 (110.8)	434 (98.3)
Sustain 50%	822 (186.2)	621 (140.7)	457 (103.5)	429 (97.2)	378 (85.6)	313 (70.9)	306 (69.3)	284 (64.3)

Test method: Measured by ASTM D575-91 for reference

- Specimen Area; DIA.28.6mm (1.13in) • Platen Area; DIA. 28.6mm (1.13in) • Sustain 50%: Sustain 50% at 1 minute later
- Compression Velocity; 5.0mm/minute

GR-F2dUnit : N/6.4cm² (psi)

Compression Ratio	0.5mmT	1.0mmT	2.0mmT
10%	157 (35.6)	260 (58.9)	117 (26.5)
20%	344 (77.9)	535 (121.2)	254 (57.5)
30%	587 (133.0)	783 (177.4)	416 (94.3)
40%	845 (191.4)	1051 (238.1)	622 (140.9)
50%	1115 (252.6)	1345 (304.7)	877 (198.7)
Sustain 50%	885 (200.5)	791 (179.2)	561 (127.1)

GR-HF2d

Compression Ratio	0.5mmT	1.0mmT	2.0mmT
10%	178 (40.3)	245 (55.5)	154 (34.9)
20%	426 (96.5)	598 (135.5)	353 (80.0)
30%	679 (157.9)	877 (198.7)	584 (132.3)
40%	972 (220.2)	1170 (265.1)	849 (192.4)
50%	1259 (285.2)	1495 (338.7)	1103 (249.9)
Sustain 50%	1057 (239.5)	1078 (244.2)	690 (156.3)

Test method: Measured by ASTM D575-91 for reference

- Specimen Area; DIA.28.6mm (1.13in) • Platen Area; DIA. 28.6 (1.13in) • Sustain 50%: Sustain 50% at 1 minute later
- Compression Velocity; 5.0mm/minute

DURABILITY

Test Property	Unit	70°C		150°C	
		Initial	After 1,000hrs	Initial	After 1,000hrs
Specific Gravity	-	2.6	2.6	2.6	2.6
Hardness	ASKER C	18	22	18	21
Breakdown Voltage	kV/mm	18	20	18	21
Thermal conductivity	W/m-K	1.5	1.5	1.5	1.5

Test Property	Unit	60°C/95%RH		-40°C	
		Initial	After 1,000hrs	Initial	After 120hrs
Specific Gravity	-	2.6	2.6	2.6	2.6
Hardness	ASKER C	18	20	18	18
Breakdown Voltage	kV/mm	18	20	18	18
Thermal conductivity	W/m-K	1.5	1.5	1.5	1.5

Test Property	Unit	-40°C(30min)↔+85°C(30min)	
		Initial	After 120hrs
Specific Gravity	-	2.6	2.6
Hardness	ASKER C	18	20
Breakdown Voltage	kV/mm	18	18
Thermal conductivity	W/m-K	1.5	1.5

- Specimen : GR-d • Test methods of Thermal Conductivity base on Fujipoly Test Method, FTM P-1620 by Hot Wire.

reduced temperature

-40°C = -40°F

60°C = 140°F

70°C = 158°F

85°C = 185°F

150°C = 302°F

TYPES AND CONFIGURATION

Series	Product Name	Thickness	Sheet Size	Flame Retardant
SARCON® GR-d	50G-d	0.5mm ± 0.05mm	300mm × 200mm (Recommended Usable Size: 290mm×190mm)	UL94 V-0
	100G-d	1.0mm ± 0.10mm		
	150G-d	1.5mm ± 0.15mm		
	200G-d	2.0mm ± 0.20mm		
	250G-d	2.5mm ± 0.25mm		
	300G-d	3.0mm ± 0.30mm		
	350G-d	3.5mm ± 0.30mm		
	400G-d	4.0mm ± 0.30mm		
	450G-d	4.5mm ± 0.30mm		
	500G-d	5.0mm ± 0.30mm		
SARCON® GR-Hd	50G-Hd	0.5mm ± 0.05mm	300mm × 200mm (Recommended Usable Size: 290mm×190mm)	UL94 V-0
	100G-Hd	1.0mm ± 0.10mm		
	150G-Hd	1.5mm ± 0.15mm		
	200G-Hd	2.0mm ± 0.20mm		
	250G-Hd	2.5mm ± 0.25mm		
	300G-Hd	3.0mm ± 0.30mm		
	350G-Hd	3.5mm ± 0.30mm		
	400G-Hd	4.0mm ± 0.30mm		
	450G-Hd	4.5mm ± 0.30mm		
	500G-Hd	5.0mm ± 0.30mm		
SARCON® GR-F2d	50G-F2d	0.5mm ± 0.15mm	300mm × 200mm (Recommended Usable Size: 290mm×190mm)	UL94 V-1
	100G-F2d	1.0mm ± 0.20mm		
	150G-F2d	1.5mm ± 0.20mm		
	200G-F2d	2.0mm ± 0.30mm		
SARCON® GR-HF2d	50G-HF2d	0.5mm ± 0.15mm	300mm × 200mm (Recommended Usable Size: 290mm×190mm)	UL94 V-1
	100G-HF2d	1.0mm ± 0.20mm		
	150G-HF2d	1.5mm ± 0.20mm		
	200G-HF2d	2.0mm ± 0.30mm		

HANDLING NOTES

- It is recommended to use the material in up to 30% of compression ratio. Using the material beyond the recommended compression rate may result in excessive silicone oil exudation.
- 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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