

Fujipoly® New Product Technical Information


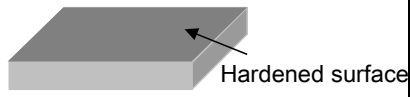
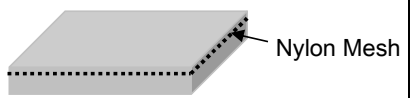
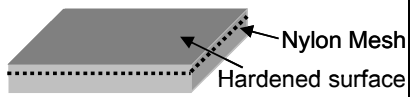
Sarcon® GR25A Series

Thermally Conductive and No Electricity Conductive Silicone Rubber Sheet

1. Features.

Sarcon® GR25A Series is a highly conformable and high thermal conducting gel material in a versatile sheet form that easily fits and adheres to most all shapes and sizes of components, including protrusions and recessed areas. It has a good handling characteristics due to highly mechanical properties.

- 1) Low thermal resistance
- 2) Soft, low stress on component
- 3) Low content of Low Molecular Siloxane

Series	Construction	
Sarcon® GR25A-00	Silicone compound with double sticky surfaces	
Sarcon® GR25A-0H	Silicone compound as above GR25A-00 plus additional hardening of the top surface to facilitate handling and installation during complex assemblies	
Sarcon® GR25A-F0	Silicone compound with Nylon mesh reinforcement stiffener to prevent stretching	
Sarcon® GR25A-FH	Silicone compound as above GR25A-F0 plus additional hardening of the top surface to facilitate handling and installation during complex assemblies	

2. Typical properties.

Property	Unit	Sarcon® GR25A		Test method	Specimen ^{*1}
Color	-	Gray		Visual	-
Specific gravity	-	2.58		JIS K 6220/ASTM D 792	A
Hardness	ASKER-C	18		JIS K 7312 (SRIS 0101)	B
	Shore OO	50			
Thermal conductivity	W/m·K	2.5		ISO/CD 22007-2 (Hot Disk)	C
Volume resistivity	MΩ·m	3.6×10 ⁴		JIS K 6249/ASTM D 257	D
Dielectric strength	kV/mm	15		JIS K 6249/ASTM D 149	D
Dielectric constant	-	50Hz	6.60	JIS K6911	E
		1kHz	6.05		
		1MHz	5.74		
Dissipation factor	-	50Hz	0.0826	JIS K6911	E
		1kHz	0.0300		
		1MHz	0.0052		
Elongation	%	197		JIS K 6251(No.2)/ASTM D 412	A
Tensile strength	MPa	0.13		JIS K 6251(No.2)/ASTM D 412	A
Tear strength	N/mm	0.78		JIS K 6252(Angle)/ASTM D 624	A
Extractable volatiles	wt%	D4 ~ D18	Less than 0.0010 ^{*2}	Gas Chromatographic Analysis by Abstracting Carbon tetrachloride	-
		D19	0.0013		
		D20	0.0015		
		Total (Σ20)	0.0028		
Flammability	-	V-0		UL 94	GR25A-00 GR25A-F0

*1 Specimen A: 2.0mmT (GR25A-00)
 Specimen B: 30mmW x 50mmL x 12mmT (GR25A-00, 3mmT x 4pcs)
 Specimen C: 50mmW x 50mmL x 9mmT (GR25A-00, 3mmT x 3pcs)
 Specimen D: 120mmW x 120mmL x 1.0mmT (GR25A-00)
 Specimen E: 2.0mmT (GR25A-00)

*2 Detection(Measuring) limit

3. Compression Load.

[Unit : N]

Compression rate		0.5mmT	1.0mmT	1.5mmT	2.0mmT	2.5mmT	3.0mmT	3.5mmT	4.0mmT	4.5mmT	5.0mmT
GR25A-00	10%	155	172	124	89	71	59	52	44	38	33
	20%	363	288	214	167	132	112	100	90	84	75
	30%	536	420	331	271	218	190	173	160	148	138
	40%	694	589	484	411	337	291	266	245	234	221
	50%	873	799	695	594	489	430	390	360	345	333
	Sustain 50%	454	412	369	320	271	238	216	202	189	179

Compression rate		0.5mmT	1.0mmT	1.5mmT	2.0mmT	2.5mmT	3.0mmT	3.5mmT	4.0mmT	4.5mmT	5.0mmT
GR25A-0H	10%	172	237	200	125	100	81	69	56	48	40
	20%	424	433	353	246	196	170	133	116	100	87
	30%	701	643	527	390	318	278	223	205	190	172
	40%	952	867	746	566	467	411	333	303	288	275
	50%	1,214	1,127	969	782	653	581	478	453	431	418
	Sustain 50%	913	739	653	497	403	351	281	256	241	230

Compression rate		0.5mmT	1.0mmT	1.5mmT	2.0mmT
GR25A-F0	10%	72	181	168	107
	20%	250	453	388	267
	30%	492	738	655	476
	40%	756	1,058	966	729
	50%	1,038	1,419	1,323	1,032
	Sustain 50%	807	972	770	563

Compression rate		0.5mmT	1.0mmT	1.5mmT	2.0mmT
GR25A-FH	10%	112	184	191	109
	20%	322	513	436	280
	30%	576	840	730	508
	40%	853	1,196	1,069	788
	50%	1,153	1,584	1,460	1,116
	Sustain 50%	970	1,176	916	647

*Test method: Specimen's dimensions 25mm x 25mm

Measured the force at 50% compression with the 25x25mm specimen set between two aluminum plates (27mmW x 27mmL x 4.0mmT).

Compression Velocity: 5.0mm/minute with 1,960N (200kgf) load Cell

Equipment: Compression Load tester (Aikoh Engineering MODEL-310N)

Sustain 50%: Sustain 50% at 1 minute later

4. Thermal Resistance

[Unit : °C·cm²/W]

Compression force		0.5mmT	1.0mmT	1.5mmT	2.0mmT	2.5mmT	3.0mmT	3.5mmT	4.0mmT	4.5mmT	5.0mmT
GR25A-00	100kPa	1.48	2.76	3.82	5.00	5.65	6.90	7.97	8.69	9.60	10.47
	300kPa	1.21	2.12	2.95	3.78	4.21	4.81	5.50	5.81	6.31	6.96
	500kPa	1.10	1.87	2.57	3.17	3.56	4.02	4.55	4.87	5.31	5.88
GR25A-0H	100kPa	1.85	2.99	4.53	6.07	7.23	7.69	8.46	10.47	11.43	12.02
	300kPa	1.76	2.70	3.86	4.70	5.49	6.05	6.70	8.12	8.48	9.27
	500kPa	1.72	2.65	3.61	4.17	4.72	5.25	5.70	6.70	7.38	7.66
GR25A-F0	100kPa	2.00	3.46	4.50	5.88						
	300kPa	1.90	3.06	3.92	4.89						
	500kPa	1.86	2.80	3.61	4.44						
GR25A-FH	100kPa	2.10	3.54	5.02	6.50						
	300kPa	2.01	3.37	4.50	5.54						
	500kPa	1.96	3.18	4.16	4.97						

*Remarks / Test method: ASTM D 5490

Test piece size : φ33mm

Measuring device : ANALYSIS TECH

Thermal Interface Material Tester TIM Tester 1300

5. Aging Test

GR25A-00		70°C x 1000hrs		150°C x 1000hrs	
Property	Unit	Initial	After 1,000hrs	Initial	After 1,000hrs
Specific gravity	-	2.58	2.58	2.58	2.59
Hardness	(ASKER-C)	18	14	18	27
Thermal conductivity	W/m·K	2.5	2.5	2.5	2.5
Dielectric strength	kV/mm	15	15	15	19

GR25A-00		60°C/95%RH x 1000hrs		-40°C x 1,000hrs	
Property	Unit	Initial	After 1,000hrs	Initial	After 1,000hrs
Specific gravity	-	2.58	2.58	2.58	2.58
Hardness	(ASKER-C)	18	13	18	17
Thermal conductivity	W/m·K	2.5	2.5	2.5	2.5
Dielectric strength	kV/mm	15	14	15	15

GR25A-00		(+125°C x 30min ⇔ -40°C x 30min) x 1000hrs	
Property	Unit	Initial	After 1000hrs
Specific gravity	-	2.58	2.58
Hardness	(ASKER-C)	18	15
Thermal conductivity	W/m·K	2.5	2.5
Dielectric strength	kV/mm	15	15

6. Types and configuration.

Type	Product name	Thickness	Sheet size
Sarcon® GR25A-00	GR25A-00-50GY	0.5mm ± 0.15mm	300mm × 200mm (Recommended Usable Size: 290mm×190mm)
	GR25A-00-100GY	1.0mm ± 0.2mm	
	GR25A-00-150GY	1.5mm ± 0.2mm	
	GR25A-00-200GY	2.0mm ± 0.3mm	
	GR25A-00-250GY	2.5mm ± 0.3mm	
	GR25A-00-300GY	3.0mm ± 0.3mm	
	GR25A-00-350GY	3.5mm ± 0.3mm	
	GR25A-00-400GY	4.0mm ± 0.3mm	
	GR25A-00-450GY	4.5mm ± 0.3mm	
	GR25A-00-500GY	5.0mm ± 0.3mm	
Sarcon® GR25A-0H	GR25A-0H-50GY	0.5mm ± 0.15mm	300mm × 200mm (Recommended Usable Size: 290mm×190mm)
	GR25A-0H-100GY	1.0mm ± 0.2mm	
	GR25A-0H-150GY	1.5mm ± 0.2mm	
	GR25A-0H-200GY	2.0mm ± 0.3mm	
	GR25A-0H-250GY	2.5mm ± 0.3mm	
	GR25A-0H-300GY	3.0mm ± 0.3mm	
	GR25A-0H-350GY	3.5mm ± 0.3mm	
	GR25A-0H-400GY	4.0mm ± 0.3mm	
	GR25A-0H-450GY	4.5mm ± 0.3mm	
	GR25A-0H-500GY	5.0mm ± 0.3mm	
Sarcon® GR25A-F0	GR25A-F0-50GY	0.5mm ± 0.15mm	300mm × 200mm (Recommended Usable Size: 290mm×190mm)
	GR25A-F0-100GY	1.0mm ± 0.2mm	
	GR25A-F0-150GY	1.5mm ± 0.2mm	
	GR25A-F0-200GY	2.0mm ± 0.3mm	
Sarcon® GR25A-FH	GR25A-FH-50GY	0.5mm ± 0.15mm	300mm × 200mm (Recommended Usable Size: 290mm×190mm)
	GR25A-FH-100GY	1.0mm ± 0.2mm	
	GR25A-FH-150GY	1.5mm ± 0.2mm	
	GR25A-FH-200GY	2.0mm ± 0.3mm	

* Unit Conversion

- Thermal Resistance	°C·cm ² /W	→ × 0.16	→ °C·in ² /W
- Tensile Strength	MPa	→ × 10.2	→ kgf/cm ²
- Tear Strength	N/mm	→ × 1.02	→ kgf/cm
- Thermal Conductivity	W/m·K	→ × 2.39×10 ⁻³	→ cal/cm·sec·°C
- Compression Load	N	→ × 0.12	→ kgf

7. 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.

Statement of Lieu of Warranty

- 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
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