



Fujipoly New Product Technical Information

NEW PRODUCTS : SARCON[®] XR-e

High Thermally Conductive and Non-Flammable Silicone Gel Sheets

1. Features:

Sarcon[®] XR-e is highly conformable/thermally conductive gel materials, **11watt/m-K** (No electricity conductive) in a versatile sheet form that easily fit and adhere to most all shapes and sizes of components, and makes reliable and complete physical contact.

The surface consistency of the pads is excellent for filling air gaps and uneven surfaces.

- 1) Realized low thermal resistance due to the best thermal conductivity
- 2) Meets the requirement UL94 V-0 class.
- 3) Content of Low Molecular Siloxane is small

2. Variety of Sarcon[®] XR-e products:

Series	Construction	Application Guidelines
Sarcon [®] ##X-e	Silicone compound	Between chassis wall and other surface. Between CPU and heat sink. Between semiconductor and heat sink.
Sarcon [®] ##X-He	Silicone compound with hardened top surface	Same as above, except hardened top surface facilitates handling and installation during complex assemblies.

* Thickness availability: more than 1.0mm for X-e, more than 0.3mm for X-He.

* Can be designed for custom applications. (Cutting. Punching)

* ## refers to a thickness of sheet

3. Typical Product Properties:

3-1. Thermal properties and Flame retardancy: (Typical Value)

Item	Sarcon [®] XR-e			Test Method	
Thermal Conductivity (Watt/m·K)	11			ASTM D 5470	
Thermal Resistance (°C·inch ² /watt)	Force(kPa)	40		ASTM D 5470	
	30X-He	0.11			
	50X-He	0.16			
	100X-e/X-He	0.20/0.23			
	150X-e/X-He	0.24/0.27			
	200X-e/X-He	0.32/0.35			
Thermal Resistance (°C·cm ² /watt)	Force(kPa)	100	300	500	Fujipoly Test Method: TIM1300 Tester based on ASTM D5470.
	30X-He				
	50X-He				
	100X-e/X-He				
	150X-e/X-He				
	200X-e/X-He				
Flame Retardancy	V-0			UL94 standard	



3-2. Extractable Volatile (Low Molecular Siloxane Content): (Typical Value)

Dn	Sarcon® XR-e	Test Method
Total less D ₂₀	0.0014 wt%	Gas Chromatographic Analysis by Abstracting Acetone

3-3. Compression VS Compression Load: (Typical Value)

Compression Rate	30X-He	50X-He	100X-e/X-He	150X-e/X-He	200X-e/X-He	
Load (N)	10%	23.5	57.8	84.3 / 100.0	98.0 / 99.0	93.1 / 112.7
	20%	89.2	218.5	211.7 / 229.3	198.0 / 248.9	218.5 / 233.2
	30%	227.4	492.9	472.4 / 510.6	492.0 / 547.8	491.0 / 582.1
	40%	383.2	835.0	806.5 / 866.3	766.4 / 876.1	780.1 / 844.8
	50%	584.1	1285.8	1235.8 / 1270.1	1209.3 / 1236.8	1189.7 / 1229.9
Sustain 50%	514.5	865.3	798.7 / 846.7	777.1 / 826.1	771.3 / 786.9	

Remark/ Test method: Fujipoly Test Method:

Compression Velocity: 5.0mm/minute with 200kgf load Cell

Compression Area: 6.25cm² (25mm x 25mm)

Sustain 50% at 1 minute after

4. Typical Material Properties:

Item	Unit	Sarcon® XR-e	Test Method	Specimen
Color	—	Gray	Visual	—
Specific Gravity		3.3	JIS K 6220/ASTM D 792	A
Hardness	ASKER-C (Shore-00)	50 (64)	SRIS 0101 (ASTM D 2240)	B
Tensile Strength	MPa	0.2	JIS K 6251(#2 Die)/ASTM D412	A
Elongation	%	40	JIS K 6251(#2 Die)/ASTM D412	A
Tear Resistance	kN/m	1.0	JIS K 6252(Angle)/ASTM D 624	A
Volume Resistivity	Mohms-m	7.0x10 ³	JIS K 6249/ASTM D 257	C
Breakdown Voltage	kV/mm	18	JIS K 6249/ASTM D 149	C
Withstand Voltage	kV/mm	11	JIS K 6249/ASTM D 149	C

Remark / Specimen A : 2.0mm Thickness. (200X-He)

Specimen B : 60mm Width x 120mm Length x 20mm Thickness.(XR-e)

Specimen C : 120mm Width x 120mm Length x 1.0mm Thickness. (100X-He)



5. Aging Test: (Typical Value)

5-1. Test Condition: +70°C x 1,000 hrs. — Sarcon® XR-e

Property	Unit	Initial	100hrs.	250hrs.	500hrs.	1000hrs.	Test Method	Specimen
Specific Gravity	—	3.3	3.3	3.3	3.3	3.3	JIS K 6220/ASTM D 792	A
Hardness	ASKER-C	50	53	58	60	65	SRIS 0101	B
Tensile Strength	MPa	0.2	0.2	0.2	0.2	0.2	JIS K6251(#2 Die)/ASTM D 412	A
Elongation	%	40	30	30	20	20	JIS K6251(#2 Die)/ASTM D 412	A
Tear Resistance	kN/m	1	1	1	1	1	JIS K6252(Angle)/ASTM D 624	A
Volume Resistivity	MΩ·m	0.7x10 ⁴	1.2x10 ⁴	0.9x10 ⁴	2.0x10 ⁴	3.5x10 ⁴	JIS K 6249/ASTM D 257	C
Breakdown Voltage	kV/mm	18	18	18	19	19	JIS K 6249/ASTM D 149	C
Thermal Conductivity	W/m·k	11	11	11	11	11	ASTM D 5470	C

5-2. Test Condition: +120°C x 1,000 hrs. — Sarcon® XR-e

Property	Unit	Initial	100hrs.	250hrs.	500hrs.	1000hrs.	Test Method	Specimen
Specific Gravity	—	3.3	3.3	3.3	3.3	3.3	JIS K 6220/ASTM D 792	A
Hardness	ASKER-C	50	55	62	70	76	SRIS 0101	B
Tensile Strength	MPa	0.2	0.2	0.2	0.2	0.2	JIS K6251(#2 Die)/ASTM D 412	A
Elongation	%	40	20	10	10	0	JIS K6251(#2 Die)/ASTM D 412	A
Tear Resistance	kN/m	1	1	1	1	1	JIS K6252(Angle)/ASTM D 624	A
Volume Resistivity	MΩ·m	0.7x10 ⁴	4.1x10 ⁴	4.3x10 ⁴	8.3x10 ⁴	1.9x10 ⁴	JIS K 6249/ASTM D 257	C
Breakdown Voltage	kV/mm	18	17	17	17	17	JIS K 6249/ASTM D 149	C
Thermal Conductivity	W/m·k	11	11	11	11	11	ASTM D 5470	C

5-3. Test Condition: +150°C x 1,000 hrs. — Sarcon® XR-e

Property	Unit	Initial	100hrs.	250hrs.	500hrs.	1000hrs.	Test Method	Specimen
Specific Gravity	—	3.3	3.3	3.3	3.3	3.3	JIS K 6220/ASTM D 792	A
Hardness	ASKER-C	50	62	75	80	84	SRIS 0101	B
Tensile Strength	MPa	0.2	0.2	0.2	0.2	0.2	JIS K6251(#2 Die)/ASTM D 412	A
Elongation	%	40	10	10	10	0	JIS K6251(#2 Die)/ASTM D 412	A
Tear Resistance	kN/m	1	1	1	1	1	JIS K6252(Angle)/ASTM D 624	A
Volume Resistivity	MΩ·m	0.7x10 ⁴	0.4x10 ⁴	6.5x10 ⁴	1.0x10 ⁵	2.3x10 ⁵	JIS K 6249/ASTM D 257	C
Breakdown Voltage	kV/mm	18	17	17	18	19	JIS K 6249/ASTM D 149	C
Thermal Conductivity	W/m·k	11	11	11	11	11	ASTM D 5470	C

Remark / Specimen A : 2.0mm Thickness

Specimen B : 60mm Width x 120mm Length x 20mm Thickness.

Specimen C : 120mm Width x 120mm Length x 1.0mm Thickness.


5-4. Test Condition: +70°C x 1,000 hrs. — Sarcon® XR-He

Property	Unit	Initial	100hrs.	250hrs.	500hrs.	1000hrs.	Test Method	Specimen
Specific Gravity	—	3.3	3.3	3.3	3.3	3.3	JIS K 6220/ASTM D 792	A
Hardness	ASKER-C	50	53	58	60	65	SRIS 0101	B
Tensile Strength	MPa	0.2	0.2	0.2	0.2	0.2	JIS K6251(#2 Die)/ASTM D 412	A
Elongation	%	40	30	30	20	10	JIS K6251(#2 Die)/ASTM D 412	A
Tear Resistance	kN/m	1	1	1	1	1	JIS K6252(Angle)/ASTM D 624	A
Volume Resistivity	MΩ·m	0.8x10 ⁴	1.0x10 ⁴	1.4x10 ⁴	1.2x10 ⁴	1.7x10 ⁴	JIS K 6249/ASTM D 257	C
Breakdown Voltage	kV/mm	18	18	17	17	17	JIS K 6249/ASTM D 149	C
Thermal Conductivity	W/m·k	11	11	11	11	11	ASTM D 5470	C

5-5. Test Condition: +120°C x 1,000 hrs. — Sarcon® XR-He

Property	Unit	Initial	100hrs.	250hrs.	500hrs.	1000hrs.	Test Method	Specimen
Specific Gravity	—	3.3	3.3	3.3	3.3	3.3	JIS K 6220/ASTM D 792	A
Hardness	ASKER-C	50	55	62	70	76	SRIS 0101	B
Tensile Strength	MPa	0.2	0.2	0.2	0.2	0.2	JIS K6251(#2 Die)/ASTM D 412	A
Elongation	%	40	20	10	10	0	JIS K6251(#2 Die)/ASTM D 412	A
Tear Resistance	kN/m	1	1	1	1	1	JIS K6252(Angle)/ASTM D 624	A
Volume Resistivity	MΩ·m	0.8x10 ⁴	6.2x10 ⁴	1.6x10 ⁴	1.9x10 ⁴	1.6x10 ⁴	JIS K 6249/ASTM D 257	C
Breakdown Voltage	kV/mm	18	17	18	19	19	JIS K 6249/ASTM D 149	C
Thermal Conductivity	W/m·k	11	11	11	11	11	ASTM D 5470	C

5-6. Test Condition: +150°C x 1,000 hrs. — Sarcon® XR-He

Property	Unit	Initial	100hrs.	250hrs.	500hrs.	1000hrs.	Test Method	Specimen
Specific Gravity	—	3.3	3.3	3.3	3.3	3.3	JIS K 6220/ASTM D 792	A
Hardness	ASKER-C	50	62	75	80	84	SRIS 0101	B
Tensile Strength	MPa	0.2	0.2	0.2	0.2	0.2	JIS K6251(#2 Die)/ASTM D 412	A
Elongation	%	40	10	10	10	0	JIS K6251(#2 Die)/ASTM D 412	A
Tear Resistance	kN/m	1	1	1	1	1	JIS K6252(Angle)/ASTM D 624	A
Volume Resistivity	MΩ·m	0.8x10 ⁴	3.8x10 ⁴	1.6x10 ⁴	8.5x10 ⁴	2.3x10 ⁴	JIS K 6249/ASTM D 257	C
Breakdown Voltage	kV/mm	18	18	18	19	18	JIS K 6249/ASTM D 149	C
Thermal Conductivity	W/m·k	11	11	11	11	11	ASTM D 5470	C

Remark / Specimen A : 2.0mm Thickness

Specimen B : 60mm Width x 120mm Length x 20mm Thickness.

Specimen C : 120mm Width x 120mm Length x 1.0mm Thickness.


5-7. Test Condition: +60°C 90%RH x 1,000 hrs. --- Sarcon® XR-e

Property	Unit	Initial	100hrs.	250hrs.	500hrs.	1000hrs.	Test Method	Specimen
Specific Gravity	-	3.3	3.3	3.3	3.3	3.3	JIS K 6220/ASTM D 792	A
Hardness	ASKER-C	50	52	55	57	60	SRIS 0101	B
Tensile Strength	MPa	0.2	0.2	0.2	0.2	0.2	JIS K6251(#2 Die)/ASTM D 412	A
Elongation	%	40	40	40	30	30	JIS K6251(#2 Die)/ASTM D 412	A
Tear Resistance	kN/m	1	1	1	1	1	JIS K6252(Angle)/ASTM D 624	A
Volume Resistivity	MΩ·m	0.7x10 ⁴	1.6x10 ⁴	1.5x10 ⁴	1.7x10 ⁴	2.2x10 ⁴	JIS K 6249/ASTM D 257	C
Breakdown Voltage	kV/mm	18	18	17	18	19	JIS K 6249/ASTM D 149	C
Thermal Conductivity	W/m·k	11	11	11	11	11	ASTM D 5470	C

5-8. Test Condition: +60°C 90%RH x 1,000 hrs. --- Sarcon® XR-He

Property	Unit	Initial	100hrs.	250hrs.	500hrs.	1000hrs.	Test Method	Specimen
Specific Gravity	-	3.3	3.3	3.3	3.3	3.3	JIS K 6220/ASTM D 792	A
Hardness	ASKER-C	50	52	55	57	60	SRIS 0101	B
Tensile Strength	MPa	0.2	0.2	0.2	0.2	0.2	JIS K6251(#2 Die)/ASTM D 412	A
Elongation	%	40	40	40	30	30	JIS K6251(#2 Die)/ASTM D 412	A
Tear Resistance	kN/m	1	1	1	1	1	JIS K6252(Angle)/ASTM D 624	A
Volume Resistivity	MΩ·m	0.8x10 ⁴	1.2x10 ⁴	1.2x10 ⁴	1.0x10 ⁴	3.1x10 ⁴	JIS K 6249/ASTM D 257	C
Breakdown Voltage	kV/mm	18	17	18	19	17	JIS K 6249/ASTM D 149	C
Thermal Conductivity	W/m·k	11	11	11	11	11	ASTM D 5470	C

Remark / Specimen A : 2.0mm Thickness

Specimen B : 60mm Width x 120mm Length x 20mm Thickness.

Specimen C : 120mm Width x 120mm Length x 1.0mm Thickness.

Notes:

- All Fujipoly test data in this document is based on Fujipoly test method and is believe to be accurate and reliable. Nevertheless, any Fujipoly test data shows typical product properties, and does not show the guaranteed product properties.
- Some Silicone oil could exude from the product according to operating conditions.
- Some low molecular Siloxane could vaporize from the product according to operating conditions.
- It is advisable to use the product under recommended operating condition. Some more Silicone oil could exude from the product if it was used over the recommended condition.
- It is advisable to use the product under parallel and even compression. Some more Silicone oil could exude from the product if it was used under excessive or partial stress.
- Products testing purchaser is recommended in order to meet expected results such as performance and application.

Sarcon® is registered trademark of Fujipoly

STATEMENT OF LIEU OF WARRANTY: All technical information in this document is based on tests and is believed to be accurate and reliable. Nevertheless, since the products described herein are not provided to conform with mutually accepted specifications and the use thereof is unknown. The manufacturer and seller of the product does not guarantee results, freedom from patent infringement, or suitability of the product for any application thereof. The manufacturer and seller of the product described in this document will provide all possible technical assistance and will replace any products proven defective. No statement or recommendation made by the manufacturer or seller not contained herein shall have any fore of effect unless in conformity with an agreement signed by an officer of the seller or manufacturer. Product testing by the purchaser is recommended in order to confirm expected results.