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FUJIPOLY®

SARCON® UR Series.

Very High Heat Conductivity.

FUJIPOLY DATA SHEET NUMBER FPDS 96-04 / Version 5

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FUJIPOLY® DATA SHEET FPDS 96-04 (Version 5)

1] Product Name :

1] -1) Sarcon® UR (UL File Number E58126)

2] Features for Sarcon® UR :

1) High Heat Conductivity.

SARCON® UR is Fujipoly's originally developed High Heat Conductive/Low Hardness Silicone Rubber. Fine, high heat conductive ceramic particles are mixed with insulative silicone rubber to produce this excellent insulative, high heat conductive silicone material.

2) Usable Over a Wide Temperture Range.(–60ºC ~ 182ºC / –76ºF ~ 360ºF)

Due to its superior resistance to heat and cold, SARCON® is ideal for use across a wide temperature range. Sarcon® maintains its outstanding electrical and electrical insulating properties which are characteristic of silicone. There is no significant variation in its physical properties.

SARCON® is distinguished by a wide range of other outstanding propertis, such as excellent resistance to environmental conditions, arc, corona discharge, ozone and chemicals.

3) Simplified Processing and Reduced Operating Costs.

Unlike mica, SARCON® requires no grease. This significantly simplifies operation, and dispenses with the various costs required for applying the grease. Sarcon® is not messy, easy to apply and free from the problems of contamination due to grease application.

4) Cushion Effect.

Due to SARCON's elastic properties, it has an excellent cushion effect. Attached to devices like transistors. SARCON® provides superb protection against damage due to deformation as well as shock and vibration.

5) Complies with UL Standards. (UL 94. UL 746)

A. Complies with UL 746 (Electrical Insulant Standard) 150ºC

B. Complies with UL 94 (Flame Retardancy Standard) V–0

3] Typical Properties.

Table - 1

Item	Unit	SARCON® 30U	SARCON® 45U	SARCON® 85U
Color	–		Grey	
Thickness	mm	0.3 +0.1 / –0	0.45 ±0.05	0.85 ±0.05
Hardness	ASTM D2240(A)		79	
Tensile Strength	KN/m	0.9	1.2	2.2
Elongation	%		110	
Tear Strength	KN/m	0.3B	0.4B	0.7B
Volume Resistivity	MΩ·m	x 10^7	x 10^7	x 10^7
Breakdown Voltage	KV / AC	9	12	16
Withstand Voltage	KV / minute	6	8	11
Dielectric Constant	50Hz 10^3Hz 10^6Hz	4.32 4.31 4.33	4.64 4.63 4.64	5.35 5.34 5.34
Dielectric Dissipation Factor	50Hz 10^3Hz 10^5Hz	0.0027 0.0014 0.0011	0.0024 0.0013 0.0009	0.0025 0.0013 0.0010
Thermal Impedance	FTM P-3010	0.26 °C / W	0.35 °C / W	0.56 °C / W
Flame Retardant	UL – 94	V – 0	V – 0	V – 0

Note.) 1. Test method is based on JIS K–6249.
2. Breakdown Voltage : AC 60Hz
   Withstand Voltage : AC 60Hz
3. Thermal Impedance : Fujipoly Test Method FTM P-3010 which gives ASTM D5470 Equivalent value.
4. Flame Retardant : UL–94

4] Heat Aging Test

4] -1) Test Condition :150ºC (300ºF) x 1,000hrs (42days)

SARCON® 30U

Table - 2

Properties	Unit	Before test	After 100hrs	After 500hrs	After 1,000hrs
Hardness	ASTM D2240(A)	83	86	88	89
Tensile Strength	KN/m	1.0	1.2	1.3	1.3
Elongation	%	83	67	50	40
Volume Resistivity	MΩ·m	9.5×10^6	1.1×10^7	3.3×10^7	6.2×10^7
Breakdown Voltage	KV / AC	9	10	10	10
Dielectric Constant	50Hz 10^3 Hz 10^6 Hz	4.32 4.31 4.33	4.22 4.22 4.24	4.24 4.23 4.25	4.24 4.23 4.26
Dielectric Dissipation Factor	50Hz 10^3 Hz 10^6 Hz	0.0027 0.0014 0.0011	0.0021 0.0011 0.0010	0.0018 0.0010 0.0010	0.0013 0.0008 0.0008

SARCON® 45U

Table - 3

Properties	Unit	Before test	After 100hrs	After 500hrs	After 1,000hrs
Hardness	ASTM D2240(A)	85	87	89	91
Tensile Strength	KN/m	1.4	1.6	1.9	1.9
Elongation	%	80	70	50	50
Volume Resistivity	MΩ·m	7.7×10^6	6.4×10^7	8.3×10^7	1.0×10^8
Breakdown Voltage	KV / AC	12	12	13	13
Dielectric Constant	50Hz 10^3 Hz 10^6 Hz	4.64 4.63 4.64	4.57 4.56 4.57	4.45 4.45 4.46	4.53 4.52 4.54
Dielectric Dissipation Factor	50Hz 10^3 Hz 10^6 Hz	0.0024 0.0013 0.0009	0.0019 0.0010 0.0008	0.0013 0.0008 0.0007	0.0011 0.0007 0.0007

SARCON® 85U

Table - 4

Properties	Unit	Before test	After 100hrs	After 500hrs	After 1,000hrs
Hardness	ASTM D2240(A)	82	84	85	83
Tensile Strength	KN/m	2.6	2.8	3.4	3.4
Elongation	%	83	67	53	47
Volume Resistivity	MΩ·m	2.7×10^7	6.8×10^7	9.8×10^7	1.1×10^7
Breakdown Voltage	KV / AC	16	16	16	17
Dielectric Constant	50Hz 10^3 Hz 10^6 Hz	5.35 5.34 5.34	5.18 5.17 5.18	5.11 5.10 5.11	5.15 5.15 5.16
Dielectric Dissipation Factor	50Hz 10^3 Hz 10^6 Hz	0.0025 0.0013 0.0010	0.0015 0.0010 0.0008	0.0012 0.0008 0.0008	0.0011 0.0007 0.0007

4] -2)Test Condition :200ºC (390ºF) x 1,000hrs (42days)

SARCON® 30U

Table - 5

Properties	Unit	Before test	After 100hrs	After 500hrs	After 1,000hrs
Hardness	ASTM D2240(A)	83	88	90	92
Tensile Strength	KN/m	1.0	1.5	1.3	1.9
Elongation	%	83	73	43	43
Volume Resistivity	MΩ·m	9.5×10^6	6.4×10^7	8.2×10^7	2.0×10^7
Breakdown Voltage	KV / AC	9	10	10	10
Dielectric Constant	50Hz 10^3 Hz 10^6 Hz	4.32 4.31 4.33	4.30 4.29 4.32	4.10 4.10 4.11	4.10 4.09 4.11
Dielectric Dissipation Factor	50Hz 10^3 Hz 10^6 Hz	0.0027 0.0014 0.0011	0.0020 0.0010 0.0009	0.0014 0.0009 0.0009	0.0012 0.0008 0.0007

SARCON® 45U

Table - 6

Properties	Unit	Before test	After 100hrs	After 500hrs	After 1,000hrs
Hardness	ASTM D2240(A)	85	90	93	93
Tensile Strength	KN/m	1.4	2.1	3.1	3.0
Elongation	%	80	60	47	47
Volume Resistivity	MΩ·m	7.7×10^6	6.0×10^7	1.4×10^7	2.0×10^7
Breakdown Voltage	KV / AC	12	12	13	13
Dielectric Constant	50Hz 10^3 Hz 10^6 Hz	4.64 4.63 4.64	4.65 4.64 4.65	4.41 4.40 4.42	4.43 4.42 4.44
Dielectric Dissipation Factor	50Hz 10^3 Hz 10^6 Hz	0.0024 0.0013 0.0009	0.0020 0.0011 0.0007	0.0014 0.0009 0.0007	0.0013 0.0008 0.0006

SARCON® 85U

Table - 7

Properties	Unit	Before test	After 100hrs	After 500hrs	After 1,000hrs
Hardness	ASTM D2240(A)	82	87	83	86
Tensile Strength	KN/m	2.6	3.8	5.3	5.1
Elongation	%	83	67	50	50
Volume Resistivity	MΩ·m	2.7×10^7	7.8×10^7	1.1×10^8	1.2×10^8
Breakdown Voltage	KV / AC	16	16	17	16
Dielectric Constant	50Hz 10^3 Hz 10^6 Hz	5.35 5.34 5.34	5.18 5.17 5.17	5.11 5.10 5.13	5.14 5.13 5.15
Dielectric Dissipation Factor	50Hz 10^3 Hz 10^6 Hz	0.0025 0.0013 0.0010	0.0023 0.0013 0.0009	0.0013 0.0008 0.0008	0.0011 0.0007 0.0007

5] Humidity Test.

Test Condition : 60°C (140°F) x 500hrs (20days) x 95%RH

SARCON® 30U — **Table - 8**

Properties	Unit	Before test	After 250hrs	After 500hrs
Hardness	ASTM D2240(A)	83	86	85
Tensile Strength	KN/m	1.0	1.1	1.1
Elongation	%	83	77	73
Volume Resistivity	MΩ·m	9.5×10^6	1.1×10^6	5.8×10^5
Breakdown Voltage	KV / AC	9	10	10
Dielectric Constant	50Hz 10^3 Hz 10^6 Hz	4.32 4.31 4.33	4.40 4.35 4.32	4.45 4.38 4.34
Dielectric Dissipation Factor	50Hz 10^3 Hz 10^6 Hz	0.0027 0.0014 0.0011	0.0155 0.0051 0.0026	0.0159 0.0062 0.0029

SARCON® 45U — **Table - 9**

Properties	Unit	Before test	After 250hrs	After 500hrs
Hardness	ASTM D2240(A)	85	88	88
Tensile Strength	KN/m	1.4	1.7	1.7
Elongation	%	80	83	83
Volume Resistivity	MΩ·m	7.7×10^6	1.1×10^6	6.1×10^5
Breakdown Voltage	KV / AC	12	12	13
Dielectric Constant	50Hz 10^3 Hz 10^6 Hz	4.64 4.63 4.64	4.86 4.77 4.71	4.79 4.71 4.65
Dielectric Dissipation Factor	50Hz 10^3 Hz 10^6 Hz	0.0024 0.0013 0.0009	0.0234 0.0071 0.0030	0.0186 0.0069 0.0035

SARCON® 85U — **Table - 1 0**

Properties	Unit	Before test	After 250hrs	After 500hrs
Hardness	ASTM D2240(A)	82	85	85
Tensile Strength	KN/m	2.6	3.3	3.3
Elongation	%	83	87	83
Volume Resistivity	MΩ·m	2.7×10^7	2.2×10^5	2.0×10^5
Breakdown Voltage	KV / AC	16	16	16
Dielectric Constant	50Hz 10^3 Hz 10^6 Hz	5.35 5.34 5.34	5.99 5.68 5.48	6.03 5.72 5.51
Dielectric Dissipation Factor	50Hz 10^3 Hz 10^6 Hz	0.0025 0.0013 0.0010	0.0563 0.0190 0.0055	0.0521 0.0194 0.0056

6] Clamping Torque VS Thermal Impedance (°C/W).

Table - 1 1

Clamping Torque				
Product Name	**Thickness** (mm)	**3kg - cm**	**5kg - cm**	**7kg - cm**
30U	**0.36**	0.30	0.26	0.25
45U	**0.45**	0.38	0.35	0.33
85U	**0.85**	0.62	0.56	0.52

Note.) Test method : Fujipoly Test Method FTM P-3010 which gives ASTM D5470 Equivalent value.

7] Chemical Resistance. (Chemical Name : HCFC AK –225 (Substitutive Freon))

Table - 1 2

	Insulative Resistivity (MΩ · m)		**Breakdown Voltage (KV)**		**Thermal Impedance (°C / W)**	
Product Name	**before soak**	**after 24hrs**	**before soak**	**after 24hrs**	**before soak**	**after 24hrs**
30U	1.1×10^7	1.1×10^7	9	9	0.26	0.27
45U	1.3×10^7	1.5×10^7	12	11	0.35	0.37
85U	1.4×10^7	1.9×10^7	16	15	0.56	0.60

8] Standard Products.

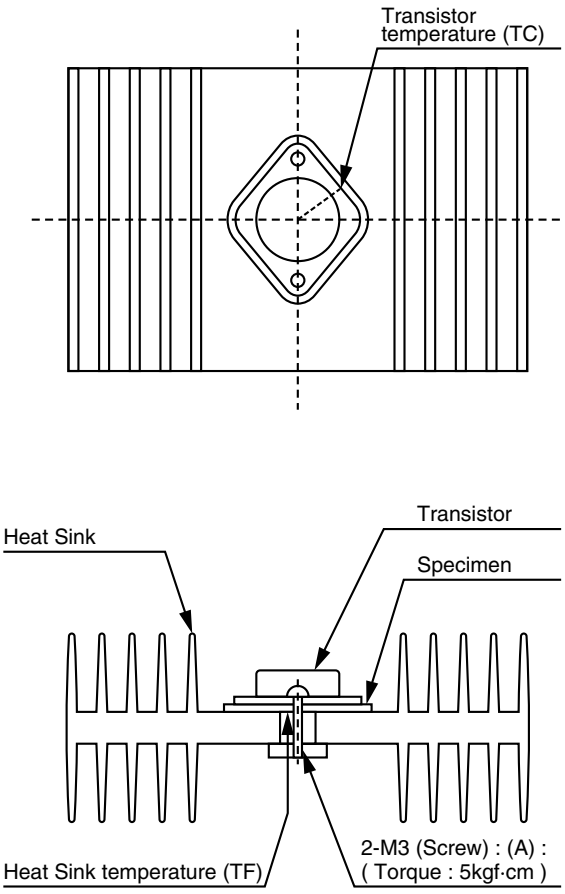
Sarcon® Roll and Sheets.
Sarcon® Die-cut Gaskets.
Sarcon® Sleeves.

9] Test Method for Thermal Resistance (Impedance) .

Test method : Fujipoly test method FTM P-3010 which gives ASTM D5470 equivalent value.

1) Punched-out specimen in TO-3 package is located between a transistor and heat sink (Fig.1). and secured with screws the position (A),using a screwdriver.
2) DC 10V, 2A (20W) current is applied to the transistor.
3) After three minutes, the thermal resistance is calculated based on the following formula (B).

(Fig.1)



Test Apparatus

Transistor : 2SC2245

Heat Sink : 40CH104L-90-K
(manufactured by Ryosan Co., Ltd)

Heat Sensor : 2SC1-OHK300 x 532W x J002Y
(manufactured by Chino Co., Ltd)

Condition : 25˚C 60%RH

Formula for Thermal Impedance calculation.

(B) : Rt= (Tc-Tf) / PC

Rt : Thermal resistance (˚C·inch^2 / W)
Tc : Transistor temperature ˚C
Tf : Heat sink temperature ˚C
PC : Power applied to transistor

10] Other Technical Information and Design Guide.

Fuji Poly website http://www.fujipoly.com

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				version 2
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