

FUJIPOLY[®]

SARCON[®] QR Series.

Low Hardness with High Heat Comductivity.

FUJIPOLY[®] and SARCON[®], are registered Trademarks of Fujipoly Group

FUJIPOLY DATA SHEET NUMBER FPDS 96-06 / Version 4

Fuji Polymer Industries Co.,Ltd. (Overseas office)

JAPAN

3F Kanda YKBldg 3-9, Iwamoto-cho 1-chome, Chiyoda-ku Tokyo Japan, 101-0032

[Phone] +81-3-5821-3105 [Facsimile] +81-3-5821-3108

[e mail] fujipoly@mxd.mesh.ne.jp

ISO9002

Fujipoly America Corporation.

USA

900 Milik Street P.O. Box 119 Carteret, NJ 07008-0119

[Phone] +1-732-969-0100 [Facsimile] +1-732-969-3311

[e mail] info@fujipoly.com [web site] www.fujipoly.com

QS9000

Fujipoly Europe Ltd.

ENGLAND

Avant Business Centre, Unit 17, Third Avenue, Bletchley Milton Keynes, MK1 1DR England

[Phone] +44-1908-277800 [Facsimile] +44-1908-379916

[e mail] fujipoly@btconnect.com

Fujipoly Singapore PTE Ltd.

SINGAPORE

Blk 71 Ayer Rajah Crescent #04-03/06 Singapore 139951

[Phone] +65-773-3466 [Facsimile] +65-773-2234

[e mail] fujipoly@mbox5.singnet.com.sg

ISO9002

Fujipoly (Thailand) Co.,Ltd.

THAILAND

55/8 Moo 13 Navanakorn Industrial Estate Phase 4 Phaholyothin Road.

Klong Nueng, Klong Luang, Pathumthanee 12120, Thailand

[Phone] +66-2-529-2732 [Facsimile] +66-2-529-2223

[e mail] fujipoly@cscoms.com

ISO9002

Fujipoly-Apcom Ltd.

HONG KONG

Workshop (F&J), Block 1, 4/F, Kwai Tak Industrial Centre Kwai Tak Street, Kwai Chung, N.t., Hong Kong.

[Phone] +852-2428-3770 [Facsimile] +852-2489-9637

[e mail] fujipoly@netvigator.com

Fujipoly China Ltd., China Factory

CHINA

1/F., JiaLongDa Bldg., Changlang Road, Jinmei Estate, Changping, Dongguan, GuangDong China 523579

[Phone] +86-769-3989660 [Facsimile] +86-769-3989662

[e mail] chinafujipoly-00@sohu.com

FUJIPOLY[®] DATA SHEET FPDS 96-06 (Version 4)

1] Product Name :

1] -1) Sarcon[®] QR (UL File Number E58126)

2] Features for Sarcon[®] QR :

1) High Heat Conductivity.

SARCON[®] QR 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 Temperature Range. (-60°C ~ 182°C / -76°F ~ +360°F)

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 properties, 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) 150°C

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

3] Typical Properties.

Table - 1

Item	Unit	SARCON® 30Q	SARCON 45Q	SARCON 85Q
Color	—	Grey		
Thickness	mm	0.3 +0.1 / -0	0.45 ±0.05	0.85 ±0.05
Hardness	ASTM D2240(A)	55		
Tensile Strength	KN/m	0.8	1.0	2.0
Elongation	%	250		
Tear Strength	KN/m	0.5B	0.6B	1.1B
Volume Resistivity	MΩ·m	x 10 ⁷	x 10 ⁷	x 10 ⁷
Breakdown Voltage	KV/AC	11	12	16
Withstand Voltage	KV/minute	7	8	11
Dielectric Constant	50Hz	4.15	4.30	4.94
	10 ³ Hz	4.12	4.24	4.90
	10 ⁶ Hz	4.11	4.23	4.88
Dielectric Dissipation Factor	50Hz	0.0064	0.0058	0.0069
	10 ³ Hz	0.0035	0.0035	0.0032
	10 ⁵ Hz	0.0022	0.0020	0.0016
Thermal Impedance	FTM P-3010	0.57 °C/W	0.77 °C/W	1.25 °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 : 150°C (300°F) x 1,000hrs (42days)

SARCON® 30Q

Table - 2

Properties	Unit	Before test	After 100hrs	After 500hrs	After 1,000hrs
Hardness	ASTM D2240(A)	66	65	69	73
Tensile Strength	KN/m	1.2	1.4	1.5	1.6
Elongation	%	168	128	118	103
Volume Resistivity	MΩ·m	5.6 x 10 ⁶	1.1 x 10 ⁷	2.0 x 10 ⁷	3.2 x 10 ⁷
Breakdown Voltage	KV/AC	11	11	11	10
Dielectric Constant	50Hz	4.15	4.05	4.11	4.02
	10 ³ Hz	4.12	4.01	4.09	3.99
	10 ⁶ Hz	4.11	4.00	4.08	3.99
Dielectric Dissipation Factor	50Hz	0.0064	0.0063	0.0039	0.0039
	10 ³ Hz	0.0035	0.0042	0.0027	0.0026
	10 ⁶ Hz	0.0022	0.0025	0.0018	0.0022

SARCON® 45Q

Table - 3

Properties	Unit	Before test	After 100hrs	After 500hrs	After 1,000hrs
Hardness	ASTM D2240(A)	58	61	66	69
Tensile Strength	KN/m	1.2	1.6	1.8	2.0
Elongation	%	207	179	140	117
Volume Resistivity	MΩ·m	4.1 x 10 ⁶	1.1 x 10 ⁷	2.4 x 10 ⁷	4.3 x 10 ⁷
Breakdown Voltage	KV/AC	12	11	12	12
Dielectric Constant	50Hz	4.30	4.26	4.19	4.18
	10 ³ Hz	4.24	4.23	4.17	4.16
	10 ⁶ Hz	4.23	4.21	4.17	4.15
Dielectric Dissipation Factor	50Hz	0.0058	0.0053	0.0034	0.0031
	10 ³ Hz	0.0035	0.0034	0.0024	0.0023
	10 ⁶ Hz	0.0020	0.0020	0.0016	0.0017

SARCON® 85Q

Table - 4

Properties	Unit	Before test	After 100hrs	After 500hrs	After 1,000hrs
Hardness	ASTM D2240(A)	55	58	63	66
Tensile Strength	KN/m	2.5	3.2	3.5	4.0
Elongation	%	196	150	130	113
Volume Resistivity	MΩ·m	4.6 x 10 ⁶	1.5 x 10 ⁷	3.2 x 10 ⁷	4.1 x 10 ⁷
Breakdown Voltage	KV/AC	16	15	16	16
Dielectric Constant	50Hz	4.94	4.87	4.88	4.86
	10 ³ Hz	4.90	4.84	4.86	4.83
	10 ⁶ Hz	4.88	4.82	4.84	4.82
Dielectric Dissipation Factor	50Hz	0.0069	0.0043	0.0034	0.0029
	10 ³ Hz	0.0032	0.0027	0.0025	0.0024
	10 ⁶ Hz	0.0016	0.0015	0.0017	0.0018

4] -2) Test Condition : 200°C (390°F) x 1,000hrs(42days)

SARCON® 30Q

Table - 5

Properties	Unit	Before test	After 100hrs	After 500hrs	After 1,000hrs
Hardness	ASTM D2240(A)	66	69	76	80
Tensile Strength	KN/m	1.2	1.5	1.6	1.8
Elongation	%	168	107	90	70
Volume Resistivity	MΩ·m	5.6 x 10 ⁶	1.1 x 10 ⁷	3.6 x 10 ⁷	7.5 x 10 ⁷
Breakdown Voltage	KV/AC	11	10	10	11
Dielectric Constant	50Hz	4.15	4.05	3.97	3.91
	10 ³ Hz	4.12	4.02	3.95	3.88
	10 ⁶ Hz	4.11	4.00	3.94	3.87
Dielectric Dissipation Factor	50Hz	0.0064	0.0049	0.0034	0.0035
	10 ³ Hz	0.0035	0.0035	0.0027	0.0031
	10 ⁶ Hz	0.0022	0.0024	0.0024	0.0022

SARCON® 45Q

Table - 6

Properties	Unit	Before test	After 100hrs	After 500hrs	After 1,000hrs
Hardness	ASTM D2240(A)	58	68	80	82
Tensile Strength	KN/m	1.2	1.9	2.3	2.5
Elongation	%	207	117	77	77
Volume Resistivity	MΩ·m	4.1 x 10 ⁶	2.8 x 10 ⁷	4.4 x 10 ⁷	6.5 x 10 ⁷
Breakdown Voltage	KV/AC	12	12	13	13
Dielectric Constant	50Hz	4.30	4.31	4.28	4.24
	10 ³ Hz	4.24	4.28	4.26	4.22
	10 ⁶ Hz	4.23	4.27	4.24	4.20
Dielectric Dissipation Factor	50Hz	0.0058	0.0037	0.0029	0.0028
	10 ³ Hz	0.0035	0.0028	0.0026	0.0028
	10 ⁶ Hz	0.0020	0.0022	0.0021	0.0022

SARCON® 85Q

Table - 7

Properties	Unit	Before test	After 100hrs	After 500hrs	After 1,000hrs
Hardness	ASTM D2240(A)	55	62	76	78
Tensile Strength	KN/m	2.5	3.8	4.9	4.8
Elongation	%	196	107	117	77
Volume Resistivity	MΩ·m	4.6 x 10 ⁶	3.0 x 10 ⁷	5.8 x 10 ⁷	8.0 x 10 ⁷
Breakdown Voltage	KV/AC	16	17	17	18
Dielectric Constant	50Hz	4.94	4.92	4.92	4.94
	10 ³ Hz	4.90	4.89	4.90	4.92
	10 ⁶ Hz	4.88	4.87	4.87	4.89
Dielectric Dissipation Factor	50Hz	0.0069	0.0034	0.0026	0.0024
	10 ³ Hz	0.0032	0.0025	0.0025	0.0027
	10 ⁶ Hz	0.0016	0.0022	0.0025	0.0025

5] Humidity Test.

Test Condition : 60°C (140°F) x 1,000hrs(42days) x 95%RH

SARCON® 30Q

Table - 8

Properties	Unit	Before test	After 250hrs	After 500hrs
Hardness	ASTM D2240(A)	66	62	63
Tensile Strength	KN/m	1.2	1.2	1.3
Elongation	%	168	157	147
Volume Resistivity	MΩ·m	5.6 x 10 ⁶	2.9 x 10 ⁶	2.8 x 10 ⁶
Breakdown Voltage	KV/AC	11	11	11
Dielectric Constant	50Hz	4.15	4.07	4.20
	10 ³ Hz	4.12	4.02	4.13
	10 ⁶ Hz	4.11	3.99	4.10
Dielectric Dissipation Factor	50Hz	0.0064	0.0116	0.0132
	10 ³ Hz	0.0035	0.0058	0.0070
	10 ⁶ Hz	0.0022	0.0025	0.0027

SARCON® 45Q

Table - 9

Properties	Unit	Before test	After 250hrs	After 500hrs
Hardness	ASTM D2240(A)	58	59	60
Tensile Strength	KN/m	1.2	1.2	1.3
Elongation	%	207	202	183
Volume Resistivity	MΩ·m	4.1 x 10 ⁶	2.5 x 10 ⁶	1.9 x 10 ⁶
Breakdown Voltage	KV/AC	12	12	12
Dielectric Constant	50Hz	4.30	4.24	4.34
	10 ³ Hz	4.24	4.18	4.27
	10 ⁶ Hz	4.23	4.16	4.23
Dielectric Dissipation Factor	50Hz	0.0058	0.0053	0.0136
	10 ³ Hz	0.0035	0.0034	0.0069
	10 ⁶ Hz	0.0020	0.0020	0.0026

SARCON® 85Q

Table - 10

Properties	Unit	Before test	After 250hrs	After 500hrs
Hardness	ASTM D2240(A)	55	56	54
Tensile Strength	KN/m	2.5	2.8	2.5
Elongation	%	196	198	173
Volume Resistivity	MΩ·m	4.6 x 10 ⁶	3.5 x 10 ⁶	3.5 x 10 ⁶
Breakdown Voltage	KV/AC	16	17	17
Dielectric Constant	50Hz	4.94	4.94	4.94
	10 ³ Hz	4.90	4.89	4.88
	10 ⁶ Hz	4.88	4.86	4.85
Dielectric Dissipation Factor	50Hz	0.0069	0.0093	0.0103
	10 ³ Hz	0.0032	0.0047	0.0053
	10 ⁶ Hz	0.0016	0.0018	0.0018

6] Clamping Torque VS Thermal Impedance (°C/W).**Table - 1 1**

Clamping Torque		3kg-cm	5kg-cm	7kg-cm
Product Name	Thickness (mm)			
30Q	0.35	0.61	0.57	0.52
45Q	0.45	0.83	0.77	0.71
85Q	0.85	1.42	1.25	1.18

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**

Product Name	Insulative Resistivity(MΩ.m)		Breakdown Voltage (KV)		Thermal Impedance (°C/W)	
	before soak	after 24hrs	before soak	after 24hrs	before soak	after 24hrs
30Q	5.6 x 10 ⁶	6.7 x 10 ⁵	11	11	0.57	0.57
45Q	4.1 x 10 ⁶	3.7 x 10 ⁵	12	11	0.77	0.78
85Q	4.6 x 10 ⁶	4.0 x 10 ⁶	16	17	1.25	1.24

8] Standard Products.

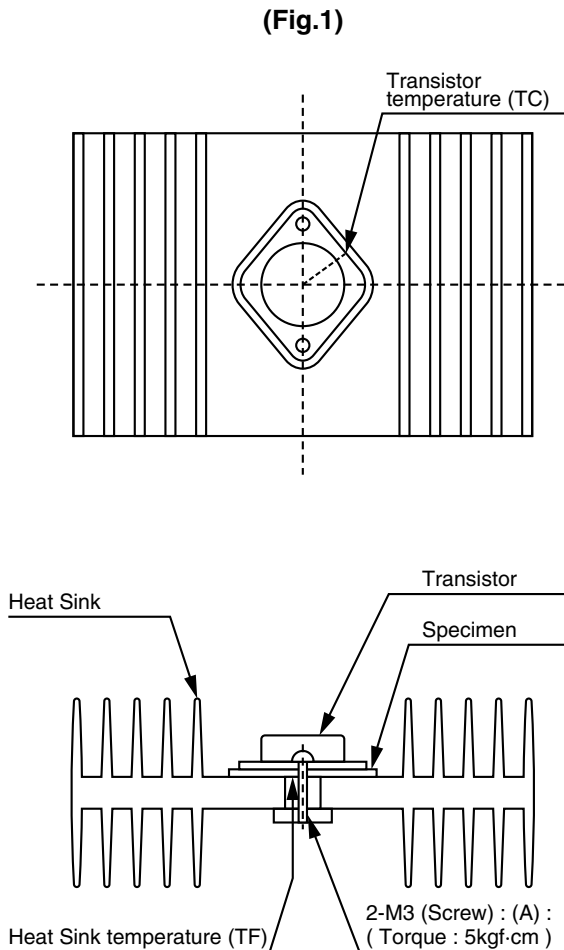
Sacon® Roll and Sheets.

Sacon® Die-cut Gaskets.

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).



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.

$$(B) : R_t = (T_c - T_f) / P_C$$

R_t : Thermal resistance (°C·inch² / W)

T_c : Transistor temperature °C

T_f : Heat sink temperature °C

P_C : Power applied to transistor

10] Other Technical Information and Design Guide.

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

	: January	31th	2002	version 4
	: October	31th	1999	version 3
	: June	1st	1999	version 2
ISSUED :	June	20th	1996	version 1

STATEMENT OF LIEU OF WARRANTY : All technical information and data 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 do 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 force 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.

Copyright © 1996 Fujipoly.

*SARCON[®], is registered Trademark of Fujipoly.