## Fujipoly Data Sheet

# SARCON® XR-Pe series

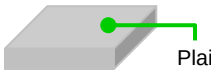
## Extremely Compressible Gap Filler Type

## FEATURES

### Highly Thermally Conductive and Non-Flammable interface materials.

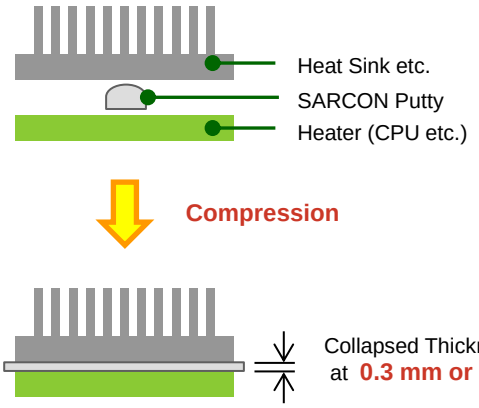
SARCON® Extremely Compressible Gap Filler Type (Putty Type) is a highly conformable, thermally conductive, non-flammable interface materials. The surface consistency is excellent for filling small air gaps and uneven mating surface, making reliable contact with various shapes and sizes of components.

## CONSTRUCTION

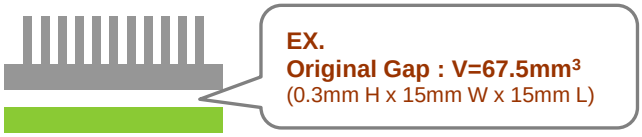
| Series | Characteristics | Constructions |
|---|---|---|
| **SARCON® XR-Pe** | Silicone compound with double sticky surfaces and Thermal Conductivity of XR-Pe material is 11.0W/m-K by using ASTM D5470 modified*1 (6.2W/m-K by using Hot Disk) |  Plain Type |

*1) Thermal Conductivity ; Measured by using ASTM D5470 modified, refer to Fujipoly Test method FTM P-3030.

## RECOMMENDED APPLICATION




**To determine the size and volume of SARCON Putty Type to be used, follow this helpful example:**




Decide Thickness of SARCON depend on the compression force
e.g. Decided Thickness = 1.0mm

$\sqrt{67.5(V) \times 1\ (T)} = 8.21$ mm

⇒ **use ; 8.5 mm x 8.5 mm x 1.0 mm**

## THERMAL RESISTANCE

Unit : K-cm²/W (K-in²/W)

| Compression Force | 1.0mmT | 1.5mmT | 2.0mmT |
|---|---|---|---|
| 100kPa /14.5psi | 1.4 (0.22) | 2.1 (0.33) | 2.3 (0.35) |
| 300kPa /43.5psi | 0.8 (0.12) | 1.0 (0.14) | 1.0 (0.15) |
| 500kPa /72.5psi | 0.4 (0.07) | 0.5 (0.08) | 0.6 (0.09) |

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 | | XR-Pe | | Test method | Specimen |
|---|---|---|---|---|---|---|---|
| Physical Properties | Color | - | | Light Gray | | Visual | - |
| | Specific Gravity | - | | 3.4 | | ASTM D792 | A |
| Electrical Properties | Volume Resistivity | Ohm-m | | $1.0x10^{10}$ | | ASTM D257 | B |
| | Breakdown Voltage | kV/mm (volts/mil) | | 11 (279) | | ASTM D149 | B |
| | Dielectric Strength | kV/mm (volts/mil) | | (N/A) | | ASTM D149 | B |
| | Dielectric Constant | - | 50Hz | 8.58 | | ASTM D150 | A |
| | | | 1kHz | 8.33 | | | |
| | | | 1MHz | 7.77 | | | |
| | Dissipation Factor | - | 50Hz | 0.0245 | | ASTM D150 | A |
| | | | 1kHz | 0.0172 | | | |
| | | | 1MHz | 0.0114 | | | |
| Thermal Properties | Thermal Conductivity | W/m-K | | 11.0 | by ASTM D5470 | ASTM D5470*1 | - |
| | | | | 6.2 | by Hot Disk | ISO/CD 22007-2 | |
| | Useful Temperature | ℃ (°F) | | -40to+150 (-40to+302) | | - | - |
| | Low molecular Siloxane | wt% | | $D_4$ to $D_{20}$ Total | 0.0014 or less | Gas Chromatography | - |
| | Flame Retardant | - | | V-0 | | UL 94 | - |

• Each Specimens are cured for measurement. • Specimen A: 2mmT • Specimen B: 120mmW × 120mmL × 1mmT

*1) Thermal Conductivity ; Measured by using ASTM D5470 modified, refer to Fujipoly Test method FTM P-3030.

## COMPRESSION FORCE

Unit : N/6.4cm$^2$ (psi)

| Compression Ratio | 1.0mmT | 1.5mmT | 2.0mmT |
|---|---|---|---|
| 10% | 75 (17.0) | 37 (8.4) | 37 (8.4) |
| 20% | 193 (43.7) | 130 (29.5) | 108 (24.5) |
| 30% | 314 (71.1) | 221 (50.1) | 165 (37.4) |
| 40% | 397 (89.9) | 294 (66.6) | 206 (46.7) |
| 50% | 472 (106.9) | 354 (80.20) | 246 (55.7) |
| Sustain 50% | 107 (24.2) | 86 (19.5) | 52 (11.8) |

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

## DURABILITY

Unit : K-cm$^2$/W

| Test Property | Compression Ratio | 70℃ | | | | | 150℃ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Initial | 100hrs | 250hrs | 500hrs | 1,000hrs | Initial | 100hrs | 250hrs | 500hrs | 1,000hrs |
| Thermal Resistance | 30% | 1.16 | 1.14 | 1.14 | 1.09 | 1.08 | 1.16 | 1.21 | 1.28 | 1.35 | 1.35 |
| | 70% | 0.65 | 0.60 | 0.57 | 0.57 | 0.58 | 0.65 | 0.72 | 0.83 | 0.90 | 1.09 |
| | 90% | 0.39 | 0.35 | 0.35 | 0.34 | 0.34 | 0.39 | 0.51 | 0.51 | 0.58 | 0.58 |

| Test Property | Compression Ratio | 60℃/90%RH | | | | | -40℃(30min)⇔+125℃(30min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Initial | 100hrs | 250hrs | 500hrs | 1,000hrs | Initial | 100hrs | 250hrs | 500hrs | 1,000hrs |
| Thermal Resistance | 30% | 1.16 | 1.08 | 1.08 | 1.08 | 1.08 | 1.16 | 1.25 | 1.25 | 1.25 | 1.26 |
| | 70% | 0.65 | 0.65 | 0.69 | 0.69 | 0.69 | 0.65 | 0.64 | 0.63 | 0.62 | 0.62 |
| | 90% | 0.39 | 0.46 | 0.46 | 0.46 | 0.46 | 0.39 | 0.36 | 0.34 | 0.34 | 0.32 |

• Thermal Resistance ; Measured by using ASTM D5470 modified, refer to Fujipoly Test method FTM P-3030.

・Specimen Area; 30% and 70% compression ratio = 10mm square , initial thickness = 1.5mm

・Specimen Area; 90% compression ratio = 5mm square , initial thickness = 1.5mm

(Specimen is sandwiched between aluminum blocks.)

reduced temperature

-40℃ = -40°F
60℃ = 140°F
70℃ = 158°F
125℃ = 257°F
150℃ = 302°F

## TYPES AND CONFIGURATION

| Series | Product Name | Thickness | Sheet Size |
|---|---|---|---|
| SARCON® XR-Pe | 100X-Pe | 1.0mm +0.4/-0mm | 300mm × 200mm (Recommended Usable Size:290mm×190mm) |
| | 150X-Pe | 1.5mm +0.5/-0mm | |
| | 200X-Pe | 2.0mm +0.7/-0mm | |

## HANDLING NOTES

- 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.
- Fujipoly Test method FTM-P3030 based on ASTM D5470 and ASTM C177 (GHP) method.
- 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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