Gelest
Enabling Your Technology

A Group Company of MITSUBISHI CHEMICAL

Gelest® PP2-TC01

Thermally Conductive Silicone Adhesive

Typical Properties*, **	Units	Value
Mix Ratio A:B		1:1
Color Part A		White-Grey
Color Part B		Grey
Color Mixed		Grey
Viscosity, Uncured Mix	cP	60,000
Thermal Conductivity	W/mK	0.8
Elongation	%	125
Tensile Strength	MPa	4.9
Durometer	Shore A	66
Specific Gravity		2.14
Adhesion to Aluminum***	MPa	2.6
Volume Resistivity	ohm-cm	1.9 E+14
Dielectric Strength	kV/mm	25
Dielectric Constant (100kHz)		4.5
Dissipation Factor (100kHz)		0.0013

* The properties reported are typical values and are intended as a guide for design and not intended for use in establishing specifications.
** Cured at 100°C/1h, *** Cured 110°C/16h, cohesive failure.

Gelest® PP2-TC01
A two-part non-flowable thermally conductive silicone adhesive used for bonding electronic assemblies requiring thermal management. This product forms no by-products during cure and adheres to organic, metal, and ceramic surfaces. Thin adhesive bond lines can be formed with this product increasing heat conduction between the device and heat sinks to which they are bonded.

Features & Benefits

- Thermally conductive
- Soft & compressible
- Self-bonding adhesion
- Non-flowable & heat curable
- No cure by-products
- Platinum addition cure

Applications

- Bonding electric assemblies (e.g., IGBT's, transformers, inverters…) to heat sinks
- Battery module bonding
- Semiconductor bonding to heat sinks

Gelest Headquarters
Morrisville, PA 19067
(215) 547-1015

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gelest.com
info@gelest.com

Processing, Fabrication, and Handling

MIXING AND DEAIRING

At the specified mix ratio by weight, weigh Parts A & B into a wide mouth mixing container. Then mix manually or via a mechanical method such as centrifugal mixing. Generation of too much heat during the mixing process may initiate cure of the product.

For lab use: Alternative mixing methods can be used, but as an example we suggest first mixing the Parts A & B manually followed by mixing on a centrifugal mixer at 800 rpm, 10-25 mm Hg pressure for 105 seconds followed immediately by 15 seconds at 1500 rpm. After mixing the product should be poured carefully into the mold or electronic enclosure to avoid air entrapment. A further deairing step may be needed when pouring material over electronic modules as air can sometimes be trapped due to the 3D geometry of the module.

CURING

Recommended cure of the product is 2 hours at 100°C in a forced air oven. Since substrate chemistry and surface conditions vary, higher cure temperatures and longer times may be needed to obtain the desired adhesion. NOTE: Pouring into a heavy enclosure or mold containing a component of high mass may require longer cure time to allow internal components to heat up.

POT LIFE

When using the product, the typical working time of the product, as defined by the time it takes for the product to double in viscosity, is >4 hours at 25°C. The maximum expected pot life at this temperature has not yet been determined.

COMPATIBILITY

Some chemicals, cured polymeric materials, and plasticizers can cause cure inhibition for this product. Examples may include exposure to sulfur containing materials such as polysulfides or polysulfones, phosphorus containing materials, organotin containing materials, plasticizers leached out from lab gloves by solvent, solder flux residues, and nitrogen containing chemicals like primary or secondary amines. If any chemical or material is suspected of retarding or impacting cure of the product, it is recommended that the product be cured in absence of the suspected chemical, plastic, surface, etc. to determine if there is an interaction impacting cure.

HANDLING AND SAFETY

Users should refer to the safety data sheet for any hazards associated with this product. Proper PPE should be used with this product including, at minimum, safety glasses and disposable lab gloves.

USABLE LIFE AND STORAGE

It is estimated that this product will have at least 6 months of shelf life when stored at 25°C and humidity levels below 65% with containers tightly closed. Partially used or filled containers purged with dry nitrogen after opening should ensure the longest shelf life for this product.

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Gelest® PP2-TC02

High Elongation Thermally Conductive Gap Filler

Gelest® PP2-TC02
is a two-part ultra high elongation thermally conductive silicone gap filler. The extreme elongation of this product reduces mechanical as well as thermal stress, creating new fabrication and assembly options. For applications requiring adhesion, use of primers and other options allow for bonding.

Typical Properties*, **	Units	Value
Mix Ratio A:B		100:1
Color Part A		White-Grey
Color Part B		Clear
Color Mixed		White-Grey
Viscosity, Uncured Mix	cP	30,000
Thermal Conductivity	W/mK	1.15
Elongation	%	1200
Tensile Strength	MPa	0.5
Durometer	Shore A	30
Specific Gravity		2.47
Volume Resistivity	ohm-cm	4.05 E+13
Dielectric Strength	kV/mm	13
Dielectric Constant (100kHz)		3.1
Dissipation Factor (100kHz)		0.008

* The properties reported are typical values and are intended as a guide for design and not intended for use in establishing specifications.
** Cured at 100°C/16h

Features & Benefits

- Thermally conductive
- Soft & compressible
- High elongation at break
- Flowable and heat curable
- No cure by-products
- Platinum addition cure

Applications

- Thermal transfer for electronic and battery modules
- Cure in place thermal pad
- Vibration damping
- Flexible electronics

Gelest Headquarters
Morrisville, PA 19067
(215) 547-1015

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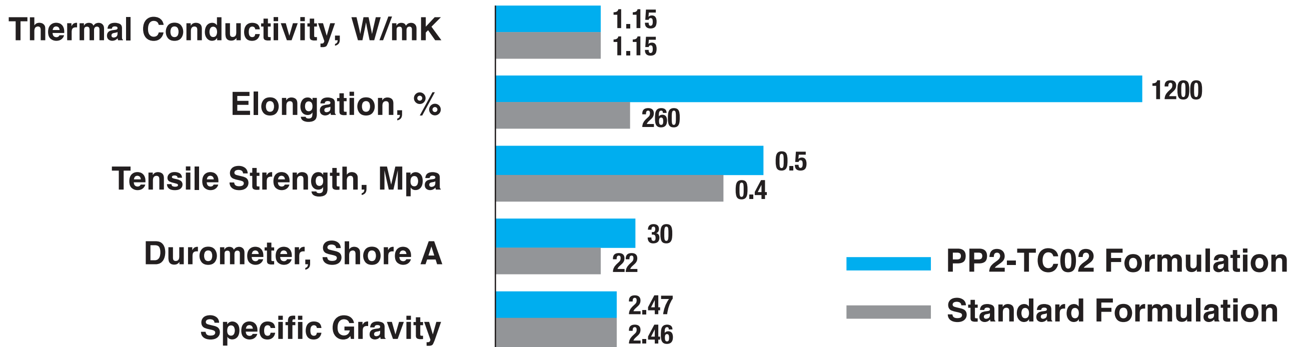
gelest.com
info@gelest.com



Processing, Fabrication, and Handling

MIXING AND DEAIRING

At the specified mix ratio by weight, weigh Parts A & B into a wide mouth mixing container. Then mix manually or via a mechanical method such as centrifugal mixing. Generation of too much heat during the mixing process may initiate cure of the product.

For lab use: Alternative mixing methods can be used, but as an example we suggest first mixing the Parts A & B manually followed by mixing on a centrifugal mixer at 800 rpm, 10-25 mm Hg pressure for 105 seconds followed immediately by 15 seconds at 1500 rpm. After mixing the product should be poured carefully into the mold or electronic enclosure to avoid air entrapment. A further deairing step may be needed when pouring material over electronic modules as air can sometimes be trapped due to the 3D geometry of the module.

CURING

Recommended cure of the product is 1 hour at 100°C in a forced air oven. NOTE: Pouring into a heavy enclosure or mold containing a component of high mass may require longer cure time to allow internal components to heat up.

POT LIFE

When using the product, pot life based on snap time is typically 10 hours at 25°C. The maximum expected pot life at this temperature has not yet been determined.

COMPATIBILITY

Some chemicals, cured polymeric materials, and plasticizers can cause cure inhibition for this product. Examples may include exposure to sulfur containing materials such as polysulfides or polysulfones, phosphorus containing materials, organotin containing materials, plasticizers leached out from lab gloves by solvent, solder flux residues, and nitrogen containing chemicals like primary or secondary amines. If any chemical or material is suspected of retarding or impacting cure of the product, it is recommended that the product be cured in absence of the suspected chemical, plastic, surface, etc. to determine if there is an interaction impacting cure.

HANDLING AND SAFETY

Users should refer to the safety data sheet for any hazards associated with this product. Proper PPE should be used with this product including, at minimum, safety glasses and disposable lab gloves.

USABLE LIFE AND STORAGE

It is estimated that this product will have at least 6 months of shelf life when stored at 25°C and humidity levels below 65% with containers tightly closed. Partially used or filled containers purged with dry nitrogen after opening should ensure the longest shelf life for this product.

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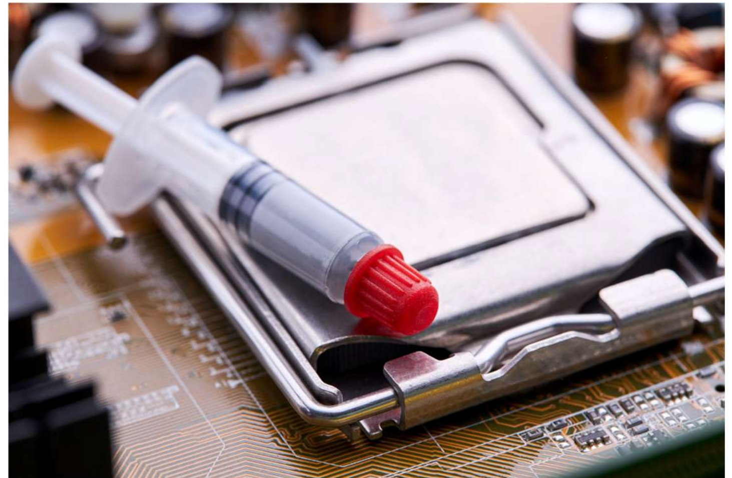
Gelest® PP2-TC03

Thermally Conductive Gap Filler

Gelest® PP2-TC03 is a two-part ultra-high elongation thermally conductive silicone gap filler. The excellent thermal conductivity of this product increases thermal transfer between an electronic component and its heat sink. This product has some adhesion to substrates, but a primer is recommended at times for adhesion.



Features & Benefits

- Thermally conductive
- Soft & compressible
- Low flow and heat-curable
- No cure by-products
- Platinum addition cure

Applications

- Thermal transfer for electronic devices and battery modules
- High power electrical devices
- Cure in place thermal interlayer
- Flexible electronics

Typical Properties*, **	Units	Value
Mix Ratio A:B		1:1
Color Part A		Black
Color Part B		Black
Color Mix		Black
Viscosity, Uncured Mix	cP	Paste
Thermal Conductivity	W/mK	3.1
Elongation	%	41.4
Tensile Strength	MPa	0.61
Durometer	Shore A	50
Specific Gravity		2.8

* The properties reported are typical values and are intended as a guide for design and not intended for use in establishing specifications.** Cured at 100°C/1h

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Processing, Fabrication, and Handling

MIXING AND DEAIRING | Using a clean spatula, hand mix Part A prior to weighing our product for use. Make sure that the filler is fully dispersed. Repeat this process for Part B.

At the specified mix ratio by weight, weigh Parts A & B into a wide-mouth mixing container. Then mix manually or via a mechanical method such as centrifugal mixing. The generation of too much heat during the mixing process may initiate the cure of the product.

> *For lab use*: Alternative mixing methods can be used, but as an example, we suggest first mixing the Parts A & B manually followed by mixing on a centrifugal mixer at 800 rpm, 10-55 mm Hg pressure for 1 minute and 45 seconds followed immediately by 15 seconds at 1500 rpm. After mixing the product should be deposited carefully into place avoiding air entrapment. If used between and electronic device and a heat sink, apply pressure between the two as necessary to allow flow of the paste between the two.

CURING | Recommended cure of the product is 1 hour at 100°C in a forced-air oven. NOTE: Pouring into a heavy enclosure or mold containing a component of high mass may require a longer cure time to allow internal components to heat up.

POT LIFE | When using the product, pot life based on snap time is typically > 2 hours at 25°C. The maximum expected pot life at this temperature has not yet been determined.

COMPATIBILITY | Some chemicals, cured polymeric materials, and plasticizers can cause cure inhibition for this product. Examples may include exposure to sulfur-containing materials such as polysulfides or polysulfones, phosphorus-containing materials, organotin-containing materials, plasticizers leached out from lab gloves by solvent, solder flux residues, and nitrogen-containing chemicals like primary or secondary amines. If any chemical or material is suspected of retarding or impacting the cure of the product, it is recommended that the product be cured in absence of the suspected chemical, plastic, surface, etc. to determine if there is an interaction impacting the cure.

HANDLING AND SAFETY | Users should refer to the safety data sheet for any hazards associated with this product. Proper PPE should be used with this product including, at minimum, safety glasses, and disposable lab gloves.

USABLE LIFE AND STORAGE | It is estimated that this product will have at least 6 months of shelf life when stored at 25°C and humidity levels below 65% with containers tightly closed. Partially used or filled containers purged with dry nitrogen after opening should ensure the longest shelf life for this product.

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