



# TSE3081

## TSE3081

### Description

RTV silicone gels are low viscosity liquid silicones that cure to form soft, gel-like elastomers. They are designed to preserve dielectric integrity and provide outstanding protection to delicate electronic circuit assemblies operating in harsh environments. This series of gels offers a wide range of performance and processing options to accommodate your specific application: one part gels for ease of dispensing, gels with flame retardant performance, "tough" gels, thixotropic gels, thermally conductive gels and low volatile gels.

When cured, silicone gels possess unique physical properties, combining the self-healing characteristics of a liquid with the non-flowing, dimensional stability for an elastomer. The soft nature and cushioning effect of these semi-solid materials provides excellent protection of electronic assemblies from external shock and vibrations. This characteristic, combined with their low modulus properties, makes silicone gels one of the most effective means of managing thermal stress related failures in hybrids and other circuitry utilizing surface mounted devices and other stress sensitive devices.

**TSE3051** – A one part gel requiring elevated temperature cure. Offers advantages in ease of dispensing and long work time/pot life for effective use in non-automated production lines.

**TSE3051FR** – Similar physical properties as TSE3051 with the additional benefit of being

UL94-V1 for those applications requiring flame retardant specifications.

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**TSE3053** – A one part gel with the highest penetration in the product series. This product also requires elevated temperature curing and is therefore suited to applications requiring long work times.

**TSE3070** – A two part, "high strength", tough silicone gel offering high tack and improved tear over conventional gels. It has a relatively long worklife and cures within 24 hours at room temperate, or faster at elevated temperatures.

**TSE3067** – A two part, thixotropic gel, this product is suitable for use in open-ended applications requiring no-flow, non-slump performance.

**TSE3080, TSE3081** – Filled two part gels, they offer thermal conductivity of 0.63 W/m-K and 1.26 W/m-K respectively. These gels have the lowest penetration values of the series and require elevated temperature cure. Their thermal conductivity makes them suitable for potting of high voltage components.

**XE14-A6158** – A two part, low volatile gel, this product is suited for applications such as cleanroom filters.

### Key Features and Benefits

- Soft, low modulus elastomeric properties
- Outstanding stress relief
- Mechanical shock/vibration dampening
- Excellent dielectric properties
- Probe testable/self-healing/repairable
- Heat accelerated or room temperature cure

### Typical Physical Properties

								<i>Thermally Conductive Gels</i>
								XE14- A6158-

	TSE3051- Clear- 1 part- Dispenses easily- Heat cure	TSE3051FR- Clear- 1 part- Flame retardant, PenetrationUL94 V-1**@ 3.0 mm	TSE3053- Clear- 1 part- High - Penetration	TSE3067- Blue- 2 part- Thixotropic	TSE3070- Clear- High tack &elongation	TSE3080- Black- Thermalinterfacematerial- Flameretardant,UL94 V- 1** - Potting forHigh voltagecomponents	TSE3081- Black- Thermalinterfacematerial- Flameretardant, UL94V- 1** - Potting for high voltage components	Clear- Fast cure- Low volatile* - Soft gel for HEPA filters
Mix Ratio(Base to curing agent byweight)	NA	NA	NA	1:1	1:1	1:1	1:1	1:1
Viscosity, cps (@ 25°C/77°F)	700	700	700	20000	800	7,000	20,000	800
Specific Gravity	0.97	0.97	0.97	1.01	0.97	1.5	2.5	0.97
Refractive Index	1.404	1.404	1.404	NA	1.404	NA	NA	1.404
Hardness, Penetration, mmASTM D 1403 (1/4 h cone)mm	-85	-85	105	65	70	20	10	70
Useful Temperature Range	-50 to +204	-50 to +204	-50 to +204	-50 to +204	-50 to +204	-50 to +204	-50 to +204	-50 to +204
(continuous) °C (° F)	(-58 to +400)	(-58 to +400)	(-58 to +400)	(-58 to +400)	(-58 to +400)	(-58 to +400)	(-58 to +400)	(-58 to +400)
Thermal Conductivity, W/M K	0.17	0.17	0.17	0.17	0.17	0.63	1.26	0.17
Coefficient of ThermalExpansion (Linear CTE), cm/cm °C (in/in °F) Cubical expansion (1/ °C)	1 x10 <sup>-3</sup>	1 x10 <sup>-3</sup>	1 x10 <sup>-3</sup>	---	1 x10 <sup>-3</sup>	---	---	1 x10 <sup>-3</sup>
Dielectric Strenght (75 mils),kV/mm (V/mil)	18 (370)	18 (370)	18 (370)	18 (370)	18 (370)	22 (450)	22 (450)	18 (370)
Dielectric Constant (@ 1 kHz)	2.8	2.8	2.8	2.8	2.8	3.3	5.0	2.8
Dissipation Factor (@ 1 kHz)	0.001	0.001	0.001	0.001	0.001	0.03	0.003	0.001
Volume Resistivity, ohm- cm	1 x 10 <sup>15</sup>	1 x 10 <sup>15</sup>	1 x 10 <sup>15</sup>	1 x 10 <sup>15</sup>	1 x 10 <sup>15</sup>	1 x 10 <sup>15</sup>	1 x 10 <sup>15</sup>	1 x 10 <sup>15</sup>
Specifications								
Packaging	1 kg can,15 kg pail	1 kg, can15 kg pail	1 kg can,15 kg pail	1 kg can,180kg DM	1 kg can,200kg DM	1 kg can,20 kg pail	1 kg can,20 kg pail	1 kg can,15 kg pail
ProcessingWork (Pot) Life (25° C/77°F)	> 2weeks	> 2weeks	> 2weeks	1.5 hours	4 hours	3 hours	3 hours	4 hours
<b>Cure Time (@ 50% RH)*</b>								
25°C (77°F)	NA	NA	NA	24 hours	24 hours	NA	NA	24 hours
65°C (149°F)	NA	NA	NA	NA	NA	NA	NA	NA
70°C (158°F)	NA	NA	NA	30 minutes	30 minutes	NA	NA	30 minutes
100°C (212°F)	4 hours	4 hours	4 hours	---	---	1 hour	1 hour	---
120°C (248°F)	---	---	---	---	---	---	---	---
125°C (256°F)	2 hours	2 hours	2 hours	---	---	---	---	---
150°C (302°F)	1 hour	1 hour	1 hour	---	---	---	---	---

## Patent Status

Nothing contained herein shall be construed to imply the nonexistence of any relevant patents or to constitute a permission, inducement or recommendation to practice any invention covered by any patent, without authority from the owner of the patent.

## Product Safety, Handling and Storage

The warranty period is 6 months from the date of shipment from Momentive Performance Materials if stored in the original unopened containers at the recommended temperature conditions. The one component products (TSE3051, TSE3051FR, and TSE3053) should be stored at temperatures below 50F; the two component products (TSE3070, TSE3067, TSE3080, TSE3081, XE14-A6158) should be stored at temperatures below 80F.

Customers should review the latest Material Safety Data Sheet (MSDS) and label for product safety information, safe handling instructions, personal protective equipment if necessary, and any special storage conditions required for safety. MSDS are available at [www.momentive.com](http://www.momentive.com) or, upon request, from any Momentive Performance Materials (MPM) representative. **For product storage and handling procedures to maintain the product quality within our stated specifications, please review Certificates of Analysis, which are available in the Order Center.** Use of other materials in conjunction with MPM products (for example, primers) may require additional precautions. Please review and follow the safety information provided by the manufacturer of such other materials.

## Limitations

Customers must evaluate Momentive Performance Materials products and make their own determination as to fitness of use in their particular applications.

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**Contact Information** For product prices, availability, or order placement, contact our customer service by visiting [momentive.com/ContactSilicones](http://momentive.com/ContactSilicones).

For literature and technical assistance, visit our website at: [www.momentive.com](http://www.momentive.com)

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