



## Agilent

# Torr Seal Low Vapor Pressure Resin Sealant Torr Seal Mixing System

## Data sheet



### Torr Seal Low Vapor Pressure Resin Sealant

Torr Seal epoxy resin quickly seals leaks on any type of vacuum system or component. Provided in convenient tubes, Torr Seal is solvent-free and can be used at pressures of  $10^{-9}$  Torr (mbar) and below, at temperatures from  $-45^{\circ}\text{C}$  to  $120^{\circ}\text{C}$  (bakeable temperature). Additionally, Torr Seal permits leak checking immediately after curing and bonds with many materials including metal, ceramic, and glass.

### Ordering Information

Description	Part Number	Weight lbs (kg)
<b>Torr Seal base resin, 82 grams,</b> and Torr Seal hardener, 36 grams	9530001	1.0 (0.45)



### Torr Seal Mixing System

The Torr Seal Mixing System includes an applicator gun, a premeasured Torr Seal cartridge, and an epoxy/resin mixer. The system uses the same low vapor pressure resin sealant as standard Torr Seal, while providing a systematic and scientific way of mixing the Torr Seal epoxy and resin. The applicator gun dispenses premeasured epoxy and resin from the cartridge through the mixer so that a uniform Torr Seal bead can be placed on any surface. As with the standard Torr Seal tubes, the mixing system can be used at pressures of  $10^{-9}$  Torr and below, and at temperatures from  $-45^{\circ}\text{C}$  to  $120^{\circ}\text{C}$  (bakeable temperature).

### Ordering Information

Description	Part Number	Weight lbs (kg)
<b>Applicator gun with Torr Seal</b> cartridge (2 oz.) and three mixers	9530002	2.00 (0.91)
<b>Applicator gun only</b>	9530003	1.50 (0.68)
<b>Torr Seal cartridge (2 oz.)</b> and three mixers	9530004	0.75 (0.34)
<b>Mixers only (six to a package)</b>	9530005	0.25 (0.11)

# Torr Seal Low Vapor Pressure Resin Sealant Torr Seal Mixing System

## Technical Specifications

<b>Absorption</b>	0.30% (water, 24-hour immersion)
<b>Acid Resistance</b>	Withstands SF6 at 25 °C
<b>Adhesion</b>	Will not adhere to Teflon, Kel-F, nylon nor polypropylene
<b>Carcinogenic</b>	Does not contain any of the carcinogens listed in the OSHA Standards of November 29, 1975
<b>Color</b>	Off-white
<b>Combustion</b>	(Gasses emitted at normal temperatures) NOx, CO <sub>2</sub> , H <sub>2</sub> O, CO
<b>Compressive Strength</b>	10,000-psi ± 20% (at 25 °C)
<b>Corrosive Properties</b>	Corrosive to copper when uncured; non-corrosive when cured
<b>Cure Time</b>	24 hours at 25° C, 2 hours at 60° C
<b>Dielectric Strength</b>	350 volts/mil
<b>Dissipation Factor</b>	0.09 (at 25° C, 1 kHz)
<b>Expansion, Linear</b>	30.3 x 10 <sup>-6</sup> in/in/ ° C (at 30° C to 90° C)
<b>Flash Point</b>	175° C
<b>Flexural Strength</b>	11,000 psi ± 20% (at 25° C)
<b>Fungus Resistance</b>	Very high
<b>Harding Time</b>	1 to 2 hours at 25° C, 30 minutes at 60° C
<b>Hardness</b>	75 - 80 Shore D

### Outgassing

See table below for typical sample at various temperatures

Temperature, °C	Cumulative Pumping Time in hrs	Outgassing Rate T-I/cm <sup>2</sup> /sec
25	1	1.0 x 10 <sup>-5</sup>
25	40	7.5 x 10 <sup>-7</sup>
116 (for 3 hrs)	43	7.0 x 10 <sup>-5</sup>
135 (for 9 hrs)	52	8.0 x 10 <sup>-6</sup>
130 (for 14 hrs)	66	2.0 x 10 <sup>-6</sup>

<b>Heat of Reaction</b>	Very slightly exothermic
<b>Pressure Range</b>	Suitable for use in pressures of 10 <sup>-9</sup> Torr and below
<b>Pot Life</b>	55 minutes (100 grams at 25 °C)

### Radiation

Similar epoxy resins have been tested to 10<sup>11</sup> ergs of gamma radiation without noticeable effect. Torr Seal is a rigid epoxy resin (as opposed to other epoxies which have plasticizers added); all rigid epoxies are relatively impervious to damage from radiation (as compared to other organic materials such as silicone rubber, phenolics and polyesters)

<b>Resistivity, Volume</b>	3.52 x 10 <sup>14</sup> ohms/cm (at 25° C)
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### Shear Strength, Tensile (on an aluminum lap joint)

	at 25 °C, following 7 days at -45 °C, 2150 psi
	at 25 °C, following 7 days at 25 °C, 2000 psi
	at 25 °C, following 7 days at 80 °C, 1900 psi
	at 80 °C, 800 psi
	100% relative humidity, long-term, 1900 psi
	immersed in alcohol, 0.5 hour, 1600 psi
	after 24-hour room temperature cure, 800 psi

<b>Shelf Life</b>	12 months minimum from date of shipment from Varian
<b>Shrinkage, Linear</b>	0.00125 in/in (at 25° C)
<b>Specific Gravity</b>	1.6
<b>Solvent</b>	Call Technical Support (800-882-7426)
<b>Temperature</b>	-45° C to 120° C; cracks at LN <sub>2</sub> temperatures
<b>Tensile Strength</b>	5000-psi ± 30%
<b>Thermal Conductivity</b>	10.4 x 10 <sup>-4</sup> cal/sec/cm <sup>2</sup> /° C/cm
<b>Toxicity</b>	Known in cured product - none
<b>Viscosity</b>	Thick non-flow paste

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