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° C to 120° 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)
Torr Seal base resin, 82 grams, 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° C to 120° C (bakeable temperature).

Ordering Information

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

Technical Specifications

Absorption	0.30% (water, 24-hour immersion)
Acid Resistance	Withstands SF6 at 25 o C
Adhesion	Will not adhere to Teflon, Kel-F, nylon nor polypropylene
Carcinogenic	Does not contain any of the carcinogens listed in the OSHA Standards of November 29, 1975
Color	Off-white
Combustion	(Gasses emitted at normal temperatures) NOx, CO_2, H_2O, CO
Compressive Strength	10,000-psi ± 20% (at 25 o C)
Corrosive Properties	Corrosive to copper when uncured; non-corrosive when cured
Cure Time	24 hours at 25° C, 2 hours at 60° C
Dielectric Strength	350 volts/mil
Dissipation Factor	0.09 (at 25° C, 1 kHz)
Expansion, Linear	30.3 x 10^{-6} in/in/ ° C (at 30° C to 90° C)
Flash Point	175° C
Flexural Strength	11,000 psi ± 20% (at 25° C)
Fungus Resistance	Very high
Harding Time	1 to 2 hours at 25° C, 30 minutes at 60° C
Hardness	75 - 80 Shore D

Outgassing

See table below for typical sample at various temperatures

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

Heat of Reaction	Very slightly exothermic
Pressure Range	Suitable for use in pressures of 10^{-9} Torr and below
Pot Life	55 minutes (100 grams at 25 o C)

Radiation

Similar epoxy resins have been tested to 10^{11} 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)

Resistivity, Volume	3.52 x 10^{14} ohms/cm (at 25° C)

Shear Strength, Tensile (on an aluminum lap joint)

	at 25 o C, following 7 days at -45 o C, 2150 psi
	at 25 o C, following 7 days at 25 o C, 2000 psi
	at 25 o C, following 7 days at 80 o C, 1900 psi
	at 80 o 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

Shelf Life	12 months minimum from date of shipment from Varian
Shrinkage, Linear	0.00125 in/in (at 25° C)
Specific Gravity	1.6
Solvent	Call Technical Support (800-882-7426)
Temperature	-45° C to 120° C; cracks at LN_2 temperatures
Tensile Strength	5000-psi ± 30%
Thermal Conductivity	10.4 x 10^{-4} cal/sec/cm^2/° C/cm
Toxicity	Known in cured product - none
Viscosity	Thick non-flow paste