

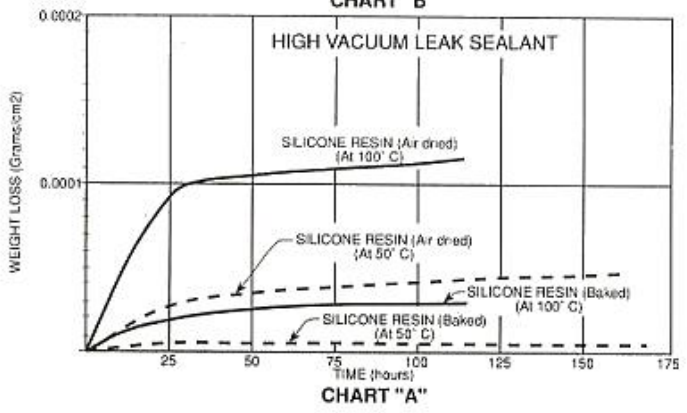
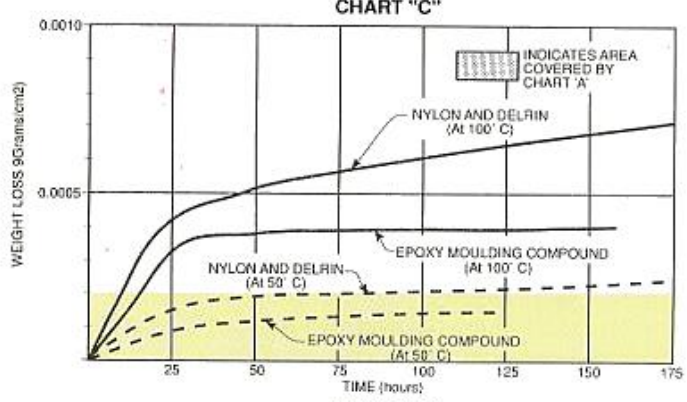
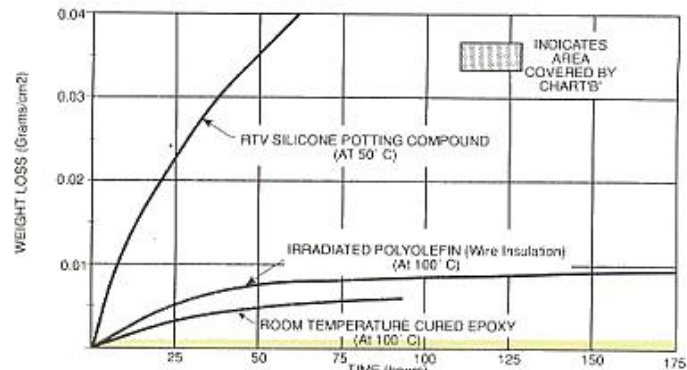
TECHNICAL INFORMATION



SPI Supplies
206 Garfield Avenue,
West Chester, PA 19380, USA

Vacseal® High Vacuum Leak Sealant

Weight loss in vacuum by sublimation



Optimum Use Of Specifications
Thorough testing should be independently done for satisfactory performance.

At 50° C, the weight loss after 175 hours in vacuum is only 0.00001 grams/cm² , compared to 0.01 grams/cm² for epoxy sealants. Residual gas analysis shows no evidence of hydrocarbons or other contamination attributable to the use of Vacseal® being used on UHV systems capable of attaining ultimate vacuums of 1x10⁻¹².

The curves in the graphs show the weight losses vs. time at 50 and 100° C for several commonly used materials in vacuum. Samples were placed in a thermal chamber at a pressure of less than 5 x 10⁻⁶ torr and at the temperature indicated. The silicone resin used in Vacseal® had a lower weight loss in vacuum than any other material tested.

Indications of how well Vacseal® can effect a permanent seal in vacuum systems has been demonstrated repeatedly on systems capable of attaining ultimate pressures of below 1 x 10⁻¹² torr after being baked at temperatures above 450° C.

Steady State Weight loss of materials tested:

Vacseal (silicone resin)	1.6 x 10 ⁻⁸ g/cm ² /hr
Epoxy molding compounds	2.6 x 10 ⁻⁷ g/cm ² /hr
Nylon® and Delrin® (polyoxymethylene)	4.0 x 10 ⁻⁷ g/cm ² /hr
Epoxy (room temperature cure)	6.4 x 10 ⁻⁷ g/cm ² /hr
Wire insulation	1.0 x 10 ⁻⁵ g/cm ² /hr
Silicone rubber (RTV)	1.0 x 10 ⁻⁴ g/cm ² /hr

Vapor pressure characteristics

The vapor pressure of Vacseal® is the highest when initially sprayed or brush painted onto the system. The vapor pressure can be reduced to nearly that of most metals by simply curing with a modest amount of heat. Vacseal® is compatible with pressures of 1 x 10⁻¹² torr. Recommended cure times are 30 minutes at 200° C, or 15 minutes at 250° C. Several days are required for a room temperature cure.

Electrical Resistivity

While there currently is no specific data for Vaceal in terms of its dielectric strength as an insulator, silicone resins, in general, have excellent dielectric properties across a wide range of temperatures.

Typical properties of this class of silicon resins are:

Dielectric Constant at 100 Hz = 0.0015

Dissipation Factor at 100 kHz = 0.0014

Vaceal has been used as an electronic protective coating. Vaceal is not considered a conductive silicone and does not represent a short circuit risk.

Revised: 2-18 -EER