

Chemical Resistance

Information For Use With GE Construction Sealants

In answer to questions regarding the effects of solvents and industrial chemicals on cured silicone rubber, the following information has been compiled.

Silicones are, in general, chemically inert and are attacked by only a very few common materials; among them are concentrated sulfuric acid, hydrofluoric acid and under long-term exposure, high pressure steam.

Like any elastomer, cured silicone resin has a tendency to physically absorb those materials and, this absorption may cause the rubber to swell and soften slightly. In a few applications, this volume increase is advantageous. For example, a silicone rubber gasket exposed to certain solvents will swell to form a tighter seal.

The change undergone by silicone rubber in contact with an absorbed solvent is primarily physical. After the solvent has completely evaporated, the cured silicone resin will return to its original physical and mechanical properties. To assure complete evaporation a bake-out at elevated temperature may be necessary.

The following table shows RTV's resistance to various common materials. It indicates the volume change, which may be expected from RTV submerged in a chemical or solvent for one week at room temperature. The following definitions for resistance were arbitrarily assigned.

| | |
|-------------------------------------|-----------|
| Less than 10% volume change..... | Excellent |
| 10-25% volume change..... | Good |
| 25-75% volume change..... | Fair |
| Greater than 75% volume change..... | Poor |

| Materials | Resistance |
|-----------|------------|
|-----------|------------|

ACIDS

| | |
|-------------------------|---------------|
| Citric..... | Excellent |
| Hydrochloric, 3%..... | Fair |
| Hydrochloric, Conc..... | Disintegrates |
| Hydrofluoric..... | Disintegrates |
| Phosphoric, dilute..... | Poor |
| Sulfuric, 10%..... | Poor |
| Sulfuric, Conc..... | Disintegrates |
| Tannic..... | Excellent |
| Nitric, Conc..... | Disintegrates |
| Nitric, 7%..... | Poor |
| Acetic, Conc..... | Good |
| Acetic, 5%..... | Excellent |

BASES

| | |
|------------------------------|---------------|
| Ammonium Hydroxide 10..... | Poor |
| Ammonium Hydroxide Conc..... | Disintegrates |
| Potassium Hydroxide..... | Disintegrates |
| Sodium Hydroxide 1%..... | Excellent |
| Sodium Hydroxide 20%..... | Fair |
| Sodium Hydroxide 50%..... | Poor |

INORGANIC CHEMICALS

| | |
|-----------------------------|-----------|
| Anhydrous Ammonia..... | Excellent |
| Sodium Chloride, 10%..... | Excellent |
| Hydrogen Peroxide, 3%..... | Excellent |
| Sodium Carbonate, 2%..... | Excellent |
| Sodium Carbonate, 20%..... | Excellent |
| Water..... | Excellent |
| Water (70 Hrs. @212°F)..... | Excellent |

ORGANIC CHEMICALS

| | |
|--------------------------|-----------|
| Detergents..... | Excellent |
| Freon 12..... | Good |
| Freon 114..... | Fair |
| Methyl Chloride..... | Fair |
| Tricresyl Phosphate..... | Excellent |



Materials

Resistance

HYDRAULIC FLUIDS

| | |
|---|-------------|
| Hollingshead, H-2..... | Excellent |
| Hollingshead, H-2 (70 Hrs @212°F)..... | Good |
| MIL-L-7808 (Diester Fluid) 70Hrs @ 212°F..... | Fair - Good |
| Skydrol 500..... | Fair |
| Skydrol 8000..... | Excellent |
| Skydrol 8000 (70Hrs. @ 212°F)..... | Excellent |
| Silicate Base..... | Fair |

OILS

| | |
|---|------------------|
| ASTM #10.1 (Aliphatic), 70Hrs. @ 300°F..... | Excellent |
| ASTM #30.1 (Aromatic), 70 Hrs @ 300°F..... | Fair |
| Castor 0.1..... | Excellent |
| Pyranol 1476..... | Excellent |
| Pyranol 1476 (70 Hrs @ 350°F)..... | Good |
| Diester Oils..... | Good |
| Diester Oils (70 Hrs. @ 350°F)..... | Fair |
| Linseed Oil..... | Excellent |
| Mineral Oil..... | Excellent |
| Silicone, SF96 (100)..... | Excellent |
| Silicone, SF96 (100) 70 Hrs @ 300°F..... | Fair |
| Viscasil 60000CSTKS 10,000-1,000,000..... | Good - Excellent |
| Viscasil 60000 CSTKS (70 Hrs @ 300°F)..... | Good |

SOLVENTS

| | |
|---------------------------|-----------|
| Acetone..... | Fair |
| Butyl Alcohol..... | Good |
| Carbon Tetrachloride..... | Poor |
| Diacetone Alcohol..... | Excellent |
| Ethyl Alcohol..... | Excellent |
| Gasoline..... | Poor |
| Jet Fuel, JP4..... | Fair |
| Mineral Spirits..... | Poor |
| Toluene..... | Poor |

