

CHEMICAL RESISTANCE OF ADSEAL SILICONE

Several questions arise concerning the effect of solvents as well as industrial chemicals on polymerized silicone rubbers. The table below gives general information on the behavior of different chemical compounds versus silicones. This information is for illustrative purposes only and should be validated according to each application and environmental condition.

Silicones are inert in nature and are affected by very few common chemicals. Products most likely to be damaged by silicones are sulfuric acid, hydrofluoric acid and high-pressure steam over a long exposure period.

Polymerized silicones tend to physically absorb chemicals, causing swelling or softening. In some applications, this consequent increase in volume may be an advantage. For example, when subjected to certain solvents, preformed seals may swell and thereby create a greater hermetic seal.

Changes undergone when in contact with absorbed solvents are mainly physical. Once the solvent has evaporated, the silicone will return to its original physical and mechanical properties. High temperature may be necessary to ensure complete evaporation of the solvent. The following definitions of resistance have been arbitrarily assigned.

Acids			
Product	Resistance	Product	Resistance
Citric	Excellent	Tannic	Excellent
Hydrochloric 3%	Fair	Concentrated Nitric	None
Concentrated Hydrochloric	None	Nitric 7%	Poor
Hydrofluoric	None	Concentrated Acetic	Good
Phosphoric dilute	Poor	Acetic 5%	Excellent
Sulfuric 10%	Poor	Oleic (@150°C/302°F)	None
Concentrated Sulfuric	None		

Bases			
Product	Resistance	Product	Resistance
Ammonium hydroxyde 10	Poor	Sodium hydroxyde 1%	Excellent
Ammonium hydroxyde (concentrated)	None	Sodium hydroxyde 20%	Fair
Potassium hydroxyde	None	Sodium hydroxyde 50%	Poor
Potassium hydroxyde 50%	Good	Calcium hydroxyde (saturated)	Good

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Inorganic			
Product	Resistance	Product	Resistance
Anhydrous ammonia	Excellent	Sodium carbonate 20%	Excellent
Sodium chloride 10%	Excellent	Water	Excellent
Hydrogen peroxide 3%	Excellent	Water (70 hours @ 100°C/212°F)	Excellent
Sodium carbonate 2%	Excellent		

Organic			
Product	Resistance	Product	Resistance
Detergents	Excellent	Methyl chloride	Fair
Freon 12	Good	Tricresyl phosphate	Excellent
Freon 114	Fair		

Hydraulic fluids			
Product	Resistance	Product	Resistance
MIL-L-7808 (diester fluid 70 hrs @ 100°C/212°F)	Fair / good	Skydrol 8000 (70 hrs @ 100°C/212°F)	Excellent
Skydrol 500	Fair	Silicate base	Fair
Skydrol 8000	Excellent	Break fluid AT (@ 100°C/212°F)	Good

Oil			
Product	Resistance	Product	Resistance
ASTM #10.1 (aliphatic) 70 hrs @ 149°C/300°F	Excellent	Mineral	Excellent
ASTM #30.1 (aromatic) 70 hrs @ 149°C/300°F	Fair	Silicone (100)	Excellent
Castor 0.1	Excellent	Silicone (100) 70 hrs @ 149°C/300°F	Fair
Diester	Good	Polydimethylsiloxane 60,000 (70 hrs @ 149°C/300°F)	Good
Diester (70 hrs @ 177°C/350°F)	Fair	Pyranol 1476	Excellent
Linseed	Excellent	Pyranol 1476 (70 hrs @ 177°C/350°F)	Good
Compressor (light)	Good	Diesel	Fair
Dinamo	Fair	Gear DTE BB (@150°C/302°F)	Good
Compressor (high pressure) (@150°C/302°F)	Good	Transformer (@150°C/302°F)	Fair

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Solvents			
Product	Resistance	Product	Resistance
Acetone	Fair	Gasoline	Poor
Butyl Alcohol	Good	Jet fuel JP4	Fair
Carbon tetrachloride	Fair	Mineral spirits	Poor
Diacetone alcohol	Excellent	Toluene	Poor
Ethyl alcohol	Excellent	Isopropyl alcohol 82	Fair

IMPORTANT

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