Den Braven

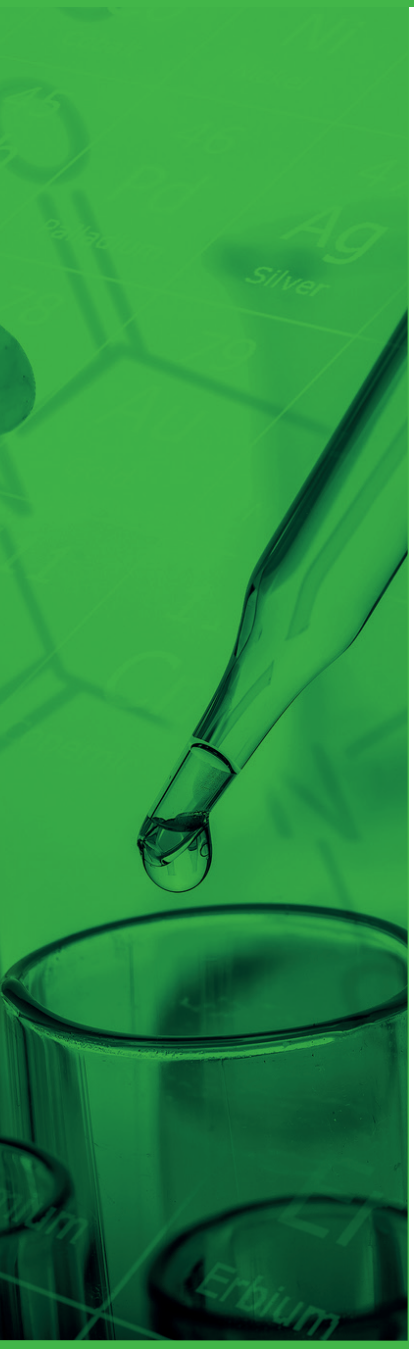
Chemical resistance silicones

Technical Bulletin TB122013-010

KNOWLEDGE

EDUCATION

BETTER RESULTS THROUGH KNOWLEDGE



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Chemical resistance of silicone rubber

With regards to the effects of solvents and industrial chemicals on silicone rubber, the following data has been complied:

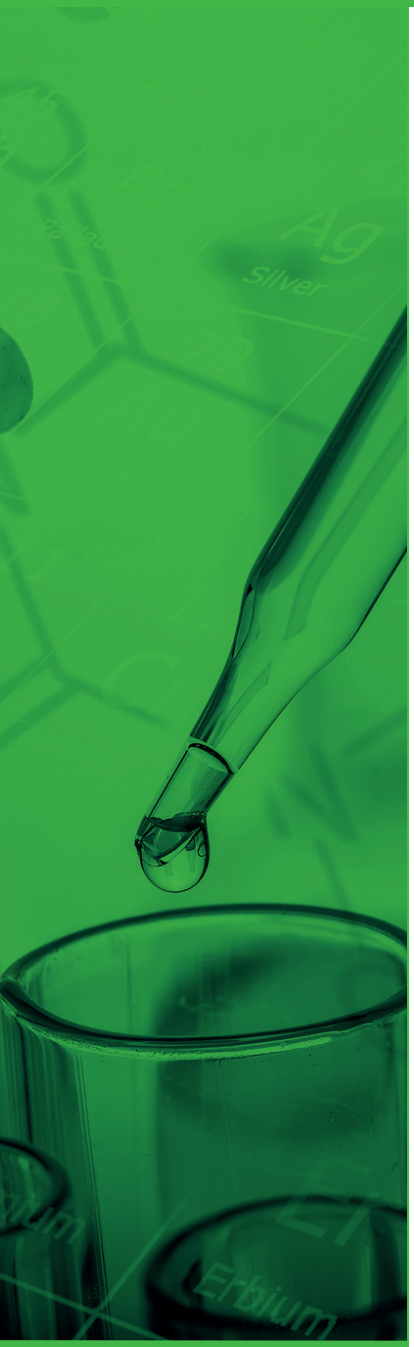
Silicones are chemically inert and are attacked by very few common materials. Among them are concentrated sulphuric acid, hydrofluoric acid and, after long term exposure, high pressure steam. Like any elastomer, silicone has a tendency to physically absorb those materials with a solubility parameter near its own. This absorption may cause the rubber to swell and to 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 silicone rubber will return to its original physical properties.

Limitations & liability

Den Braven specialises in sealants for building and glazing joints. Knowledge of, and experience in chemical resistant sealants and joints is limited. Chemical resistance strongly depends on concentration, temperature and exposure time.

This is why Den Braven gives no guarantee on chemical resistance. However we can, without any warranty, provide the knowledge and experience of our raw material supplier in the format of this chemical resistance list. It is the responsibility of the user to verify by his own tests if the product is suitable for the application.

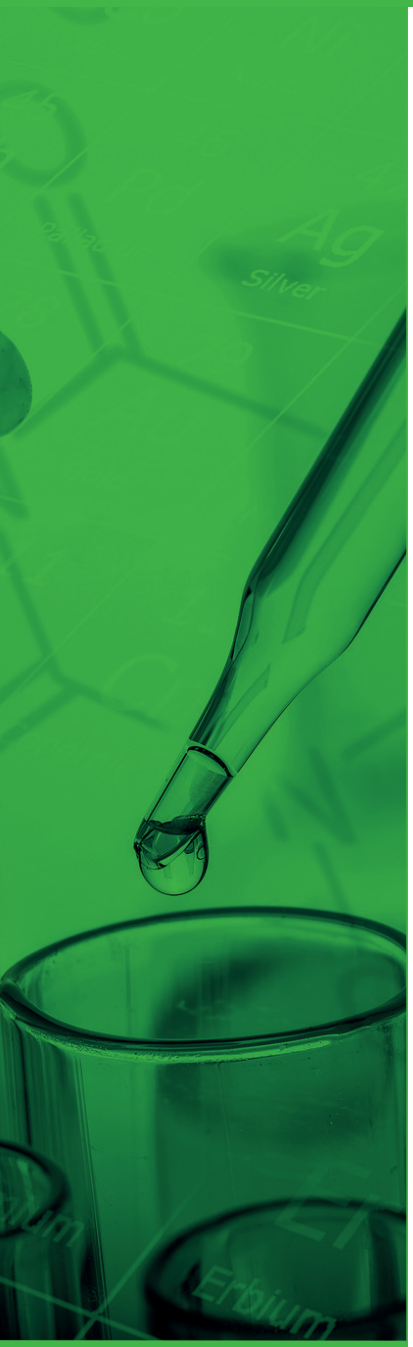


Warranty
Den Braven warrants that the product complies, within its shelf life, to its specification. The liability shall in no case exceed the amount fixed in our Condition of Sale.
In no event is Den Braven liable for any kind of incidental or consequential damages whatsoever.

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

1 = excellent, less than 10% volume change
2 = good, 10-25% volume change
3 = fair, 25-75% volume change
4 = poor, greater than 75% volume change
5 = disintegrates

Acids	
Citric	1
Hydrochloric, 3% and Conc.	1
Hydrofluoric	5
Phosphoric, dilute	1
Sulphuric, 10%	1
Sulphuric, Conc.	5
Nitric, 7% and Conc.	1-2
Acetic, 5% and Conc.	1
Basis	
Ammonium Hydroxide, 10%	1
Ammonium Hydroxide, Conc.	1
Potassium Hydroxide	1
Sodium Hydroxide, 5% and 50%	1
Inorganic Chemicals	
Anhydrous Ammonia	1
Sodium Chloride, 10%	1
Hydrogen Peroxide, 3%	1
Sodium Carbonate, 20%	1
Water / Water 70 Hrs @ 212°F	1



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Organic Chemicals	
Detergents	1
Freon 12	2
Freon 114	3
Methyl Chloride	3
Tricresyl Phosphate	1
Hydraulic Fluids	
Hollingshead, H-2	1
Hollingshead, H-2, 70 Hrs @ 212°F	2
Skydrol 500	3
Skydrol 8000 also after 70 Hrs @ 212°F	1
Silicate Base	3
Oils	
ASTM#10.1 aliphatic, 70 Hrs @ 300°F	1
ASTM#30.1 aromatic, 70 Hrs @ 300°F	3
Castor 0.1	1
Diester oils	2
Linseed oil / Mineral oil	1
Silicone oil also after 70 Hrs @ 300°F	3
Solvents	
Acetone	3
Butyl Alcohol	2
Carbon Tetrachloride	4
Diaceton Alcohol / Ethyl Alcohol	1
Gasoline	4
Jet Fuel, JP4	3
Mineral Spirits & Toluene	4