

Technical Application Report



Silicone Lubrication

Silicone polymers by nature have very low coefficients of friction thereby making them excellent lubricants for plastic and rubber. The non-reactive silicone fluids or oils as they are sometimes known can be used in their pure form or alternatively they can be processed to make grease or combined with water to make oil in water silicone emulsions. Resistance to high temperatures is also a useful quality which can be utilised in specific applications.



These lubricants can be used at the interface between most rubbers and plastics and when metals are in contact with rubber and plastic but should not be used in high load metal to metal bearings.

Caution

There is also much talk in the automotive industry about the adverse effects of silicones within the paint spraying process. It is fact that if silicone polymers become atomised and airborne they can contaminate large areas and cause fish eye defects during the paint spraying process. We therefore strongly recommend silicone emulsions and fluids are not used in these situations particularly if they are to be applied by spray.

However this is not true regarding the use of other silicone materials such as grease, adhesives, sealants, electronic encapsulants and coatings. In these products the silicone polymers are not readily able to become airborne to the same extent and thereby present a threat.

Silicone Fluid

Silicone fluid Polydimethylsiloxane (PDMS) is an ideal lubricant for all types of plastic and rubber. PDMS fluid is available in a wide range of standard viscosities from 20 to 60,000 cst. This colourless and odourless liquid does not stain or discolour with age. They can be applied using a brush, cloth, spray or by dipping. These polymers can be used as additives in the manufacture of household and automotive polishes, and used in aerosols to lubricate and provide shine on automotive plastic trims.

Some PDMS fluids are approved for pharmaceutical use within the medical industry.



Features

- High temperature stability
- Excellent water and weather resistance
- Resistant to shear breakdown
- High spreading and wetting capabilities
- Durable
- Non toxic and inert



Lubrication Applications

- Textile threads
- Rubber seals
- Rubber profiles (window / door seals)
- Plastic parts

Silicone Emulsion

Silicone emulsions are inert, heat stable, non-toxicity products, which suit many industrial applications where lubrication, gloss, antistatic, protective and release properties are advantageous. Silicone emulsions can be divided into three groups depending on the type of emulsifier system used, they can be: anionic, cationic and non-ionic. Most emulsions are non-ionic as they are compatible with either of the other two systems but depending on the application, cationic or anionic emulsions can be chosen.

The viscosity and physical characteristics can be altered by using different viscosity base polymers. High parentage solids versions can be supplied as concentrates and diluted with water prior to application, this makes for more cost effective transportation.

Industry	Application
Printing	Paper offset printing
Rubber & Plastics	Release agents & lubrication
Food Trays & Plastics	Release Agents
Textiles	Water repellency & reduced creasing

Silicone Grease

Silicone greases are formulated to provide very durable, non setting, work stable pastes, for use in the water, gas, electronics and the general maintenance industries. Due to their excellent dielectric properties they are well suited for use in high voltage electrical switches.

Caution: Silicone grease should not be used for metal to metal high load bearings as it will cause adverse wear.

Potable Water

Water repellency combined with non toxicity makes these greases an ideal choice for use with water pipes and fittings. ACC Silicones SGM494 has approval for use with hot and cold potable water from the Water Regulations Advisory Scheme (WRSA) ref 0502509. Applications include; lubricating plastic fittings and stop taps.



ACC Silicones Silicone Lubricants

The list below details many of the standard ACC Silicones encapsulants. Before selecting a material careful consideration should be given to the relevant Technical Data Sheet

Product Code	Type	Description	Features	Solids
F111 20-60,000 cst	Fluid	PDMS Fluid	Wide range of viscosities	100%
C111 100 -1,000 cst	Fluid	PDMS Fluid	Pharmaceutical Grade	100%
EM1035	Emulsion	Non-Ionic	Based on 350cst fluid	35%
EM1039	Emulsion	Non-Ionic	Based on 350cst fluid	39%
EM1065	Emulsion	Non-Ionic	Based on 350cst fluid	65%
SGM494	Grease	Silicone Grease	Water Potable	100%