

### **Greatest feature of Silicone Rubber:-**

1. Outstanding resistance to high and low temperature from  $-60^{\circ}\text{C}$  to  $+260^{\circ}\text{C}$
2. Outstanding resistance to weathering and ageing
3. Excellent electrical properties
4. Physiologically inert
  - a. Silicone Rubber is tasteless, odorless and non-toxic, usable in food industries and medical fields.
5. Endowed with pliability inherent of rubber and optimum for use in places requiring flexibility.
6. Excels in corona resistance, chemical resistance, ozone resistance etc. Making it possible to extend the service life of apparatuses.
7. It repels water
8. Good recovery (return to original shape and sizes of the compact material).
9. Does not contain plasticizer so that there is no plasticizer migration
10. Does not sweat

### **Application:-**

The excellent uniformity of the electrical and mechanical properties in a wide range of temperature of  $-60^{\circ}\text{C}$ , alternatively  $-100^{\circ}\text{C}$ , to  $+180^{\circ}\text{C}$  and for short periods up to  $300^{\circ}\text{C}$ , offers special fields of application for Silicone Rubber and Foamed Silicone Rubber in the form of tubing, sections, sheets and moldings where other elastomers fail.

1. packing and gaskets for general industry
  - a. Packing for chemical industry, bushings of transformers and condensers using insulating oil
  - b. Packing for joints related with communication equipment, sealed gaskets of street lamps, automobile oil seals, O-rings of engines, cold and heat resistant packing and gaskets of aircrafts, heat and cold resistance ducts, hoses, bellows, diaphragms, packing of steam irons, ironing press beds.
2. Hose requiring heat resistance, cold resistance and chemical resistance such as for micro pumps, hot water heaters and vending machines for tea, and coffee etc.
3. Insulation & Protection
  - a. Electric wires for relays
  - b. Kitchenware and coolers and heaters
  - c. Insulation and protection of wires of high and low temperature equipment such as transformers and of lead wire.

### **Chemical Resistance:-**

SR has a good water resistance up to 100°C. Its resistance to low pressure steam up to approx. 2 bars is also satisfactory. Steam of higher temperatures, however, destroys vulcanizes especially on prolonged exposure. SR has good resistance to weak acids and alkalis, SR vulcanizes, however, are destroyed by strong acids and alkalis especially at higher temperatures.

Its resistance to mineral oils at room temperature and at moderately higher temperature can be compared with chloroprene rubber. At oil temperatures above 100°C, SR surpasses the stability of oil-resistance organic rubber types. SR swells in many organic solvents.

With the exception of chlorinated aliphatic hydrocarbons (e.g. carbon tetrachloride) and aromatic hydrocarbons, SR is to a great extent unaffected by polaric solvents. Non-polaric as well as chlorinated and aromatic solvents causes a medium to strong swelling. This swelling is at its highest with low boiling solvents and decreased with high boiling solvents. In most cases, the swelling is reversible since SR does not contain soluble plasticizers.

### **Weathering and Ageing Resistance:-**

SR has excellent weather resistance, is not attacked by the effects of oxidations, humidity, ultra-violet rays and ozone and can therefore be used successfully where other elastomers are subject to fast ageing.

### **Combustibility**

Silicone Rubber is Combustible

### **Physiological Properties**

SR vulcanize are tasteless and odorless and physiologically inert. They do not contain any plasticizer or other extractable ingredients.

### **Coloring**

Using stable inorganic pigments, SR can be colored to virtually any required shapes.

### **Bonding**

SR may be bonded to itself as well as to other materials.

### **Chemical structure**

SR is a high polymer, cross-linked polysiloxane with added inorganic fillers which, depending on their type, give vulcanize special physical and chemical properties.

## **Characteristic Properties**

- A. Outstanding resistance to high and low temperature
- B. Outstanding resistance to weathering and ageing
- C. Excellent electrical properties
- D. Physiologically inert.

## **Thermal Prosperities**

### **High-temperature resistance**

The long temperature resistance of SR ranges from +180°C to 200°C. At +250°C the vulcanize loses their elastic characteristics after approx.. 2000 hours. At +300°C SR has a service life of approx.. 120 hours if special additives are used.

### **Low-temperature resistance**

Vulcanize made of SR show excellent resistance to low temperature. This resistance is inherent in the molecule structure and is not obtained by the addition of plasticizers. Generally, SR vulcanize retain their elasticity down to approx. -60°C SR8190 remains flexible down to approx. -100°C .

### **Mechanical properties**

The tensile and impact strength (notched)

And abrasion strength of SR vulcanize is lower than that of other rubber types. At higher temperatures and especially after ageing SR is superior. Formulations of particularly high notch strength have been developed for special applications.

As will all the other properties, the elasticity changes only little with the temperature (-60°C to +200°C)

The good resistance of most of the SR types to permanent deformation by compression even at temperature up to +200°C should particularly be noted.

### **Electrical Properties**

SR possesses excellent electrical properties which are only slightly dependent on temperature, frequency and humidity.