

### Rubber

Rubber insulation generally refers to both natural rubber and SBR compounds, each available in a variety of formulas for use in a wide range of applications. Because formulas vary, so do temperature ranges and some other basic characteristics.

While this type of insulation has poor oil, ozone and abrasion resistance, it exhibits good low-temperature flexibility, good water and alcohol resistance, good electrical properties, and excellent abrasion resistance.

### Neoprene (Polychloroprene)

This is a synthetic thermoset rubber that must be vulcanized to obtain its desired qualities. It exhibits supreme abrasion, cut-through, oil, and solvent resistance. Neoprene is also known for its long service life and wide ranges of temperature and usability. It is remarkably flame retardant and self-extinguishing.

Military products often incorporate Neoprene. This material is especially desirable for hand-held cordsets.

### Silicone

This material is extremely heat resistant and flame retardant and can be used in temperatures up to 180°C. It is moderately abrasion resistant. Silicone is also extremely flexible. Benefits include a long storage life and good bonding properties necessary in many electrical applications.

### Chlorosulfonated Polyethylene (CSPE)

CSPE works well as low-voltage insulation. It is known for its ability to perform through a wide temperature range as well as for its resistance to chemicals and UV rays.

This insulation material can be found in appliance wire, lead wire, coil leads, transformer leads, and motor lead wire.

Chlorosulfonated Polyethylene is sometimes referred to as Hypalon, a registered trademark of Dupont.

### Ethylene Propylene Diene Monomer (EPDM)

This synthetic rubber insulation displays outstanding heat, ozone, weather, and abrasion resistance. EPDM also exhibits excellent electrical properties. Further benefits include excellent flexibility at both high and low temperatures, from -55°C to 150°C, as well as good dielectric strength.

EPDM replaces silicone rubber in some applications.

COMPARATIVE PROPERTIES OF RUBBER INSULATIONS

	RUBBER	NEOPRENE	CSPE	EPDM	SILICONE
Oxidation Resistance	F	G	E	E	E
Heat Resistance	F	G	E	E	O
Oil Resistance	P	G	G	P	F-G
Low Temperature Flexibility	G	F-G	F	G-E	O
Ozone Resistance	P	G	E	E	O
Weather (Sun Resistance)	F	G	E	E	O
Abrasion Resistance	E	G-E	G	G	P
Electrical Properties	G	P	G	E	G
Flame Resistance	P	G	G	P	F-G
Nuclear Radiation Resistance	F	F-G	E	G	E
Water Resistance	G	E	E	G-E	E
Acid Resistance	F-G	G	E	G-E	F-G
Alkali Resistance	F-G	G	E	G-E	F-G
Alcohol Resistance	G	F	G	P	G
Aliphatic Hydrocarbons Resistance (Gasoline, Kerosene)	P	G	F	P	P-F
Aromatic Hydrocarbons Resistance (Benzol, Toluol)	P	P-F	F	F	P
Halogenated Hydrocarbons Resistance (Degreaser Solvents)	P	P	P-F	P	P-G

**P = POOR**      **F = FAIR**      **G = GOOD**      **E = EXCELLENT**      **O = OUTSTANDING**  
 These ratings are based on average performance of general purpose compounds. Any given property can usually be improved by the use of selective compounding.