Properties of Common Insulation and Jacket Materials

Plastics									
Property	**Low-Density PE**	**High-Density PE**	**Cellular PE**	**Nylon**	**PP**	**Cellular PP**	**PVC**	**Plenum PVC**	**PUR**
Abrasion Resistance	G	E	F	E	F–G	F–G	F–G	F–G	O
Acid Resistance	G–E	E	G–E	P–F	E	E	G–E	G	F
Alcohol Resistance	E	E	E	P	E	E	P–F	G	P–G
Aliphatic Hydrocarbons Resistance (Gasoline, Kerosene, etc.)	G–E	G–E	G	G	P–F	P	P	P	P–G
Alkali Resistance	G–E	E	G–E	E	E	E	G–E	G	F
Aromatic Hydrocarbons Resistance (Benzol, Toluol, etc.)	P	P	P	G	P–F	P	P–F	P–F	P–G
Electrical Properties	E	E	E	P	E	E	F–G	G	P
Flame Resistance	P	P	P	P	P	P	E	E	P
Halogenated Hydrocarbons Resistance (Degreaser Solvents)	G	G	G	G	P	P	P–F	P–F	P–G
Heat Resistance	G	E	G	E	E	E	G–E	G–E	G
Low-Temperature Flexibility	E	E	E	G	P	P	P–G	P–G	G
Nuclear Radiation Resistance	G–E	G–E	G	F–G	F	F	F	F	G
Oil Resistance	G–E	G–E	G	E	F	F	F	F	E
Oxidation Resistance	E	E	E	E	E	E	E	E	E
Ozone Resistance	E	E	E	E	E	E	E	E	E
Underground Burial	G	E	N/A	P	N/A	N/A	P–G	P	G
Water Resistance	E	E	E	P–F	E	E	F–G	F	P–G
Weather, Sun Resistance	E	E	E	E	E	E	G–E	G	G

Ratings based on average performance of general-purpose compounds. Specific properties can usually be improved by selective compounding.

P Poor
F Fair
G Good
E Excellent
O Outstanding

Fluoropolymers						
Property	**FEP**	**PTFE**	**ETFE**	**ECTFE**	**PVDF**	**TPE**
Abrasion Resistance	E	O	E	E	E	F–G
Acid Resistance	E	E	E	E	G–E	G
Alcohol Resistance	E	E	E	E	E	G
Aliphatic Hydrocarbons Resistance (Gasoline, Kerosene, etc.)	E	E	E	E	E	P
Alkali Resistance	E	E	E	E	E	G–E
Aromatic Hydrocarbons Resistance (Benzol, Toluol, etc.)	E	E	E	E	G–E	P
Electrical Properties	E	E	E	E	G–E	E
Flame Resistance	O	E	G	E–O	E	F–G
Halogenated Hydrocarbons Resistance (Degreaser Solvents)	E	E	E	E	G	
Heat Resistance	O	O	E	O	O	E
Low-Temperature Flexibility	O	O	E	O	F	E
Nuclear Radiation Resistance	P–G	P	E	E	E	G
Oil Resistance	O	E–O	E	O	E	G
Oxidation Resistance	O	O	E	O	O	E
Ozone Resistance	E	O	E	E	E	E
Underground Burial	E	E	E	E	E	P
Water Resistance	E	E	E	E	E	G–E
Weather, Sun Resistance	O	O	E	O	E–O	E

Ratings based on average performance of general-purpose compounds. Specific properties can usually be improved by selective compounding.

P Poor
F Fair
G Good
E Excellent
O Outstanding

Properties of Common Insulation and Jacket Materials

Rubber				
Property	**Rubber**	**Neoprene**	**EPDM**	**Silicone**
Abrasion Resistance	E	G–E	G	P
Acid Resistance	F–G	G	G–E	F–G
Alcohol Resistance	G	F	P	G
Aliphatic Hydrocarbons Resistance (Gasoline, Kerosene, etc.)	P	G	P	P–F
Alkali Resistance	F–G	G	G–E	F–G
Aromatic Hydrocarbons Resistance (Benzol, Toluol, etc.)	P	P-F	F	P
Electrical Properties	G	P	E	G
Flame Resistance	P	G	P	F–G
Halogenated Hydrocarbons Resistance (Degreaser Solvents)	P	P	P	P–G
Heat Resistance	F	G	E	O
Low-Temperature Flexibility	G	F–G	G- E	O
Nuclear Radiation Resistance	F	F–G	G	E
Oil Resistance	P	G	P	F–G
Oxidation Resistance	F	G	E	E
Ozone Resistance	P	G	E	O
Water Resistance	G	E	G–E	G-E
Weather, Sun Resistance	F	G	E	O

Ratings based on average performance of general-purpose compounds. Specific properties can usually be improved by selective compounding.

P Poor
F Fair
G Good
E Excellent
O Outstanding

Temperature Ranges of Insulation and Jacket Materials				
Material	**Normal Low**	**Normal High**	**Special Low**	**Special High**
ECTFE	-70°C	150°C	—	—
EPDM	-55°C	105°C	—	150°C
ETFE	-65°C	150°C	—	—
FEP	-70°C	200°C	—	—
Neoprene	-20°C	60°C	-55°C	90°C
PE	-60°C	80°C	—	—
Plenum PVC	-20°C	75°C	—	—
PP	-40°C	105°C	—	—
PTFE	-70°C	260°C	—	—
PVC	-20°C	80°C	-55°C	105°C
PVDF	-20°C	125°C	-40°C	150°/150°C
Rubber	-30°C	60°C	-55°C	75°C
Silicone	-80°C	150°C	—	200°C
TPE	-40°C	105°C	-50°C	125°C