



GENERAL PROPERTIES OF ELASTOMERS SUMMARY CHART

The chart below provides general information for various common elastomeric compounds and very general features of the most common elastomers. Rubber compounding is a broad field. Basic elastomers are mixed with a variety of chemicals and ingredients to obtain desired physical properties. Many basic polymers are available that can yield compounds with unique physical properties.

Common Name	Designation ²	Composition ²	General Properties ¹	General Chemical Resistance ³	
				Resistant to:	Attacked by:
Butyl	IIR	Isobutylene-isoprene	Very good weathering resistance Excellent dielectric properties Low permeability to air Good flex properties Poor resistance to petroleum-based fluids	Animal and vegetable fats, oils, greases, oxygenated solvents, alkalis, ozone, strong and oxidizing chemicals, silicone fluids and greases, ammonia, phosphate ester type hydraulic fluids	Petroleum oils, fluids, and solvents; coal, tar, and diester-based lubricants and solvents; aliphatic and aromatic hydrocarbons
EPDM	EPDM, EPM	Ethylene-Propylene-Diene Modified	Excellent ozone, chemical, weather, UV, and aging resistance Poor resistance to petroleum-based fluids	Animal and vegetable oils, ozone, strong and oxidizing chemicals, alkalis, brake fluids, phosphate ester type hydraulic fluids	Mineral oils and solvents; petroleum oils, fluids, or solvents; aliphatic and aromatic hydrocarbons
Natural Rubber	NR	Isoprene, natural	Excellent physical properties including abrasion and low temperature resistance Poor resistance to petroleum-based fluids	Most moderate chemicals, wet or dry, organic acids, alcohols, ketones, aldehydes	Ozone, strong acids, fats, oils, fuels, solvents, petroleum derivatives, hydraulic fluids, greases, most hydrocarbons
Neoprene	CR	Chloroprene	Good weathering resistance, resilience, and abrasion strength Flame retarding Moderate resistance to petroleum-based fluids	Moderate chemicals and acids, ozone, oils, fats, gasoline, greases, solvents, petroleum oils, animal and vegetable oils, refrigerants, steam, carbon dioxide	Strong oxidizing acids, esters, ketones, chlorinated, aromatic, and nitro hydrocarbons
Nitrile (Buna-N)	NBR	Nitrile-butadiene	Excellent resistance to petroleum-based fluids Good physical properties such as resistance to tear, abrasion, and heat aging	Many hydrocarbons, fats, oils, gasoline, solvents, mineral and vegetable oils, fuels, greases, hydraulic fluids, chemicals	Ozone (except PVC blends), ketones, esters, aldehydes, chlorinated and nitro hydrocarbons
Polyisoprene	IR	Isoprene, synthetic	Excellent resilience Characteristics equal to, or similar to, those of natural rubber Tensile strength is slightly lower than the tensile strength of natural rubber	Most moderate chemicals, wet or dry, organic acids, alcohols, ketones, aldehydes	Ozone, strong acids, fats, oils, fuels, solvents, petroleum derivatives, hydraulic fluids, greases, most hydrocarbons
SBR	SBR	Styrene Butadiene	Good electrical insulation and resistance to alcohol, oxygenated solvents, and mild acids Similar properties to natural rubber, but has superior low-temp flexibility, heat aging properties, and resistance to water, heat, and abrasion Abrasion resistance to petroleum-based fluids	Most moderate chemicals, wet or dry, organic acids, alcohols, ketones, aldehydes	Ozone, strong acids, fats, oils, fuels, greases, most hydrocarbons
Silicone	Q, Si	Polysiloxane	Excellent high and low temperature properties Excellent vibration damping and maintains its dielectric strength Poor tensile, tear, and abrasion resistance Generally odorless and non-toxic Good fatigue resistance, flex resistance, and elongation	Moderate or oxidizing chemicals, ozone, oxygen, UV light, moisture, fungus, concentrated sodium hydroxide	Many solvents, oils, concentrated acids and alkalines, fuels, dilute sodium hydroxide, hydrocarbons, steam

¹ "Sheet Rubber Handbook – Gasket and Packing Materials" publication #IP-40 of the Rubber Manufacturers Association (RMA).

² ASTM C 1418-79

³ 1979 Yearbook of the Los Angeles Rubber Group, Inc.