

RUBBERS

Natural Rubber
 Butadiene Styrene
 Silicone
 Nitrile
 Polyisobutylene
 Acrylic
 Ethylene
 Propylene
 Polyisoprene
 Fluorosilicone
 Viton
 Neoprene
 Butadiene
 Hypalon
 Buna N
 Polyurethane
 Butyl
 Natsyn

PLASTICS

Nylon
 ABS
 Acrylic
 Polyester
 Polyurethane
 Polybutylene
 Polycarbonate
 Polyethylene
 Polypropylene
 Polystyrene
 Polyvinyl Chloride
 Acetal
 Fluoropolymers
 Polyarylether
 Diallyl Phthalate
 Phenolics

TPEs* & TPRs**

Styrenic Block Copolymer
 Rubber-Polyolefin In Blends
 Elastomeric Alloys
 Thermoplastic Polyurethane
 Thermoplastic Copolyester
 Thermoplastic Polyamide
 Santoprene
 Alcryn
 Draton
 Hytrel
 Estamid

*Thermoplastic Elastomers
 **Thermoplastic Rubbers

MILITARY & COMMERCIAL SPECIFICATIONS:

ASTM D-2000 Class AA, BA, BC, BE, BF, BG, CA, OE, CH, DA, FC, FE, GE, HK • MIL-R-3065, MIL-STD-417, ZZ-R-765, MIL-R-6855, MIL-R-800, MIL-R-900, MIL-R-1149, MIL-R-15624, MIL-R-2765 • AMS-3200 thru AMS-7276 • Hardness Range 25 Shore A to 50 Shore D.

Prototyping.....Rubber • Plastic • TPEs

Our unique “Master Molds” concept can produce the rubber, plastic, TPR and TPE components you need quickly and efficiently. Our designers and engineers will work hand-in-hand with you on the design, set-up, tooling, compound development, and production requirements.

LONGWOOD'S ENGINEERING GUIDE

To the Properties of Natural and Synthetic Rubber

This reference chart has been prepared to be a helpful guide to the design engineer in the selection of basic rubber polymers. Because of the variety of polymers and thousands of different compounding ingredients, there is an almost limitless number of possible rubber compounds. Therefore, successful engineering of a rubber application requires close collaboration with Longwood Engineering as to the specific service and ultimate use of the part.

Property	Natural Rubber	SBR (Buna-S)	Nitrile (Buna-N)	Neoprene	Butyl	Fluro-Silicone	Silicone	Hypalon**	Poly-Acrylic	Poly-Urethane	Viton**
Tensile Strength (PSI)	4500	3000	3500	3500	3000	1200	1500	4000	1800	5500	2000
Elongation	700	500	500	500	600	300	300	300	200	800	250
Tear Resistance	EX	F	F	G	G	F	P-F	EX	F	G	G
Abrasion Resistance	EX	G	G	EX	F	P	P	EX	G	EX	G
Resilience	VG	F	F	VG	VG	G	G	G	VG	VG	F
Gas Permeability	F	VG	VG	F	VG	F	F	VG	G	G	F
Low Temp. Flexibility (max.)	-65°F	-75°F	-75°F	-65°F	-65°F	-90°F	-130°F	-40°F	-20°F	-65°F	-40°F
High Temp. (max.)	300°F	275°F	300°F	300°F	300°F	550°F	550°F	300°F	350°F	250°F	600°F
Sunlight Resistance	P	P	P	EX	EX	G	G	EX	EX	EX	G
Oxidation Resistance	G	F	F	G	G	VG	VG	VG	EX	F	EX
Flex Cracking Resistance	EX	G	G	EX	EX	F	F	G	G	F	G
Compression Set Resistance	VG	G	VG	VG	F	VG	VG	F	G	F	VG
Water Resistance	G	VG	VG	F	VG	F	F	P	F	P	VG
Alkali (dilute) Resistance	G	G	G	G	VG	F	F	G	P	P	F
Alkali (concentrated) Resistance	F	F	F	G	VG	F	P	G	P	VP	P
Acid (dilute) Resistance	G	G	G	F	G	F	F	G	P	P	EX
Acid (concentrated) Resistance*	F	P	P	F	F	P	P	G	P	VP	EX
Low Aniline Oil Resistance	VP	VP	EX	F	VP	F	P	F	EX	F	EX
High Aniline Oil Resistance	VP	VP	EX	G	VP	G	G	G	EX	G	EX
Synthetic Lubricant Resistance	VP	VP	G	VP	P	G	F	P	F	P	EX
Organic Phosphate Resistance	VP	VP	VP	VP	G	P	P	P	P	VP	F
Aromatic Solvent Resistance	VP	VP	F	P	VP	G	VP	P	P	P	EX
Aliphatic Solvent Resistance	VP	VP	G	F	P	G	P	F	G	F	EX
Oxygenated Solvent Resistance	G	G	P	F	G	G	P	P	P	VP	EX
Halogenated Solvent Resistance	VP	VP	F	VP	P	P	VP	VP	P	VP	EX
Aromatic Fuel Resistance	VP	VP	G	G	VG	G	P	P	F	P	EX
Non-Aromatic Fuel Resistance	VP	VP	EX	G	VG	G	G	F	P	G	EX

*Except Nitric and Sulfuric **Trademark of E.I. DuPont

Key: VP = Very Poor; P = Poor; F = Fair; G = Good; VG = Very Good; EX = Excellent

Longwood's Testing Capabilities to ASTM Standards

D 395	Compression Set	D 865	Rubber Deterioration in Test Tube Aging
D 412	Tensile Testing Rubber	D 1084	Viscosity of Adhesives
D 413	Rubber Adhesion Testing	D 1149	Surface Ozone Cracking in Chamber
D 429	Rubber Adhesion to Metal	D 1171	Surface Ozone Cracking—Outdoor and/or Chamber
D 430	Dynamic Fatigue Testing of Rubber	D 1329	Low Temperature Retraction
D 471	Effect of Liquids on Rubber Properties	D 1415	Microhardness, International
D 518	Rubber Deterioration Due to Ozone	D 1646	Mooney Viscosity & Scorch Test
D 573	Rubber Deterioration in Air Oven	D 2084	Rheometer Cure Method
D 575	Compression-Deflation of Rubber	D 2240	Shore Hardness Test
D 624	Tear Resistance of Rubber		
D 735	Specifications Properties		