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

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