

WARCO° BILTRITE°

General Chemical Resistance Guide for Various Elastomers

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General Chemical Resistance of Various Elastomers

This chart is offered as a general guide, including the suitability of various elastomers for service in these chemicals and fluids. The ratings are based for the most part, on published literature of various polymer suppliers, rubber manufacturers, and in some cases, the considered opinion of experienced compounders. We cannot guarantee their accuracy nor assume responsibility for use thereof. Many factors must be considered in using a rubber part in service. The most important as we see them are:

- 1. The temperature of Service: Higher temperatures increase the affect of all chemicals on polymers. The increase varies with the polymer and the chemical. A compound quite suitable at room temperature might fail miserably at elevateed temperature.
- 2. Conditions of Service: A compound that swells badly might still function as a static seal yet fail in any dynamic application.
- 3. The Grade of the Polymer: Many types of polymers are available in different grades that vary greatly in chemical resistance.
- 4. The Compound Itself: Compounds designed for other outstanding properties may be poorer in performance in a chemical than one designd especially for fluid resistance.
- 5. The Durometer: In general, the harder a compound the better its resistance.

Note: Determination of the suitability of the goods for the uses and applications contemplated by Buyer and others shall be the sole responsibility of the Buyer or user.

	General Purpose Elastomers										Specialty Elastomers			
	Non-Oil Resistant		Oil Resistant							Non-Oil Resistant		Oil Resistant		
Fluid Chart Key	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Typical WARCO Cmpd No.	40-R-149	60-A-128	60-T-56	60-K-20	60-P-187	60-D-3	60-E-306	60-H-17	_	_	60-\$-563	60-S-802	75-F-81	60-D-16
Common Name	Natual Rubber	SBR or BUNA-S	Butyl	EPDM or EP Rubber	Nitrile, NBR or BUNA-N	Epichloro- hydrin	Neoprene	Hypalon	Urethane	Polysulfide	Silicone	Fluoro Silicone	Fluoro Carbon	Polyacrylate
ASTM D 1418	NR	SBR	IIR	EPDM, EPM	NBR	CO, ECO	CR	CSM	AU, EU	T	VMQ	FVMQ	FKM	ACM
Designation Chemical Name	Polyisoprene	Styrene Butadiene	Isobutyllene Isoprene	Ethylene Propylen Copolymer	Acrylonitrile Butadiene	Epichloro- Hydrin	Chloroprene	Chlorosulfo- nated Polyethylene	Polyeter, or Polyether Urethane	Polysulfide	Polydimethyl- Siloxane	Fluorovinyl Methyl Siloxane	Fluorinated Hydrocarbon	Copolymer of Ethyl and Butyl Acrylate
Generally Resistant To	Most Moderate Chemicals Wet or Dry, Organic Acids, Alcohols Ketones Aldehydes	Similar to Natural Rubber	Animal and Vegetable Fats, Oils, Greases, Ozone, Strong and Oxidizing Chemicals	Animal and Vegetable Oils, Ozone, Strong and Oxidising Chemicals	Many Hydrocarbons, Fats, Oils, Greases, Hydraulic Fluids, Chemicals	Similar to Nitrile with Ozone Resistance	Moderate Chemicals and Acids, Ozone, Oils, Fats, Greases, Many Oils and Solvents	Silimar to Neoprene with Improved Acid Resistance	Ozones, Hydrocarbons, Moderate Chemicals, Fats, Oils, Greases	Ozone, Oils, Solvents, Thinners, Ketones, Esters, Aromatic Hydrocarbons	Moderate or Oxidising Chemicals, Ozone, concentrated Sodium Hydroxide	Moderate or Oxidizing Chemicals, Ozone, Aromatic Chloronated Solvents, Bases	All Aliphatic, Aromatic and Halogenated Hydrocarbons, Acids, Animal and Vegetable Oils	Ozone, Extreme Pressure, Lubricants, Hot Oils, Petroliums Solvents, Animal and Vegetable Fats
Generally Attacked By	Ozone, Strong Acids, Fats, Oils Greases, Most Hydrocarbons	Similar to Natural Rubber	Petrolium Solvents, Coal Tar Solvents, Aromatic Hydrocarbons	Mineral Oils and Solvents, Aromatic Hydrocarbons	Ozone* Ketones, Esters, Aldehydes, Chlorinated and Nitro Hydrocarbons *Except PVC Ble	Ketones, Esters, Aldehydes, Chlorinated and Nitro Hydrocarbons	Strong Oxidizing Acids, Esters, Ketones, Choloronated, Aromatic and Nitro Hydrocarbons	Concentrated Oxidizing Acids, Esters, Ketones, Chlorinated Aromatic and Nitro Hydrocarbons	Concentrated Acids, Esters, Ketones, Chlorinated and Nitro Hydrocarbons	Mercaptans, Chloronated Hydrocarbons, Nitro Hydrocarbons, Ethers, Amines, Hetercocyclics	Many Solvents Oils, Contentrated Acids, Dilute Sodium Hydroxide	Brake Fluids Hydrazine Ketones	Ketones, Low Mole Weight, Ester and Nitro Containing Compounds	Water, Alcohols, Glycols, Alkali, Esters, Aromatic Hydrocarbons, Halogenated Hydrocarbons, Phenol



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Dibutyl Ether

Chemical Resistance Guide

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В

U



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U

Linoleic Acid



Petroleum - Above 250

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Sucrose Solution

Chemical Resistance Guide

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С

Α



Type IV

U

U

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Chemical Resistance Guide

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Chemical Effect Rating: A - Recommended - Little or minor effect B - Minor to moderate effect - Rubber parts probably still useful in many applications C - Moderate to severe effect - Rubber parts perhaps still useful in limited applications U - Not recommended Blank - No data or insufficient evidence - It should be noted that it is not expected that a polymer unrated would perform better than those that are rated Fluid Resistance (7) CR (8) (9) (10) (11) (12) (13) (14) EPM FKM ACM SBR ΪŔ NBR ĊΟ CSM Key NR ΑU IR BR **EPDM** ECO ΕŪ Type V U U U U Α Α В В В Α С Α Α Type VI U В В Α Type VII С С С Α U VIL-L-3150A MIL-L-3503 В С MIL-L-3545B U В С U В MIL-C-4339C u U u U Α С Α MIL-G-4343B U U C C R R U R Α MIL-L-5020A U U U U В С В U В MIL-J-5161F U U U U C C Α U MIL-C-5545A U В С U В U U U В В С С Α Α MIL-H-5559A В В В С С В В С Α Α Α В В MIL-F-5566 В В В Α Α В Α Α Α Α MIL-F-5602 U U U U В В В С Α Α Α Α Α Α В В MIL-H-5606B U MIL-J-5624G Grade JP-3 U U С С С U В Grade JP-4 U Grade JP-5 U U U U С С С Α U Α В MIL-O-6081 C U U U В В В С MIL-L-6082C U U U U Α С MII -H-6083C U U U U R R R Α C Α MIL-L-6085A U U С U С С С В С С MIL-L-6086B U U U U Α С Α Α MIL-L-6387A U U С С В В С MIL-C-6529C В MIL-F-7024A MIL-H-7083A В В MIL-G-7118A С В С С MIL-G-7187 U U MIL-G-7421A U U С С В В С MII -H-7644 R R R R С C П R В MII -I -7645 U U U u R R R С С С U Α Α R MIL-G-7711A U U U U Α Α Α Α С Α Α MIL-L-7808F U U C U В C C C В С C MIL-L-7870A U U U U В В В С MIL-C-8188C С U С U В С В С С С Α MIL-A-8243B В В С В С MIL-L-8383B С MIL-H-8446B MIL-I-8660B U MIL-L-9000F U U U u С R U R MIL-T-9188B U U U U U U U U U С U U MIL-L-9236B С С В С R R U С MIL-L-10295A U U U u R R R Α С Α Α MIL-L-10324A U U U U В В Α С Α С MIL-G-10924B U U U U В В В MIL-L-11734B U В С MIL-O-11773 С С С В В VIL-P-12098 С В В U В В В MIL-H-13862 В В С MIL-H-13866A MIL-H-13910B В В В В В В С С U В В MIL-H-13919A U U В В MIL-L-14107B U U U U C U U MIL-L-15017 U U U U Α Α C Α MII -I -15018B U U U u Α Α Α Α Α C Α Α Α MIL-L-15019C U U U U Α Α C Α MIL-L-15719A С В В В В В В U U U В В MIL-G-15793 U U С В С С В С С MIL-F-16929A U U В С С С В С С Α MIL-L-16958A U В В С Α Α MIL-F-17111 В В С Α MIL-L-17331D MIL-L-17353A U U С С В В С MIL-L-17672B U MIL-L-18486A u U U u Α С Α Α MIL-G-18709A U U U U Α C Α Α MIL-H-19457B U U U U U U U U U С U U MIL-F-19605 U U U Α U С MIL-L-19701 U U U В С С В С С С Α Α MIL-L-21260 U U U U Α Α Α С Α Α Α MIL-S-21568A U В В Α Α Α MIL-H-22072 С С В В В В В В В С VIL-L-22396 С Α Α VIL-L-23699A В С С В С



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Note: Our laboratory is in constant touch with the latest developments on all of the elastomers shown. In addition, it is constantly experimenting with new elastomers as they are developed. For specific up to date information for your particular needs contact West American Rubber Company, LLC.

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