CHEMICAL RESISTANCE GUIDE

The following chart compares the resistance of elastomers to certain compounds (at temperatures assumed to be less than 150°F).

S = Suitable for use with minimal or no attack. **L** = Often suitable, but with some limitations. **U** = Very limited, or completely unsuitable.

CHEMICAL	SILICONE (VMQ)	NEOPRENE (CR)	ETHYLENE PROPYLENE (EPDM)	FLUOROSILICONE (FVMQ)	FLUOROCARBON (FKM)	NITRILE (NBR)
Acetic Acid 5%	S	S	S	S	S	L
Air	S	S	S	S	S	S
Ammonia (Liquid)	S	S	S	S	U	L
Animal Fats	L	L	L	S	S	S
ASTM Oil #1	S	S	U	S	S	S
ASTM Oil #4	U	U	U	L	S	L
Beer	S	S	S	S	S	S
Benzine	U	L	U	S	S	S
Bleach Solutions	L	U	S	L	S	L
Boric Acid	S	S	S	S	S	S
Calcium Chloride	S	S	S	S	S	S
Calcium Hypochlorite	L	L	S	L	S	L
Carbon Dioxide Dry	L	L	L	L	L	S
Carbon Dioxide Wet	L	L	L	L	L	S
Carbon Tetrachloride	U	U	U	S	S	L
Chlorine Dry	U	U	U	S	S	U
Chlorine Wet	U	U	L	L	S	U
Chloroform	U	U	U	L	S	U

CHEMICAL	SILICONE (VMQ)	NEOPRENE (CR)	ETHYLENE PROPYLENE (EPDM)	FLUOROSILICONE (FVMQ)	FLUOROCARBON (FKM)	NITRILE (NBR)
Copper Salts	S	S	S	S	S	S
Diesel Oil	U	U	U	S	S	S
Ethanol	S	S	S	S	U	S
Ferric Sulfate	L	S	S	S	S	S
Freon 114	U	S	S	L	L	S
Fuel Oil	U	L	U	S	S	S
Gasoline	U	U	U	S	S	S
Glucose	S	S	S	S	S	S
JP4 (Mil-J-5624-F)	U	U	U	S	S	S
Kerosene	U	L	U	S	S	S
Lactic Acid cold	S	S	S	S	S	S
Linseed Oil	S	U	U	S	S	S
Lye Solutions	L	L	S	L	L	L
Magnesium Chloride	S	S	S	S	S	S
Methanol	S	S	S	S	U	S
Mineral Oils	L	L	U	S	S	S
Natural Gas	S	S	U	U	S	S

CHEMICAL	SILICONE (VMQ)	NEOPRENE (CR)	ETHYLENE PROPYLENE (EPDM)	FLUOROSILICONE (FVMQ)	FLUOROCARBON (FKM)	NITRILE (NBR)
Olive Oil	S	L	L	S	S	S
Ozone	S	L	S	S	S	U
Perchlorethylene	U	U	U	L	S	U
Potassium Salts	S	S	S	S	S	S
Propane	U	L	U	L	S	S
Sewage	S	L	S	S	S	S
Silicone Grease/Oils	U	S	S	S	S	S
Sodium Hypochlorite	L	U	L	L	S	L
Sulfur Chloride	U	U	U	S	S	U
Sulfuric Acid, dilute	U	U	L	U	S	U
Tannic Acid	L	L	S	S	S	S
Toluene	U	U	U	S	S	U
Trichlorethylene	U	U	U	S	S	U
Turpentine	U	U	U	S	S	S
Vinegar	S	L	S	U	S	L
Wood Alcohol	S	S	S	S	U	S
Xylene	U	U	U	S	S	U

ELASTOMER AND FABRIC RATINGS

The comparable suitability of elastomers and fabrics to various applications has been established by more than 30 years of experience with military and other specifications and through laboratory research at Flexfab. The following chart explains strengths and weaknesses of common raw materials, rating by numbers: 1—Excellent, 2—Good, 3—Fair, 4—Poor.

ELASTOMERS

ELASTOMER (ASTM Desig.)	Temp. Range °F Low – High +	PHYSICAL						ENVIRONMENTAL RESISTANCE							SUBJECTIVE			HEAT	
		TENSILE	ELECT. RESITY	IMPERMEABILITY	RESILIENCE	ABRASION	TEAR	WEATHERING	OZONE	RADIATION	WATER	ACIDS	ALKALIES	GASOLINE	TASTE	ODOR	NON-STAINING	AGING AT 212°F	AGING, RM TEMP.
Silicone (VMQ)	−100 +600	2	1	4	2	4	2	1	1	2	1	3	2	4	1	1	1	1	1
Fluorosilicone (FVMQ)	−60 +450	2	1	4	2	3	2	1	1	2	1	2	2	1	1	1	1	1	1
Neoprene (CR)	−40 +250	1	3	3	1	1	1	2	2	2	3	3	3	4	3	2	3	2	2
Hypalon (CSM)	−30 +275	2	2	2	2	2	2	1	1	1	2	3	3	3	3	2	2	1	1
Nitriles (NBR)	−40 +250	1	2	2	1	1	2	3	4	3	1	4	2	2	3	2	2	2	2
Vinyl (PVC)	−20 +170	2	1	3	2	2	3	1	1	2	1	2	2	3	2	2	2	4	1

NOTE: Ratings can be changed by compound composition changes. Higher temperatures increase the effects of all chemicals on elastomers. Compounds designed for one outstanding property may perform poorly in another. These tables are for reference only. Contact Flexfab for specific recommendations for your applications.

FABRICS

Fabric	Maximum Continuous Operating Temperaure °F	Acids	Alkalies	Flex and Abrasion
Fiberglas	700°	1	3	3
Polyester	350°	2	2	1
Nylon	325°	3	1	1
Nomex	425°	3	2	1
Kevlar	392°	4	1	2
Cotton	225°	4	1	2
Teflon	400°	1	3	3

NOTE: For reference only. Contact Flexfab Technical Service for specific recommendations.

CHEMICAL RESISTANCE

Today's changing industrial processes are creating applications for an ever-expanding list of newly-discovered chemicals. Many chemicals react differently at different temperatures. The following chart should therefore be used only as a general reference. (In our laboratory, various materials are tested for resistance to your specific compound, to find the one substance which will assure optimum performance under all reasonable conditions.)

The following is a run-down of the basic characteristics of Flexfab's general-purpose elastomers:

Silicone, VMQ, is generally resistant to oxidizing chemicals, ozone, concentrated hydroxide; but attacked by many solvents and concentrated acids.

Fluorosilicone, FVMQ, is similar to silicone, but also resistant to gasoline, aromatic solvents and chlorinated solvents. It is attacked by ketones and selected chemicals such as hydrazine.

Fluorocarbon, FKM, is resistant to all aliphatic, aromatic, and halogenated hydrocarbons, acids, vegetable and animal oils; but is attacked by ketones, low molecular weight esters and nitro containing compounds.

Neoprene, CR, is generally resistant to mild chemicals and aliphatic hydrocarbons, ozone, selected oils and solvents; but is attacked by strong oxidizing acids, esters, ketones, and chlorinated aromatic hydrocarbons.

Nitrile, NBR, is generally resistant to hydrocarbons, fats, oils, greases, hydraulic fluids, and a variety of other chemicals, — but is attacked by ketones, esters, aldehydes, aromatic hydrocarbons and nitrocarbons.

Ethylene Propylene, EPDM, is generally resistant to animal and vegetable oils, strong oxidizing chemicals, and ozone, — but is attacked by mineral oils, solvents and aromatic hydrocarbons.

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TECHNICAL DATA SHEET NUMBER 101