

# MERCER ELASTOMER CHEMICAL RESISTANCE GUIDE

This guide is designed as an aid in selecting common elastomers used to conduct some of the many types of materials found in industry.

Improper selection of tube and/or cover materials can result in decreased service life, or complete failure of the expansion joint. For example, Natural Rubber is an excellent tube material for water lines. If however, the water contains concentrations of non-degradable oil, the rubber will swell and deteriorate. In this instance a Nitrile tube should be used. If this expansion joint were installed outdoors, the cover elastomer would be subject to ozone and weathering which would rapidly age harden both Natural Rubber and Nitrile. These cover materials could become brittle, crack and crumble. EPDM would be the proper choice for an outdoor cover. While Freon is chemically compatible with some elastomers, we never build Freon connectors because of mechanical problems.

**In selecting a proper elastomer, total system environment must be considered.** While theoretically safe, some applications may be inadvisable because of worker safety or extensive property damage.

The information in this selection guide was derived from published literature of Polymer suppliers. We always recommend using the "Chemical Resistance Guide for Elastomers IV" by Compass Publications as the most reliable reference in our industry. **Therefore, this guide is intended only as an aid in selecting the proper elastomers.** We encourage our customers to test samples of a selected elastomer for compatibility with the actual service, and we would be pleased to provide small test samples on request.

We feel this guide is an excellent source of general information, but Mercer Rubber Company cannot be held responsible should your specific experience disagree with these generalizations.





**Ac - Am****ACETAL - AMMONIUM SULFITE**

Chemical	NR	BS	BU	NP	NI	EP	HY	VT	TF
Acetal	C	C	G	C	D	G	C	D	E
Acetaldehyde	C	D	E	C	D	E	C	D	E
Acetamide	C	C	E	G	G	E	G	G	E
Acetate Solvents	C	D	C	D	D	C	D	D	E
Acetic Acid, 10%	G	G	G	C	G	G	C	C	E
Acetic Acid, 30%	D	D	G	C	D	E	G	C	E
Acetic Acid, 50%	D	D	G	C	C	E	D	D	E
Acetic Acid, Glacial	D	D	G	C	D	G	D	D	E
Acetic Anhydride	D	D	G	D	D	G	D	D	E
Acetic Ester (Ethyl Acetate)	D	D	G	D	D	G	D	D	E
Acetic Ether (Ethyl Acetate)	D	D	G	D	D	G	C	D	E
Acetic Oxide (Acetic Anhydride)	D	D	G	D	D	G	D	D	E
Acetone	G	C	E	C	D	E	C	D	E
Acetophenone	C	D	E	D	D	E	D	D	E
Acetyl Acetone	G	D	G	D	D	G	D	D	E
Acetyl Chloride	D	D	C	D	D	C	D	G	G
Acetylene	D	D	E	G	E	G	G	E	E
Acrylonitrile	C	D	D	C	D	D	C	D	E
Air	E	E	E	E	E	E	E	E	E
Alcohols, Aliphatic	E	G	E	E	E	E	E	C	E
Alcohols, Aromatic	C	D	D	C	C	D	D	E	E
Alk Tri (Trichloroethylene)	D	D	D	D	D	D	D	E	E
Allyl Alcohol	E	G	E	E	E	E	E	G	E
Allyl Bromide	D	D	D	D	D	D	D	G	G
Allyl Chloride	D	D	D	D	D	D	D	G	G
Alum (Aluminum Potassium Sulfate)	E	E	E	E	E	E	E	E	E
Aluminum Acetate	C	C	E	C	C	E	G	E	E
Aluminum Chloride	E	E	E	E	E	E	E	E	E
Aluminum Fluoride	E	E	E	E	E	E	E	E	E
Aluminum Hydroxide	E	E	E	E	E	E	E	E	E
Aluminum Nitrate	E	E	E	E	E	E	E	E	E
Aluminum Phosphate	E	E	E	E	E	E	E	E	E
Aluminum Sulfate	E	E	E	E	E	E	E	E	E
Ammonia, Anhydrous	E	C	E	E	E	E	G	D	E
Ammonia, Liquid	G	G	E	E	E	E	E	E	E
Ammonia, in Water	G	G	G	G	G	E	G	G	E
Ammonia Gas (Cold)	E	-	E	E	E	-	E	-	D
Ammonia Gas (150°F)	C	-	C	G	C	-	-	-	D
Ammonium Carbonate	E	E	E	E	C	E	E	E	E
Ammonium Chloride	E	E	E	E	E	E	E	E	E
Ammonium Hydroxide	G	G	E	G	G	G	E	G	E
Ammonium Metaphosphate	E	E	E	E	E	E	E	E	E
Ammonium Nitrate	G	E	E	E	E	E	E	E	E
Ammonium Nitrite	E	E	E	E	E	E	E	E	E
Ammonium Persulfate	E	D	E	E	D	E	E	E	E
Ammonium Phosphate	E	E	E	E	E	E	E	E	E
Ammonium Sulfate	E	E	E	E	E	E	E	E	E
Ammonium Sulfide	E	E	E	E	E	E	E	E	E
Ammonium Sulfite	E	E	E	E	E	E	E	E	E

**Am - Be****AMMONIUM THIOCYANATE - BENZOYL CHLORIDE**

Chemical	NR	BS	BU	NP	NI	EP	HY	VT	TF
Ammonium Thiocyanate	E	E	E	E	E	E	E	E	E
Ammonium Thiosulfate	E	E	E	E	E	E	E	E	E
Amyl Acetate	C	D	G	D	D	G	D	D	E
Amyl Acetone	D	D	G	D	D	G	D	D	E
Amyl Alcohol	E	E	E	E	E	E	E	E	E
Amylamine	G	G	G	G	G	G	C	D	E
Amyl Borate	D	D	D	E	E	D	C	E	E
Amyl Chloride	D	D	D	D	D	D	D	E	E
Amyl Chloronaphthalene	D	D	D	D	D	D	D	E	E
Amyl Naphthalene	D	D	D	D	D	D	D	E	E
Amyl Oleate	D	D	G	D	D	G	D	C	E
Amyl Phenol	D	D	D	D	D	D	D	E	E
Anethole	D	D	D	D	D	D	D	G	G
Aniline	D	D	G	C	D	D	C	G	E
Aniline Dyes	G	G	G	G	C	G	G	G	E
Aniline Hydrochloride	G	C	G	D	G	G	D	G	E
Animal Fats	D	D	G	G	E	G	G	E	E
Animal Grease	D	D	D	G	G	C	D	E	E
Animal Oils	D	D	G	D	E	C	D	E	E
Ansul Ether	D	D	C	D	C	C	D	D	E
Antifreeze (Ethylene Glycol)	D	D	D	D	D	D	D	D	D
Antimony Chloride	-	-	E	-	G	-	-	-	E
Antimony Trichloride	D	D	E	G	G	G	G	E	E
Antimony Pentachloride	D	D	C	D	D	C	D	E	G
Aqua Regia	D	D	D	D	D	C	C	G	-
Aromatic Hydrocarbons	D	D	D	D	C	D	D	E	E
Arquad	E	E	E	E	E	E	E	E	E
Arsenic Acid	E	E	E	E	E	E	E	E	E
Arsenic Chloride	D	D	G	G	D	G	D	D	-
Arsenic Trichloride	D	D	G	G	D	G	D	D	-
Asphalt	D	D	D	G	E	D	D	E	G
ASTM #1 Oil	D	D	D	E	E	D	G	E	E
ASTM #2 Oil	D	D	D	G	E	D	C	E	E
ASTM #3 Oil	D	D	D	G	E	D	C	E	E
Aviation Gasoline	D	D	D	C	E	D	D	E	E
<b>B</b>									
Bardol B	D	-	D	D	D	-	-	-	C
Barium Carbonate	E	E	E	E	E	E	E	E	E
Barium Chloride	E	E	E	E	E	E	E	E	E
Barium Hydroxide	E	E	E	E	E	E	E	E	E
Barium Sulfate	E	E	E	E	E	E	E	E	E
Barium Sulfide	E	E	E	E	E	E	E	E	E
Beet Sugar Liquors	E	E	E	E	E	E	E	E	E
Benzaldehyde	D	D	G	D	D	G	D	D	E
Benzene (Benzol)	D	D	D	C	C	D	D	E	E
Benzene Sulfonic Acid	D	D	D	E	G	C	E	E	E
Benzine Solvent (Ligroin)	D	D	D	E	E	D	C	E	E
Benzoic Acid	D	D	G	G	D	G	G	E	E
Benzoic Aldehyde	D	D	D	D	D	D	D	D	E
Benzotrichloride	D	D	D	D	D	D	D	G	G
Benzoil Chloride	D	D	D	D	D	D	D	G	G

**LEGEND**

- E **Excellent.** Suitable for continuous service.  
 G **Good.** Generally suitable for continuous or intermittent service.  
 C **Conditional.** Not recommended for continuous service,  
 but generally suited for intermittent service.  
 D **DO NOT USE.**  
 — **No experience.**

**THE COMPARATIVE COST INDEX**

Approximate cost comparisons between natural rubber and other materials for expansion joints of average diameter between 11/2" and 96" when the tube and cover are of the same elastomer.

1.0 <b>NR</b> Natural Rubber	1.15 <b>NI</b> Nitrile (Buna-N)	1.2 <b>HY</b> Hypalon®
1.0 <b>BS</b> Buna-S (SBR)	1.15 <b>EP</b> EPDM	3.8 <b>VT</b> Viton®
1.1 <b>BU</b> Butyl		<b>TF</b> Teflon® -
1.1 <b>NP</b> Neoprene		See Price List



**Be - Ca****BENZYL ACETATE - CALCIUM SULFIDE**

Chemical	NR	BS	BU	NP	NI	EP	HY	VT	TF
Benzyl Acetate	D	D	G	D	D	G	G	D	E
Benzyl Alcohol	G	G	G	G	D	G	G	E	E
Benzyl Benzoate	C	-	E	D	D	-	-	-	E
Benzyl Chloride	D	D	C	D	D	D	D	E	E
Bichromate of Soda (Sodium Dichromate)	D	D	E	G	D	C	G	E	E
Bismuth Carbonate	E	-	E	E	E	-	E	-	E
Black Sulfate Liquor	G	G	E	E	G	E	G	E	E
Blast Furnace Gas	D	D	C	G	C	C	G	E	E
Bleach Solutions	D	D	G	D	D	G	C	G	G
Borax	G	G	E	E	G	E	E	E	E
Bordeaux Mixture	G	G	E	E	E	E	E	E	E
Boric Acid	E	E	E	E	E	E	E	E	E
Brandy	E	-	E	E	E	-	E	-	-
Brine	E	E	E	E	E	E	E	E	E
Bromine	D	D	D	D	D	D	C	C	E
Bromine Water	D	D	G	G	C	G	E	E	E
Bromobenzene	D	D	D	D	D	D	D	G	-
Bunker Oil	D	D	D	G	E	D	D	E	E
Butane	Refer to Supplier								
Butanol (Butyl Alcohol)	E	E	E	E	E	E	E	E	E
Butadiene	D	D	D	C	D	D	G	E	E
I-Butene (Aliphatic Hydrocarbon 95°F)	D	-	D	E	-	-	-	-	E
I-Butene, 2-Ethyl (95°F)	D	-	D	G	-	-	-	-	E
Butter (Non F.D.A.)	C	C	G	E	E	G	E	E	E
Butyl Acetate	D	D	G	D	D	C	D	D	E
n-Butyl Acetate	C	-	-	D	D	-	D	-	D
Butyl Acetate Recinoleate	C	-	-	D	E	-	-	-	C
Butyl Acrylate	D	D	D	D	D	D	D	D	E
Butylamine	G	C	C	D	C	C	C	D	E
Butyl Benzene	D	D	D	D	D	D	D	E	E
Butyl Bromide	D	D	D	D	D	D	D	G	-
Butyl Butyrate	D	D	C	D	D	G	D	C	-
Butyl Carbitol	D	D	E	G	G	E	G	E	E
Butyl Cellosolve	D	D	E	G	G	E	G	D	E
Butyl Chloride	D	D	C	D	D	D	D	E	G
Butyl Ether	D	D	C	G	G	C	G	D	E
Butyl Ethyl Acetaldehyde	D	D	C	D	D	D	D	D	E
Butyl Ethyl Ether	D	D	C	D	D	C	G	C	E
Butyl Oleate	D	D	G	D	D	G	D	E	E
Butyl Phthalate	D	D	C	D	D	C	D	C	E
Butyl Stearate	D	D	C	D	G	C	D	E	E
Butyraldehyde	C	D	D	D	D	D	D	D	E
Butyric Acid	C	D	C	C	C	C	G	C	E
Butyric Anhydride	C	D	C	D	C	C	G	C	E
<b>C</b>									
Cadmium Cyanide	-	-	E	E	-	-	-	-	E
Calcium Acetate	C	D	E	D	D	E	D	D	E
Calcium Bisulfate	E	E	E	E	E	E	E	E	E
Calcium Bisulfite	E	E	E	E	E	E	E	E	E
Calcium Carbonate	E	E	E	E	E	E	E	E	E
Calcium Chlorate	E	-	E	E	E	-	E	-	E
Calcium Chloride	E	E	E	E	E	E	E	E	E
Calcium Fluorophosphate	-	-	E	E	-	-	-	-	E
Calcium Hydroxide	E	G	E	E	G	E	G	C	E
Calcium Hypochlorite	D	D	G	D	D	G	C	E	-
Calcium Nitrate	E	E	E	E	E	E	E	E	E
Calcium Sulfate	E	E	E	E	E	E	E	E	E
Calcium Sulfide	E	E	E	E	E	E	E	E	E

**Ca - Co****CALCIUM SULFITE - CORN OIL**

Chemical	NR	BS	BU	NP	NI	EP	HY	VT	TF
Calcium Sulfite	E	E	E	E	E	E	E	E	E
Caliche Liquor (Crude Sodium Nitrate)	E	E	E	E	E	E	E	E	E
Cane Sugar Liquors (Non F.D.A.)	E	E	E	E	E	E	E	E	E
Carbitol	D	D	E	E	D	G	G	G	E
Carbitol Acetate	D	D	G	D	D	G	D	D	E
Carbolic Acid (Phenol)	D	D	G	C	C	G	C	E	E
Carbon Bisulfide	(See Carbon Disulfide)								
Carbon Dioxide	E	E	E	E	E	E	E	E	E
Carbon Disulfide	D	D	D	D	D	D	D	E	E
Carbonic Acid	E	E	E	E	E	E	E	E	E
Carbon Monoxide	E	E	E	E	E	E	E	E	E
Carbon Tetrachloride	D	D	D	D	C	D	D	E	-
Carbon Tetrafluoride	D	D	D	D	C	D	D	E	-
Castor Oil	C	D	G	G	E	G	C	E	E
Caustic Potash (Potassium Hydroxide)	E	G	E	G	E	E	E	C	E
Caustic Soda (Sodium Hydroxide)	E	G	E	E	E	E	E	C	E
Cellosolve	D	D	G	E	G	G	G	C	E
Cellulose Acetate	C	D	G	C	D	G	C	D	-
Cellulube	C	D	G	D	D	E	D	C	E
China Wood Oil (Tung Oil)	D	D	G	G	E	G	G	E	E
Chlorine Dioxide	D	D	D	D	D	D	C	E	-
Chlorine Gas (Dry)	C	C	C	D	C	C	G	G	-
Chlorine, Water Solutions	C	D	C	D	D	C	G	E	E
Chloroacetic Acid	G	D	C	D	D	C	D	C	E
Chloroacetone	D	D	G	D	D	C	D	D	E
Chlorobenzene	D	D	D	D	D	D	D	E	-
Chlorobromomethane	D	-	D	D	D	-	D	-	E
Chlorobutane	D	D	D	D	D	D	D	E	-
Chlorobutadiene	D	D	D	D	D	D	D	E	-
Chloroform	D	D	D	D	D	D	D	E	-
o-Chloronapthalene	D	-	D	D	D	-	-	-	E
Chlorinated Hydrocarbons	D	D	D	D	D	D	D	E	-
Chloropentane	D	D	D	C	D	D	D	E	E
Chlorophenol	D	D	D	D	D	D	D	G	G
Chloropropanone	D	D	C	D	D	C	D	D	E
Chlorosulfonic Acid	D	D	D	D	D	D	C	D	G
Chlorothene (Trichloroethane)	D	D	D	D	D	D	D	E	G
Chlorotoluene	D	D	D	D	D	D	D	E	G
Chromic Acid	D	D	D	D	D	C	E	C	E
Citric Acid	E	E	E	G	G	E	E	E	E
Coal Oil	D	D	D	G	E	D	D	E	E
Coal Tar	D	D	D	G	E	G	G	E	E
Coal Tar Naptha	D	D	D	C	C	D	D	E	E
Cobalt Chloride	E	E	E	E	E	E	E	E	E
Coconut Oil	D	D	G	G	E	E	G	E	E
Cod Liver Oil	D	D	E	G	E	E	G	E	E
Coke Oven Gas	D	D	C	D	D	D	G	E	E
Copper Arsenate	E	E	E	E	E	E	E	E	E
Copper Chloride	E	E	E	E	E	E	E	E	E
Copper Cyanide	E	E	E	E	E	E	E	E	E
Copper Nitrate	E	E	E	E	E	E	E	E	E
Copper Nitrite	E	E	E	E	E	E	E	E	E
Copper Sulfate	C	E	E	E	E	E	E	E	E
Copper Sulfide	C	E	E	E	E	E	E	E	E
Corn Oil	D	D	G	G	E	G	G	E	E



## Co - Di

## COTTONSEED OIL - DICHLOROPENTANE

Chemical	NR	BS	BU	NP	NI	EP	HY	VT	TF
Cottonseed Oil	D	D	E	G	E	E	E	E	E
Creosote (Wood)	D	D	D	C	G	D	C	E	E
Creosote (Coal Tar)	D	D	D	C	G	D	C	E	E
Cresols	D	D	D	C	C	D	C	E	E
Cresylic Acid	D	D	D	C	C	D	C	E	E
Crotonaldehyde	D	D	E	D	D	C	D	D	E
Crude Oil	D	D	D	G	E	D	D	E	E
Cryolite 10% (Alum./Sodium Flouride)	-	-	E	E	G	-	-	-	E
Cumene	D	D	D	C	C	D	D	E	E
Cupric Carbonate	C	C	E	G	G	E	G	E	E
Cupric Chloride	C	C	E	G	E	E	E	E	E
Cupric Nitrate	C	C	E	G	E	E	E	E	E
Cupric Nitrite	C	C	E	G	E	E	E	E	E
Cupric Sulfate	C	G	E	G	E	E	G	E	E
Cyclohexane	D	D	D	D	G	D	D	E	E
Cyclohexanone	D	D	D	D	D	D	D	C	E
Cyclohexanol	D	D	D	G	G	D	D	G	E
Cyclopentane	D	D	D	D	C	D	D	E	E
p-Cymene	D	D	D	D	C	D	D	E	E
<b>D</b>									
DDT in Kerosene	D	D	D	G	E	D	C	E	E
Decaline	D	D	D	D	D	D	D	E	E
Deionized Water*	E	E	E	E	E	E	E	E	E
Decane	D	D	D	D	G	D	D	E	E
Detergent Solutions	G	G	E	E	E	E	E	E	E
Diacetone Alcohol	D	D	E	D	D	G	G	D	E
Diamylamine	G	C	E	E	G	C	C	G	E
Dibenzyl Ether	D	D	D	D	D	D	D	C	E
Dibenzyl Sebacate	C	D	G	D	D	G	C	G	E
Dibromobenzene	D	D	D	D	D	D	D	E	G
Dibutylamine	G	C	C	E	G	G	C	D	E
Dibutylether	D	D	D	D	D	G	D	C	E
Dibutyl Phthalate	D	D	G	D	D	E	D	D	E
Dibutyl Sebacate	D	D	G	D	D	G	D	D	G
Dicalcium Phosphate	E	E	E	E	E	E	E	E	E
Dichloroacetic Acid	D	D	C	D	D	C	D	C	E
P-Dichlorobenzene	D	D	D	D	D	D	D	E	E
Dichlorobutane	D	D	D	D	D	D	D	E	E
Dichloroisopropyl Ether	D	D	C	D	D	C	D	C	E
Dicyclohexylamine	D	D	D	D	C	C	D	C	G
Dichlorodifluoromethane (Freon 12)	D	D	D	D	G	D	D	G	E
Dichloroethane	D	D	D	D	D	D	D	E	E
Dichloroethylene	D	D	D	D	D	D	D	E	E
Dichloroethyl Ether	D	D	D	D	D	D	D	C	E
Dichlorohexane	D	D	D	D	D	D	D	E	E
Dichloromethane	D	D	D	D	D	D	D	E	E
Dichloropentane	D	D	D	D	D	D	D	E	E

\*Teflon is recommended where deionization levels are critical.

## Di - Di

## DIELDRIN IN XYLENE - DIPROPYLAMINE

Chemical	NR	BS	BU	NP	NI	EP	HY	VT	TF
Dieldrin In Xylene	D	D	D	D	D	D	D	E	E
Dieldrin In Xylene and Water Spray	D	D	D	G	G	D	D	E	E
Diesel Oil	D	D	D	G	E	D	C	E	E
Diethanolamine	G	C	G	G	G	C	C	G	E
Diethylamine	G	C	G	G	G	C	C	D	E
Diethyl Benzene	D	D	D	D	D	D	D	E	E
Diethyl Ether	D	D	D	C	G	C	C	D	E
Diethylene Dioxide	D	D	G	D	D	G	D	D	E
Diethylene Glycol	D	D	D	D	D	D	D	D	D
Diethylenetriamine	G	G	E	G	G	E	C	C	E
Diethyl Oxalate	E	E	E	D	D	E	D	C	E
Diethyl Phthalate	D	D	E	D	D	G	D	C	E
Diethyl Sebacate	D	D	E	D	D	G	D	C	E
Diethyl Sulfate	D	D	G	D	D	G	D	D	E
Diethyl Triamine	G	C	E	G	G	G	C	C	E
Dihydroxyethyl Amine	G	C	E	G	G	G	C	C	E
Dihydroxyethyl Ether	E	E	E	G	E	G	E	E	E
Diisobutylene	D	D	D	G	E	D	D	E	E
Diisobutyl Ketone	D	D	G	D	D	G	D	D	E
Diisodecyl Adipate	D	D	E	D	D	E	C	C	E
Diisodecyl Phthalate	D	D	E	D	D	E	C	C	E
Diisooctyl Adipate	D	D	E	D	D	E	C	C	E
Diisooctyl Phthalate	D	D	E	D	D	E	C	C	E
Diisopropanol Amine	G	C	E	G	G	E	C	C	E
Diisopropyl Benzene	D	D	D	D	C	D	D	E	E
Diisopropyl Ether	D	D	D	C	G	D	D	G	E
Diisopropyl Ketone	D	D	E	D	D	E	D	D	E
Dilauryl Ether	D	D	D	D	D	D	D	C	E
Dimethylamine	G	C	E	G	G	E	C	C	E
Dimethyl Benzene	D	D	D	D	D	D	D	E	E
Dimethylaniline	D	D	D	D	D	C	D	D	G
Dimethylformamide (DMF)	C	C	C	C	D	C	C	D	E
Dimethyl Ketone (Acetone)	G	C	E	C	D	E	C	D	E
Dimethyl Phthalate	D	D	E	D	D	G	D	C	E
Dimethyl Sulfate	D	D	D	D	D	D	D	D	E
Dimethyl Sulfide	D	D	D	D	D	D	D	C	G
Dinitrobenzene	D	D	C	C	D	C	D	E	E
Dinitrotoluene	D	D	D	D	D	D	D	C	E
Diocetyl Adipate (DOA)	D	D	G	D	D	G	D	C	E
Diocetylamine	G	G	E	G	G	G	C	C	E
Diocetyl Phthalate (DOP)	D	D	G	D	D	G	D	E	E
Diocetyl Sebacate (DOS)	D	D	G	D	D	G	D	G	E
Dioxane	D	D	G	D	D	G	D	D	E
Dioxolane	D	D	C	D	D	G	D	C	E
Dipentene (Limonene)	D	D	D	D	C	D	D	E	E
Diphenyl (Biphenyl)	D	D	D	D	D	D	D	E	E
Diphenyl Oxide (Phenyl Ether)	D	D	D	D	D	D	C	E	E
Dipropylamine	G	G	E	G	G	E	C	C	E

## LEGEND

- E **Excellent.** Suitable for continuous service.  
 G **Good.** Generally suitable for continuous or intermittent service.  
 C **Conditional.** Not recommended for continuous service,  
 but generally suited for intermittent service.  
 D **DO NOT USE.**  
 — **No experience.**

## THE COMPARATIVE COST INDEX

Approximate cost comparisons between natural rubber and other materials for expansion joints of average diameter between 11/2" and 96" when the tube and cover are of the same elastomer.

1.0 <b>NR</b> Natural Rubber	1.15 <b>NI</b> Nitrile (Buna-N)	1.2 <b>HY</b> Hypalon®
1.0 <b>BS</b> Buna-S (SBR)	1.15 <b>EP</b> EPDM	3.8 <b>VT</b> Viton®
1.1 <b>BU</b> Butyl		<b>TF</b> Teflon® - See Price List
1.1 <b>NP</b> Neoprene		



**Di - Fe****DIPROPYLENE GLYCOL - FERRIC NITRATE**

Chemical	NR	BS	BU	NP	NI	EP	HY	VT	TF
Dipropylene Glycol	D	D	D	D	D	D	D	D	D
Dipropyl Ketone	D	D	G	D	D	G	D	D	E
Disodium Phosphate	E	E	E	E	E	E	E	E	E
Divinyl Benzene	D	D	D	D	D	D	D	E	E
D.M.P. (Dimethyl Phenols)	D	D	D	D	D	D	D	D	-
Dodecylbenzene	D	D	D	D	D	D	D	E	E
p-Dodecyltoluene	D	D	D	D	D	D	D	E	E
Dowfume W 40, 100%	D	D	D	C	D	C	C	C	-
Dow-Per (Perchloroethylene)	D	D	D	D	C	D	D	E	E
Dowtherm™ Oil, A and E	D	D	D	D	D	D	C	E	E
Dowtherm™ SR-1	E	E	E	E	E	E	E	E	E
Dry Cleaning Fluids	D	D	D	D	C	D	D	E	G
<b>E</b>									
Epichlorohydrin	D	D	G	D	D	G	C	D	G
Ethanol (Ethyl Alcohol)	E	E	E	E	E	E	E	E	E
Ethanolamine	G	C	G	G	G	G	C	D	E
Ethers	D	D	C	D	D	D	C	C	E
Ethyl Acetate	D	D	G	D	D	G	C	D	E
Ethyl Acetoacetate	D	D	G	D	D	G	D	D	E
Ethyl Acrylate	D	D	C	D	D	D	D	D	G
Ethyl Benzene	D	D	D	D	C	D	D	E	E
Ethyl Benzoate	D	D	G	C	G	G	C	C	E
Ethyl Butyl Alcohol	E	E	E	E	E	E	E	G	E
Ethyl Butyl Amine	G	C	E	G	G	G	C	G	E
Ethyl Butyl Ketone	D	D	G	D	D	G	D	D	E
Ethyl Butyrate	C	-	-	D	D	-	D	-	C
Ethyl Cellulose	G	G	G	G	G	G	G	D	E
Ethyl Chloride	C	C	D	C	C	D	D	E	E
Ethyl Dichloride	D	D	D	D	D	D	D	G	G
Ethylene	D	D	D	G	E	D	C	E	E
Ethylene Bromide	D	D	D	D	D	D	D	E	G
Ethylene Chloride	D	D	D	D	D	D	D	E	G
Ethylene Chlorohydrin	C	-	E	E	D	-	-	-	C
Ethylene Diamine	G	C	E	E	G	E	C	D	E
Ethylene Dibromide	D	D	D	D	D	D	D	G	G
Ethylene Dichloride	D	D	D	D	D	D	D	G	G
Ethylene Glycol	D	D	D	D	D	D	D	D	D
Ethylene Oxide	D	D	C	D	D	C	D	D	-
Ethylene Trichloride (Trichloroethylene)	D	D	D	D	C	D	D	E	G
Ethyl Ether	D	D	D	D	C	D	D	D	E
Ethyl Formate	D	D	G	D	D	C	D	D	E
Ethyl Hexanol	E	E	E	E	E	E	E	G	E
Ethyl Mercaptan	D	-	D	D	D	-	-	-	C
Ethyl Methyl Ketone	C	D	G	D	D	G	D	D	E
Ethyl Oxalate	E	E	E	D	D	G	D	C	E
Ethyl Pentachlorobenzene	D	-	D	D	C	-	-	-	E
Ethyl Phthalate	D	D	E	D	D	G	D	C	E
Ethyl Propyl Ether	D	D	D	D	D	D	D	C	E
Ethyl Propyl Ketone	D	D	G	D	D	G	D	D	E
Ethyl Silicate	C	C	E	E	E	E	E	E	E
Ethyl Sulfate	D	D	G	D	D	G	D	D	E
EX TRI (Trichloroethylene)	D	D	D	D	C	D	D	E	G
<b>F</b>									
Fatty Acids	D	D	D	G	G	C	G	E	E
Ferric Bromide	E	E	E	E	E	E	E	E	E
Ferric Chloride	E	E	E	E	E	E	E	E	E
Ferric Nitrate	E	E	E	E	E	E	E	E	E

**Fe - GI****FERRIC SULFATE - GLYCERINE (GLYCEROL)**

Chemical	NR	BS	BU	NP	NI	EP	HY	VT	TF
Ferric Sulfate	E	E	E	E	E	E	E	E	E
Ferrous Acetate	D	D	E	D	D	G	D	D	E
Ferrous Ammonium Sulfate	E	E	E	E	E	E	E	E	E
Ferrous Chloride	E	E	E	E	E	E	E	E	E
Ferrous Hydroxide	G	C	E	E	G	E	G	C	E
Ferrous Sulfate	E	E	E	E	E	E	E	E	E
Fish Oil	D	D	E	E	E	E	E	E	E
Fluorobenzene	D	-	D	D	D	-	-	-	E
Fluoroboric Acid	E	C	E	G	E	E	E	C	E
Fluorine (Liquid)	D	D	D	D	D	D	D	D	-
Fluosilicic Acid	G	G	E	G	G	G	E	E	E
Formaldehyde (Formalin)	C	C	E	G	G	G	G	E	E
Formamide	E	E	E	E	E	E	E	D	E
Formic Acid	G	G	E	C	C	C	C	D	G
Freon™ 11*	D	D	D	G	E	D	E	E	E
Freon™ 12*	D	D	D	C	G	C	D	G	G
Freon™ 13*	E	E	E	E	E	E	E	E	E
Freon™ 21*	D	D	D	G	D	D	D	D	E
Freon™ 22*	D	D	E	E	D	G	D	D	E
Freon™ 31*	G	G	E	E	D	E	G	D	E
Freon™ 32*	E	E	E	E	E	E	E	C	E
Freon™ 112*	D	D	D	G	G	D	G	E	E
Freon™ 113*	C	G	D	E	E	D	E	G	E
Freon™ 114*	E	E	E	E	E	E	E	G	E
Freon™ 115*	E	E	E	E	E	E	E	G	E
Freon™ 142b*	E	E	E	E	E	E	E	D	E
Freon™ 152a*	E	E	E	E	E	E	C	D	E
Freon™ 218*	E	E	E	E	E	E	E	E	E
Freon™ C316*	E	E	E	E	E	E	E	E	E
Freon™ C318*	E	E	E	E	E	E	E	E	E
Freon™ 13B1*	E	E	E	E	E	E	E	E	E
Freon™ 114B2*	D	C	D	E	G	D	E	G	E
Freon™ 502*	E	E	E	E	G	E	E	G	E
Freon™ TF*	C	G	E	E	E	D	E	E	E
Freon™ T-WD602*	C	G	E	G	E	G	G	E	E
Freon™ TMC*	G	C	G	G	G	G	G	E	E
Freon™ T-P35*	E	E	E	E	E	E	E	E	E
Freon™ TA*	E	E	E	E	E	E	E	C	E
Freon™ TC*	D	G	E	E	E	G	E	E	E
Freon™ MF*	D	G	D	C	E	D	G	E	E
Freon™ BF*	D	D	D	G	G	D	G	E	E
Fuel Oil	D	D	D	G	E	D	C	E	E
Fuel, ASTMA	D	D	D	E	E	D	C	E	E
Fuel, ASTM B	D	D	D	G	E	D	C	E	E
Fuel, ASTM C	D	D	D	C	G	D	D	E	G
Fumaric Acid	E	E	D	G	E	D	G	E	E
Furan	D	D	C	D	D	C	D	D	E
Furfural	D	D	G	C	D	G	G	D	E
Furfuryl Alcohol	D	D	C	C	D	C	C	D	E
<b>G</b>									
Gallic Acid	E	E	G	G	G	G	G	G	E
Gasoline, Reg	D	D	D	E	E	D	C	E	E
Gasoline, Hi-Test	D	D	D	G	E	D	D	E	E
Gasoline, Lead Free	D	D	D	G	G	D	D	E	E
Gelatin	E	E	E	E	E	E	E	E	E
Gluconic Acid	D	D	C	C	C	C	G	E	E
Glucose	E	E	E	E	E	E	E	E	E
Glue	E	E	E	E	E	E	E	E	E
Glycerine (Glycerol)	E	E	E	E	E	E	E	E	-

\*Reference for Freon Seals Only: Mercer will not manufacture any type of rubber hose or expansion joint for Freon service.  
Freon is a registered trademark of The Chemours Company, which uses it for a number of halocarbon products.



**GI - Ir****GLYCOLS - IRON SULFIDE**

Chemical	NR	BS	BU	NP	NI	EP	HY	VT	TF
Glycols	D	D	D	D	D	D	D	D	D
Grease	D	D	D	G	E	D	C	E	E
Green Sulfate Liquor	E	E	E	G	E	E	E	G	E
<b>H</b>									
Halowax Oil	D	D	D	D	D	D	D	E	E
Heptachlor In Petroleum Solvents	D	D	D	G	G	D	D	E	E
Heptachlor In Petroleum Solvents, Water Spray	D	D	D	G	G	D	D	E	E
Heptanal (Heptaldehyde)	D	D	D	D	D	G	D	D	E
Heptane	D	D	D	E	E	D	G	E	E
Heptane Carboxylic Acid	D	D	C	G	C	C	G	E	E
Hexaldehyde	D	D	G	G	D	G	C	D	E
Hexane	D	D	D	E	E	D	C	E	E
Hexanol (Hexyl Alcohol)	E	E	E	E	E	E	E	E	E
Hexene	D	D	D	G	G	D	C	E	E
Hexylamine	G	C	G	G	G	G	C	D	E
Hexylene	D	D	D	G	E	C	D	E	G
Hexylene Glycol	D	D	D	D	D	D	D	D	D
Hexyl Methyl Ketone	D	D	G	D	D	G	D	D	E
Hi-Tri (Trichloroethylene)	D	D	D	D	C	D	D	E	G
Hydraulic Fluid (Petroleum)	D	D	D	G	E	D	G	E	E
Hydraulic Fluid (Phosphate Ester Base)	D	D	E	D	D	E	D	D	E
Hydraulic Fluid (Poly Alkylene Glycol Base)	D	D	D	D	D	D	D	D	D
Hydrazine	-	-	-	-	-	E	-	D	-
Hydrobromic Acid	E	D	E	C	D	G	E	E	E
Hydrochloric Acid, 37%	E	G	E	C	C	G	E	E	E
Hydrochloric Acid, 50%	E	C	G	D	D	C	E	E	E
Hydrochloric Acid, 100%	G	C	C	D	D	C	G	C	E
Hydrocyanic Acid	G	C	E	C	G	G	E	G	E
Hydrofluoric Acid	G	D	G	C	D	G	E	G	E
Hydrofluosilic Acid	E	D	E	C	D	G	E	G	E
Hydrogen Gas	G	G	E	E	E	G	E	E	E
Hydrogen Peroxide, 3%	E	G	E	C	G	G	E	E	E
Hydrogen Peroxide, 10%	D	D	C	C	D	C	C	E	E
Hydrogen Peroxide, 30%	D	D	D	D	D	C	D	E	E
Hydrogen Peroxide, 90%	D	D	D	D	D	C	D	G	G
Hydrogen Sulfide	D	D	E	E	D	E	G	E	E
Hydroquinone	G	G	G	D	D	G	C	D	E
Hydrochlorous Acid	G	G	G	G	D	G	E	E	E
<b>I</b>									
Ink Oil (Linseed Oil Base)	D	D	G	G	G	G	G	E	E
Insulating Oil	D	D	D	G	E	D	D	E	E
Iodine	D	D	D	D	D	D	C	C	E
Iron Acetate	D	D	E	D	D	G	D	D	E
Iron Hydroxide	C	C	E	E	G	G	G	C	E
Iron Salts	E	E	E	E	E	E	E	E	E
Iron Sulfate	E	E	E	E	E	E	E	E	E
Iron Sulfide	E	E	E	E	E	E	E	E	E

**Is - Li****ISOAMYL ACETATE - LINOLEIC ACID**

Chemical	NR	BS	BU	NP	NI	EP	HY	VT	TF
Isoamyl Acetate	D	D	E	D	D	G	D	D	E
Isoamyl Alcohol	E	E	E	E	E	E	E	E	E
Isoamyl Bromide	D	D	D	D	D	D	D	G	G
isoamyl Butyrate	D	D	C	D	D	C	D	D	G
Isoamyl Chloride	D	D	C	D	D	D	D	G	G
Isoamyl Ether	D	D	D	D	D	D	D	D	E
Isoamyl Phthalate	D	D	E	D	D	G	D	C	E
Isobutane	D	D	D	E	E	D	D	E	E
Isobutanol (Isobutyl Alcohol)	E	E	E	E	E	E	E	E	E
Isobutyl Acetate	D	D	E	D	D	G	D	D	E
Isobutyl Aldehyde	C	D	G	D	D	G	D	D	E
Isobutyl Amine	G	C	G	D	D	G	C	D	E
Isobutyl Bromide	D	D	D	D	D	D	D	G	G
Isobutyl n-Butyrate	-	-	-	D	-	-	-	-	C
Isobutyl Carbinol	E	E	E	G	E	E	E	G	E
Isobutyl Chloride	D	D	D	D	D	D	D	G	G
Isobutylene	D	D	D	C	C	D	D	E	E
Isobutyl Ether	D	D	D	D	D	D	D	D	E
Isocyanates	C	D	G	D	D	G	C	C	G
Isododecane	D	-	-	E	E	-	E	-	E
Isooctane	D	D	D	E	E	D	G	E	E
Isopentane	D	D	D	E	E	D	D	E	G
Isopropyl Acetate	D	D	E	D	D	G	C	D	E
Isopropyl Alcohol (Iso-propanol)	E	E	E	E	E	G	E	G	G
Isopropyl Amine	G	C	E	E	G	G	C	D	E
Isopropyl Benzene	D	D	D	D	D	D	D	E	E
Isopropyl Chloride	D	D	D	D	D	D	D	G	G
Isopropyl Ether	D	D	D	D	C	D	C	D	E
Isopropyl Toluene	D	D	D	D	D	D	D	E	E
<b>J</b>									
Jet Fuels (JP 1 - JP 6)	D	D	D	G	E	D	C	E	E
<b>K</b>									
Kerosene	D	D	D	G	E	D	C	E	E
Ketones	G	G	G	D	D	G	D	D	E
<b>L</b>									
Lactic Acid	G	G	G	E	E	G	E	E	E
Lacquers	D	D	D	D	D	D	D	D	E
Lacquer Solvents	D	D	D	D	D	D	D	D	E
Lard	D	D	D	G	E	C	D	E	E
Lauryl Alcohol	E	E	E	E	E	E	E	G	E
Lead Acetate	D	D	E	C	C	G	D	C	E
Lead Nitrate	E	E	E	E	E	E	E	E	E
Lead Sulfamate	G	G	E	E	G	E	G	E	E
Lead Sulfate	E	E	E	E	E	E	E	E	E
Ligroin	D	D	D	E	E	D	D	E	E
Lime Water	D	D	E	E	C	E	E	E	E
Lime-Sulphur	G	-	C	E	E	-	G	-	E
Linseed Oil	D	D	E	G	E	G	G	E	E
Lindol (Tricresyl Phosphate)	D	D	E	D	D	E	D	E	E
Linoleic Acid	-	-	-	D	G	-	-	-	E

**LEGEND**

- E **Excellent.** Suitable for continuous service.  
 G **Good.** Generally suitable for continuous or intermittent service.  
 C **Conditional.** Not recommended for continuous service,  
 but generally suited for intermittent service.  
 D **DO NOT USE.**  
 — **No experience.**

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Approximate cost comparisons between natural rubber and other materials for expansion joints of average diameter between 11/2" and 96" when the tube and cover are of the same elastomer.

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1.0 <b>BS</b> Buna-S (SBR)	1.15 <b>EP</b> EPDM	3.8 <b>VT</b> Viton®
1.1 <b>BU</b> Butyl		<b>TF</b> Teflon® -
1.1 <b>NP</b> Neoprene		See Price List



**Li - Mo****LIQUID SOAP - MONOCHLOROBENZENE**

Chemical	NR	BS	BU	NP	NI	EP	HY	VT	TF
Liquid Soap	E	E	E	E	E	E	E	E	E
Liquified Petroleum Gas	D	D	D	G	E	D	D	E	E
Lubricating Oils	D	D	D	G	E	D	C	E	E
Lye (Sodium Hydroxide)	E	G	E	E	G	E	E	D	E
<b>M</b>									
Magnesium Acetate	D	D	E	D	D	G	D	D	E
Magnesium Ammonium Sulphate	-	-	E	E	-	-	-	-	E
Magnesium Carbonate	E	E	E	E	E	E	E	E	E
Magnesium Chloride	E	E	E	E	E	G	E	E	E
Magnesium Hydrate	E	G	E	E	G	E	G	G	E
Magnesium Hydroxide	E	E	E	E	E	G	E	E	E
Magnesium Nitrate	E	E	E	E	E	E	E	E	E
Magnesium Oxide	-	-	E	E	-	-	-	-	E
Magnesium Sulfate	E	E	E	E	E	E	E	E	E
Malathion 50 in Aromatic Solvents	D	D	D	C	C	D	D	E	E
Malathion 50 in Aromatic Solvents, Water Spray	D	D	D	E	E	D	D	E	E
Maleic Acid	D	D	C	C	D	C	D	E	-
Maleic Anhydride	D	D	C	C	D	C	D	E	E
Malic Acid	E	G	D	C	G	D	G	E	E
Manganese Sulfate	E	E	E	E	E	E	E	E	E
Manganese Sulfide	C	E	E	G	E	G	E	E	E
Manganese Sulfite	C	E	E	G	E	G	E	E	E
Mercuric Chloride	G	G	G	C	C	C	G	E	E
Mercuric Cyanide	E	-	E	G	E	-	E	-	E
Mercurous Nitrate	E	-	E	E	E	-	E	-	E
Mercury	G	G	E	G	E	E	E	E	E
Mesityl Oxide	D	-	D	D	D	-	D	-	C
Methane	D	D	D	G	E	D	G	E	E
Methyl Acetate	C	D	G	D	D	G	D	D	E
Methyl Acrylate	C	D	G	C	D	G	D	D	E
Methacrylic Acid	D	D	G	G	D	G	C	G	E
Methyl Alcohol (Methanol)	E	E	E	E	E	E	E	C	E
Methyl Benzene (Toluene)	D	D	D	D	D	D	D	E	E
Methyl Bromide	D	D	G	D	G	G	D	E	E
Methyl Butyl Ketone	D	D	G	D	D	G	D	D	E
Methyl Cellosolve	D	D	G	G	C	G	C	D	E
Methyl Chloride	D	D	D	D	C	D	D	G	G
Methyl Cyclohexane	D	D	D	D	D	D	D	G	G
Methyl Cyclopentane	-	-	-	G	-	-	-	-	E
Methylene Bromide	D	D	D	D	D	D	D	G	G
Methylene Chloride	D	D	D	D	D	D	D	G	E
Methyl Ethyl Ketone (MEK)	G	D	G	D	D	G	D	D	E
Methyl Formate	C	C	G	G	D	G	C	C	G
Methyl Hexanol	E	E	E	E	E	E	E	G	E
Methyl Hexyl Ketone	D	D	G	D	D	G	D	D	E
Methyl Isobutyl Carbinol	G	C	E	G	G	E	G	G	E
Methyl Isobutyl Ketone (MIBK)	D	D	G	D	D	G	D	D	E
Methyl Isopropyl Ketone	D	D	G	D	D	G	D	D	E
Methyl Propyl Ether	D	D	D	D	D	D	D	D	E
Methyl Propyl Ketone	D	D	G	D	D	G	D	D	E
Methyl Methacrylate	D	D	D	D	D	D	G	D	G
Methyl Salicylate	D	D	G	D	D	G	D	C	G
Milk	C	-	C	G	G	-	E	-	E
Mineral Oil	D	D	D	G	E	D	G	E	E
Mineral Spirits	D	D	D	G	E	D	D	E	E
Monobromobenzene	-	-	D	-	D	-	-	-	E
Monochlorobenzene	D	D	D	D	D	D	D	E	E

**Mo - Pa****MONOCHLORODIFLUOROMETHANE - PAPERMAKER'S ALUM**

Chemical	NR	BS	BU	NP	NI	EP	HY	VT	TF
Monochlorodifluoromethane (Freon™ 22)	D	D	E	E	D	E	D	D	E
Monoethanolamine	G	C	G	G	C	G	G	D	E
Monomethylether	G	G	E	E	E	E	C	C	E
Monovinyl Acetate	D	D	G	D	D	C	C	E	E
Motor Oil	D	D	D	E	E	D	D	E	E
Muriatic Acid	(See HCL 37%)								
N									
Naphtha	D	D	D	G	E	D	D	E	E
Napthalene	D	D	D	D	D	D	D	E	E
Napthenic Acid	D	D	D	D	C	D	D	E	E
Natural Gas	C	-	E	E	E	-	E	-	E
Neatsfoot Oil	D	D	G	G	E	G	G	E	E
NEU-TRI™ (Trichloroethylene)	D	D	D	D	C	D	D	E	G
Nickel Acetate	D	D	E	D	D	G	D	D	E
Nickel Ammonium Sulphate	-	-	E	E	-	-	-	-	E
Nickel Chloride	E	E	E	E	E	E	E	E	E
Nickel Nitrate	E	E	E	E	E	E	E	E	E
Nickel Plating Solution	E	D	G	C	G	G	G	E	E
Nickel Sulfate	E	E	E	E	E	E	E	E	E
Nicotine Bentonite	-	-	-	-	G	-	-	-	C
Nicotine Sulphate	-	-	-	-	G	-	-	-	C
Niter Cake	E	E	E	E	E	E	E	E	E
Nitric Acid, 10%	D	D	G	C	D	G	G	E	E
Nitric Acid, 20%	D	D	G	D	D	C	G	E	E
Nitric Acid, 30%	D	D	G	D	D	C	C	E	G
Nitric Acid, 30-70%	D	D	C	D	D	D	D	C	-
Nitric Acid, Read Fuming	D	D	D	D	D	D	D	D	-
Nitrobenzene	D	D	D	D	D	D	D	G	E
Nitrogen Gas	E	E	E	E	E	E	E	E	E
Nitrogen Tetroxide	D	D	D	D	D	D	D	D	-
Nitromethane	G	G	G	C	D	G	C	D	E
Nitropropane	C	C	E	C	D	G	C	D	E
Nitrous Oxide	E	E	E	E	E	E	E	E	E
O									
Octadecanoic Acid	D	D	G	G	E	C	D	C	E
Octane	D	D	D	G	E	D	D	E	G
Octanol (Octyl Alcohol)	G	G	G	E	G	G	G	E	E
2-Octene	-	-	-	C	-	-	-	-	E
Octyl Acetate	D	D	E	D	D	G	D	D	E
Octyl Amine	C	C	G	G	C	G	C	D	E
Octyl Carbinol	E	E	E	E	E	E	E	G	E
Octylene Glycol	D	D	D	D	D	D	D	D	D
Oil, Petroleum	D	D	D	E	E	D	C	E	E
Oil, ASTM #1	D	D	D	E	E	D	G	E	E
Oil, ASTM #2	D	D	D	E	E	D	C	E	E
Oil, ASTM #3	D	D	D	G	E	D	C	E	E
Oletic Acid	D	D	G	C	G	G	C	C	E
Oleum (Fuming Sulfuric Acid)	D	D	D	D	D	D	D	D	-
Olive Oil (Non F.D.A.)	D	D	G	G	E	G	G	E	E
Orthodichlorobenzene	D	D	D	D	D	D	D	E	G
Oxalic Acid	C	C	E	C	G	E	G	C	E
Oxygen, Cold	G	G	E	G	G	G	G	E	E
Oxygen, Hot	D	D	D	D	D	D	D	G	E
Ozone	D	C	G	G	D	E	E	E	E
P									
Paint Thinner (Duco)	D	D	D	D	D	D	D	C	E
Palmitic Acid	D	D	G	G	E	G	G	E	G
Palm Oil	D	D	E	G	E	G	G	E	E
Papermaker's Alum	E	E	E	E	E	E	E	E	E



**Pa - Po****PARADICHLOROBENZENE - POTASSIUM DICHROMATE**

Chemical	NR	BS	BU	NP	NI	EP	HY	VT	TF
Paradichlorobenzene	D	D	D	D	D	D	D	E	G
Paraffin	D	D	D	E	E	D	D	E	-
Paraformaldehyde	D	D	G	G	G	G	G	C	E
Peanut Oil	D	D	C	G	E	D	G	E	E
Pentaclorophenol	D	-	D	D	D	-	-	-	E
Pentane	D	D	D	E	E	D	G	E	E
n-Pentane, 2-Methyl, 3-Methyl	-	-	-	E	-	-	-	-	E
Pentene-2, 4-Methyl	-	-	-	G	-	-	-	-	E
Perchloroethylene	D	D	D	D	C	D	D	E	G
Perchloric Acid	G	G	G	E	D	G	E	E	E
Permachlor (Degreasing Fluid)	-	-	-	-	D	-	-	-	C
Petrolatum	D	D	D	E	E	D	C	E	E
Petroleum, Crude	D	D	D	G	E	D	D	E	E
Petroleum Ether (Naphtha)	D	D	D	E	E	D	D	E	E
Petroleum Oils	D	D	D	E	E	D	C	E	E
Phenol	C	C	G	C	D	C	C	E	E
Phenolates (DINITROL®)	D	-	-	D	D	-	-	-	G
Phenols (DINITROL®)	E	-	-	G	D	-	-	-	G
Phenolsulfonic Acid	D	D	C	C	D	C	D	E	G
Phenyl Chloride	D	D	D	D	D	D	D	E	E
Phenyl Ethyl Ether	D	-	D	D	D	-	-	-	C
Phenylhydrazine	C	D	G	D	D	C	C	E	E
Phorone	D	D	E	D	D	G	D	C	E
Phosphate Esters	D	D	E	D	D	E	D	C	E
Phosphoric Acid, 10%	E	E	E	E	E	E	E	E	E
Phosphoric Acid, 10-85%	C	C	E	G	C	E	E	E	E
Phosphorous Trichloride	D	D	E	D	D	E	D	E	E
Pickling Solution	C	C	C	C	C	C	C	G	E
Picric Acid, Molten	C	C	C	C	C	C	G	C	-
Picric Acid, Water Solutions	E	C	E	G	G	G	E	C	E
Pinene	D	D	D	D	E	D	D	E	E
Pine Oil	D	D	D	C	C	D	D	G	E
Piperidine	D	D	D	D	D	D	D	D	G
Pitch	D	D	D	G	G	D	C	C	E
Plating Solutions, Chrome	D	D	E	G	G	E	C	E	E
Plating Solutions, Others	E	E	E	G	G	E	C	G	E
Polyvinyl Acetate Emulsion (PVA)	C	C	E	G	C	E	G	C	E
Polyethylene Glycol	D	D	D	D	D	D	D	D	D
Polypropylene Glycol	D	D	D	D	D	D	D	D	D
Potassium Acetate	D	D	E	D	D	G	D	D	E
Potassium Bicarbonate	E	E	E	E	E	E	E	E	E
Potassium Bisulfate	E	E	E	E	E	E	E	E	E
Potassium Bisulfite	E	E	E	E	E	E	E	E	E
Potassium Borate	E	-	E	E	E	-	E	-	E
Potassium Bromide	E	-	E	E	E	-	E	-	E
Potassium Carbonate	E	E	E	E	E	E	E	E	E
Potassium Chlorate	E	-	E	E	E	-	E	-	E
Potassium Chloride	E	E	E	E	E	E	E	E	E
Potassium Chromate	D	D	E	C	D	G	C	E	G
Potassium Cyanide	E	E	E	E	E	E	E	E	E
Potassium Dichromate	D	D	E	G	D	G	C	E	E

**Po - So****POTASSIUM HYDRATE - SOAP SOLUTIONS**

Chemical	NR	BS	BU	NP	NI	EP	HY	VT	TF
Potassium Hydrate	E	G	E	G	G	E	G	C	E
Potassium Hydroxide	E	E	E	G	E	E	E	D	E
Potassium Iodide	-	-	E	E	-	-	-	-	E
Potassium Nitrate	E	E	E	E	E	E	E	E	E
Potassium Nitrite	-	-	E	E	-	-	-	-	E
Potassium Permanganate	D	D	E	D	D	E	D	E	E
Potassium Phosphate	-	-	E	E	-	-	-	-	E
Potassium Silicate	E	E	E	E	E	E	E	E	E
Potassium Sulfate	E	E	E	E	E	E	E	E	E
Potassium Sulfide	E	E	E	E	E	E	E	E	E
Potassium Sulfite	E	E	E	E	E	E	E	E	E
Potassium Thiosulphate	-	-	E	E	-	-	-	-	E
Producer Gas	D	D	D	G	E	D	G	E	E
Propanediol	E	E	E	G	E	E	E	E	E
Propyl Acetate	D	D	G	D	D	G	D	D	E
Propyl Alcohol (Propanol)	E	E	E	E	E	E	E	E	E
Propyl Aldehyde	C	D	G	D	D	G	D	D	E
Propyl Chloride	D	D	C	C	D	C	D	G	G
Propylene Diamine	G	G	E	G	G	G	C	C	E
Propylene Dichloride	D	D	D	D	D	D	D	G	G
Propylene Glycol	D	D	D	D	D	D	D	D	D
Pydraul Hydraulic Fluids	D	D	G	D	D	G	D	C	G
Pyranol	D	D	D	D	C	D	D	E	E
Pyridine	D	D	G	D	D	G	D	D	E
Pyroigneous Acid	C	C	G	G	C	G	G	E	E
Pyrrole	C	G	G	D	D	C	D	C	E
<b>R</b>									
Rape Seed Oil	D	D	E	G	G	G	G	E	G
Red Oil (Crude Oleic Acid)	D	D	G	G	G	G	G	E	E
Richfield A Weed Killer, 100%	D	D	D	D	D	D	D	C	G
Richfield B Weed Killer, 33%	D	D	G	G	G	D	C	C	G
Rosin Oil	D	D	D	E	E	D	G	E	E
Rotenone And Water	E	E	E	E	E	E	E	E	E
Rum	E	-	E	E	E	-	E	-	-
<b>S</b>									
Sal Ammoniac (Ammonium Chloride)	E	E	E	E	E	E	E	E	E
Salicylic Acid	E	G	E	D	D	E	E	E	E
Salt Water (Sea Water)	E	E	E	E	E	E	E	E	E
Secondary Butyl Alcohol	E	-	E	E	E	-	-	-	E
Sewage	C	C	C	G	E	G	E	E	E
Shell DD	D	-	D	D	D	-	-	-	C
Silicate of Soda (Sodium Silicate)	E	E	E	E	E	E	E	E	E
Silicate Esters	D	D	D	E	G	D	E	E	E
Silicone Greases	E	E	E	E	E	E	E	E	E
Silicone Oils	E	E	E	E	E	E	E	E	E
Silver Nitrate	E	E	E	E	E	E	E	E	E
Skelly Solvent	D	D	D	G	E	D	C	E	E
Skydrol Hydraulic Fluids	D	D	E	D	D	E	D	D	E
Soap Solutions	E	E	E	E	E	E	E	E	E

**LEGEND**

- E **Excellent.** Suitable for continuous service.  
 G **Good.** Generally suitable for continuous or intermittent service.  
 C **Conditional.** Not recommended for continuous service, but generally suited for intermittent service.  
 D **DO NOT USE.**  
 — **No experience.**

**THE COMPARATIVE COST INDEX**

Approximate cost comparisons between natural rubber and other materials for expansion joints of average diameter between 11/2" and 96" when the tube and cover are of the same elastomer.

1.0 <b>NR</b> Natural Rubber	1.15 <b>NI</b> Nitrile (Buna-N)	1.2 <b>HY</b> Hypalon®
1.0 <b>BS</b> Buna-S (SBR)	1.15 <b>EP</b> EPDM	3.8 <b>VT</b> Viton®
1.1 <b>BU</b> Butyl		<b>TF</b> Teflon® - See Price List
1.1 <b>NP</b> Neoprene		



## So - Ta

## SODA ASH (SODIUM CARBONATE) - TALLOW

Chemical	NR	BS	BU	NP	NI	EP	HY	VT	TF
Soda Ash (Sodium Carbonate)	E	E	E	E	E	E	E	E	E
Soda, Caustic (Sodium Hydroxide)	E	G	E	E	G	E	E	D	E
Soda, Lime	E	G	E	G	G	E	G	C	E
Soda Niter (Sodium Nitrate)	E	E	E	E	E	E	E	E	E
Sodium Acetate	D	D	E	D	D	G	D	D	E
Sodium Aluminate	E	E	E	E	E	E	E	E	E
Sodium Bicarbonate	E	E	E	E	E	E	E	E	E
Sodium Bisulfate	E	E	E	E	E	E	E	E	E
Sodium Bisulfite	E	E	E	E	E	E	E	E	E
Sodium Borate	E	E	E	E	E	E	E	E	E
Sodium Carbonate	E	E	E	E	E	E	E	E	E
Sodium Chloride	E	E	E	E	E	E	E	E	E
Sodium Chromate	D	D	E	C	D	G	C	C	G
Sodium Cyanide	E	E	E	E	E	E	E	E	E
Sodium Dichromate	D	D	E	C	D	G	C	C	E
Sodium Fluoride	E	E	E	E	E	E	E	E	E
Sodium Fluoroaluminate 10%	E	-	E	E	E	-	E	-	E
Sodium Hydroxide	E	G	E	E	G	E	E	D	E
Sodium Hypochloride	C	-	C	C	C	-	E	-	E
Sodium Hypochlorite	C	D	G	D	D	G	C	E	G
Sodium Iodide	-	-	E	E	-	-	-	-	E
Sodium Metaphosphate	E	E	E	G	E	E	G	E	E
Sodium Nitrate	E	E	E	E	E	E	E	E	E
Sodium Nitrite	E	E	E	E	E	E	E	E	E
Sodium Perborate	C	D	E	D	D	G	D	E	E
Sodium Peroxide	G	G	E	G	G	E	G	E	G
Sodium Phosphate	E	E	E	E	E	E	E	E	E
Sodium Salts	E	-	E	E	-	-	E	-	E
Sodium Silicate	E	E	E	E	E	E	E	E	E
Sodium Sulfate	E	E	E	E	E	E	E	E	E
Sodium Sulfide	E	E	E	E	E	E	E	E	E
Sodium Sulfite	E	E	E	E	E	E	E	E	E
Sodium Thiosulfate	E	E	E	E	E	E	E	E	E
Soybean Oil	D	D	G	G	G	G	G	E	E
Stannic Chloride	E	E	G	E	E	E	E	E	E
Stannic Sulfide	E	E	E	E	E	E	E	E	E
Stannous Chloride	E	E	E	E	E	E	E	E	E
Stannous Sulfide	E	E	E	E	E	E	E	E	E
Stearic Acid	D	D	G	G	E	C	G	E	E
Stoddard Solvent	D	D	D	C	E	D	D	E	E
Styrene	D	D	D	D	D	D	D	G	E
Sugar Solutions (Sucrose) (Non F.D.A.)	E	E	E	E	E	E	E	E	E
Sulfamic Acid	C	C	E	G	G	E	G	E	E
Sulfite Liquors	G	G	E	G	G	G	E	E	E
Sulfonic Acid	D	D	D	C	D	D	C	D	G
Sulfur (Molten)	D	D	G	C	C	C	C	E	-
Sulfur Chloride	D	D	D	D	D	D	G	E	G
Sulfur Dioxide	C	C	G	G	D	C	G	E	E
Sulfur Hexafluoride	E	E	E	E	E	E	E	E	E
Sulfur Trioxide	D	D	G	D	D	C	D	E	G
Sulfuric Acid, 25%	G	G	G	E	G	G	E	E	E
Sulfuric Acid, 25-50%	G	D	E	C	D	G	E	E	E
Sulfuric Acid, 50-96%	D	D	C	C	D	G	G	E	E
Sulfuric Acid, Fuming	D	D	D	D	D	D	D	D	G
Sulfurous Acid	G	C	G	G	C	G	E	E	E
<b>T</b>									
Tall Oil	D	D	D	G	C	D	G	E	E
Tallow	D	D	D	E	E	D	D	E	E

## Ta - Ur

## TANNIC ACID - UREA

Chemical	NR	BS	BU	NP	NI	EP	HY	VT	TF
Tannic Acid	E	G	E	G	C	E	G	E	E
Tanning Liquors (alum./dichromate)	-	-	C	E	E	-	G	-	E
Tar	D	D	D	G	G	D	D	E	-
Tartaric Acid	E	E	E	G	E	E	E	E	E
Terpineol	D	D	C	D	D	C	D	E	-
Tertiary Butyl Alcohol	E	E	E	E	E	E	E	E	E
p-Tertiary Butylcatechol	C	-	E	E	D	-	-	-	E
Tertiary Butyl Mercaptan	D	-	D	D	D	-	-	-	E
Tetrachlorobenzene	D	D	D	D	D	D	D	G	G
Tetrachloroethane	D	D	D	D	D	D	D	E	G
Tetrachloroethylene	D	D	D	D	D	D	D	E	G
Tetraethylene Glycol	D	D	D	D	D	D	D	D	D
Tetrachloromethane	D	D	D	D	C	D	D	E	G
Tetrachloronaphthalene	D	D	D	D	D	D	D	G	G
Tetraethyl Lead	D	D	D	C	G	D	D	E	E
Tetrahydrofuran (THF)	D	D	D	D	D	D	D	D	E
Tetralin	D	-	D	D	D	-	D	-	E
Thionyl Chloride	D	D	D	D	D	D	D	G	E
Tin chloride	E	E	E	E	E	E	E	E	E
Tin Tetrachloride	E	E	E	E	E	E	E	E	E
Titanium Tetrachloride	D	D	D	C	G	C	C	E	E
Toluene (Toluol)	D	D	D	D	D	D	D	E	E
Toluene Diisocyanate (TDI)	C	C	E	D	C	E	D	G	E
Toxaphene	D	D	D	G	G	D	D	E	E
Transformer Oils (Petroleum Base)	D	D	D	G	E	D	G	E	E
Transformer Oils (Chlorinated Phenyl Base Askerels)	D	D	D	D	D	D	D	E	-
Transmission Fluids, A	D	D	D	C	G	D	D	E	E
Transmission Fluids, B	D	D	D	D	C	D	D	E	E
Triacetin	E	G	E	G	G	E	G	D	E
Tributoxy Ethyl Phosphate	G	-	C	C	D	-	-	-	C
Tributyl Amine	G	G	E	G	G	E	C	D	E
Tributyl Phosphate	D	D	G	D	D	G	D	D	E
Trichloroacetic Acid 10%	C	-	C	C	G	-	-	-	G
Trichlorobenzene	D	D	D	D	D	D	D	G	G
Trichloroethane	D	D	D	D	D	D	D	E	E
Trichloroethylene	D	D	D	D	C	D	D	E	G
Trichloropropane	D	D	D	D	D	D	D	E	E
Tricresyl Phosphate (TCP)	D	D	E	D	D	G	D	G	E
Triethanolamine (TEA)	G	G	E	E	G	G	E	D	E
Triethylamine	G	G	G	E	G	G	E	G	E
Triethylborane	-	-	-	-	-	-	-	-	E
Triethylene Glycol	D	D	D	D	D	D	D	D	D
Trinitrotoluene (TNT)	D	D	D	G	D	D	G	G	-
Triphenyl Phosphate	D	D	E	C	D	G	C	C	E
Trisodium Phosphate	E	E	E	E	E	E	E	E	E
Tung Oil	D	D	C	G	E	D	G	E	E
Turbine Oil	D	D	D	G	G	D	G	E	E
Turpentine	D	D	D	G	G	D	D	E	E
2,4D With 10% Fuel Oil	D	D	D	E	E	D	D	E	E
<b>U</b>									
Ucon Hydrolube Oils	D	D	E	G	E	E	D	E	E
(UDMH) Unsymmetrical Dimethylhydrazine	D	D	E	D	D	E	E	D	C
Undecanol	E	E	E	E	E	E	E	G	E
Uran	G	C	G	G	G	G	E	C	E
Urea	E	C	E	E	C	E	C	C	E



**Va - Wa**

## VARNISH - WATER, SALT

Chemical	NR	BS	BU	NP	NI	EP	HY	VT	TF
Varnish	D	D	D	G	G	D	C	E	E
Vegetable Oils	D	D	E	G	E	E	G	E	E
Versilube®	E	E	E	E	E	E	E	E	E
Vinegar	E	C	E	E	C	G	E	G	E
Vinyl Acetate	D	D	E	D	D	C	C	D	G
Vinyl Benzene	D	D	D	D	D	D	D	E	G
Vinyl Chloride (Monomer)	C	D	D	D	D	D	D	E	E
Vinyl Ether	D	D	D	D	D	C	C	D	E
Vinyl Toluene	D	D	D	D	D	D	D	E	G
Vinyl Trichloride	D	D	D	D	D	D	D	E	E
V.M. & P. Naptha	D	D	D	E	E	D	D	E	E
<b>W</b>									
Walnut Oil	D	-	C	G	E	-	-	-	E
Water, Fresh (Non F.D.A.)	E	E	E	E	E	E	E	E	E
Water, Salt	E	E	E	E	G	E	E	E	E

**Wh - Zi**

## WHITE LIQUOR - ZINC SULFATE

Chemical	NR	BS	BU	NP	NI	EP	HY	VT	TF
White Liquor	E	E	G	E	E	C	E	E	E
White Oil	D	D	D	G	E	D	D	E	E
Whiskey and Wines	E	-	E	E	E	-	E	-	E
Wood Alcohol (Methanol)	E	E	E	E	E	E	E	D	E
Wool Oil	G	-	D	E	E	-	-	-	E
<b>X</b>									
Xylene (Xylol)	D	D	D	D	D	D	D	E	E
Xylidine	D	D	D	D	D	D	D	C	G
<b>Z</b>									
Zeolites	E	E	E	E	E	E	E	E	E
Zinc Acetate	C	D	E	C	C	G	C	D	E
Zinc Carbonate	E	E	E	E	E	E	E	E	E
Zinc Chloride	E	E	E	E	E	G	E	E	E
Zinc Chromate	E	C	E	E	E	E	C	E	G
Zinc Sulfate	E	E	E	E	E	E	E	E	E

**LEGEND**

- E **Excellent**. Suitable for continuous service.  
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 D **DO NOT USE**.  
 — **No experience**.

**THE COMPARATIVE COST INDEX**

Approximate cost comparisons between natural rubber and other materials for expansion joints of average diameter between 1 1/2" and 96" when the tube and cover are of the same elastomer.

1.0 <b>NR</b> Natural Rubber	1.15 <b>NI</b> Nitrile (Buna-N)	1.2 <b>HY</b> Hypalon®
1.0 <b>BS</b> Buna-S (SBR)		3.8 <b>VT</b> Viton®
1.1 <b>BU</b> Butyl	1.15 <b>EP</b> EPDM	<b>TF</b> Teflon® -
1.1 <b>NP</b> Neoprene		See Price List