# **Chemical Compatibility for the following O-rings Elastomers:** Ethylene Propylene, Fluorosilicone, Nitrile (Buna N), and Silicone

**Technical Report TR-60D** 

(Rev.  $\emptyset$ )



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#### 1.0 DISCUSSION

These tables list the chemical compatibility chart of various elastomer materials commonly used for o-ring. This data has been compiled from literature published by various material suppliers. It is given as background information only. In any given case, factors such as concentration, temperature, degree of agitation and presence of impurities influence the rate of corrosion. The user, through their own testing and evaluation, must determine the suitability of the material for the application.

#### 2.0 GUIDE TO COMPATIBILITY KEY

Key to O-Ring Material Compatibility Ratings				
(4)	Good, both for static and dynamic seals			
(3)	Fair, usually acceptable for static seals			
(2)	Sometimes acceptable for static seals; not acceptable for dynamic seals			
(1)	Poor			
(0)	No Data			

### 3.0 CHEMICAL COMPATIBILITY GUIDE FOR ELASTOMER MATERIALS

In addition to this chemical compatibility chart, report TR-60D, Bal Seal has three other reports: report TR-60A "Chemical Compatibility Guide for Bal Seal PTFE, Filled PTFE, and Polyethylene Seal Materials," report TR-60B "Chemical Resistance to Typical [HPLC High Pressure Liquid Chromatography] Solutions, Using Typical Bal Seal Products Used in Such Applications", and TR-60C "Compatibility Guide for Metallic Materials" Consult the Technical Sales Department for further details or materials not listed.

#### 4.0 References

1) Efunda, Engineering Fundamentals, http://www.efunda.com/home.cfm

Ammonium Chloride (4)

**Chemical Compatibility of Ethylene Propylene** 

Acetaldehyde (1) Acetamide (4) Acetic Acid, Glacial (4) Acetic Anhydride (4) Acetophenone (4) Acetone (4) Acetyl Chloride (1) Acrylonitrile (1) Acetylene Gas (4) Air below 200 C (1) Alkazene (0) Aluminium Acetate (4) Aluminium Chloride (4) Aluminium Flouride (4) Aluminium Nitrate (4) Aluminium Sulfate (4) Ammonia, Gas, Cold (4) Ammonia, Anhydrous (4)

Ammonium Hydroxide, Concentrated (2) Ammonium Nitrate (4) Ammonium Persulfate Solution (3)

Ammonium Carbonate (4)

Ammonium Phosphate (4) Ammonium Sulfate (4) Amyl Acetate (4)

Ammonia, Gas, Hot (3)

Amyl Alcohol (4) Amyl Borate (1) Amyl Chloronaphthalene (1)

Aniline (4) Aniline Oil (3) Animal Oil (4)

 Arachlor 1248 (3)
 Argon (4)
 Aromatic Fuel 50% (1)

 Askarel Transformer Oil (1)
 ASTM Fuel A (1)
 ASTM Fuel B (1)

 ASTM Fuel C (1)
 ASTM Oil Four (1)
 ASTM Oil Three (1)

ASTM Oil Two (1)

Automatic Transmission Fluid (1) Automotive Brake Fluid (4) Beer (4)

Benzaldehyde (4) Benzene (1) Benzene Sulfonic Acid (1)

Benzine (Ligroin) (1)Benzoic Acid (0)Benzophenone (3)Benzyl Alcohol (3)Benzyl Benzoate (3)Benzyl Chloride (1)Bleach Liquor (4)Borax Solutions (4)Boric Acid (4)Brake Fluid (4)Bromine Gas (1)Bromobenzene (1)

Bunker Oil (1)

Butter (4)

Butyl Alcohol (3)

Butyl Cellosolve (4)

Calcium Chloride (4)

Butyl Carbinole (4)

Butyl Alcohol (3)

Butyraldehyde (2)

Calcium Carbonate (4)

Calcium Hydroxide (4)

Calcium Hydroxide (4)

Calcium Nitrate (4) Calcium Sulfide (4) Carbitol 2 (3)

Carbolic Acid (Phenol) (1) Carbon Disulfide (1) Carbon Monoxide (4)

Carbon Tetrachloride (1)Carbonic Acid (4)Castor Oil (3)Cellosolve (3)China Wood Oil, Tung Oil (1)Chloracetic Acid (3)Chlordane (1)Chlorinated Solvents (1)Chlorine Dioxide (1)

Chlorine Trifluoride (1) Chlorine, Dry (0) Chlorine, Wet (0)

Chlorosulfonic Acid (1) Chrome Plating Solution (1)

Chromic Acid (1)Citric Acid (4)Cod Liver Oil (4)Coffee (4)Coolanol Monsanto (1)Corn Oil (0)

Creosote, Coal Tar (1) Creosylic Acid (1) Crude Oil (Asphalt Base) (1)

Cyclohexane (1) Denatured Alcohol (4) Diacetone (4)

# **Chemical Compatibility of Ethylene Propylene**

Diacetone Alcohol (4) Dibenzyl Ether (2) Dibutyl Phthalate (4)

Dichloro-Butane (1) Diesel Oil (1) Di-ester Lubricant MIL-L-7808 (1)

Diethylamine (3) Diethylamine Glycol (4) Dimethyl Formamide (3)

Dimethyl Phthalate (3) Dioxane (3) Diphenyl (1) Dowtherm A (3) Dow Corning 550 (4) Dow Guard (4) Elco 28 Lubricant (1) Epoxy Resins (4) Ethane (1) Ethanol (4) Ethyl Acetoacetate (1) Ethyl Alcohol (4) Ethyl Benzene (1) Ethyl Benzoate (0) Ethyl Cellulose (3) Ethyl Chloride (4) Ethyl Chlorocarbonate (1) Ethyl Diamine (4) Ethyl Ether (1) Ethyl Formate (3) Ethyl Hexanol (4)

Ethyl Mercaptan (0)Ethyl Oxalate (0)Ethyl Pentachlorobenzene (1)Ethyl Silicate (4)Ethylene (1)Ethylene Dichloride (1)Ethylene Glycol (4)Ethylene Oxide (3)Ethylene Trichloride (1)

 Formaldehyde (4)
 Freon 11 (M) (1)
 Freon 112 (1)

 Freon 113 (1)
 Freon 114 (1)
 Freon 114B2 (1)

 Freon 12 (2)
 Freon 13 (4)
 Freon 21 (1)

 Freon 22 (4)
 Freon 31 (4)
 Freon 32 (4)

 Freon 502 (F22+F316) (4)
 Freon C318 (4)
 FREON R134A (0)

Freon TF (1)Fuel Oil (1)Furan (1)Furfural (3)Furfuryl Alcohol (3)Gallic Acid (3)Gasoline, Automative (1)Gelatine (4)Glucose (4)

Glycerin (4) Grease, Petroleum Base (1)

Helium (4) Heptane (1) Hexane (1)

Hexyl Alcohol (3) Hydraulic Oil, Petroleum Base (1)

Hydrobromic Acid (0)Hydrobromic Acid, Gas (4)Hydrochloric Acid (2)Hydrocyanic Acid (4)Hydrofluoric Acid (0)Hydrogen Gas (4)Hydrogen Peroxide (0)Hydroquinone (0)Iodine (3)

| Iso Octane (4) | Isobutyl Alcohol (4) | Isopropyl Chloride (1) | Isopropyl Ether (1) |
| JP 3 MIL-J5624 (1) | JP 4 MIL-J5624 (1) | JP 5 MIL-J5624 (1) |
| JP 6 MIL-J5624 (1) | Kerosene (1) | Lacquer Solvents (1)

Lacquers (1) Lard, Animal Fat (3) Lindol, Hydraulic Fluid (Phosphate Ester Type) (4)

Linsed Oil (2) Liquefied Petroleum Gas (LPG) (1)

Malathion (1)

Lubricating Oils, Petroleum Base (1) Lye (4)

Maleic Acid (1)Mercuric Chloride (4)Mercury (4)Methane (1)Methanol (4)Methyl Acetate (3)

### **Chemical Compatibility of Ethylene Propylene**

Methyl Acrylate (3)Methyl Alcohol (4)Methyl Bromide (0)Methyl Butyl Ketone (4)Methyl Cellosolve (3)Methyl Chloride (1)

Methyl Ether (4) Methyl Ethyl Ketone (MEK) (4) Methyl Isobutyl Ketone (MIBK) (3)

Methyl Mercaptan (4)Methyl Methacrylate (1)Methyl Oleate (3)Methyl Propyl Salicylate (3)Methylacrylic Acid (3)Methylene Chloride (0)MIL-F-25558 (RJ-1) (1)MIL-F-25656 (1)MIL-G-25760 (1)

MIL-H-5606 (1) MIL-H-7083 (4) MIL-J 5624, JP-3, JP-4, JP-5 (1)

Milk (4) MIL-R-25576 (RP-1) (1)

MIL-S-3136, Type 1 Fuel (1)

Monovinyl Acetate (3)

Naphtha (1)

Naphthalenic (1)

Natural Gas (1)

Neatsfoot Oil (3)

N-Hexaldehyde (0)

Nitro Acid (0)

Nitrobenzene (4)

Nitrogen Tetroxide (0)
Nitrogen, Gas (4)
Nitromethane (3)
Nitropropane (3)
N-Pentane (1)
Octyl Alcohol (3)
Oleic Acid (2)
Oleum (Fuming Sulfuric Acid) (1)
Oxygen, 200-400F (1)
Oxygen, Cold (4)
Oxygen, Cold (4)
Oxygen, Cold (4)

 Oxygen, 200-400F (1)
 Oxygen, Cold (4)
 Ozone (4)

 Peanut Oil (2)
 Petroleum Oil (1)
 Phenol (1)

Phenylhydrazine (1)Phosphoric Acid (4)Phosphoric Trichloride (4)Pine Oil (1)Potassium Nitrate (4)Potassium Sulfate (4)

Producer Gas (1)
Propyl Acetate (3)
Propyl Alcohol (4)
Propyl Alcohol (4)
Propyl Alcohol (4)
Propylene (1)

<u>Propylene Oxide (3)</u> <u>Pydraul, 10E (3)</u> <u>Pydraul, 230C, 312F, 540C (1)</u>

Pydraul, 30E, 50E, 65E, 90E (3) Pyranol, Transformer Oil (1) Pyrogard 42, 43, 53, 55 (Phosphate Ester) (4)

 Radiation (2)
 Rapeseed Oil (4)
 Red Oil (2)

 RJ-1 (MIL-F-25558) (1)
 RP-1 (MIL-R-25576) (1)
 Sea Water (4)

 Silicone Grease (4)
 Silicone Oils (4)
 Silver Nitrate (4)

 Skydrol 500 (4)
 Sodium Bicarbonate (4)
 Sodium Carbonate (4)

Skydrol 500 (4)Sodium Bicarbonate (4)Sodium Carbonate (4)Sodium Chloride (4)Sodium Hydroxide (4)Soyabean Oil (1)Steam to 350F (4)Stearic Acid (3)Stoddard Solvent (1)Styrene Monomer (1)Sucrose Solutions (4)Sulfur Chloride (1)

Sulfur Dioxide Gas, Dry (4)
Sulfur Dioxide Gas, Wet (4)
Sulfur Dioxide, Liquefied Under Pressure (4)

Sulfur Hexafluoride (4) Sulfur Trioxide (2) Sulfuric Acid (Concentrated) (0)

Sulfurous Acid (4) Tannic Acid (4) Tartaric Acid (2)
Tertiary Butyl Alcohol (3) Tertiary Butyl Mercaptan (1) Tetrabromoethane (1)

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# **Chemical Compatibility of Ethylene Propylene**

Tetrabutyl Titanate (4)
Tetrachloroethane (1)
Tetrachloroethylene (1)

Turbine Oil (1) Turpentine (1) Varnish (1)

Xylene (1)

Vinegar (4) VV-H-910 (4) Wagner 21B Brake Fluid (4)

Water, Fresh (4) Whiskey (4) White Pine Tar (1)

**Chemical Compatibility of Fluorosilicone** 

Acetaldehyde (0) Acetamide (4) Acetic Acid, Glacial (1) Acetic Anhydride (1) Acetone (1) Acetophenone (1) Acetyl Chloride (4) Acetylene Gas (2) Acrylonitrile (1) Air below 200 C (4) Alkazene (3) Aluminium Acetate (1) Aluminium Chloride (4) Aluminium Flouride (4) Aluminium Nitrate (0) Ammonia, Anhydrous (1) Ammonia, Gas, Cold (0) Aluminium Sulfate (4)

Ammonia, Gas, Hot (1)

Ammonium Carbonate (0)

Ammonium Chloride (1)

Ammonium Persulfate Solution (0)

Ammonium Phosphate (0)

Ammonium Sulfate (4)

Amyl Acetate (1)

Amyl Alcohol (4)

Amyl Borate (0)

Amyl Chloronaphthalene (3)

Aniline (2)
Arachlor 1248 (3)
Argon (3)
Animal Oil (4)
Argon (3)
Aromatic Fuel 50% (3)

Askarel Transformer Oil (3)

ASTM Fuel A (3)

ASTM Fuel B (3)

ASTM Fuel D (0)

ASTM Oil Four (3)

ASTM Oil Three (4)

ASTM Oil Two (4)

Automatic Transmission Fluid (0)

Automotive Brake Fluid (1)

Beer (4)

Benzaldehyde (1) Benzene (3) Benzene Sulfonic Acid (3)

Benzine (Ligroin) (4)Benzoic Acid (3)Benzophenone (4)Benzyl Alcohol (3)Benzyl Benzoate (4)Benzyl Chloride (3)Bleach Liquor (3)Borax Solutions (3)Boric Acid (4)Brake Fluid (1)Bromine Gas (3)Bromobenzene (3)Bunker Oil (4)Butadiene Monomer (3)Butane (3)

Butter (4)
Butyl Alcohol (4)
Butyl Cellosolve (1)
Butyraldehyde (1)
Butyraldehyde (1)
Butyraldehyde (4)

Calcium Chloride (4)

Calcium Hydroxide (3)

Calcium Hydroxide (3)

Calcium Hydroxide (4)

Calcium Hydroxide (4)

Calcium Hydroxide (3)

Calcium Hydroxide (3)

Calcium Hydroxide (3)

Carbolic Acid (Phenol) (3)

Carbon Disulfide (3)

Carbon Monoxide (3)

Carbon Tetrachloride (2)Carbonic Acid (4)Castor Oil (4)Cellosolve (1)China Wood Oil, Tung Oil (3)Chloracetic Acid (1)Chlordane (3)Chlorinated Solvents (4)Chlorine Dioxide (3)

Chlorine Trifluoride (0) Chlorine, Dry (4) Chlorine, Wet (3)

Chloroform (0) Chlorosulfonic Acid (1) Chrome Plating Solution (3)

Chromic Acid (4)Citric Acid (4)Cod Liver Oil (4)Coffee (4)Coolanol Monsanto (3)Corn Oil (4)

<u>Creosylic Acid (0)</u> <u>Crude Oil (Asphalt Base) (3)</u>

Cyclohexane (3) Denatured Alcohol (4) Diacetone (1)

# **Chemical Compatibility of Fluorosilicone**

Dibutyl Phthalate (2)

Diacetone Alcohol (1) Dibenzyl Ether (0)

Dichloro-Butane (3) Diesel Oil (4) Di-ester Lubricant MIL-L-7808 (4)

Diethylamine Glycol (4) Diethylamine (1) Dimethyl Formamide (1)

Dimethyl Phthalate (3) Dioxane (1) Diphenyl (3) Dowtherm A (4) Dow Corning 550 (3) Dow Guard (4) Elco 28 Lubricant (4) Epoxy Resins (0) Ethane (3) Ethanol (4) Ethyl Acetoacetate (1) Ethyl Alcohol (4) Ethyl Benzene (4) Ethyl Benzoate (4) Ethyl Cellulose (1)

Ethyl Chloride (4) Ethyl Chlorocarbonate (3) Ethyl Diamine (1) Ethyl Ether (1) Ethyl Formate (4) Ethyl Hexanol (4)

Ethyl Oxalate (3) Ethyl Pentachlorobenzene (3) Ethyl Mercaptan (0)

Ethyl Silicate (4) Ethylene (4) Ethylene Dichloride (1) Ethylene Oxide (1) Ethylene Trichloride (2) Ethylene Glycol (4)

Formaldehyde (0) Freon 11 (M) (3) Freon 112 (0) Freon 113 (1) Freon 114 (3) Freon 114B2 (0) Freon 12 (0) Freon 13 (1) Freon 21 (0) Freon 22 (0) Freon 31 (0) Freon 32 (0) Freon 502 (F22+F316) (0) Freon C318 (0) FREON R134A (0)

Freon TF (1) Fuel Oil (4) Furan (0) Furfuryl Alcohol (1) Furfural (1) Gallic Acid (4) Gasoline, Automative (4) Gelatine (4) Glucose (4)

Glycol, General (4) Grease, Petroleum Base (4) Glycerin (4)

Helium (4) Heptane (4) Hexane (4)

Hexyl Alcohol (3) Hydraulic Oil, Petroleum Base (4) Hydrobromic Acid, Gas (1) Hydrobromic Acid (4) Hydrochloric Acid (0)

Hydrocyanic Acid (3) Hydrofluoric Acid (1) Hydrogen Gas (2) Hydrogen Peroxide (3) Hydroguinone (3) lodine (4)

Isobutyl Alcohol (3) Iso Octane (3) Isopropanol (3) Isopropyl Acetate (1) Isopropyl Chloride (3) Isopropyl Ether (2) JP 3 MIL-J5624 (3) JP 4 MIL-J5624 (3) JP 5 MIL-J5624 (3) JP 6 MIL-J5624 (3) Lacquer Solvents (1) Kerosene (4)

Lindol, Hydraulic Fluid (Phosphate Ester Type) (2) Lacquers (1) Lard, Animal Fat (4)

> Linsed Oil (4) Liquefied Petroleum Gas (LPG) (3)

Lubricating Oils, Petroleum Base (4) Lye (3)

Malathion (3) Maleic Acid (0) Mercuric Chloride (4) Mercury (0) Methane (0) Methanol (4) Methyl Acetate (1)

### **Chemical Compatibility of Fluorosilicone**

Methyl Alcohol (4) Methyl Acrylate (1) Methyl Bromide (4) Methyl Butyl Ketone (1) Methyl Cellosolve (1) Methyl Chloride (3)

Methyl Ether (4) Methyl Ethyl Ketone (MEK) (1) Methyl Isobutyl Ketone (MIBK) (1)

Methyl Mercaptan (0) Methyl Methacrylate (1) Methyl Oleate (3) Methyl Propyl Salicylate (0) Methylacrylic Acid (0) Methylene Chloride (3) MIL-F-25558 (RJ-1) (4) MIL-F-25656 (3) MIL-G-25760 (3)

MIL-H-5606 (4) MIL-H-7083 (4) MIL-J 5624, JP-3, JP-4, JP-5 (3)

Milk (4) MIL-L-25681 (3) MIL-R-25576 (RP-1) (4) MIL-S-3136, Type 1 Fuel (4) MIL-S-81087 (4) Mineral Oils (4)

Monovinyl Acetate (4) Naphtha (1) Naphthalene (4) Naphthalenic (4) Natural Gas (0) Neatsfoot Oil (4) N-Hexaldehyde (1) Nitric Acid (0) Nitrobenzene (1) Nitroethane (1) Nitrogen Tetroxide (1) Nitrogen, Gas (4) Nitromethane (1) Nitropropane (1) N-Octane (3) N-Pentane (2) Octyl Alcohol (3) Oleic Acid (4)

Oleum (Fuming Sulfuric Acid) (1) Oronite 8200 (4) Oxalic Acid (4) Oxvaen, 200-400F (0) Oxygen, Cold (4) Ozone (4) Peanut Oil (4) Petroleum Oil (4) Phenol (3)

Phosphoric Trichloride (4) Phenylhydrazine (0) Phosphoric Acid (2) Pine Oil (4) Potassium Nitrate (4) Potassium Sulfate (4)

Producer Gas (3) Propane (3) Propanol (4) Propyl Acetate (1) Propyl Alcohol (4) Propylene (3)

Pydraul, 230C, 312F, 540C (1) Propylene Oxide (1) Pydraul, 10E (1)

Pydraul, 30E, 50E, 65E, 90E (4) Pyrogard 42, 43, 53, 55 (Phosphate Ester) (1) Pyranol, Transformer Oil (4)

Rapeseed Oil (4) Red Oil (4)

RJ-1 (MIL-F-25558) (4) RP-1 (MIL-R-25576) (4) Sea Water (4) Silicone Grease (4) Silicone Oils (4) Silver Nitrate (4) Sodium Bicarbonate (4) Sodium Carbonate (4) Skydrol 500 (0) Sodium Hydroxide (0) Sodium Chloride (4) Soyabean Oil (4) Stoddard Solvent (4) Steam to 350F (1) Stearic Acid (2)

Styrene Monomer (2) Sucrose Solutions (2) Sulfur Chloride (4) Sulfur Dioxide Gas, Dry (3) Sulfur Dioxide Gas, Wet (3) Sulfur Dioxide, Liquefied Under Pressure (3)

Sulfur Hexafluoride (3) Sulfur Trioxide (3) Sulfuric Acid (Concentrated) (0)

Sulfurous Acid (0) Tannic Acid (4) Tartaric Acid (4) Tertiary Butyl Mercaptan (0) Tetrabromoethane (3) Tertiary Butyl Alcohol (3) Tetrabutyl Titanate (4) Tetrachloroethane (0) Tetrachloroethylene (3)

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Chemical Compatibility of Fluorosilicone				
Tetraethyl Lead (0)	Tetrahydrofuran (1)	Tetralin (4)		
Toluene (3)	Transmission Fluid, Type A (4)			
Turbine Oil (3)	Turpentine (3)	Varnish (3)		
Vinegar (2)	<u>VV-H-910 (3)</u>	Wagner 21B Brake Fluid (1)		
Water, Fresh (4)	Whiskey (4)	White Pine Tar (4)		
Xylene (0)				

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**Chemical Compatiblity of Nitrile (Buna-N)** 

Acetaldehyde (1) Acetic Acid, Glacial (1)

Acetic Anhydride (4) Acetone (1) Acetophenone (1) Acetyl Chloride (1) Acetylene Gas (4) Acrylonitrile (1) Air below 200 C (4) Alkazene (1) Aluminium Acetate (3) Aluminium Chloride (4) Aluminium Flouride (4) Aluminium Nitrate (4) Aluminium Sulfate (4) Ammonia, Anhydrous (3) Ammonia, Gas, Cold (4) Ammonia, Gas, Hot (3) Ammonium Carbonate (3) Ammonium Chloride (3)

Ammonium Hydroxide, Concentrated (2) Ammonium Nitrate (4) Ammonium Persulfate Solution (4)

Ammonium Phosphate (0)

Ammonium Sulfate (4)

Amyl Acetate (1)

Amyl Alcohol (3) Amyl Borate (3) Amyl Chloronaphthalene (2)

Aniline (1) Aniline Oil (1) Animal Oil (4)

 Arachlor 1248 (2)
 Argon (4)
 Aromatic Fuel 50% (3)

 Askarel Transformer Oil (3)
 ASTM Fuel A (4)
 ASTM Fuel B (2)

 ASTM Fuel C (2)
 ASTM Fuel D (2)
 ASTM Oil Four (3)

 ASTM Oil One (4)
 ASTM Oil Three (4)
 ASTM Oil Two (4)

Automatic Transmission Fluid (4)

Automotive Brake Fluid (0)

Beer (4)

Benzaldehyde (1)

Benzine (Ligroin) (4)

Benzoic Acid (1)

Benzyl Alcohol (1)

Benzyl Alcohol (1)

Bleach Liquor (2)

Brake Fluid (1)

Benzyl Benzoic Acid (1)

Brownine Gas (1)

Brownine Gas (1)

Brownine Gas (1)

Brownine Gas (1)

Brake Fluid (1)Bromine Gas (1)Bromobenzene (1)Bunker Oil (4)Butadiene Monomer (2)Butane (4)Butter (4)Butyl Alcohol (4)Butyl Carbitol (1)

Butyl Cellosolve (2)Butyraldehyde (1)Calcium Carbonate (4)Calcium Chloride (4)Calcium Hydroxide (4)Calcium Hypochlorite (2)Calcium Nitrate (4)Calcium Sulfide (4)Carbitol 2 (3)

Carbolic Acid (Phenol) (1)

Carbon Disulfide (1)

Carbon Monoxide (4)

Carbon Tetrachloride (1)Carbonic Acid (3)Castor Oil (4)Cellosolve (1)China Wood Oil, Tung Oil (4)Chloracetic Acid (1)Chlordane (3)Chlorinated Solvents (1)Chlorine Dioxide (1)

Chlorine Trifluoride (1)

Chlorogram (1)

Chlorogram (1)

Chlorogram (1)

Chlorogram (2)

Chlorogram (1)

Chlorogram (1)

Chlorogram (1)

Chloroform (1) Chlorosulfonic Acid (1) Chrome Plating Solution (1)

Chromic Acid (1)Citric Acid (4)Cod Liver Oil (4)Coffee (4)Coolanol Monsanto (4)Corn Oil (4)

Creosote, Coal Tar (3) Creosylic Acid (1) Crude Oil (Asphalt Base) (3)

# **Chemical Compatiblity of Nitrile (Buna-N)**

Cyclohexane (4) Denatured Alcohol (4) Diacetone (1)

Diacetone Alcohol (1) Dibenzyl Ether (1) Dibutyl Phthalate (1)

Dichloro-Butane (3) Diesel Oil (4) Di-ester Lubricant MIL-L-7808 (3)

Diethylamine (2) Diethylamine Glycol (4) Dimethyl Formamide (2)

Dimethyl Phthalate (1) Dioxane (1) Diphenyl (1) Dow Corning 550 (4) Dow Guard (4) Dowtherm A (1) Elco 28 Lubricant (4) Epoxy Resins (0) Ethane (4) Ethanol (4) Ethyl Acetoacetate (3) Ethyl Alcohol (4) Ethyl Benzene (1) Ethyl Benzoate (1) Ethyl Cellulose (3) Ethyl Chloride (4) Ethyl Chlorocarbonate (1) Ethyl Diamine (3) Ethyl Ether (2) Ethyl Formate (1) Ethyl Hexanol (4)

Ethyl Mercaptan (1) Ethyl Oxalate (1) Ethyl Pentachlorobenzene (1)

Ethyl Silicate (4) Ethylene (4) Ethylene Dichloride (1)
Ethylene Glycol (4) Ethylene Oxide (1) Ethylene Trichloride (1)

 Formaldehyde (4)
 Freon 11 (M) (3)
 Freon 112 (3)

 Freon 113 (4)
 Freon 114 (4)
 Freon 114B2 (3)

 Freon 12 (4)
 Freon 13 (4)
 Freon 21 (1)

 Freon 22 (1)
 Freon 31 (1)
 Freon 32 (4)

 Freon 502 (F22+F316) (3)
 Freon C318 (4)
 FREON R134A (0)

Freon TF (4)Fuel Oil (4)Furan (1)Furfural (1)Furfuryl Alcohol (1)Gallic Acid (3)Gasoline, Automative (4)Gelatine (4)Glucose (4)

Glycerin (4) Grease, Petroleum Base (4)

Helium (4) Heptane (4) Hexane (4)

Hexyl Alcohol (3) Hydraulic Oil, Petroleum Base (4)

Hydrobromic Acid (1)Hydrobromic Acid, Gas (1)Hydrochloric Acid (1)Hydrocyanic Acid (3)Hydrofluoric Acid (1)Hydrogen Gas (4)

 Hydrogen Peroxide (1)
 Hydroquinone (1)
 Iodine (3)

 Iso Octane (4)
 Isobutyl Alcohol (3)
 Isopropanol (4)

 Isopropyl Acetate (1)
 Isopropyl Chloride (1)
 Isopropyl Ether (3)

 JP 3 MIL-J5624 (4)
 JP 4 MIL-J5624 (4)
 JP 5 MIL-J5624 (4)

 JP 6 MIL-J5624 (4)
 Kerosene (4)
 Lacquer Solvents (1)

<u>Lacquers (1)</u> <u>Lard, Animal Fat (4)</u> <u>Lindol, Hydraulic Fluid (Phosphate Ester Type) (1)</u>

Linsed Oil (4) Liquefied Petroleum Gas (LPG) (4)

Lubricating Oils, Petroleum Base (4)Lye (1)Malathion (3)Maleic Acid (2)Mercuric Chloride (4)Mercury (4)

# **Chemical Compatiblity of Nitrile (Buna-N)**

Methane (4)Methanol (3)Methyl Acetate (1)Methyl Acrylate (1)Methyl Alcohol (4)Methyl Bromide (3)Methyl Butyl Ketone (1)Methyl Cellosolve (2)Methyl Chloride (1)

Methyl Ether (4) Methyl Ethyl Ketone (MEK) (1) Methyl Isobutyl Ketone (MIBK) (1)

Methyl Mercaptan (0)Methyl Methacrylate (1)Methyl Oleate (1)Methyl Propyl Salicylate (1)Methylacrylic Acid (0)Methylene Chloride (1)MIL-F-25558 (RJ-1) (4)MIL-F-25656 (4)MIL-G-25760 (3)

MIL-H-5606 (4) MIL-H-7083 (4) MIL-J 5624, JP-3, JP-4, JP-5 (4)

Milk (4) MIL-L-25681 (3) MIL-R-25576 (RP-1) (4) MIL-S-3136, Type 1 Fuel (4) MIL-S-81087 (4) Mineral Oils (4)

MIL-S-3136, Type 1 Fuel (4)MIL-S-81087 (4)Mineral Oils (4)Monovinyl Acetate (1)Naphtha (4)Naphthalene (1)Naphthalenic (3)Natural Gas (4)Neatsfoot Oil (4)N-Hexaldehyde (1)Nitric Acid (1)Nitrobenzene (1)Nitroethane (1)Nitrogen Tetroxide (1)Nitrogen, Gas (4)

 Nitromethane (1)
 Nitropropane (1)
 N-Octane (3)

 N-Pentane (4)
 Octyl Alcohol (3)
 Oleic Acid (4)

 Oleum (Fuming Sulfuric Acid) (1)
 Oronite 8200 (3)
 Oxalic Acid (3)

 Oxygen, 200-400F (1)
 Oxygen, Cold (3)
 Ozone (1)

 Peanut Oil (4)
 Petroleum Oil (4)
 Phenol (0)

Peanut Oil (4)
Phenylhydrazine (1)
Phosphoric Acid (1)
Phosphoric Trichloride (1)
Phosphoric Trichloride (1)
Phosphoric Trichloride (1)

Pine Oil (3)Potassium Nitrate (4)Potassium Sulfate (4)Producer Gas (4)Propane (4)Propanol (4)

Propyl Acetate (1) Propyl Alcohol (4) Propylene (1) Pydraul, 10E (1) Pydraul, 230C,

Propylene Oxide (1) Pydraul, 10E (1) Pydraul, 230C, 312F, 540C (1)

Pydraul, 30E, 50E, 65E, 90E (1) Pyranol, Transformer Oil (4) Pyrogard 42, 43, 53, 55 (Phosphate Ester)

Radiation (2) Rapeseed Oil (3) Red Oil (4)

Styrene Monomer (3)

RJ-1 (MIL-F-25558) (4)
Silicone Grease (4)
Silicone Oils (4)
Silicone Oils (4)
Silicone Oils (4)
Sodium Bicarbonate (4)
Sodium Carbonate (4)
Sodium Hydroxide (4)
Steam to 350F (1)
Stearic Acid (4)
Sea Water (4)
Silver Nitrate (3)
Sodium Carbonate (4)
Soyabean Oil (4)
Steddard Solvent (4)

Sulfur Dioxide Gas, Dry (1)

Sulfur Dioxide Gas, Wet (1)

Sulfur Dioxide, Liquefied Under Pressure (1)

Sulfur Chloride (1)

Sulfur Hexafluoride (3)

Sulfur Trioxide (1)

Sulfuric Acid (Concentrated) (1)

Sulfurous Acid (2) Tannic Acid (4) Tartaric Acid (4)

Sucrose Solutions (4)

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# **Chemical Compatiblity of Nitrile (Buna-N)**

Tertiary Butyl Alcohol (3)
Tetrabutyl Titanate (3)
Tetraethyl Lead (3)
Toluene (2)
Turbine Oil (3)
Vinegar (3)
Water, Fresh (4)

Xylene (1)

Tertiary Butyl Mercaptan (1)
Tetrachloroethane (1)
Tetrahydrofuran (1)
Transmission Fluid, Type A (4)

Turpentine (4) VV-H-910 (2) Whiskey (4) Tetrabromoethane (1)
Tetrachloroethylene (2)

Tetralin (1)

Varnish (3)

Wagner 21B Brake Fluid (3)

White Pine Tar (3)

Ammonium Chloride (2)

**Chemical Compatibility of Silicone** 

Acetaldehyde (4) Acetamide (2) Acetic Acid. Glacial (4) Acetic Anhydride (2) Acetone (1) Acetophenone (1) Acetyl Chloride (2) Acetylene Gas (2) Acrylonitrile (1) Air below 200 C (4) Alkazene (1) Aluminium Acetate (1) Aluminium Chloride (3) Aluminium Flouride (3) Aluminium Nitrate (3) Ammonia, Anhydrous (2) Ammonia, Gas, Cold (4) Aluminium Sulfate (4)

Ammonium Hydroxide, Concentrated (4) Ammonium Nitrate (2) Ammonium Persulfate Solution (1)

Ammonium Carbonate (2)

Ammonium Phosphate (3)

Ammonium Sulfate (4)

Amyl Acetate (1)

Ammonia, Gas, Hot (4)

Amyl Alcohol (1)

Amyl Borate (1)

Amyl Chloronaphthalene (1)

Aniline (3)
Arachlor 1248 (3)
Argon (3)
Animal Oil (0)
Argon (3)
Aromatic Fuel 50% (1)

 Askarel Transformer Oil (1)
 ASTM Fuel A (1)
 ASTM Fuel B (1)

 ASTM Fuel C (1)
 ASTM Fuel D (1)
 ASTM Oil Four (1)

 ASTM Oil Three (3)
 ASTM Oil Two (0)

Automatic Transmission Fluid (1)

Automotive Brake Fluid (4)

Beer (4)

Benzaldehyde (1) Benzene (1) Benzene Sulfonic Acid (1)

Benzine (Ligroin) (1)Benzoic Acid (0)Benzophenone (1)Benzyl Alcohol (0)Benzyl Benzoate (0)Benzyl Chloride (1)Bleach Liquor (3)Borax Solutions (3)Boric Acid (4)Brake Fluid (0)Bromine Gas (1)Bromobenzene (1)Bunker Oil (0)Butadiene Monomer (1)Butane (1)

Butter (3)Butyl Alcohol (3)Butyl Carbitol (1)Butyl Cellosolve (1)Butyraldehyde (1)Calcium Carbonate (0)Calcium Chloride (4)Calcium Hydroxide (4)Calcium Hypochlorite (3)

Calcium Nitrate (3) | Calcium Sulfide (3) | Carbitol 2 (3)

Carbolic Acid (Phenol) (1) Carbon Disulfide (1) Carbon Monoxide (4)

Carbon Tetrachloride (1)Carbonic Acid (4)Castor Oil (4)Cellosolve (1)China Wood Oil, Tung Oil (1)Chloracetic Acid (0)Chlordane (1)Chlorinated Solvents (1)Chlorine Dioxide (2)

<u>Chlorine Trifluoride (1)</u> <u>Chlorine, Dry (1)</u> <u>Chlorine, Wet (1)</u>

Chloroform (1) Chlorosulfonic Acid (1) Chrome Plating Solution (3)

Chromic Acid (4)

Coffee (4)

Coolanol Monsanto (1)

Cod Liver Oil (3)

Coon Oil (4)

Creosylic Acid (0) Crude Oil (Asphalt Base) (1)

Cyclohexane (1) Denatured Alcohol (4) Diacetone (1)

### **Chemical Compatibility of Silicone**

Diacetone Alcohol (0)

Dibenzyl Ether (0)

Dibutyl Phthalate (3)

Dichloro-Butane (1) Diesel Oil (1) Di-ester Lubricant MIL-L-7808 (1)

Diethylamine (3) Diethylamine Glycol (3) Dimethyl Formamide (2)

Dimethyl Phthalate (0)Dioxane (1)Diphenyl (1)Dow Corning 550 (2)Dow Guard (4)Dowtherm A (4)Elco 28 Lubricant (3)Epoxy Resins (0)Ethane (1)Ethanol (3)Ethyl Acetoacetate (2)Ethyl Alcohol (3)Ethyl Benzene (1)Ethyl Benzoate (1)Ethyl Cellulose (2)

Ethyl Benzene (1)Ethyl Benzoate (1)Ethyl Cellulose (2)Ethyl Chloride (1)Ethyl Chlorocarbonate (1)Ethyl Diamine (4)Ethyl Ether (1)Ethyl Formate (0)Ethyl Hexanol (3)

Ethyl Mercaptan (2) Ethyl Oxalate (1) Ethyl Pentachlorobenzene (1)

Ethyl Silicate (0)Ethylene (0)Ethylene Dichloride (1)Ethylene Glycol (4)Ethylene Oxide (1)Ethylene Trichloride (1)

 Formaldehyde (0)
 Freon 11 (M) (1)
 Freon 112 (1)

 Freon 113 (1)
 Freon 114 (1)
 Freon 114B2 (1)

 Freon 12 (0)
 Freon 13 (1)
 Freon 21 (1)

 Freon 22 (1)
 Freon 31 (0)
 Freon 32 (0)

 Freon 502 (F22+F316) (0)
 Freon C318 (0)
 FREON R134A (0)

Freon TF (1)
Furfural (0)
Gasoline, Automative (1)
Freon TF (1)
Furfuryl Alcohol (1)
Gelatine (4)

Glycerin (4) Grease, Petroleum Base (1)

Helium (4) Heptane (1) Hexane (1)

Hexyl Alcohol (3)
Hydraulic Oil, Petroleum Base (2)

Hydrobromic Acid (0)Hydrobromic Acid, Gas (1)Hydrochloric Acid (0)Hydrocyanic Acid (0)Hydrofluoric Acid (0)Hydrogen Gas (2)Hydrogen Peroxide (1)Hydroquinone (0)Iodine (2)Iso Octane (1)Isobutyl Alcohol (4)Isopropanol (4)

 Iso Octane (1)
 Isobutyl Alcohol (4)
 Isopropanol (4)

 Isopropyl Acetate (1)
 Isopropyl Chloride (1)
 Isopropyl Ether (1)

 JP 3 MIL-J5624 (1)
 JP 4 MIL-J5624 (1)
 JP 5 MIL-J5624 (1)

 JP 6 MIL-J5624 (1)
 Kerosene (1)
 Lacquer Solvents (1)

<u>Lacquers (1)</u> <u>Lard, Animal Fat (3)</u> <u>Lindol, Hydraulic Fluid (Phosphate Ester Type) (2)</u>

Linsed Oil (4) Liquefied Petroleum Gas (LPG) (1)

Lubricating Oils, Petroleum Base (0) Lye (4)

Malathion (1)

Maleic Acid (1)Mercuric Chloride (4)Mercury (4)Methane (0)Methanol (4)Methyl Acetate (1)

# **Chemical Compatibility of Silicone**

Methyl Acrylate (1)Methyl Alcohol (4)Methyl Bromide (0)Methyl Butyl Ketone (1)Methyl Cellosolve (1)Methyl Chloride (1)

Methyl Ether (4) Methyl Ethyl Ketone (MEK) (1) Methyl Isobutyl Ketone (MIBK) (1)

Methyl Mercaptan (0)Methyl Methacrylate (1)Methyl Oleate (0)Methyl Propyl Salicylate (0)Methylacrylic Acid (0)Methylene Chloride (1)MIL-F-25558 (RJ-1) (1)MIL-F-25656 (1)MIL-G-25760 (1)

MIL-H-5606 (1) MIL-H-7083 (4) MIL-J 5624, JP-3, JP-4, JP-5 (1)

 Milk (4)
 MIL-L-25681 (1)
 MIL-R-25576 (RP-1) (1)

 MIL-S-3136, Type 1 Fuel (1)
 MIL-S-81087 (2)
 Mineral Oils (3)

Monovinyl Acetate (1) Naphtha (1) Naphthalene (1) Naphthalenic (1) Natural Gas (0) Neatsfoot Oil (3) N-Hexaldehyde (3) Nitric Acid (0) Nitrobenzene (1) Nitroethane (1) Nitrogen Tetroxide (1) Nitrogen, Gas (4) Nitromethane (1) Nitropropane (1) N-Octane (1) N-Pentane (1) Octyl Alcohol (3) Oleic Acid (1) Oleum (Fuming Sulfuric Acid) (1) Oronite 8200 (1) Oxalic Acid (3)

 Original (Full ling Sulful C Acid) (1)
 Oronic 8200 (1)
 Oxalic Acid

 Oxygen, 200-400F (0)
 Oxygen, Cold (4)
 Ozone (4)

 Peanut Oil (4)
 Petroleum Oil (1)
 Phenol (1)

Phenylhydrazine (0)Phosphoric Acid (1)Phosphoric Trichloride (0)Pine Oil (1)Potassium Nitrate (4)Potassium Sulfate (4)

Propyl Acetate (1)

Propyl Alcohol (4)

Propyl Alcohol (4)

Propylene (1)

<u>Propylene Oxide (1)</u> <u>Pydraul, 10E (1)</u> <u>Pydraul, 230C, 312F, 540C (1)</u>

Pydraul, 30E, 50E, 65E, 90E (4) Pyranol, Transformer Oil (1) Pyrogard 42, 43, 53, 55 (Phosphate Ester) (1)

Radiation (3) Rapeseed Oil (1) Red Oil (1) RJ-1 (MIL-F-25558) (1) RP-1 (MIL-R-25576) (1) Sea Water (4) Silicone Grease (2) Silicone Oils (1) Silver Nitrate (4) Skydrol 500 (2) Sodium Bicarbonate (4) Sodium Carbonate (4) Sodium Chloride (4) Sodium Hydroxide (0) Soyabean Oil (4) Steam to 350F (1) Stearic Acid (3) Stoddard Solvent (1) Styrene Monomer (1) Sucrose Solutions (4) Sulfur Chloride (2)

Sulfur Dioxide Gas, Dry (3)
Sulfur Dioxide Gas, Wet (3)
Sulfur Dioxide, Liquefied Under Pressure (3)

Sulfur Hexafluoride (3) Sulfur Trioxide (3) Sulfuric Acid (Concentrated) (0)

Sulfurous Acid (1)Tannic Acid (3)Tartaric Acid (4)Tertiary Butyl Alcohol (3)Tertiary Butyl Mercaptan (1)Tetrabromoethane (1)

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Tetrabutyl Titanate (0) Tetrachloroethane (1) Tetrachloroethylene (0) Tetraethyl Lead (0) Tetrahydrofuran (1) Tetralin (1) Toluene (1) Transmission Fluid, Type A (3) Turbine Oil (1) Turpentine (1) Varnish (1) Vinegar (4) VV-H-910 (0) Wagner 21B Brake Fluid (2) Whiskey (4) White Pine Tar (1) Water, Fresh (3) Xylene (1)