

This manual contains a list of liquids and their compatibility with materials of construction for oval gear, rotary PD and turbine meters. The list is to be used as a guide to determine type of meter to recommend for a particular fluid. Additional information, such as operating temperature, viscosity, contamination, flow rates, etc., should be known before a final decision is made. The seals and packing for meters are also applicable to valves and other accessories.

***Compatibility Table***

Metals and elastomers noted as:

A–Excellent

B–Good

C–Poor

D–Not Recommended

Blank Space–Insufficient Information

Note 1 Avoid dissimilar metals.

Note 2 For rotary meters recommend LPG trim.

Note 3 C or D rating given due to possible contamination of metered product by metal. Material compatibility may be satisfactory.

The information contained herein is general in nature and while drawn from sources deemed to be reliable and presumed to be accurate, is not guaranteed in any way by TechnipFMC.

Any application to a particular situation requires the use of qualified experts and is subject to limitations which are normally present.

# Specifications of Materials Used in Meters and Valves

## Metals

### 1. Aluminum—ASTM, B-26, SG-70T6

#### Chemical Composition

|                 |            |
|-----------------|------------|
| Copper .....    | 0.20%      |
| Iron .....      | 0.60%      |
| Silicon .....   | 6.57.5%    |
| Manganese ..... | 0.35%      |
| Zinc .....      | 0.30%      |
| Titanium .....  | 0.25%      |
| Magnesium ..... | 0.20-0.40% |
| Others .....    | 0.15%      |
| Aluminum .....  | Remainder  |

Density: 0.10 lb/in<sup>3</sup>.

Thermal Coefficient of Expansion:  $11.9 \times 10^{-6}$  in/in °F.

Chemical Resistance: Organic acids, amines, solvents, alcohols, ketones.

Not Resistant To: hydroxides, acids, acid salts, alkalis.

### 2. Bronze—ASTM, B-145, Alloy 4A

#### Chemical Composition

|              |     |
|--------------|-----|
| Copper ..... | 85% |
| Tin .....    | 5%  |
| Zinc .....   | 5%  |
| Lead .....   | 5%  |

Density: 0.318 lb/in<sup>3</sup>.

Thermal Expansion:  $10.2 \times 10^{-6}$  in/in °F.

Chemical Resistance: Solvents, acetates, esters, alcohols, ketones, petroleum solvents, glycols, aromatic hydrocarbons, and water.

Not Resistant To: Mineral acids, amines, alkalis, hydroxides.

### 3. Cast Iron—ASTM, A-48, Class 25 and 30

#### Chemical Composition

|                   |            |
|-------------------|------------|
| Carbon .....      | 2.75–3.40% |
| Sulfur .....      | 0.08–0.12% |
| Silicon .....     | 2.10–2.30% |
| Phosphorous ..... | 0.15–0.30% |
| Iron .....        | Remainder  |

Density: 0.25 lb/in<sup>3</sup>.

Thermal Coefficient of Expansion:  $6 \times 10^{-6}$  in/in °F.

Chemical Resistance: 93–95% sulfuric acid, alkalis, hydroxides, ammonia, amines, solvents, alcohols, ethers, ketones, petroleum solvents.

Not Resistant To: Organic acids, dilute acids.

### 4. Ductile Iron—ASTM, A-536, Grade 60-40-18

#### Chemical Composition

|                    |             |
|--------------------|-------------|
| Total Carbon ..... | 3.2–4.1%    |
| Phosphorous .....  | 0.015–0.10% |
| Silicon .....      | 1.8–3.0%    |
| Nickel .....       | 0–3%        |
| Manganese .....    | 0.10–1.00%  |

Density: 0.24–0.26 lb/in<sup>3</sup>.

Thermal Coefficient of Expansion:  $6.8 \times 10^{-6}$  in/in °F.

Used in pressure castings for singlecase PD meters and DuraFlow meters, good high temperature applications requiring maximum toughness, and several thermal and mechanical shock.

### 5. Tungsten Carbide—Carboloy 883 or Equivalent

#### Chemical Composition (Bearing Material)

|                        |     |
|------------------------|-----|
| Tungsten Carbide ..... | 94% |
| Cobalt .....           | 6%  |

Hardness: 92 Ra.

Specific Gravity: 14.9.

Thermal Coefficient of Expansion:  $2.5 \times 10^{-6}$  in/in °F.

Temperature Range: -250°F to 400°F.

Chemical Resistance: Due to cobalt binder, tungsten carbide is attacked by acids with Ph of 2–3 but is resistant to alkalis, such as sodium hydroxide, up to 40%.

### 6. Carbon Steel—ASTM, A-216, Grade WCB

#### Chemical Composition

|                   |           |
|-------------------|-----------|
| Carbon .....      | 0.30%     |
| Sulfur .....      | 0.06%     |
| Manganese .....   | 1.00%     |
| Silicon .....     | 0.60%     |
| Phosphorous ..... | 0.05%     |
| Iron .....        | Remainder |

#### Residual Elements

|                  |       |
|------------------|-------|
| Copper .....     | 0.50% |
| Chromium .....   | 0.40% |
| Nickel .....     | 0.50% |
| Molybdenum ..... | 0.25% |

Density: 0.283 lb/in<sup>3</sup>.

Thermal Coefficient of Expansion:  $8.3 \times 10^{-6}$  in/in °F.

Chemical Resistance: High resistance to alkalis, petroleum products.

Not Resistant To: Acids, water.

Used mainly for strength and for high-pressure vessels.

## 7. Carbon Steel—ASTM, A-285, Grade C

### Chemical Composition

|                   |           |
|-------------------|-----------|
| Carbon .....      | 0.35%     |
| Sulfur .....      | 0.06%     |
| Manganese .....   | 0.80%     |
| Silicon .....     | 0.69%     |
| Phosphorous ..... | 0.05%     |
| Iron .....        | Remainder |
| Residual Elements |           |
| Copper .....      | 0.50%     |
| Chromium .....    | 0.40%     |
| Nickel .....      | 0.50%     |
| Molybdenum .....  | 0.25%     |

Density: 0.283 lb/in<sup>3</sup>.

Thermal Coefficient of Expansion:  $8.3 \times 10^{-6}$  in/in °F.

Chemical Resistance: High resistance to alkalis, petroleum products.

Not Resistant To: Acids, water.

Used mainly for strength and for high-pressure vessels.

## 8. Austenitic Stainless Steels

### 316 SS Casting—ASTM, A-295, Grade CF-8M

### 304 SS Wrought—ASTM, A167

### Chemical Composition

#### 316

|                   |            |
|-------------------|------------|
| Carbon .....      | 0.08%      |
| Silicon .....     | 1.50%      |
| Manganese .....   | 1.50%      |
| Chromium .....    | 18.0–21.0% |
| Phosphorous ..... | 0.04%      |
| Nickel .....      | 9.0–12.0%  |
| Sulfur .....      | 0.04%      |
| Molybdenum .....  | 2.0–3.0%   |

#### 304

|                   |            |
|-------------------|------------|
| Carbon .....      | 0.08%      |
| Silicon .....     | 1.0%       |
| Manganese .....   | 2.0%       |
| Chromium .....    | 18.0–20.0% |
| Phosphorous ..... | 0.045%     |
| Nickel .....      | 8.0–12.0%  |
| Sulfur .....      | 0.030%     |

Density: 0.29 lb/in<sup>3</sup>.

Thermal Coefficient of Expansion:  $9.2 \times 10^{-6}$  in/in °F.

Chemical Resistance: Organic acids, amines, hydroxides, food products, fatty acids, anilines, solvents, alcohols, ethers, and ketones.

Not Resistant To: Mineral acids, high concentrations of acid salts.

## 9. ARMCO 17-4 PH Stainless Steel

### Chemical Composition

|                   |            |
|-------------------|------------|
| Carbon .....      | 0.07%      |
| Phosphorous ..... | 0.04%      |
| Chromium .....    | 15.5–17.5% |
| Sulfur .....      | 0.03%      |
| Nickel .....      | 3–5%       |
| Silicon .....     | 1.0%       |
| Copper .....      | 3.5%       |
| Others .....      | 0.15–0.45% |
| Manganese .....   | 1.0%       |

Density: 0.282 lb/in<sup>3</sup>.

Thermal Coefficient of Expansion:  $6.0 \times 10^{-6}$  in/in °F.

Condition H900: 38–44 RC.

Excellent corrosion resistance and high hardness to resist effects of wear and corrosion. Better resistance than 400 series stainless steel, but less than 316 stainless steel.

## 10. Martensitic Stainless Steel—ASTM, A-276, Type 440C SS, Type 416 SS

### Chemical Composition

#### 440C (Hardness - 55–60 Rockwell C)

|                   |            |
|-------------------|------------|
| Carbon .....      | 0.95–1.20% |
| Silicon .....     | 1.0%       |
| Manganese .....   | 1.0%       |
| Chromium .....    | 16–18%     |
| Phosphorous ..... | 0.040%     |
| Molybdenum .....  | 0.75%      |
| Sulfur .....      | 0.030%     |

#### 416 (Hardness - 39–41 Rockwell C)

|                   |        |
|-------------------|--------|
| Carbon .....      | 0.15%  |
| Sulfur .....      | 0.15%  |
| Manganese .....   | 1.25%  |
| Silicon .....     | 1.0%   |
| Phosphorous ..... | 0.060% |
| Chromium .....    | 12–14% |

Density: 0.28 lb/in<sup>3</sup>.

Thermal Coefficient of Expansion:  $5.6 \times 10^{-6}$  in/in °F.

Stainless steel always used in hardened condition for shafts and bearings.

Chemical Resistance: Resistant to water, steam, crude oil, gasoline, alcohols.

## 11. HYMU 80

### Chemical Composition

|                  |           |
|------------------|-----------|
| Carbon .....     | 0.05%     |
| Nickel .....     | 79%       |
| Manganese .....  | 0.50%     |
| Molybdenum ..... | 4%        |
| Silicon .....    | 0.15%     |
| Iron .....       | Remainder |

Density: 0.316 lb/in<sup>3</sup>.

Thermal Coefficient of Expansion:  $7.2 \times 10^{-6}$  in/in °F.

High permeability allow used for electromagnetic devices—can become magnetized in low-strength magnetic field.

Corrosion Resistance: Not as good as chromium steel alloys, and protective coatings are needed to improve resistance.

## 12. Austenitic Stainless Steel—ASTM A479 UNS S 21800, Nitronic 60\*

### Chemical Composition

|                  |            |
|------------------|------------|
| Carbon.....      | 0.03–0.06% |
| Chromium.....    | 20.2–23.5% |
| Manganese.....   | 4.0–6.0%   |
| Nickel.....      | 11.5–13.5% |
| Phosphorous..... | 0.04%      |
| Molybdenum.....  | 1.5–3.0%   |
| Sulfur.....      | 0.03%      |
| Nitrogen.....    | 0.20–0.40% |
| Silicon.....     | 1.0%       |
| Columbium.....   | 0.10–0.30% |
| Vanadium.....    | 0.10–0.30% |

Density: 0.285 lb/in<sup>3</sup>.

Thermal Coefficient of Expansion:  $9.2 \times 10^{-6}$  in/in°C.

Hardness: 31 to 43 Rc.

Chemical Resistance: Excellent resistance to stress corrosion cracking and pitting. Not resistant to mineral acids.

Application: Oval meter shafts, as a substitute for 316 stainless steel, to provide a hard wear-resistant surface and compliance to NACE.

\*Trademark: Armco Inc.

## 13. Hastelloy C265—ASTM B622 N01276

### Chemical Composition

|                 |          |
|-----------------|----------|
| Nickel.....     | 54-56%   |
| Chromium.....   | 14-16%   |
| Tungsten.....   | 3.0-4.5% |
| Molybdenum..... | 15%-17%  |
| Iron.....       | 4.0%-7%  |
| Cobalt.....     | 2.5%     |
| Silicon.....    | 0.08%    |
| Manganese.....  | 1.0%     |
| Carbon.....     | 0.10%    |
| Vanadium.....   | 0.35%    |
| Phosphorus..... | 0.03%    |
| Sulfur.....     | 0.010%   |

Density: 8.89 g/cm<sup>3</sup>

Coefficient of Thermal Expansion:  $7.3 \times 10^{-6}$  in/in°F

Chemical Resistance: Ferric and cupric chlorides, hot contaminated mineral acids, solvent, chlorine and inorganic and organic acids, sea water and brine solutions resistant to pitting and stress corrosion.

Not resistant to: Dilute hydrochloric acid, hydrofluoric acids.

## Platings

### 1. Electroless Nickel

A nickel coating containing 5–10% phosphorous applied by chemical reduction. It can be applied up to 0.003" thick and hardness will be 40 Rockwell C and above. It is resistant to weak acids, salts, and sea water, and is used as a barrier under hard chrome platings.

### 2. Hard Chrome

A hard, dense chromium coating applied electrolytically. It can be applied in thicknesses ranging from 0.0002" to 0.010". Its purpose is mainly wear-resistance when applied on hardened shafts. Its microporosity can be a detriment when used on acid applications.

### 3. Tungsten Carbide (83% Tungsten Carbide 17% Cobalt)

A hard dense thermal spray coating (high velocity oxygen fuel process with cobalt binder). Recommended for severe fretting, sliding and abrasive conditions (bearing applications). Ideal for petroleum applications but not recommended for acidic environments.

## Non-Metals

### Elastomers/Sealants

#### 1. Buna-N

A co-polymer of butadiene and acrylonitrile. It has excellent resistance to petroleum products, water and ethylene glycol-base fluids. It is not recommended for ketones, acids, and halogenated hydrocarbons.

Temperature Range: -40°F to 225°F.

Color Code: Red.

Hardness: 75–90 Durometer.

#### 2. Viton A

A fluoroelastomer composed of vinylidene fluoride and hexafluoro propylene. It contains about 65% fluorine and is recommended for aromatic hydrocarbons, acids, and halogenated hydrocarbons (Trichloroethylene). It is not recommended for ketones and amines.

Temperature Range: 10°F to 400°F.

Color Code: Yellow.

Hardness: 80–90 Durometer.

#### 3. Ethylene Propylene Rubber (EPR)

A co-polymer of ethylene and propylene. It is recommended for ketones, alcohols, water, and steam. It is not recommended for petroleum products as it swells rapidly in contact with these fluids.

Temperature Range: -65°F to 300°F.

Color Code: Green and Red.

Hardness: 75–90 Durometer.

#### 4. Fluorosilicone

A group of elastomers made up of silicon, oxygen, carbon hydrogen, and fluorine. Used mainly as diaphragm material. Excellent resistance to petroleum oils and fluids, mildly resistant to aromatic hydrocarbons and chlorinated solvents. Poor abrasion resistance.

Temperature Range: -80°F to 400°F.

## 5. Polyurethane

Formed by reaction of polyols with diisocyanates. Used in seals of 4-way valve and prover spheres. Resistant to oils, gasoline, and other petroleum-based products. Not recommended for ketones, chlorinated solvents, and water-based solutions.

Temperature Range: -20°F to 180°F.

Thermal Coefficient of Expansion:  $5.5\text{--}10 \times 10^{-5}$  in/in °F.

Specific Gravity: 1.04 to 1.26.

Hardness: 85–90 Shore A.

## 6. Master Gasket\*

A methacrylate ester which, when isolated from air contact, form a flexible polymer seal. It acts as the seal between the single-case meter housing and cover.

It is resistant to glycols, water, oils, gasoline, and diesel fuels but should not be used with sodium and potassium hydroxide, acids, lyes, and ammonia solutions.

Temperature Range: -60°F to 300°F.

\*Trademark: Loctite Company.

## 7. Gylon\*

A filled polytetrafluoroethylene (PTFE<sup>1</sup>) which is compressible and can be formed into diaphragms and gaskets.

It is chemically inert, has good abrasion resistance, and resists cold-flow common to unfilled PTFE<sup>1</sup> materials.

Temperature Range: -350°F to 500°F.

\*Trademark: Garlock Inc.

## 8. Gore Tex\*

A pure, soft polytetrafluoroethylene (PTFE<sup>1</sup>) which is used as a sealant or gasket for irregular surfaces.

Temperature Range: -350°F to 500°F.

\*Trademark: W.L. Gore & Associates, Inc.

## 9. Chemraz\*

An elastomeric PTFE<sup>1</sup> which is used as O-Rings and other types of seals in meters, valves, and accessories. It combines the resilience and low sealing force of an elastomer with the chemical resistance approaching PTFE<sup>1</sup>.

Temperature Range: -20°F to 450°F.

Color Code: Two green stripes.

Hardness: 75–85 Durometer.

\*Trademark: Greene, Tweed and Company.

## Plastics

### 1. PTFE<sup>1</sup>

A fluorocarbon consisting of polytetrafluoroethylene (TFE). This material is relatively inert to most chemicals, has low coefficient of friction, good abrasion resistance and low coefficient of expansion.

Temperature Range: -40°F to 300°F (diaphragm and seal applications).

Color Code: White, milk-like.

Density: 2.22 g/cm<sup>3</sup>.

Thermal Coefficient of Expansion:  $4.8 \times 10^{-5}$  in/in °F.

Temperature Range: -100°F to 400°F.

### 2. Tefzel\*

Tefzel is an injection molding grade of ethylene and tetrafluoroethylene (TFE), modified with glass fibers. It has outstanding chemical resistance, mechanical strength, and abrasion resistance. Very strong oxidizing agents, such as nitric, organic bases, and amines, at their boiling points will affect it to various degrees.

Temperature Range: -100°F to 302°F.

Thermal Coefficient of Expansion:  $5.2 \times 10^{-5}$  in/in °F.

Specific Gravity: 1.70–1.86.

\*Trademark: E.I. Dupont Corporation.

### 3. Rulon\*

Trade name for a family of specially-compounded forms of TFE fluorocarbons. It is used as a bearing material with a low coefficient of friction, excellent abrasion resistance, and chemical resistance equal to TFE. It requires no lubrication and is capable of performing under severe temperatures.

Temperature Range: -400°F to 550°F.

Color Code: Maroon.

\*Trademark: Dixon Corporation.

### 4. Ryton\*

Trade name for material made from polyphenylene sulfide. It is used as engineering plastic with high strength, low coefficient of expansion, high temperature resistance, and good chemical resistance.

Temperature Range: -20°F to 300°F.

Density: 1.34–1.69 g/cm<sup>3</sup>.

Thermal Coefficient of Expansion:  $1.5\text{--}2.0 \times 10^{-5}$  in/in °F.

Not Resistant To: Concentrated sulfuric acid or nitric acids.

\*Trademark: Phillips Petroleum Company.

<sup>1</sup> Polytetrafluoroethylene (PTFE)

## 5. Kynar\*

Trade name for fluoroplastic polyvinylidene fluoride used for coating magnets and other metals in corrosion environments.

Temperature Range: -80°F to 350°F.

Specific Gravity: 1.75.

Thermal Coefficient of Expansion:  $8.5 \times 10^{-5}$  in/in °F.

Resistant To: Acids and bases, solvents, oxidizing agents.

Not Resistant To: Polar solvents such as ketones and esters.

\*Trademark: Pennsalt Chemical Company.

## 6. Nylons

Family of thermoplastic polyamide resins. Used as injection-molded units or fluidized bed powders. Used in meters as functional parts—wear strips, valve guides, exterior parts, bearing retainers, absorbs moistures, not resistant to mineral acids.

Temperature Range: -20°F to 250°F.

Thermal Coefficient of Expansion:  $5.5 \times 10^{-5}$  in/in °F.

## 7. Epoxies

Powder coatings designed for coating interior of pipes, valve float guards, etc., for resistance to dilute acids, alkalines, salts, aliphatic and aromatic hydrocarbons.

Temperature Range: -20°F to 180°F.

Thermal Coefficient of Expansion:  $2.5\text{--}3.6 \times 10^{-5}$  in/in °F.

Not Resistant To: Methylene chloride, phenols, and some mineral acids.

## 8. Peek (Polyetheretherketone)

A high temperature engineering plastic which is compounded with 35% carbon fiber and 5% PTFE<sup>1</sup>. It has excellent mechanical properties. It has excellent resistance to oxygenated hydrocarbons, ethers alcohols reformed gasoline and neat MTBE.

Density: 1.49 g/cm<sup>3</sup>

Coefficient of Thermal Expansion:  $1.7 \times 10^{-5}$  in/in °F

Temperature Range: -40 to 500 °F

\* Vitrex (ICI) Trademark

## Ceramics and Carbon

### 1. Ceramagnet A-19\*

Family of ceramic permanent magnetic materials belonging to group of hard ferrites consisting of Barium Ferrite. Parts are magnetized with multiple poles on OD and ID of ring to transmit torque through a barrier without a mechanical connection, thus eliminating packing glands.

Temperature Range: -20°F to 600°F.

Thermal Coefficient of Expansion:  $10.2 \times 10^{-6}$  in/in °C.

Density: 4.7–5.11 g/cm<sup>3</sup>.

Resistant To: Solvents, salts, petroleum oils, caustics. When immersed in corrosive fluids, the material is encapsulated with Tefzel and Ryton.

\*Trademark: Stackpole Carbon.

### 2. Carbon Pure-Bon (P-6038C2)\*

Resin impregnated carbon-graphite self-lubricating and non-galling material. Remarkable chemical resistance; only strong oxidizing acids, such as fuming nitric, will attack carbon.

Temperature Range: -65°F to 350°F.

Thermal Coefficient of Expansion:  $2.0 \times 10^{-6}$  in/in °F.

Hardness (Scleroscope): 90.

\*Trademark: Pure Carbon Company.

Typical (60°F)

Sp. Gr.

Viscosity

Chemicals

Formula (60°F)

(CPS)

Remarks

<sup>1</sup> Polytetrafluoroethylene (PTFE)



**A - Excellent    B - Good    C - Poor**  
**D - Not Recommended**  
**Blank Space - Insufficient Information**

|                                  |                                                                                                      |           |           | Aluminum | Bronze | Cast Iron | Tungsten Carb. | Carbon Steel | 304SS-17-4PhSS | 316 SS | 440CSS | Buna-N | EPR | Viton | PTFE <sup>1</sup> | Ryton | Carbon | Peek | Hastelloy C-276 | Chemraz                   |
|----------------------------------|------------------------------------------------------------------------------------------------------|-----------|-----------|----------|--------|-----------|----------------|--------------|----------------|--------|--------|--------|-----|-------|-------------------|-------|--------|------|-----------------|---------------------------|
| Abetic Acid                      |                                                                                                      |           |           | A        |        | A         |                |              |                |        |        |        |     |       | A                 | A     | A      | A    | A               | A                         |
| Acetaldehyde                     | CH <sub>3</sub> CHO                                                                                  | 0.783     | 0.22      | B        | D      | C         | A              | C            | A              | A      | A      | C      | A   | D     | A                 | A     | A      | A    | A               | D                         |
| Acetates                         | (CH <sub>3</sub> COO-)                                                                               |           |           | A        | A      | B         | A              | B            | A              | A      | A      | D      | A   | D     | A                 | A     | A      | A    | A               | A                         |
| Acetic Acid (50%)                | CH <sub>3</sub> COOH                                                                                 | 1.057     | 1.22      | C        | D      | D         | C              | D            | A              | A      | D      | B      | B   | D     | A                 | A     | A      | A    | A               | A                         |
| Acetic Acid (Glacial)            | CH <sub>3</sub> COOH                                                                                 | 1.049     |           | A        | B      | D         | C              | D            | A              | A      | B      | B      | B   | D     | A                 | A     | A      | A    | A               | A                         |
| Acetic Anhydride                 | (CH <sub>3</sub> CO) <sub>2</sub> O                                                                  | 1.083     | 0.90      | B        | C      | D         | A              | D            | B              | B      | C      | D      | B   | D     | A                 | A     | A      | D    | A               | A                         |
| Acetone                          | CH <sub>3</sub> COCH <sub>3</sub>                                                                    | 0.797     | 0.31      | B        | A      | A         | A              | A            | B              | B      | B      | D      | A   | D     | A                 | A     | A      | A    | A               | A                         |
| Acrylic Emulsions                |                                                                                                      |           |           | B        | B      | C         | A              | C            | A              | A      | A      | A      |     | A     | A                 | A     | A      | A    | A               | A                         |
| Acrylonitrile                    | H2CCHCN                                                                                              | 0.800     |           | B        | A      | C         | A              | A            | A              | A      | A      | D      | D   | C     | A                 | A     | A      | A    | A               | A                         |
| Alcohol-Allyl                    | CH <sub>2</sub> CHCH <sub>2</sub> OH                                                                 | 0.852     | 1.36      | B        | B      | B         | A              | B            | B              | B      | B      | A      |     |       | A                 | A     | A      | A    | A               | A                         |
| Alcohol-Amyl                     | CH <sub>3</sub> (CH <sub>2</sub> ) <sub>3</sub> CH <sub>2</sub> OH                                   | 0.817     | 4.65      | A        | B      | B         | A              | B            | A              | A      | B      | B      | A   | B     | A                 | A     | A      | A    | B               | A                         |
| Alcohol-Butyl                    | CH <sub>3</sub> (CH <sub>2</sub> ) <sub>2</sub> CH <sub>2</sub> OH (Butanol)                         | 0.810     | 2.94      | A        | B      | B         | A              | B            | A              | A      | B      | A      | B   | A     | A                 | A     | A      | A    | A               | A                         |
| Alcohol-Diacetone                | CH <sub>3</sub> COCH <sub>2</sub> C(CH <sub>3</sub> ) <sub>2</sub> OH                                | 0.940     | 3.20      | A        | B      | B         | A              | B            | A              | A      | B      | D      | A   | D     | A                 | A     | A      | A    | A               | A                         |
| Alcohol-Ethyl                    | C <sub>2</sub> H <sub>5</sub> OH                                                                     | 0.804     | 1.20      | B        | B      | B         | A              | B            | A              | A      | B      | A      | A   | C     | A                 | A     | A      | A    | A               | A                         |
| Alcohol-Furfuryl                 | C <sub>4</sub> H <sub>3</sub> OCH <sub>2</sub> OH                                                    | 1.128     |           | B        | B      | B         | A              | B            | B              | B      | B      | D      | B   | C     | A                 | A     | A      | A    | A               | A                         |
| Alcohol-Isopropyl                | (CH <sub>3</sub> ) <sub>2</sub> CHOH                                                                 | 0.786     |           | B        | B      | B         | A              | B            | B              | B      | B      | B      | A   | A     | A                 | A     | A      | A    | A               | A                         |
| Alcohol-Methyl                   | CH <sub>3</sub> OH                                                                                   | 0.792     | 0.59      | D        | B      | B         | A              | B            | A              | A      | B      | A      | A   | D     | A                 | A     | A      | A    | A               | A                         |
| Aliphatic Solvents               |                                                                                                      |           |           | A        | A      | A         | A              | A            | A              | A      | A      | D      | A   | A     | A                 | A     | A      | A    | A               | A                         |
| Alkyd Resin                      |                                                                                                      |           |           | B        | B      | C         | A              | C            | A              | A      | A      | A      | D   | A     | A                 | A     | A      | A    | A               | A                         |
|                                  |                                                                                                      |           |           |          |        |           |                |              |                |        |        |        |     |       |                   |       |        |      |                 | Viscosity<br>Prime Factor |
| Alkyl Benzene                    | C <sub>2</sub> H <sub>5</sub> -C <sub>6</sub> H <sub>6</sub>                                         |           |           | B        | B      | A         | A              | A            | A              | A      | A      | D      | D   | A     | A                 | A     | A      | A    | A               | A                         |
| Allyl Chloride                   | CH <sub>2</sub> CHCH <sub>2</sub> CL                                                                 | 0.938     |           | D        | B      | B         | B              | B            | B              | B      | B      | A      |     |       | A                 | A     | A      | A    | A               | A                         |
| AluminumAmmonium Sulfate (Alum.) | AlNH <sub>4</sub> (SO <sub>4</sub> ) <sub>2</sub>                                                    | 1.645     |           | D        | D      | D         | D              | D            | B              | A      | D      | A      | A   | A     | A                 | A     | A      | A    | A               | A                         |
| Aluminum Chloride (10%)          | AlCl <sub>3</sub> ·6H <sub>2</sub> O                                                                 | 1.07      |           | D        | D      | D         | D              | D            | B              | A      | D      | A      | A   | A     | A                 | A     | A      | A    | B               | A                         |
| AluminumSodium Sulfate (Aq.)     | Al <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub> ·Na <sub>2</sub> SO <sub>4</sub> ·24H <sub>2</sub> O | 1.67      |           | D        | D      | D         | D              | D            | B              | A      | D      | A      | A   | A     | A                 | A     | A      | A    | A               | A                         |
| Amines                           | (NH <sub>3</sub> )                                                                                   |           |           | C        | D      | B         | A              | B            | A              | A      | A      | B      | B   | D     | A                 | A     | A      | A    | A               | A                         |
| Ammonia (Anh.)                   | NH <sub>3</sub>                                                                                      | 0.77      | 0.25      | B        | D      | B         | B              | A            | A              | A      | A      | B      | A   | D     | A                 | A     | A      | A    | A               | A                         |
| Ammonia Solutions                | NH <sub>4</sub>                                                                                      |           | @ -33°F   | B        | D      | B         | B              | A            | A              | A      | A      | B      | A   | D     | A                 | A     | A      | A    | A               | A                         |
| Ammonium Carbonate               | NH <sub>4</sub> HCO <sub>3</sub>                                                                     |           |           | B        | D      | B         | B              | B            | B              | B      | B      | A      | A   | A     | A                 | A     | A      | A    | A               | A                         |
| Ammonium Chloride (0-24%)        | NH <sub>4</sub> Cl                                                                                   | 1.04-1.06 |           | C        | D      | B         | B              | B            | A              | A      | B      | A      | A   | A     |                   | A     | A      | A    | A               | A                         |
| AmmoniumHydroxide (28%)          | NH <sub>4</sub> OH                                                                                   | 0.900     |           | C        | D      | B         | B              | B            | B              | B      | B      | C      | A   | D     | A                 | A     | A      | A    | A               | A                         |
| AmmoniumHydroxide (34%)          | NH <sub>4</sub> OH                                                                                   | 0.882     |           | C        | D      | B         | B              | B            | B              | B      | B      | D      | A   | D     | A                 | A     | A      | A    | A               | A                         |
| Ammonium Nitrate (8-42%)         | NH <sub>4</sub> NO <sub>3</sub>                                                                      | 1.03      |           | B        | D      | D         | B              | D            | A              | A      | A      | A      | A   | B     | A                 | A     | A      | A    | A               | A                         |
| Ammonium Phosphate               | (NH <sub>4</sub> ) <sub>3</sub> HPO <sub>4</sub>                                                     | 1.61      |           | B        | D      | D         | B              | D            | A              | A      | A      | A      | A   |       | A                 | A     | A      | A    | A               | A                         |
| Ammonium Sulfate                 | (NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>                                                      | 1.28      |           | C        | B      | C         | B              | C            | A              | A      | B      | A      | A   | D     | A                 | A     | A      | A    | A               | A                         |
| Amyl Acetate                     | CH <sub>3</sub> CO <sub>2</sub> C <sub>5</sub> H <sub>11</sub>                                       | 0.879     | 0.89      | B        | B      | C         | A              | C            | A              | A      | A      | D      | A   | D     |                   | A     | A      | A    | A               | A                         |
| Aniline                          | C <sub>6</sub> H <sub>5</sub> NH <sub>2</sub>                                                        | 1.023     | 4.40      | C        | C      | C         | A              | C            | A              | A      | B      | D      | B   | C     | A                 | A     | A      | A    | A               | A                         |
| Anionic Detergents               |                                                                                                      |           |           | A        | A      | A         | A              | A            | A              | A      | A      | A      | D   | A     | A                 | A     | A      | A    | A               | A                         |
| Antimony Trichloride             | SbCl <sub>3</sub>                                                                                    | 3.14      |           | D        | D      | D         | D              | D            | D              | D      | D      |        |     |       | A                 |       |        | A    | A               | A                         |
| Asphalt @ 450°F                  | Bitumens                                                                                             |           | 2,000 SSU | C        | A      | A         | B              | A            | A              | A      | A      | D      | D   | C     | A                 |       | A      | A    | A               | A                         |
|                                  |                                                                                                      |           |           |          |        |           |                |              |                |        |        |        |     |       |                   |       |        |      |                 | Ventilated<br>Ext.        |
| Barium Carbonate                 | BaCO <sub>3</sub>                                                                                    | 3.85      |           | B        | B      | B         | B              | B            | B              | B      | B      | A      | A   | A     | A                 | A     | A      | A    | A               | A                         |
| Barium Chloride (26%)            | BaCl <sub>2</sub> ·2H <sub>2</sub> O                                                                 | 1.27      |           | D        | B      | C         | C              | C            | C              | C      | B      | A      | A   | A     | A                 | A     | A      | A    | A               | A                         |
| Barium Hydroxide                 | Ba(OH) <sub>2</sub>                                                                                  | 1.656     |           | D        | B      | B         | B              | B            | B              | A      | B      | A      | A   | A     | A                 | A     | A      | A    | A               | A                         |
| Barium Sulfate                   | BaSO <sub>4</sub>                                                                                    | 4.25      |           | D        | C      | C         | B              | C            | B              | B      | B      | A      | A   | A     | A                 | A     | A      | A    | A               | A                         |

Note 1: Avoid dissimilar metals.

1 Polytetrafluoroethylene (PTFE)

**A - Excellent    B - Good    C - Poor**  
**D - Not Recommended**  
**Blank Space - Insufficient Information**

| Chemicals                  | Formula                                                                                                        | Sp. Gr. (60°F) | Typical Viscosity (60°F) (CPS) | Aluminum | Bronze | Cast Iron | Tungsten Carb. | Carbon Steel | 304SS-17-4PHSS | 316 SS | 440CSS | Buna-N | EPR | Viton | PTFE <sup>1</sup> | Ryton | Carbon | Peek | Hastelloy C-276 | Chemraz | Remarks              |
|----------------------------|----------------------------------------------------------------------------------------------------------------|----------------|--------------------------------|----------|--------|-----------|----------------|--------------|----------------|--------|--------|--------|-----|-------|-------------------|-------|--------|------|-----------------|---------|----------------------|
| Barium Sulfide             | BaS                                                                                                            | 4.25           |                                | D        | C      | C         | B              | C            | B              | B      | B      | A      | A   | A     | A                 | A     | A      | A    | A               | A       |                      |
| Beef Tallow                |                                                                                                                |                |                                | D        | D      | B         | A              | B            | A              | A      | A      | A      | B   | A     | A                 | A     | A      | A    | A               | A       | Steam Clean          |
| Beer                       |                                                                                                                |                |                                | A        | B      | C         | A              | C            | A              | A      | A      | A      | A   | A     | A                 | A     | A      | A    | A               | A       | SS Meter Preferred   |
| Beet Sugar Liquors         | Sucrose                                                                                                        |                |                                | A        | A      | B         | A              | B            | A              | A      |        | A      | A   | A     | A                 | A     | A      | A    | A               | A       |                      |
| Benzaldehyde               |                                                                                                                |                |                                | A        | A      | A         | A              | A            | A              | A      | A      |        |     |       | A                 | A     | A      |      | A               | A       |                      |
| Benzene                    | C <sub>6</sub> H <sub>6</sub>                                                                                  | 0.879          | 0.652                          | B        | B      | B         | A              | B            | B              | B      | B      | D      | D   | A     | A                 | A     | A      | A    | A               | A       |                      |
| Benzoic Acid               | C <sub>6</sub> H <sub>5</sub> COOH                                                                             | 1.265          |                                | B        | B      | D         | B              | D            | B              | B      | B      | D      | D   | A     | A                 | A     | A      | A    | A               | A       |                      |
| Benzyl Alcohol             | C <sub>6</sub> H <sub>5</sub> CH <sub>2</sub> OH                                                               | 1.040          |                                | B        | B      | A         | A              | A            | B              | B      | B      | D      | B   | A     | A                 | A     | A      | A    | A               | A       |                      |
| Boric Acid                 | H <sub>3</sub> BO <sub>3</sub>                                                                                 | 1.434          |                                | B        | B      | D         | B              | D            | A              | A      | B      | A      | A   | A     | A                 | A     | A      | A    | A               | A       |                      |
| Butadiene                  | C <sub>4</sub> H <sub>6</sub>                                                                                  | 0.621          |                                | A        | C      | B         | A              | B            | A              | A      | A      |        |     | A     | A                 | A     | A      | A    | A               | A       | Note 2               |
| Butane                     | C <sub>4</sub> H <sub>10</sub>                                                                                 | 0.599          |                                | A        | A      | B         | A              | B            | A              | A      | A      | A      | D   | A     | A                 | A     | A      | A    | A               | A       | Note 2               |
| Butyl Acetate              | CH <sub>3</sub> COOC <sub>4</sub> H <sub>9</sub>                                                               | 0.875          | 0.732                          | B        | B      | A         | A              | B            | B              | B      | B      | D      | B   | D     | A                 | A     | A      | A    | A               | A       |                      |
| Butylene                   | C <sub>4</sub> H <sub>8</sub>                                                                                  | 0.595          |                                | A        | A      | A         | A              | A            | A              | A      | A      | B      | D   | A     | A                 | A     | A      | A    | A               | A       | Note 2               |
| Butylene Glycol            | HOCH <sub>2</sub> CH <sub>2</sub> CH(OH)CH <sub>3</sub>                                                        | 1.00           |                                | A        | A      | A         | A              | A            | A              | A      | A      | A      |     | A     | A                 | A     | A      | A    | A               | A       |                      |
| Butylethyl Ketone          | C <sub>4</sub> H <sub>9</sub> COC <sub>2</sub> H <sub>5</sub>                                                  | 0.819          |                                | A        | A      | A         | A              | A            | A              | A      | A      | D      | A   | D     | A                 | A     | A      | A    | A               | A       |                      |
| Butylaldehyde              | CH <sub>3</sub> (CH <sub>2</sub> )CHO                                                                          | 0.804          | 0.43                           | A        | A      | A         | A              | A            | A              | A      | A      | D      | B   | D     | A                 | A     | A      | A    | A               | A       | B                    |
| Butyrcellosolve            | CH <sub>2</sub> OHCH <sub>2</sub> OC <sub>4</sub> H <sub>9</sub>                                               | 0.901          | 6.40                           | A        | A      | A         | A              | A            | A              | A      | A      | D      | B   | D     | A                 |       | A      | A    | A               | A       |                      |
| Butyric Acid               | C <sub>4</sub> H <sub>2</sub> OOH                                                                              | 0.958          | 1.61                           | B        | C      | D         | B              | D            | B              | B      | C      | D      | B   | B     | A                 |       | A      | A    | A               | A       |                      |
| Buttermilk                 |                                                                                                                |                |                                | A        | D      | D         | B              | D            | A              | A      | A      | A      | A   | A     | A                 | A     | A      | A    | A               | A       |                      |
| Bunker Oils                |                                                                                                                |                |                                | A        | B      | B         | A              | A            | A              | A      | A      | A      | D   | A     | A                 | A     | A      | A    | A               | A       |                      |
| Calcium Chloride (38%)     | CaCl·6H <sub>2</sub> O                                                                                         | 1.33           |                                | D        | B      | D         | B              | D            | B              | B      | C      | A      | A   | A     | A                 | A     | A      | A    | A               | A       | Note 1               |
| Calcium Hydroxide          | Ca(OH) <sub>2</sub>                                                                                            | 2.34           |                                | D        | C      | C         | B              | C            | B              | B      | B      | A      | A   | A     | A                 | A     | A      | A    | A               | A       |                      |
| Calcium Hypochlorite (Aq.) | Ca(OCl) <sub>2</sub>                                                                                           |                |                                | C        | D      | D         | C              | D            | C              | C      | C      | B      | A   | A     | A                 | D     | A      | D    | C               | A       | Hastelloy C          |
| Calcium Nitrate (Aq.)      | Ca(NO <sub>3</sub> ) <sub>2</sub> ·4H <sub>2</sub> O                                                           | 1.82           |                                | D        | B      | B         | B              | B            | A              | A      | A      | A      | A   | A     | A                 | A     | A      | A    | A               | A       | Note 1               |
| Calcium Sulfate (10%)      | CaSO <sub>4</sub>                                                                                              | 2.45           | 14 CPS                         | B        | B      | B         | B              | B            | A              | A      | A      | B      | A   | A     | A                 | A     | A      | A    | B               | A       | Note 1               |
| Camphene                   | C <sub>10</sub> H <sub>16</sub>                                                                                | 0.833          |                                | B        | B      | B         | B              | B            | B              | B      | B      | A      | D   | A     | A                 | A     | A      | A    | A               | A       |                      |
| Carbolic Acid (20%)        | Phenol                                                                                                         | 1.07           | 65 SSU                         | A        | A      | D         | B              | D            | A              | A      | B      | D      | B   | A     | A                 |       | A      |      | A               | A       | Note 3               |
| Capric Acid                | CH <sub>3</sub> (CH <sub>2</sub> ) <sub>8</sub> COOH                                                           | 0.885 @ 40°C   |                                | B        | B      | B         | C              | B            | C              | A      | B      | B      | C   | A     | A                 |       | A      | A    | A               | A       |                      |
| Caproic Acid               | CH <sub>3</sub> (CH <sub>2</sub> ) <sub>4</sub> COOH                                                           | 0.927 @ 20°C   | 3.10                           | A        | C      | D         | B              | D            | A              | A      | B      | B      | C   | A     | A                 |       | A      | A    | A               | A       | Fatty Acid           |
| Caprylic Acid              | CH <sub>3</sub> (CH <sub>2</sub> ) <sub>6</sub> COOH                                                           | 0.915 @ 20°C   |                                | A        | C      | D         | B              | D            | A              | A      | B      | B      | C   | A     | A                 |       | A      | A    | A               | A       | Fatty Acid           |
| Carbitol                   | C <sub>4</sub> H <sub>9</sub> OC <sub>2</sub> H <sub>4</sub> OC <sub>2</sub> H <sub>4</sub> OH                 | 0.953          | 6.40                           | A        | A      | A         | A              | A            | A              | A      | A      | B      | B   | B     | A                 | A     | A      | A    | A               | A       |                      |
| Carbitol Acetate           | CH <sub>3</sub> COOC <sub>2</sub> H <sub>4</sub> OC <sub>2</sub> H <sub>4</sub> OC <sub>2</sub> H <sub>5</sub> | 1.01           | 2.70                           | A        | A      | A         | A              | A            | A              | A      | A      | D      | B   | D     | A                 |       | A      | A    | A               | A       |                      |
| Carbon Dioxide             | CO <sub>2</sub>                                                                                                | 1.10 @ -37°C   |                                | A        | A      | A         | A              | A            | A              | A      | A      | A      | B   | B     | A                 |       | A      | A    | A               | A       | Note 2               |
| Carbonic Acid              | H <sub>2</sub> CO <sub>3</sub>                                                                                 | 2.44           |                                | A        | D      | C         | A              | A            | A              | A      | A      | B      | A   | A     | A                 |       | A      | A    | A               | A       | Exists Only in Solid |
| Carbon Tetrachloride (Dry) | CCl <sub>4</sub>                                                                                               | 1.59           | 1.03                           | C        | C      | C         | A              | C            | A              | A      | C      | B      | D   | A     | A                 | A     | A      | A    | A               | A       |                      |
| Carbon Disulphide          | CS <sub>2</sub>                                                                                                | 1.26           | 0.36                           | A        | C      | B         | B              | B            | A              | A      | B      | A      | D   | A     | A                 | A     | A      | A    | A               | A       | Note 1               |
| Castor Oil                 |                                                                                                                | 0.969          | 98.0                           | A        | A      | A         | A              | A            | A              | A      | A      | B      | A   | A     | A                 | A     | A      | A    | A               | A       |                      |
| Cellosolve                 | HOC <sub>2</sub> H <sub>4</sub> OC <sub>4</sub> H <sub>9</sub>                                                 | 0.901          | 6.40                           | A        | A      | A         | A              | A            | A              | A      | A      | D      | B   | D     | A                 |       | A      | A    | A               | A       |                      |
| Cellosolve Acetate         | CH <sub>3</sub> COOC <sub>2</sub> H <sub>4</sub> OC <sub>2</sub> H <sub>5</sub>                                | 0.978          | 1.32                           | A        | A      | A         | A              | A            | A              | A      | A      | D      | B   | D     | A                 | A     | A      | A    | A               | A       |                      |
| Cerotic Acid               | CH <sub>3</sub> (CH <sub>2</sub> ) <sub>24</sub> COOH                                                          | 0.819 @ 100°C  |                                | A        | C      | D         | C              | D            | A              | A      | B      | B      | C   | A     | A                 |       | A      | A    | A               | A       |                      |
| Cetane                     | Hexadecane                                                                                                     | 0.773          |                                | A        | A      | A         | A              | A            | A              | A      | A      | A      | D   | A     | A                 | A     | A      | A    | A               | A       |                      |
| Chlorinated Solvents       |                                                                                                                |                |                                | A        | A      | A         | A              | A            | A              | A      | A      | D      | D   | A     | A                 |       | A      | A    | A               | A       | No Water Present     |
| Chlorine (Dry)             | CL <sub>2</sub>                                                                                                | 1.46           |                                | D        | D      | B         | D              | C            | B              | B      | B      | D      | D   | A     | A                 | D     | A      | D    | A               | A       | No Moisture Present  |

Note 1: Avoid dissimilar metals.  
 Note 2: For rotary meters recommend LPG trim.  
 Note 3: C or D rating given due to possible contamination of metered product by metal. Material compatibility may be satisfactory.  
 1 Polytetrafluoroethylene (PTFE)



**A - Excellent    B - Good    C - Poor**  
**D - Not Recommended**  
**Blank Space - Insufficient Information**

| Chemicals                   | Formula                                                                                     | Sp. Gr. (60°F) | Typical Viscosity (60°F) (CPS) | Aluminum | Bronze | Cast Iron | Tungsten Carb. | Carbon Steel | 304SS-17-4PhSS | 316 SS | 440CSS | Buna-N | EPR | Viton | PTFE <sup>1</sup> | Ryton | Carbon | Peek | Hastelloy C-276 | Chemraz | Remarks               |
|-----------------------------|---------------------------------------------------------------------------------------------|----------------|--------------------------------|----------|--------|-----------|----------------|--------------|----------------|--------|--------|--------|-----|-------|-------------------|-------|--------|------|-----------------|---------|-----------------------|
| Chloroacetic Acid           | CH <sub>2</sub> ClCOOH                                                                      | 1.370 @ 70°C   |                                | D        | D      | D         | D              | D            | D              | D      | D      | D      | B   | D     | A                 | D     | A      |      | A               | A       | Hastelloy             |
| Chlorobenzene               | C <sub>6</sub> H <sub>5</sub> Cl                                                            | 1.105 @ 25°C   | 0.79                           | B        | B      | B         | A              | B            | B              | B      | B      | D      | D   | A     | A                 | B     | A      | A    | A               | A       |                       |
| Chloroform (Dry)            | CHCl <sub>3</sub>                                                                           | 1.485 @ 20°C   | 0.58                           | D        | B      | B         | A              | B            | A              | A      | A      | D      | D   | A     | A                 | A     | A      | A    | A               | A       | Note 1                |
| Chlorosulfonic Acid         | ClSO <sub>2</sub> OH                                                                        | 1.76 @ 20°C    |                                | B        | B      | B         | D              | B            | B              | B      | D      | D      | D   | D     | A                 | D     | A      | A    | A               | A       |                       |
| Chlorothene                 | CH <sub>3</sub> CCl <sub>3</sub>                                                            | 1.319 @ 25°C   |                                | A        | A      | A         | A              | A            | A              | A      | A      | D      |     | A     | A                 | B     | A      | A    | A               | A       |                       |
| Chromic Acid                | H <sub>2</sub> CrO <sub>4</sub>                                                             | 2.67           |                                | D        | D      | D         | D              | D            | C              | C      | D      | B      | D   | A     | A                 | D     | A      | D    | D               | A       | Lead, Alloy 20        |
| Citric Acid                 | C <sub>3</sub> H <sub>4</sub> OH(COOH) <sub>3</sub>                                         | 1.54           |                                | C        | D      | D         | C              | D            | A              | A      | D      | A      | A   | A     | A                 | A     | A      | A    | A               | A       |                       |
| Coca Cola                   |                                                                                             |                |                                |          |        |           | A              |              | A              | A      | A      |        |     | A     | A                 | A     | A      | A    | A               | A       |                       |
| Coconut Oil                 |                                                                                             | 0.925          | 27.0                           | B        | B      | C         | A              | C            | A              | A      | B      | A      | A   | A     | A                 | A     | A      | A    | A               | A       | Note 3                |
| Codliver Oil                |                                                                                             | 0.918          | 160 SSU                        | A        | A      | D         | A              | D            | A              | A      | B      | A      | A   | A     | A                 | A     | A      | A    | A               | A       | Note 3                |
| Copper Nitrate 5–50%        | Cu(NO <sub>3</sub> ) <sub>2</sub> ·3H <sub>2</sub> O                                        | 2.174          |                                | D        | D      | D         | D              | D            | A              | A      | B      |        |     | A     | A                 | A     | A      | A    | A               | A       |                       |
| Copper Sulfate              | CuSO <sub>4</sub> ·5H <sub>2</sub> O                                                        | 2.284          |                                | C        | D      | D         | C              | D            | B              | B      | B      | A      | A   | A     | A                 | A     | A      | A    | A               | A       |                       |
| Cottonseed Oil              |                                                                                             | 0.915–0.921    | 70.4                           | B        | B      | C         | A              | C            | B              | B      | B      | A      | C   | A     | A                 | A     | A      | A    | A               | A       | No Cd. Plating Note 3 |
| Corn Oil                    | (Fatty Acid)                                                                                | 0.914–0.921    | 26.0*                          | B        | B      | C         | A              | C            | A              | B      | B      | A      | C   | A     | A                 | A     | A      | A    | A               | A       | *Vis. @ 130°F Note 3  |
| Cresylic Acid (50%)         | (Cresol)                                                                                    | 1.034          |                                | C        | C      | D         | C              | C            | B              | B      | A      | D      | D   | A     | A                 |       | A      |      | A               | A       |                       |
| Creosote                    | (Coal Tar)                                                                                  | 1.04–1.10      | 12.0                           | B        | A      | B         | A              | B            | A              | A      | A      | A      | D   | A     | A                 | A     | A      | A    | A               | A       |                       |
| Crude Oil (Sweet)           | 0.2–0.5% Sulfur                                                                             |                |                                | A        | B      | B         | A              | A            | A              | A      | A      | B      | D   | A     | A                 | A     | A      | A    | A               | A       |                       |
| Crude Oil (Sour)            | 0.5–2.5% Sulfur                                                                             |                |                                | A        | D      | B         | B              | B            | A              | A      | B      | B      | D   | A     | A                 | A     | A      | A    | A               | A       | Note 1                |
| Cryogenics                  | Liquid O <sub>2</sub> , N <sub>2</sub> , CO <sub>2</sub>                                    |                |                                | A        | D      | D         | A              | D            | A              | A      | B      | D      | D   | D     | A                 | D     | D      |      | A               | D       |                       |
| Cumene                      | C <sub>6</sub> H <sub>5</sub> CH(CH <sub>3</sub> ) <sub>2</sub>                             | 0.862          | 0.73                           | B        | B      | A         | B              | B            | B              | B      | B      | D      | D   | A     | A                 | D     | A      | A    | A               | A       |                       |
| Cupric Chloride             | CuCl <sub>2</sub> ·2H <sub>2</sub> O                                                        | 2.39           |                                | D        | D      | D         | D              | D            | D              | D      | D      | A      | A   | A     | A                 | A     | A      | A    | A               | A       |                       |
| Cuprous Chloride            | CuCl                                                                                        | 3.35           |                                | D        | D      | D         | D              | D            | D              | D      | D      | A      | A   | A     | A                 | A     | A      | A    | A               | A       |                       |
| Cutting Oil-Water Emulsions |                                                                                             |                |                                | A        | A      | B         | A              | B            | A              | A      | A      | A      | D   | A     | A                 | A     | A      | A    | A               | A       |                       |
| Cyclo Hexane                | C <sub>6</sub> H <sub>12</sub>                                                              | 0.779          | 1.02                           | A        | A      | A         | A              | A            | A              | A      | A      | A      | D   | A     | A                 | A     | A      | A    | A               | A       |                       |
| Cyclo Hexanone              | C <sub>6</sub> H <sub>10</sub> O                                                            | 0.943          |                                | B        | B      | B         | A              | D            | B              | B      | B      | D      | B   | D     | A                 | A     | A      | A    | A               | A       |                       |
| D.D.T.                      | (ClC <sub>6</sub> H <sub>4</sub> ) <sub>2</sub> CHCCL <sub>3</sub>                          |                |                                | D        | D      | A         | A              | A            | A              | A      | A      | B      | D   | A     | A                 | A     | A      | A    | A               | A       |                       |
| Decyl Alcohol               | C <sub>10</sub> H <sub>21</sub> OH                                                          | 0.829          |                                | A        | A      | A         | A              | A            | A              | A      | A      |        |     | A     | A                 | A     | A      | A    | A               | A       |                       |
| Denatured Alcohol           | (Denatured Ethyl Alcohol)                                                                   |                |                                | A        | A      | A         | A              | A            | A              | A      | A      | A      | A   | A     | A                 | A     | A      | A    | A               | A       |                       |
| Diammonium Phosphate        | Ammonium Phosphate                                                                          | 1.61           |                                | B        | D      | D         | D              | D            | A              | A      | B      | A      | A   |       | A                 | A     | A      | A    | A               | A       |                       |
| Diocetylphthalate           | (C <sub>6</sub> H <sub>17</sub> COO) <sub>2</sub> C <sub>6</sub> H <sub>4</sub>             | 0.965          |                                | B        | A      | B         | A              | B            | B              | A      | B      | D      | B   | B     | A                 | A     | A      | A    | A               | A       |                       |
| Dibutyl Phthalate           | C <sub>6</sub> H <sub>4</sub> (COOC <sub>4</sub> H <sub>9</sub> ) <sub>2</sub>              | 1.048 @ 20°C   | 20.0                           | B        | B      | B         | A              | B            | B              | A      | B      | D      | B   | B     | A                 | A     | A      | A    | A               | A       |                       |
| Dichloroethyl Ether         | C <sub>2</sub> H <sub>4</sub> ClOC <sub>2</sub> H <sub>4</sub> Cl                           | 1.222          | 2.95                           | A        | A      | A         | A              | A            | A              | A      | A      | D      | C   | C     | A                 |       | A      | A    | A               | A       |                       |
| Dichloro Propane            | CH <sub>3</sub> CHClCH <sub>2</sub> Cl                                                      | 1.158          | 0.88                           | B        | B      | A         | A              | A            | A              | A      | A      | B      | D   | A     | A                 | A     | A      | A    | A               | A       |                       |
| Diethanol Amine             | (HOCH <sub>2</sub> CH <sub>2</sub> ) <sub>2</sub> NH                                        | 1.092          |                                | A        | D      | A         | A              | A            | A              | A      | A      | B      | B   | D     | A                 |       | A      | A    | A               | A       | Note 1                |
| Diethyl Aniline             | (C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> C <sub>6</sub> H <sub>3</sub> NH <sub>2</sub> | 0.959          |                                | B        | D      | A         | A              | A            | B              | B      | B      | D      | A   | D     | A                 |       | A      | A    | A               | A       | Note 1                |
| Diethyl Ketone              | C <sub>2</sub> H <sub>5</sub> COC <sub>2</sub> H <sub>5</sub>                               | 0.816          |                                | A        | A      | A         | A              | A            | A              | A      | A      | D      | A   | D     | A                 | A     | A      | A    | A               | A       |                       |
| Diethylene Glycol           | C <sub>4</sub> H <sub>8</sub>                                                               |                |                                | A        | A      | A         | A              | A            | A              | A      | A      | A      | A   | A     | A                 | A     | A      | A    | A               | A       | Hygroscopic Liquid    |
| Diethylene Triamine         | (NH <sub>2</sub> C <sub>2</sub> H <sub>4</sub> ) <sub>2</sub> NH                            | 0.954          | 7.0                            | A        | D      | A         | A              | A            | A              | A      | A      | B      | B   | D     | A                 | A     | A      | A    | A               | A       | Note 1                |
| Diethyl Sulfate             | (C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> SO <sub>4</sub>                               | 1.180          | 1.79                           | A        | A      | A         | B              | A            | A              | A      | A      | A      |     | A     | A                 |       | A      | A    | A               | A       | Anhydrous             |
| Di-octyl Adipate            | D.O.A.                                                                                      | 0.926          | 13.7                           | D        | D      | A         | A              | A            | A              | A      | A      | D      | B   | B     | A                 | A     | A      | A    | A               | A       |                       |
| Dipentene                   | C <sub>10</sub> H <sub>16</sub>                                                             | 0.847 @ 15°C   |                                | A        | A      | A         | A              | A            | A              | A      | A      | D      | D   | A     | A                 | A     | A      | A    | A               | A       |                       |

Note 1: Avoid dissimilar metals.

Note 3: C or D rating given due to possible contamination of metered product by metal. Material compatibility may be satisfactory.

1 Polytetrafluoroethylene (PTFE)

**A - Excellent    B - Good    C - Poor**  
**D - Not Recommended**  
**Blank Space - Insufficient Information**

| Chemicals                         | Formula                                                                                          | Sp. Gr. (60°F) | Typical Viscosity (60°F) (CPS) | Aluminum | Bronze | Cast Iron | Tungsten Carb. | Carbon Steel | 304SS-17-4PHSS | 316 SS | 440CSS | Buna-N | EPR | Viton | PTFE <sup>1</sup> | Ryton | Carbon | Peek | Hastelloy C-276 | Chemraz | Remarks                    |
|-----------------------------------|--------------------------------------------------------------------------------------------------|----------------|--------------------------------|----------|--------|-----------|----------------|--------------|----------------|--------|--------|--------|-----|-------|-------------------|-------|--------|------|-----------------|---------|----------------------------|
| Diisobutyl Ketone                 | C <sub>4</sub> H <sub>9</sub> COC <sub>4</sub> H <sub>9</sub>                                    | 0.808          |                                | A        | A      | A         | A              | A            | A              | A      | D      | A      | D   | A     | A                 | A     | A      | A    | A               | A       |                            |
| Dimethylamine                     | (CH <sub>3</sub> ) <sub>2</sub> NH                                                               | 0.686          |                                | A        | D      | A         | A              | A            | A              | A      | B      | B      | D   | A     | B                 | A     | A      | A    | A               | A       | Note 1                     |
| Dimethyl Formamide                | HCON(CH <sub>3</sub> ) <sub>2</sub>                                                              | 0.953          |                                | D        | D      | A         | A              | A            | A              | A      | D      | B      | B   | A     | A                 | A     | A      | A    | A               | B       |                            |
| Dioxane                           | C <sub>4</sub> H <sub>8</sub> O <sub>2</sub>                                                     | 1.035 @ 20°C   | 1.31                           | B        | A      | A         | A              | A            | A              | A      | D      | B      | D   | A     | A                 | A     | A      | A    | A               | A       |                            |
| Dipropylene Glycol                | (C <sub>3</sub> H <sub>6</sub> OH) <sub>2</sub> O                                                | 1.025          | 107.0                          | A        | A      | A         | A              | A            | B              | B      | B      | A      | A   | A     | A                 | A     | A      | A    | A               | A       |                            |
| Dodecyl Benzene                   | Detergent                                                                                        |                |                                | A        | A      | A         | A              | A            | A              | A      | D      | D      | A   | A     | A                 | A     | A      | A    | A               | A       |                            |
| Dowtherms                         | Diphenyl Oxides                                                                                  | 1.060          |                                | A        | A      | B         | A              | B            | A              | A      | A      | D      | D   | A     | A                 |       | A      | A    | A               | A       |                            |
| Ethane                            | C <sub>2</sub> H <sub>6</sub>                                                                    | 0.446          |                                | A        | A      | A         | A              | A            | A              | A      | A      | D      | A   | A     | A                 | A     | A      | A    | A               | A       | Note 2                     |
| Ether Dimethyl                    | CH <sub>3</sub> OCH <sub>3</sub>                                                                 | 0.661          | 0.23                           | B        | B      | B         | B              | A            | A              | A      | D      | C      | C   | A     | A                 | A     | A      | A    | A               | A       |                            |
| Ethers                            | (C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> O                                                  | 0.736          | 0.23                           | B        | B      | B         | A              | B            | A              | A      | D      | C      | C   | A     | A                 | A     | A      | A    | A               | A       |                            |
| Ethanol Amine                     | HOCH <sub>2</sub> CH <sub>2</sub> NH <sub>2</sub>                                                | 1.017          |                                | A        | D      | B         | A              | B            | A              | B      | B      | B      | B   | D     | A                 | A     | A      | A    | A               | A       | Note 1                     |
| Ethyl Acetate                     | CH <sub>3</sub> COOC <sub>2</sub> H <sub>5</sub>                                                 | 0.883          | 0.45                           | A        | C      | C         | A              | B            | B              | B      | B      | D      | B   | D     | A                 | A     | A      | A    | A               | A       |                            |
| Ethyl Acrylate                    | CH <sub>2</sub> CHCOOC <sub>2</sub> H <sub>5</sub>                                               | 0.92           |                                | A        | A      | A         | A              | A            | A              | A      | D      | B      | D   | A     | A                 | A     | A      | A    | A               | A       |                            |
| Ethyl Amine                       | CH <sub>3</sub> CH <sub>2</sub> NH <sub>2</sub>                                                  | 0.689          |                                | A        | D      | B         | A              | B            | A              | B      | B      | B      | B   | D     | A                 | A     | A      | A    | A               | A       | Note 1                     |
| Ethyl Aniline                     | C <sub>2</sub> H <sub>5</sub> NHC <sub>6</sub> H <sub>5</sub>                                    | 0.963          | 2.04                           | B        | D      | A         | A              | A            | B              | B      | B      | D      | A   | D     | A                 | A     | A      | A    | A               | A       |                            |
| Ethyl Benzene                     | C <sub>6</sub> H <sub>5</sub> C <sub>2</sub> H <sub>5</sub>                                      | 0.867          | 0.64                           | A        | B      | B         | A              | A            | B              | B      | B      | D      | A   | A     | A                 | A     | A      | A    | A               | A       | Note 2                     |
| Ethyl Chloride (Dry)              | C <sub>2</sub> H <sub>5</sub> Cl                                                                 | 0.921          |                                | B        | B      | B         | B              | B            | A              | A      | A      | A      | A   | A     | A                 | A     | A      | A    | D               | A       | Note 2                     |
| Ethyl Chloride (Wet)              | C <sub>2</sub> H <sub>5</sub> Cl                                                                 | 0.921          |                                | D        | C      | D         | C              | D            | C              | C      | D      | A      | A   | A     | A                 | A     | A      | A    | D               | A       | Note 2                     |
| Ethyl Ether                       | (C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> O                                                  | 0.714          | 0.23                           | B        | B      | B         | B              | A            | A              | A      | D      | C      | C   | A     | A                 | A     | A      | A    | A               | A       |                            |
| Ethyl Hexanol                     | CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> COH(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> | 0.83           |                                | B        | B      | A         | A              | A            | A              | A      | A      | A      | A   | A     | A                 | A     | A      | A    | A               | A       |                            |
| Ethyl Lactate                     | CH <sub>3</sub> CHOHCOOC <sub>2</sub> H <sub>5</sub>                                             | 0.1020         |                                | B        | B      | B         | B              | B            | B              | B      | B      | A      |     | A     | A                 | A     | A      | A    | A               | A       |                            |
| Ethyl Mercaptan                   | C <sub>2</sub> H <sub>5</sub> SH                                                                 | 0.839          |                                | B        | D      | A         | B              | D            | B              | B      | B      | D      | D   | A     | A                 | A     | A      | A    | A               | A       | Note 1                     |
| Ethyl Propyl Myristate            | CH <sub>3</sub> (CH <sub>2</sub> ) <sub>12</sub> COOC <sub>2</sub> H <sub>5</sub>                |                |                                | A        | A      | A         | A              | A            | A              | A      | D      | A      | D   | A     | A                 | A     | A      | A    | A               | A       |                            |
| Ethyl Propyl Palmitate            | C <sub>2</sub> H <sub>5</sub> (CH <sub>2</sub> ) <sub>14</sub> COOC <sub>2</sub> H <sub>5</sub>  | 0.83           |                                | A        | A      | A         | A              | A            | A              | A      | D      | A      | D   | A     | A                 | A     | A      | A    | A               | A       |                            |
| Ethylene Chlorohydrin             | ClCH <sub>2</sub> CH <sub>2</sub> OH                                                             | 1.204          | 3.4                            | D        | B      | B         | B              | B            | B              | B      | B      | D      | B   | A     | A                 | A     | A      | A    | A               | A       |                            |
| Ethylene Cyanohydrin              | HOCH <sub>2</sub> CH <sub>2</sub> CN                                                             | 1.04           |                                | B        | B      | B         | B              | D            | B              | B      |        | A      | D   | A     | A                 | A     | A      | A    | A               | A       |                            |
| Ethylene Diamine                  | (CH <sub>2</sub> ) <sub>2</sub> (NH <sub>2</sub> ) <sub>2</sub>                                  | 0.899          | 1.54                           | C        | D      | B         | A              | B            | A              | A      | B      | A      | A   | D     | A                 | A     | A      | A    | D               | A       | Note 1                     |
| Ethylene Dichloride               | CH <sub>2</sub> ClCH <sub>2</sub> Cl                                                             | 1.25           | 0.83                           | D        | B      | D         | B              | D            | A              | A      | B      | C      | C   | A     | A                 | A     | A      | A    | D               | A       | Anhydrous                  |
| Ethylene Glycol                   | (CH <sub>2</sub> OH) <sub>2</sub>                                                                | 1.15           | 2.18                           | A        | B      | B         | A              | B            | B              | B      | B      | A      | A   | A     | A                 | A     | A      | A    | A               | A       |                            |
| Ethylene Glycol Acetate           | CH <sub>200</sub> CH <sub>2</sub>                                                                |                |                                |          |        |           | A              |              | A              |        | D      | A      | D   | A     | A                 | A     | A      | A    | A               | A       |                            |
| Ethyl Oxide                       | Ether                                                                                            | 0.714          | 0.23                           | B        | B      | B         | A              | B            | A              | A      | A      | D      | C   | C     | A                 | A     | A      | A    | A               | A       | Dry Liquid                 |
| Ethylene                          | H <sub>2</sub> CCH <sub>2</sub>                                                                  | 0.610 @ 0°C    |                                | A        | A      | A         | A              | A            | A              | A      | A      | D      | A   | A     | A                 | A     | A      | A    | A               | A       |                            |
| Ethyl Teritary Butyl Ether (ETBE) | C <sub>2</sub> H <sub>5</sub> OC <sub>4</sub> H <sub>9</sub>                                     |                |                                | A        | A      | A         | A              | A            | A              | A      | A      | D      | A   | A     | A                 | A     | A      | A    | A               | A       |                            |
| Fatty Acids                       |                                                                                                  |                |                                | A        | D      | D         | B              | D            | B              | A      | B      | B      | C   | A     | A                 | A     | A      | A    | A               | A       |                            |
| Ferric Chloride                   | FeCl <sub>3</sub>                                                                                | 2.8            |                                | D        | D      | D         | D              | D            | D              | D      | D      | D      | D   | A     | A                 | A     | D      | A    | C               | A       | Hastelloy C                |
| Ferric Sulphate                   | Fe <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub> ·9H <sub>2</sub> O                               | 2.0-2.1        |                                | D        | D      | D         | D              | D            | B              | A      | B      | A      | A   | A     | A                 | A     | A      | A    | A               | A       |                            |
| Ferrous Chloride                  | FeCl <sub>2</sub> ·4H <sub>2</sub> O                                                             | 1.93           |                                | D        | D      | D         | D              | D            | D              | D      | D      | A      | A   | A     | A                 | A     | D      | A    | B               | A       |                            |
| Ferrous Sulphate                  | FeSO <sub>4</sub> ·7H <sub>2</sub> O                                                             | 1.89           |                                | D        | B      | D         | D              | D            | B              | A      | A      | A      | A   | A     | A                 | A     | A      | A    | A               | A       |                            |
| Fish Oil                          |                                                                                                  |                |                                |          |        |           | A              |              | A              | A      | A      |        | A   | A     | A                 | A     | A      | A    | A               | A       |                            |
| Flexol Plasticizer                | DoP                                                                                              |                |                                | A        | A      | A         | A              | A            | B              | B      | B      | D      | B   | B     | A                 |       | A      | A    | A               | A       |                            |
| Formaldehyde (37%)                | HCHO                                                                                             | 1.075          |                                | B        | A      | C         | C              | C            | A              | A      | B      | C      | B   | D     | A                 | A     | A      | B    | A               | A       | Note 3                     |
| Formic Acid                       | HCOOH                                                                                            | 1.22 @ 20°C    |                                | B        | C      | D         | C              | D            | B              | A      | C      | A      | A   |       | A                 | A     | A      |      | A               | A       | All Concentration          |
| Fruit Juices                      | Fructose                                                                                         |                |                                | B        | B      | D         | A              | D            | A              | A      | A      | A      |     | A     | A                 | A     | A      | A    | A               | A       | No SO <sub>2</sub> Present |
| Furfural (25%)                    | C <sub>4</sub> H <sub>3</sub> OCHO                                                               | 1.15           | 1.49                           | B        | B      | B         | B              | B            | B              | B      | B      | D      | B   | D     | A                 | A     | A      | A    | A               | A       |                            |
| Fertilizer Solutions              | NH <sub>4</sub> NO <sub>3</sub> Phosphate KC <sub>1</sub> NH <sub>4</sub>                        | 0.811          |                                | D        | D      | A         | A              | A            | A              | A      | A      | A      |     | A     | A                 | A     | A      | A    | A               | A       | Note 1                     |
| Freon-11, 12                      | CCl <sub>3</sub> F                                                                               |                |                                | B        | B      | B         | A              | B            | A              | A      | A      | B      | D   | B     | A                 | A     | A      | D    | A               | B       |                            |

Note 1: Avoid dissimilar metals.  
Note 2: For rotary meters recommend LPG trim.  
Note 3: C or D rating given due to possible contamination of metered product by metal. Material compatibility may be satisfactory.

1 Polytetrafluoroethylene (PTFE)



**A - Excellent    B - Good    C - Poor**  
**D - Not Recommended**  
**Blank Space - Insufficient Information**

| Chemicals                | Formula                                                              | Sp. Gr. (60°F) | Typical Viscosity (60°F) (CPS) | Aluminum | Bronze | Cast Iron | Tungsten Carb. | Carbon Steel | 304SS-17-4PhSS | 316 SS | 440CSS | Buna-N | EPR | Viton | PTFE <sup>1</sup> | Ryton | Carbon | Peek | Hastelloy C-276 | Chemraz | Remarks                        |
|--------------------------|----------------------------------------------------------------------|----------------|--------------------------------|----------|--------|-----------|----------------|--------------|----------------|--------|--------|--------|-----|-------|-------------------|-------|--------|------|-----------------|---------|--------------------------------|
| Iso-Valeric Acid         | C <sub>5</sub> H <sub>9</sub> OOH                                    | 0.931          |                                |          |        |           |                |              |                |        |        |        | A   | A     | A                 | A     | A      | A    | A               | A       |                                |
| Inks—Printers            |                                                                      | 1.00–1.38      | 500.0                          | B        | C      | D         | A              | D            | B              | A      | B      |        |     |       | A                 | A     | A      | A    | A               | A       |                                |
| Jet Fuel                 | JP-4, JP-5, JP-6                                                     |                |                                | A        | B      | A         | A              | A            | A              | A      | A      | A      | D   | A     | A                 | A     | A      | A    | A               | A       | Gasoline-Kerosene Blend        |
| Kerosene                 |                                                                      | 0.802          | 30 SSU                         | A        | A      | B         | A              | B            | A              | A      | A      | A      | D   | A     | A                 | A     | A      | A    | A               | A       |                                |
| Ketone, Butylethyl       | C <sub>4</sub> H <sub>9</sub> COC <sub>2</sub> H <sub>5</sub>        | 0.819          |                                | A        | A      | A         | A              | A            | A              | A      | A      | D      | A   | D     | A                 | A     | A      | A    | A               | A       |                                |
| Ketone, Diethyl          | (C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> CO                     | 0.816          |                                | A        | A      | A         | A              | A            | A              | A      | A      | D      | A   | D     | A                 | A     | A      | A    | A               | A       |                                |
| Ketone, Di-Iso-Propyl    | C <sub>4</sub> H <sub>8</sub> CO                                     |                |                                | A        | A      | A         | A              | A            | A              | A      | A      | D      | A   | D     | A                 | A     | A      | A    | A               | A       |                                |
| Ketone, Methyl Ethyl     | CH <sub>3</sub> COC <sub>2</sub> H <sub>5</sub>                      | 0.825          | .40                            | A        | A      | A         | A              | A            | A              | A      | A      | D      | A   | D     | A                 | A     | A      | A    | A               | A       |                                |
| Ketone (MIBK)            | C <sub>4</sub> H <sub>9</sub> COCH <sub>3</sub>                      | 0.804          | 0.59                           | A        | A      | A         | A              | A            | A              | A      | A      | D      | A   | D     | A                 | A     | A      | A    | A               | A       |                                |
| Lactic Acid              | CH <sub>3</sub> CHOHCOOH                                             | 1.2 @ 20°C     |                                | A        | D      | D         | C              | D            | A              | A      | C      | A      | A   | A     | A                 | A     | A      | A    | A               | B       | A                              |
| Lacquer                  |                                                                      | 0.900          |                                | A        | A      | D         | A              | D            | A              | A      | A      | A      |     | A     | A                 | A     | A      | A    | A               | A       |                                |
| Lard Oil                 | Grease Oil                                                           | 1.470          |                                | A        | A      | C         | A              | C            | A              | A      | A      | A      | B   | A     | A                 | A     | A      | A    | A               | A       | 287 SSU @ 100°F - Note 3       |
| Latex Sol (70%)          | Ph 1.7                                                               |                | 900.0                          |          |        |           |                |              | A              | A      | A      | A      |     | A     | A                 | A     | A      | A    | A               | A       |                                |
| Lauric Acid              | CH <sub>3</sub> (CH <sub>2</sub> ) <sub>10</sub> COOH                | 0.833          |                                | A        | C      | D         | C              | A            | A              | A      | A      | A      |     | A     | A                 | A     | A      | A    | A               | A       |                                |
| Lecithin                 | 1.0                                                                  | 5,000 SSU      |                                | A        | A      | C         |                | C            | A              | A      | A      |        |     | A     | A                 | A     | A      | A    | A               | A       |                                |
| Ligroin                  | Petroleum Ether                                                      |                |                                | A        | A      | A         | A              | A            | A              | A      | A      | A      | D   | A     | A                 | A     | A      | A    | A               | A       |                                |
| Linoleic Acid            | C <sub>10</sub> H <sub>17</sub> (CH <sub>2</sub> ) <sub>7</sub> COOH | 0.905          |                                | A        | B      | B         | C              | B            | A              | A      | B      | B      | D   | B     | A                 | A     | A      | A    | A               | A       |                                |
| Linolenic Acid           | (C <sub>10</sub> H <sub>15</sub> CH <sub>2</sub> ) <sub>7</sub> COOH | 0.916          |                                | A        | B      | B         | C              | B            | A              | A      | B      | B      | D   | B     | A                 | A     | A      | A    | A               |         |                                |
| Linseed Oil              | Flaxseed Oil                                                         | 0.931          | 33.0                           | A        | B*     | B*        | A              | B*           | A              | A      | B      | A      |     | A     | A                 | A     | A      | A    | A               | A       | Corrosive if Free Acid Present |
| Liquefied Pet. Gas       | L.P.G.                                                               |                |                                | A        | A      | A         | A              | A            | A              | A      | A      | A      | D   | A     | A                 | A     | A      | A    | A               | A       | Note 2                         |
| Liquid Feed              | Morea                                                                | 1.2            | 22.0                           |          |        |           |                | A            | A              | A      | A      |        | A   | A     | A                 | A     |        | A    | A               | A       |                                |
| Magnesium Hydroxide      | Mg(OH) <sub>2</sub>                                                  | 2.36           |                                | D        | B      | B         | B              | B            | A              | A      | A      | B      | A   | A     | A                 | A     | A      | A    | A               | A       | Note 1                         |
| Magnesium Chloride (10%) | MgCl <sub>2</sub> ·6H <sub>2</sub> O                                 | 1.56           |                                | D        | D      | B         | B              | B            | A              | A      | C      | A      | A   | A     | A                 | A     | A      | A    | B               | A       |                                |
| Magnesium Nitrate        | Mg(NO <sub>3</sub> ) <sub>2</sub> ·6H <sub>2</sub> O                 | 1.46           |                                | B        | C      | B         | B              | B            | A              | A      | A      | A      | A   | A     | A                 | A     | A      | A    | A               | A       | Note 1                         |
| Magnesium Sulfate        | Mg(SO <sub>4</sub> )·7H <sub>2</sub> O                               | 1.678          |                                | B        | D      | B         | B              | B            | A              | A      | D      | A      | A   | A     | A                 | A     | A      | A    | A               | A       | Note 1                         |
| Maize Oil                |                                                                      |                |                                |          |        |           |                |              | A              | A      | A      | A      |     | A     | A                 | A     | A      | A    | A               | A       |                                |
| Maleic Acid              | (CHCOOH) <sub>2</sub>                                                | 1.59           |                                | B        | B      | B         | C              | B            | A              | A      | B      | D      | D   | A     | A                 | A     | A      | A    | A               | A       |                                |
| Malonic Acid             | CH <sub>2</sub> (COOH) <sub>2</sub>                                  | 1.63           |                                |          |        |           | C              | A            | A              |        |        |        |     | A     | A                 | A     | A      | A    | A               | A       |                                |
| Menhaden Oil (10%)       | Moss Bunker Oil                                                      | 0.927–0.933    | 28.0                           |          |        |           |                | A            | A              | A      |        |        |     | A     | A                 | A     | A      | A    | A               | A       | Viscosity @ 100°F              |
| Mercuric Chloride        | HgCl <sub>2</sub>                                                    | 5.32           |                                | D        | D      | D         | D              | D            | D              | D      | D      | A      | A   | A     | A                 |       | A      |      | A               | A       | Titanium                       |
| Mesityl Oxide (Ketone)   | (CH <sub>3</sub> ) <sub>2</sub> C <sub>3</sub> HOCH <sub>3</sub>     | 0.863          | 0.60                           | B        | B      | B         | A              | A            | B              | B      | B      | D      | B   | D     | A                 |       | A      | A    | A               | A       |                                |
| Methyl Acetate           | CH <sub>3</sub> COOCH <sub>3</sub>                                   | 0.924          | 0.38                           | A        | C      | C         | B              | B            | B              | B      | B      | D      | B   | D     | A                 | A     | A      | A    | A               | A       | Alloy 20                       |
| Methyl Acrylate          | C <sub>3</sub> H <sub>5</sub> OOCH <sub>3</sub>                      | 0.957          |                                | A        | B      | B         | A              | A            | A              | A      | A      | D      | B   | D     | A                 | A     | A      | A    | A               | A       |                                |
| Methyl Amine             | CH <sub>3</sub> NH <sub>2</sub>                                      |                | 0.23                           | B        | D      | B         | B              | B            | B              | B      | B      |        | A   |       | A                 | A     | A      | A    | A               | A       | Note 1                         |
| Methyl Amyl Acetate      | C <sub>8</sub> H <sub>16</sub> O <sub>2</sub>                        | 0.859          |                                | A        | C      | C         | B              | B            | B              | B      | B      |        | A   | D     | A                 | A     | A      | A    | A               | A       |                                |
| Methyl Amyl Alcohol      | C <sub>8</sub> H <sub>18</sub> OH                                    | 0.807          |                                | A        | B      | B         | A              | B            | A              | A      | A      |        | A   |       | A                 | A     | A      | A    | A               | A       |                                |
| Methyl Aniline           | C <sub>6</sub> H <sub>5</sub> NH(CH <sub>3</sub> )                   | 0.991          | 2.02                           | B        | D      | A         | B              | A            | B              | B      | B      | D      | A   | D     | A                 | A     | A      | A    | A               | A       | Note 1                         |
| Methyl Cellosolve        | CH <sub>3</sub> OCH <sub>2</sub> CH <sub>2</sub> OH                  |                |                                | A        | A      | B         | A              | B            | A              | A      | A      | C      | B   | D     |                   | A     | A      | A    | A               | A       |                                |
| Methyl Cyclohexane       | C <sub>7</sub> H <sub>14</sub>                                       | 0.769          |                                | A        | A      | A         | A              | A            | A              | A      | A      | D      | A   | A     | A                 | A     | A      | A    | A               | A       |                                |
| Methyl Cyclo Hexanol     | CH <sub>3</sub> C <sub>6</sub> H <sub>10</sub> OH                    |                |                                | A        | B      | B         | A              | B            | A              | A      | A      | A      | D   | A     | A                 | A     | A      | A    | A               | A       |                                |
| Methyl Glycol Acetate    |                                                                      |                |                                | A        | C      | C         | A              | A            | A              | A      | A      | D      | A   | D     | A                 | A     | A      | A    | A               | A       |                                |
| Methyl Methacrylate      | CH <sub>2</sub> C(CH <sub>3</sub> )COOCH <sub>3</sub>                | 0.940          |                                | A        | A      | A         | A              | A            | A              | A      | A      | D      | D   | D     | A                 | A     | A      | A    | A               | A       |                                |
| Methyl Pyrrolidone       | CH <sub>3</sub> NC <sub>3</sub> H <sub>6</sub> CO                    |                |                                | D        | D      | A         | A              | A            | A              | A      | A      | D      | A   | D     | A                 | A     | A      | A    | A               | A       |                                |
| Methyl Salicylate        | C <sub>6</sub> H <sub>4</sub> OHCOOCH <sub>3</sub>                   | 1.180          |                                |          |        |           | A              |              | A              | A      | A      | D      | B   | C     | A                 | A     | A      | A    | A               | A       |                                |

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1 Polytetrafluoroethylene (PTFE)

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| Chemicals                          | Formula                                                                         | Sp. Gr. (60°F) | Typical Viscosity (60°F) (CPS) | Aluminum | Bronze | Cast Iron | Tungsten Carb. | Carbon Steel | 304SS-17-4PHSS | 316 SS | 440CSS | Buna-N | EPR | Viton | PTFE <sup>1</sup> | Ryton | Carbon | Peek | Hastelloy C-276 | Chemraz | Remarks           |
|------------------------------------|---------------------------------------------------------------------------------|----------------|--------------------------------|----------|--------|-----------|----------------|--------------|----------------|--------|--------|--------|-----|-------|-------------------|-------|--------|------|-----------------|---------|-------------------|
| Methyl Tertiary Butyl Ether (MTBE) | CH <sub>3</sub> OC <sub>4</sub> H <sub>9</sub>                                  | 0.74           | .35                            | A        | A      | A         | A              | A            | A              | A      | A      | A      | D   | D     | A                 | A     | A      | A    | A               | A       |                   |
| Methylene Chloride                 | CH <sub>2</sub> Cl <sub>2</sub>                                                 | 1.33           | 0.42                           | D        | B      | B         | B              | B            | B              | B      | B      | D      | D   | B     | A                 |       | A      | A    | A               | A       | Note 1            |
| Methylene Dichloride               |                                                                                 |                |                                | C        | B      | B         | B              | B            | B              | B      | B      | D      | D   | B     | A                 | A     | A      | A    | A               | A       | Note 1            |
| Methylene Glycol                   | CH <sub>2</sub> (OH) <sub>2</sub>                                               |                |                                | B        | B      | B         | A              | B            | A              | A      | A      | A      | D   | A     | A                 | A     | A      | A    | A               | A       |                   |
| Milk                               | Lactic Acid                                                                     | 1.028–1.035    | 1.16                           |          |        |           | A              |              | A              | A      | A      | A      | A   | A     | A                 |       | A      | A    | A               | A       |                   |
| Mineral Spirits                    | Naphtha                                                                         |                |                                | A        | B      | B         | A              | B            | B              | B      |        | A      | D   | A     | A                 | A     | A      | A    | A               | A       | Note 2            |
| Molasses (Crude)                   | Mother Liquor                                                                   | 1.40–1.46      | 151.5                          | A        | A      | A         | A              | A            | A              | A      | A      | A      | A   | A     | A                 | A     | A      | A    | A               | A       | Viscosity @ 130°F |
| Molasses (Edible)                  | Blackstrap                                                                      | 1.46–1.49      | 1320.0                         | A        | A      | A         | A              | A            | A              | A      | A      | A      | A   | A     | A                 | A     | A      | A    | A               | A       | Viscosity @ 130°F |
| Monochlorobenzene                  | C <sub>6</sub> H <sub>5</sub> CL                                                | 1.105          |                                | B        | B      | B         | A              | B            | B              | B      | B      | D      | D   | A     | A                 | A     | A      | A    | A               | A       |                   |
| Monoethanolamine                   |                                                                                 |                |                                | D        | D      | A         | A              | A            | A              | A      | A      | D      | B   | D     | A                 | A     | A      | A    | A               | A       |                   |
| Muriatic Acid                      | Hydrochloric                                                                    |                |                                | D        | D      | D         | D              | D            | D              | D      | D      | D      | C   | A     | A                 | A     | A      | D    | A               | A       |                   |
| Myristic Acid                      | CH <sub>3</sub> (CH <sub>2</sub> ) <sub>12</sub> COOH                           | 0.873          |                                | A        | A      | A         | C              | A            | A              | A      | A      |        |     |       | A                 |       | A      | A    | A               | A       |                   |
| Methane                            | CH <sub>4</sub>                                                                 | 0.554          |                                | A        | A      | A         | A              | A            | A              | A      | A      | A      | D   | A     | A                 | A     | A      | A    | A               | A       | Note 2            |
| Naphtha (Aliphatic)                |                                                                                 | 0.665          |                                | A        | B      | B         | A              | A            | B              | B      | B      | B      | D   | A     | A                 | A     | A      | A    | A               | A       | Note 2            |
| Naphtha (Aromatic)                 |                                                                                 | 0.885–0.970    |                                | A        | B      | B         | A              | A            | B              | B      | B      | B      | D   | A     | A                 | A     | A      | A    | A               | A       | Note 2            |
| Naphtha (V.M. and P.)              |                                                                                 |                |                                | A        | B      | B         | A              | A            | B              | B      | B      | B      | D   | A     | A                 | A     | A      | A    | A               | A       | Note 2            |
| Neatsfood Oil                      |                                                                                 | 0.916          |                                |          |        |           | A              |              | A              | A      | A      | A      | B   | A     | A                 | A     | A      | A    | A               | A       | 230 SSU @ 100°F   |
| Nickel Ammonium Sulfate (10%)      | NiSO <sub>4</sub> ·(NH <sub>4</sub> ) <sub>2</sub> ·6H <sub>2</sub> O           | 1.92           |                                | D        | D      | D         | D              | D            |                |        | D      | A      | A   | A     | A                 |       | A      | A    | A               | A       | Monel             |
| Nickel Chloride (37%)              | CiCl <sub>2</sub> ·6H <sub>2</sub> O                                            | 1.35           |                                | D        | D      | D         | D              | D            | D              | B      | D      | A      | A   | A     | A                 |       | A      | A    | A               | A       |                   |
| Nickel Sulfate (25%)               | NiSO <sub>4</sub> ·6H <sub>2</sub> O                                            | 1.20           |                                | D        | B      | D         | D              | D            | A              | A      | A      | A      | A   | A     | A                 |       | A      | A    | A               | A       |                   |
| Nitro Benzene                      | C <sub>6</sub> H <sub>5</sub> NO <sub>2</sub>                                   | 1.198          |                                | B        | B      | B         | A              | A            | B              | B      | B      | D      | D   | B     | A                 | A     | A      | C    | B               | A       |                   |
| Nitro Ethane                       | C <sub>2</sub> H <sub>5</sub> NO <sub>2</sub>                                   | 1.052          |                                | A        | A      | A         | A              | A            | A              | A      | A      | D      | B   |       | A                 | A     | A      | C    | B               | A       |                   |
| Nitro Propane                      | C <sub>3</sub> H <sub>7</sub> NO <sub>2</sub>                                   | 1.003          |                                | A        | A      | A         | A              | A            | A              | A      | A      | D      | B   | D     | A                 | A     | A      | C    | B               | A       |                   |
| Nonenes                            | C <sub>9</sub> H <sub>18</sub>                                                  | 0.743          |                                | A        | A      | A         | A              | A            | A              | A      | A      | A      | D   | A     | A                 | A     | A      | A    | A               | A       |                   |
| Nitric Acid (10%)                  | HNO <sub>3</sub>                                                                | 1.074          |                                | B        | D      | D         | D              | D            | A              | A      | B      | D      | D   | A     | A                 | A     | A      | A    | B               | A       |                   |
| Nitric Acid (30%)                  | HNO <sub>3</sub>                                                                | 1.186          |                                | D        | D      | D         | D              | D            | A              | A      | B      | D      | D   | A     | A                 | D     | A      | D    | A               | A       |                   |
| Nitric Acid (50%)                  | HNO <sub>3</sub>                                                                | 1.318          | 0.76                           | D        | D      | D         | D              | D            | A              | A      | B      | D      | D   | B     | A                 | D     | A      | D    | A               | A       |                   |
| Nitric Acid (70%)                  | HNO <sub>3</sub>                                                                | 1.421          |                                | D        | D      | D         | D              | D            | A              | A      | B      | D      | D   | B     | A                 | D     | A      | D    | B               | A       |                   |
| Nitric Acid (100%)                 | HNO <sub>3</sub>                                                                | 1.502          |                                | A        | D      | D         | D              | D            | A              | A      | D      | D      | D   | B     | A                 | D     | A      | D    | B               | D       |                   |
| Nitrocumene                        | C <sub>6</sub> H <sub>4</sub> CH(CH <sub>3</sub> ) <sub>2</sub> NO <sub>2</sub> |                |                                | C        | D      | B         | B              | B            | B              | B      | B      | B      | C   | D     | A                 | A     | A      | A    | A               |         |                   |
| Nitro Fluorobenzene                | C <sub>6</sub> H <sub>4</sub> NO <sub>2</sub> FL                                |                | 2.0                            | C        | D      | B         | B              | B            | B              | B      | B      | B      | C   | D     | A                 | A     | A      | C    | B               |         |                   |
| N. Octane                          | C <sub>8</sub> H <sub>18</sub>                                                  | 0.702          | 0.54                           | A        | A      | A         | A              | A            | A              | A      | A      | B      | D   | A     | A                 | A     | A      | A    | A               | A       |                   |
| Oleic Acid (40%)                   | CH <sub>3</sub> (CH <sub>2</sub> ) <sub>14</sub> C <sub>2</sub> H <sub>2</sub>  | 0.890          |                                | D        | D      | D         | C              | D            | A              | A      | B      | C      | D   | B     | A                 |       | A      |      | A               | A       | Note 3            |
| Oxalic Acid (50%)                  | (COOH) <sub>2</sub>                                                             | 1.653          |                                | D        | D      | B         | C              | B            | A              | A      | B      | B      | A   | A     | A                 |       | A      | C    | A               | A       |                   |
| Olive Oil                          | Sweet Oil                                                                       | 0.910          | 84.0                           | A        | B      | B         | A              | B            | A              | A      | A      | A      | B   | A     | A                 | A     | A      | A    | A               | A       | 200 SSU @ 100°F   |
| Oil-Lube                           |                                                                                 |                | 113.0                          | A        | B      | A         | A              | A            | A              | A      | A      | A      | D   | A     | A                 | A     | A      | A    | A               | A       |                   |
| Oils-Mineral                       |                                                                                 |                |                                | A        | B      | B         | A              | B            | A              | A      | A      | A      | D   | A     | A                 | A     | A      | A    | A               | A       |                   |
| Oils-Petroleum                     |                                                                                 |                |                                | A        | B      | B         | A              | A            | A              | A      | A      | A      | D   | A     | A                 | A     | A      | A    | A               | A       |                   |
| Oils-Water Emu.                    |                                                                                 |                |                                | A        | A      | B         | A              | B            | A              | A      | A      | A      | D   | A     | A                 | A     | A      | A    | A               | A       |                   |
| Ortho-Dichloro-Benzene             | C <sub>6</sub> H <sub>4</sub> CL <sub>2</sub>                                   | 1.305          |                                | B        | B      | B         | B              | B            | B              | B      | B      | D      | D   | A     | A                 | A     | A      | A    | B               | A       |                   |
| Palmitic Acid                      | CH <sub>3</sub> (CH <sub>2</sub> ) <sub>14</sub> COOH                           | 0.841          |                                | B        | B      | C         | C              | C            | B              | B      | B      | A      | D   | A     | A                 |       | A      | A    | A               | A       |                   |
| Palm Oil                           |                                                                                 | 0.924 @ 100°   | 44.0                           | A        | B      | C         | A              | C            | B              | B      | B      | A      | C   | A     | A                 | A     | A      | A    | A               | A       |                   |
| Paradyne                           |                                                                                 |                |                                | A        | A      | A         | A              | A            | A              | A      | A      | A      | D   | A     | A                 | A     | A      | A    | A               | A       |                   |

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**D - Not Recommended**  
**Blank Space - Insufficient Information**

| Chemicals                  | Formula                                                                                         | Sp. Gr.<br>(60°F) | Typical<br>(60°F)<br>Viscosity<br>(CPS) | Aluminum | Bronze | Cast Iron | Tungsten Carb. | Carbon Steel | 304SS-17-4PhSS | 316 SS | 440CSS | Buna-N | EPR | Viton | PTFE <sup>1</sup> | Ryton | Carbon | Peek | Hastelloy C-276 | Chemraz | Remarks |
|----------------------------|-------------------------------------------------------------------------------------------------|-------------------|-----------------------------------------|----------|--------|-----------|----------------|--------------|----------------|--------|--------|--------|-----|-------|-------------------|-------|--------|------|-----------------|---------|---------|
| Paraffin                   |                                                                                                 | 0.83–0.93         |                                         | A        | A      | B         | A              | B            | A              | A      | A      | A      | B   | A     | A                 | A     | A      | A    | A               | A       |         |
| Para-tert-Amyl Phenol      | (CH <sub>3</sub> ) <sub>2</sub> C <sub>2</sub> H <sub>5</sub> CC <sub>6</sub> H <sub>4</sub> OH | 0.955             |                                         | A        | A      | B         | A              | B            | A              | A      | A      | D      | A   | A     | A                 | A     | A      | A    | B               | B       | A       |
| Para-tert-Butyl Phenol     | (CH <sub>3</sub> ) <sub>3</sub> CC <sub>6</sub> H <sub>4</sub> OH                               | 1.03              |                                         | D        | D      | A         | A              | A            | A              | A      | A      | A      | A   | A     | A                 | A     | A      | A    |                 | B       | A       |
| Paratex                    | Water Softner                                                                                   |                   |                                         | D        | D      | A         | A              | A            | A              | A      | A      | A      | A   | A     | A                 | A     | A      | A    | A               | A       | A       |
| Parathion                  | C <sub>10</sub> H <sub>14</sub> NO <sub>5</sub> PS                                              |                   |                                         |          |        |           | A              | A            | A              | A      | A      | A      | A   | A     | A                 | A     | A      | A    | A               | A       | A       |
| Peanut Oil                 |                                                                                                 | 0.920 @<br>100°   | 38.0                                    | A        | B      | C         | A              | C            | B              | B      | B      | A      | C   | A     | A                 | A     | A      | A    | A               | A       | A       |
| Pear Oil                   | Amyl Acetate                                                                                    | 0.879             | 0.89                                    | A        | B      | C         | A              | C            | B              | B      | B      | D      | A   | D     | A                 | A     | A      | A    | A               | A       | Note 3  |
| Pentane                    | C <sub>5</sub> H <sub>12</sub>                                                                  | 0.626             |                                         | A        | B      | B         | A              | B            | B              | B      | B      | A      | D   | A     | A                 | A     | A      | A    | A               | A       | A       |
| Perchloroethylene          | C <sub>2</sub> Cl <sub>4</sub>                                                                  | 1.65              | 0.84                                    | B        | C      | B         | A              | A            | A              | A      | A      | B      | D   | A     | A                 | A     | A      | A    | A               | A       | A       |
| Perilla Oil                |                                                                                                 | 0.932             |                                         | A        | B      | B         | A              | B            | A              | A      | B      | A      | A   | A     | A                 |       | A      | A    | A               | A       | A       |
| Petroleum Ether            | Ligroin                                                                                         | 0.665             |                                         | A        | A      | A         | A              | A            | A              | A      | A      | A      | D   | A     | A                 | A     | A      | A    | A               | A       | A       |
| Petroleum Spirits          | Naphtha                                                                                         |                   |                                         | A        | A      | A         | A              | A            | A              | A      | A      | A      | D   | A     | A                 | A     | A      | A    | A               | A       | A       |
| Phenolic Resins            |                                                                                                 |                   |                                         | A        | C      | C         | A              | C            | A              | A      | A      | A      | B   | A     | A                 | A     | A      | A    | A               | A       | A       |
| Phenol (20%)               | C <sub>6</sub> H <sub>5</sub> OH                                                                | 1.07              | 12.7                                    | A        | A      | B         | A              | B            | A              | A      | B      | D      | A   | A     | A                 | A     | A      | A    | D               | A       | A       |
| Phosphoric Acid (10%)      | H <sub>3</sub> PO <sub>4</sub>                                                                  | 1.053             |                                         | D        | D      | D         | D              | D            | B              | B      | B      | D      | D   | A     | A                 | A     | A      | A    | A               | A       | A       |
| Phosphoric Acid (25%)      | H <sub>3</sub> PO <sub>4</sub>                                                                  | 1.152             |                                         | D        | D      | D         | D              | D            | B              | B      | D      | D      | D   | A     | A                 | A     | A      | A    | A               | A       | A       |
| Phosphoric Acid (75%)      | H <sub>3</sub> PO <sub>4</sub>                                                                  | 1.579             |                                         | D        | D      | D         | D              | D            | D              | B      | D      | D      | D   | A     | A                 | A     | A      | A    | A               | A       | A       |
| Phthalic Acid              | C <sub>6</sub> H <sub>4</sub> (CO <sub>2</sub> H) <sub>2</sub>                                  | 1.58              |                                         | B        | B      | C         | C              | D            | B              | B      | B      | C      | C   | A     | A                 |       | A      | A    | A               | A       | A       |
| Phthalic Anhydride         | C <sub>6</sub> H <sub>4</sub> (CO) <sub>2</sub>                                                 | 1.527             |                                         | B        | B      | C         | B              | D            | B              | B      | B      | C      | C   | A     | A                 | A     | A      | A    | A               | A       | A       |
| Picric Acid                | C <sub>6</sub> H <sub>2</sub> (NO <sub>2</sub> ) <sub>3</sub> OH                                | 1.76              |                                         | C        | D      |           | C              |              | A              | A      |        | A      | A   | A     | A                 | A     | A      | A    | A               | A       | A       |
| Polyethylene Glycol        | H(OC <sub>2</sub> H <sub>4</sub> )NOH                                                           |                   |                                         | A        | B      | B         | A              | B            | B              | B      | B      | A      | A   | A     | A                 | A     | A      | A    | A               | A       | A       |
| Polyester Resin            |                                                                                                 |                   |                                         | D        | D      | A         | A              | A            | A              | A      | A      | A      | D   | A     | A                 | A     | A      | A    | A               | A       | A       |
| Polypropylene Glycol       | CH <sub>2</sub> CHOH<br>(CH <sub>2</sub> OCHCH <sub>2</sub> ) <sub>n</sub> -CH <sub>2</sub> OH  |                   |                                         | A        | B      | B         | A              | B            | B              | B      | B      | A      | A   | A     | A                 | A     | A      | A    | A               | A       | A       |
| Polyvinyl Acetate          | (H <sub>2</sub> C <sub>2</sub> HOOC <sub>2</sub> H <sub>3</sub> )                               | 1.19              |                                         | A        | A      | A         | A              | B            | A              | A      | A      |        | A   | A     |                   | A     | A      | A    | A               | A       | A       |
| Polyvinyl Acetate Emulsion | PVac+H <sub>2</sub> O                                                                           |                   |                                         | A        | A      | A         | A              | B            | A              | A      | A      |        | A   | A     | A                 | A     | A      | A    | A               | A       | A       |
| Polyvinyl Alcohol          | (CH <sub>2</sub> CHOH) <sub>x</sub>                                                             | 1.98              | 2000.0                                  | A        | B      | A         | A              | A            | A              | A      | A      | A      |     | A     | A                 | A     | A      | A    | A               | A       | A       |
| Polymerized Gasoline       |                                                                                                 |                   |                                         | A        | A      | A         | A              | A            | A              | A      | A      | A      | D   | A     | A                 | A     | A      | A    | A               | A       | A       |
| Potassium Chloride         | KCl                                                                                             | 1.98              |                                         | D        | B      | C         | C              | C            | A              | A      | B      | A      | A   | A     | A                 | A     | D      | A    | A               | A       | Note 1  |
| Potassium Aluminum Sulfate | AlK(SO <sub>4</sub> ) <sub>2</sub> ·12H <sub>2</sub> O                                          | 1.75              |                                         | B        | B      | C         | C              | C            | A              | A      | B      | A      | A   | A     | A                 | A     | A      | A    | A               | A       | Note 1  |
| Potassium Cyanide (25%)    | KCN                                                                                             | 1.52              |                                         | D        | D      | D         | D              | B            | A              | A      | B      | A      | A   | A     | A                 |       | A      |      | A               | A       | Note 1  |
| Potassium Hydroxide (25%)  | KOH                                                                                             | 2.044             |                                         | D        | D      | B         | B              | B            | B              | B      | B      | B      | A   | D     | A                 | A     | A      | A    | A               | A       | Note 1  |
| Potassium Hydroxide        | KOH                                                                                             |                   |                                         | D        | D      | D         | B              | D            | A              | A      | A      | B      | A   | D     | A                 | A     | A      | A    | A               | A       | Note 1  |
| Potassium Sulfate          | K <sub>2</sub> SO <sub>4</sub>                                                                  | 2.66              |                                         | B        | B      | C         | B              | B            | B              | B      | B      | A      | A   | A     | A                 | A     | A      | A    | A               | A       | Note 1  |
| Potassium Sulfide          | K <sub>2</sub> S                                                                                | 1.80              |                                         | B        | D      | D         | B              | D            | B              | B      | B      | A      | A   | A     | A                 | A     | A      | A    | A               | A       | Note 1  |
| Potash (Aq.)               | K <sub>2</sub> CO <sub>3</sub>                                                                  | 2.33              |                                         | C        |        | A         | B              | A            | B              | A      | B      | A      | A   | A     | A                 | A     | A      | A    | A               | A       | Note 1  |
| Propane                    | C <sub>3</sub> H <sub>8</sub>                                                                   | 0.531             |                                         | A        | A      | A         | A              | A            | A              | A      | A      | A      | D   | A     | A                 | A     | A      | A    | A               | A       | Note 2  |
| Propionic Acid (20%)       | CH <sub>3</sub> CH <sub>2</sub> CO <sub>2</sub> H                                               | 0.994             |                                         | B        | B      | D         | C              | D            | B              | B      | D      |        | A   |       | A                 | A     | A      | A    | A               | A       |         |
| Propylene                  | C <sub>3</sub> H <sub>6</sub>                                                                   | 0.513             |                                         | A        | A      | A         | A              | A            | A              | A      | A      | D      | D   | A     | A                 | A     | A      | A    | A               | A       | Note 2  |
| Propylene Diamine          | C <sub>3</sub> H <sub>8</sub> (NH <sub>2</sub> ) <sub>2</sub>                                   | 0.873             | 1.70                                    | B        | B      | B         | A              | B            | A              | A      |        | D      | D   | D     | A                 | A     | A      | A    | A               | A       |         |
| Propylene Glycol           | C <sub>3</sub> H <sub>8</sub> (OH) <sub>2</sub>                                                 | 1.038             | 58.0                                    | A        | B      | B         | A              | B            | B              | B      | B      | A      | A   | A     | A                 | A     | A      | A    | A               | A       |         |
| Propylene Oxide            | C <sub>3</sub> H <sub>6</sub> O                                                                 | 0.830             |                                         | B        | B      | B         | A              | B            | A              | A      | B      | D      | B   | D     | A                 | A     | A      | A    | A               | A       |         |
| Prussic Acid               | HCN                                                                                             | 0.697             |                                         | A        | D      | B         | C              | A            | B              | B      | B      | B      | A   | A     | A                 |       | A      |      | A               | A       |         |
| Pyridine                   | N(CH <sub>2</sub> ) <sub>4</sub> CH                                                             | 0.978             |                                         | A        | B      | B         | B              | B            | A              | A      | B      | D      | B   | D     | A                 | B     | A      | A    | A               | A       |         |

Note 1: Avoid dissimilar metals.

Note 2: For rotary meters recommend LPG trim.

Note 3: C or D rating given due to possible contamination of metered product by metal. Material compatibility may be satisfactory.

1 Polytetrafluoroethylene (PTFE)



| <b>A - Excellent    B - Good    C - Poor</b><br><b>D - Not Recommended</b><br><b>Blank Space - Insufficient Information</b> |                                                                                                   | Sp. Gr.<br>(60°F) | Typical<br>(60°F)<br>Viscosity<br>(CPS) | Aluminum | Bronze | Cast Iron | Tungsten Carb. | Carbon Steel | 304SS-17-4PHSS | 316 SS | 440CSS | Buna-N | EPR | Viton | PTFE <sup>1</sup> | Ryton | Carbon | Peek | Hastelloy C-276 | Chemraz | Remarks                   |
|-----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-------------------|-----------------------------------------|----------|--------|-----------|----------------|--------------|----------------|--------|--------|--------|-----|-------|-------------------|-------|--------|------|-----------------|---------|---------------------------|
| Chemicals                                                                                                                   | Formula                                                                                           |                   |                                         |          |        |           |                |              |                |        |        |        |     |       |                   |       |        |      |                 |         |                           |
| Pyrogalllic Acid                                                                                                            | C <sub>6</sub> H <sub>3</sub> (OH) <sub>3</sub>                                                   | 1.463             |                                         | B        | B      | D         | C              | D            | B              | B      | B      | B      | B   | A     | A                 |       | A      | A    | A               | A       |                           |
| Pyrrolidine                                                                                                                 | C <sub>4</sub> H <sub>9</sub> N                                                                   | 0.866             |                                         | B        | B      | B         | A              | B            | A              | A      | B      | D      | A   | D     | A                 |       | A      | A    | A               |         |                           |
| Rayon (Spun Viscose)                                                                                                        |                                                                                                   |                   |                                         | B        | B      | B         | A              | B            | A              | A      | B      |        | A   |       | A                 |       | A      | A    | A               | A       | 40,000 SSU @ 80°F         |
| Raffinate                                                                                                                   |                                                                                                   | 0.712             |                                         | A        | A      | A         | A              | A            | A              | A      | A      | A      |     | A     | A                 |       | A      | A    | A               | A       |                           |
| Resins and Rosins                                                                                                           |                                                                                                   |                   |                                         | B        | B      | C         | A              | C            | B              | B      | B      | A      |     | A     | A                 | A     | A      | A    | A               | A       | Note 3                    |
| Ricinoleic Acid                                                                                                             | C <sub>18</sub> H <sub>32</sub> O(OH) <sub>2</sub>                                                | 0.940             |                                         | B        | A      | A         | C              | A            | A              | A      | A      |        |     | A     |                   | A     | A      | A    | A               |         | Not Over 21°F             |
| Rotograve-Ink                                                                                                               |                                                                                                   |                   |                                         | D        | D      | A         | A              | A            | A              | A      | A      | D      | D   | A     | A                 | A     | A      | A    | A               | A       |                           |
| Rubber Solvent                                                                                                              |                                                                                                   |                   |                                         | A        | A      | A         | A              | A            | A              | A      | A      |        |     | A     | A                 |       | A      | A    | A               | A       | 100,000 SSU               |
| Salicylic Acid                                                                                                              | C <sub>6</sub> H <sub>4</sub> (OH)(COOH)                                                          | 1.48              | 2.71                                    | C        | C      | D         | C              | D            | A              | A      | B      | B      | A   | A     | A                 | A     | A      | A    | A               | A       |                           |
| Shellacol                                                                                                                   |                                                                                                   |                   |                                         | A        | A      | B         | A              | A            | A              | A      | A      |        |     | A     | A                 | A     | A      | A    | A               | A       |                           |
| Shortening                                                                                                                  |                                                                                                   |                   |                                         |          |        |           | A              |              | A              | A      | A      | A      |     | A     | A                 | A     | A      | A    | A               | A       | Note 3                    |
| Sodium Aluminate                                                                                                            | Na <sub>2</sub> Al <sub>2</sub> O <sub>4</sub>                                                    |                   |                                         | C        | B      | C         | B              | C            | B              | A      | B      | A      | A   | A     | A                 | A     | A      | A    | A               | A       |                           |
| Soap Solutions (0–20%)                                                                                                      | Stearates                                                                                         |                   |                                         | C        | A      | A         | A              | A            | A              | A      | A      | A      | A   | A     | A                 | A     | A      | A    | A               | A       |                           |
| Sodium Bicarbonate (50%)                                                                                                    | NaHCO <sub>3</sub>                                                                                | 1.019–1.108       |                                         | D        | B      | B         | B              | B            | A              | A      | B      | A      | A   | A     | A                 | A     | A      | A    | A               | A       | Note 1                    |
| Sodium Carbonate (0–20%)                                                                                                    |                                                                                                   | 1.146             |                                         | D        | D      | B         | B              | B            | A              | A      | A      | A      | A   | A     | A                 | A     | A      | A    | A               | A       |                           |
| Sodium Chloride (30%)                                                                                                       | NaCl                                                                                              | 1.012–1.164       |                                         | D        | B      | B         | B              | B            | A              | A      | A      | A      | A   | A     | A                 | A     | A      | A    | A               | A       | Pitting may Occur         |
| Sodium Chromate                                                                                                             | NaCrO <sub>4</sub>                                                                                | 1.261             |                                         | B        | B      | B         | B              | B            | B              | B      | B      | A      | A   | A     | A                 | A     | D      | A    | A               | A       |                           |
| Sodium Cyanide                                                                                                              | NaCn                                                                                              |                   |                                         | D        | D      | B         | D              | D            | A              | A      | B      | A      | A   |       | A                 | A     | A      |      | A               | A       | Note 1                    |
| Sodium Hydroxide (20%)                                                                                                      | NaOH                                                                                              | 1.219             |                                         | D        | A      | A         | A              | A            | A              | A      | A      | B      | A   | B     | A                 | A     | A      | A    | A               | A       | Note 1                    |
| Sodium Hydroxide (30%)                                                                                                      | Caustic                                                                                           | 1.262             |                                         | D        | A      | A         | A              | A            | A              | A      | A      | B      | A   | B     | A                 | A     | A      | A    | A               | A       | Note 1                    |
| Sodium Hydroxide (50%)                                                                                                      | Soda                                                                                              | 1.525             |                                         | D        | D      | B         | C              | B            | B              | B      | B      | B      | A   | B     | A                 | A     | A      | A    | A               | A       | Note 1                    |
| Sodium Hydroxide (70%)                                                                                                      | Soda                                                                                              | 1.788             |                                         | D        | D      | D         | C              | D            | B              | B      | B      | B      | A   | B     | A                 | A     | A      | A    | A               | A       | Note 1                    |
| Sodium Hypochlorite (5%)                                                                                                    | NaOCl                                                                                             |                   |                                         | D        | D      | D         | C              | D            | D              | D      | D      | B      | B   | A     | A                 | A     | A      | A    | A               | A       | Hastelloy C               |
| Sodium Meta Phosphate                                                                                                       | NaPO <sub>3</sub>                                                                                 |                   |                                         | D        | B      | B         | B              | D            | B              | B      | B      | A      | A   | A     | A                 |       | A      | A    | A               | A       | Note 1                    |
| Sodium Metasilicate                                                                                                         | Na <sub>2</sub> SiO <sub>3</sub>                                                                  | 2.61              |                                         | D        | D      | B         | C              | B            | A              | A      | A      | A      | A   | A     | A                 | A     | A      | A    | A               | A       | No Brass                  |
| Sodium Monochloro Acetic Acid                                                                                               | NaCH <sub>3</sub> COOCL                                                                           | 1.328             |                                         | D        | D      | D         | D              | D            | A              | A      | A      | D      | D   | A     | A                 | A     | A      | A    | A               | A       |                           |
| Sodium Nitrate                                                                                                              | NaNO <sub>3</sub>                                                                                 | 1.36              |                                         | A        | B      | B         | C              | B            | A              | A      | B      | B      | A   |       | A                 | A     | A      | A    | A               | A       | Note 1                    |
| Sodium Perborate (10%)                                                                                                      | NaBO <sub>2</sub>                                                                                 |                   |                                         | D        | B      | B         | B              | B            | B              | B      | B      | B      | A   | A     | A                 | A     | A      | A    | A               | A       |                           |
| Sodium Peroxide (10%)                                                                                                       | Na <sub>2</sub> O <sub>2</sub>                                                                    | 2.80              |                                         | C        | D      | C         | B              | B            | A              | A      | B      | B      | A   | A     | A                 | A     | A      | A    | A               | A       | Note 1                    |
| Sodium Phosphate (5%)                                                                                                       | Na <sub>2</sub> HPO <sub>4</sub>                                                                  | 1.52              |                                         | D        | B      | B         | B              | B            | B              | B      | B      | A      | A   | A     | A                 | A     | A      | A    | A               | A       | Note 1                    |
| Sodium Silicate                                                                                                             | Na <sub>2</sub> O·SiO <sub>2</sub>                                                                | 1.56              |                                         | D        | D      | B         | B              | B            | B              | B      | B      | A      | A   | A     | A                 | A     | A      | A    | A               | A       | Note 1                    |
| Sodium Sulfate (0–50%)                                                                                                      | Na <sub>2</sub> SO <sub>4</sub>                                                                   | 1.047             |                                         | A        | B      | B         | B              | B            | B              | A      | A      | A      | A   | A     | A                 | A     | A      | A    | A               | A       | Note 1                    |
| Sodium Sulfide                                                                                                              | Na <sub>2</sub> S·5H <sub>2</sub> O                                                               | 1.02–1.36         |                                         | D        | D      | C         | B              | C            | B              | B      | B      | A      | A   | A     | A                 | A     | A      | A    | A               | A       | Note 1                    |
| Sodium Thiosulfate (25%)                                                                                                    | Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>                                                     | 1.232             |                                         | A        | B      | D         | B              | D            | B              | B      | B      | B      | A   | A     | A                 | A     | A      | A    | A               | A       | Pitting may Occur         |
| Sodium Xylene Sulfonate                                                                                                     | (CH <sub>3</sub> ) <sub>2</sub> C <sub>6</sub> H <sub>3</sub> SO <sub>3</sub> Na-H <sub>2</sub> O |                   |                                         | A        | B      | A         | A              | A            | A              | A      | A      | D      | D   | A     | A                 | A     | A      | A    | A               | A       |                           |
| Solvento-100–150 Aromatic Solvents                                                                                          |                                                                                                   | 0.889             | 1.17                                    | A        | A      | A         | A              | A            | A              | A      | A      | C      | D   | A     | A                 | A     | A      | A    | A               | A       |                           |
| Soybean Oil                                                                                                                 |                                                                                                   | 0.924             | 40.6                                    | B        | B      | D         | A              | D            | A              | A      | A      | A      | D   | A     | A                 | A     | A      | A    | A               | A       | No Cad. Plat-ing - Note 3 |
| Stoddard's Solvent                                                                                                          |                                                                                                   | 0.780             |                                         | A        | A      | A         | A              | A            | A              | A      | A      | A      | D   | A     | A                 | A     | A      | A    | A               | A       |                           |
| Soups                                                                                                                       |                                                                                                   |                   |                                         |          |        |           | A              |              | A              | A      |        |        |     | A     | A                 | A     | A      | A    | A               | A       |                           |
| Sperm Oil                                                                                                                   |                                                                                                   | 0.878             | 42.0                                    |          |        |           | A              |              | A              | A      |        |        |     | A     | A                 | A     | A      | A    | A               | A       | 110 SSU & 100°F           |
| Stannic Chloride                                                                                                            | SnCl <sub>4</sub>                                                                                 | 1.21              |                                         | D        | D      | D         | D              | D            | D              | D      | D      | A      | A   | A     | A                 | A     | A      | A    | A               | A       |                           |
| Stannous Chloride                                                                                                           | SnCl <sub>2</sub>                                                                                 | 2.71              |                                         | D        | D      | D         | D              | D            | D              | D      | D      | A      | A   | A     | A                 | A     | A      | A    | A               | A       |                           |
| Starch                                                                                                                      | (C <sub>6</sub> H <sub>10</sub> O <sub>5</sub> ) <sub>N</sub>                                     | 1.5               |                                         | B        | B      | A         | A              | A            | A              | A      | A      |        | B   | A     | A                 | A     | A      | A    | A               | A       | Visc. 100–100,000 SSU     |

Note 1: Avoid dissimilar metals.

Note 3: C or D rating given due to possible contamination of metered product by metal. Material compatibility may be satisfactory.

1 Polytetrafluoroethylene (PTFE)

**A - Excellent    B - Good    C - Poor**  
**D - Not Recommended**  
**Blank Space - Insufficient Information**

| Chemicals                  | Formula                                                            | Sp. Gr. (60°F) | Typical Viscosity (60°F) (CPS) | Aluminum | Bronze | Cast Iron | Tungsten Carb. | Carbon Steel | 304SS-17-4PHSS | 316 SS | 440CSS | Buna-N | EPR | Viton | PTFE <sup>1</sup> | Ryton | Carbon | Peek | Hastelloy C-276 | Chemraz | Remarks                             |
|----------------------------|--------------------------------------------------------------------|----------------|--------------------------------|----------|--------|-----------|----------------|--------------|----------------|--------|--------|--------|-----|-------|-------------------|-------|--------|------|-----------------|---------|-------------------------------------|
| Steam Condensate           |                                                                    |                |                                | A        | A      | A         | A              | A            | A              | A      | D      | A      | C   | A     | A                 | A     | A      | A    | A               | A       |                                     |
| Stearic Acid               | CH <sub>3</sub> (CH <sub>2</sub> ) <sub>16</sub> CO <sub>2</sub> H | 0.839          |                                | B        | C      | C         | C              | C            | A              | A      | B      | B      | B   |       | A                 | A     | A      | A    | A               | A       |                                     |
| Styrene                    | C <sub>6</sub> H <sub>5</sub> CHCH <sub>2</sub>                    | 0.904          |                                | A        | B      | A         | A              | A            | A              | A      | A      | D      | D   | B     | A                 | A     | A      | A    | A               | A       |                                     |
| Sugar Solutions            | Glucose                                                            |                | 2.8 x 10 <sup>6</sup>          | A        | A      | D         | A              | B            | A              | A      | A      | A      | A   | A     | A                 | A     | A      | A    | A               | A       |                                     |
| Sulfate Liquors            |                                                                    |                |                                | D        | D      | B         | A              | B            | B              | A      | B      | B      | A   | A     | A                 | A     | A      | A    | A               | A       |                                     |
| Sulfonic Acid              | C <sub>6</sub> H <sub>5</sub> HSO <sub>3</sub>                     |                |                                | D        | B      | D         | C              | D            | B              | B      | B      |        |     | A     |                   | A     | A      | B    | A               |         |                                     |
| Sulfur                     | S                                                                  | 2.06           | 10.94                          | A        | D      | A         | B              | A            | A              | A      | B      | D      | D   | C     | A                 |       | A      | A    | A               | A       | All Iron Up to 350°F                |
| Sulfur Dioxide             | SO <sub>2</sub>                                                    |                | @ 120°C                        | B        | B      | B         | B              | B            | B              | D      | D      | B      | A   | A     | A                 | A     |        | A    | A               |         |                                     |
| Sulfuric Acid (0-7%)       | H <sub>2</sub> SO <sub>4</sub>                                     | 1.074          |                                | D        | D      | D         | C              | D            | D              | B      | D      | D      | D   | A     | A                 | A     | A      | A    | A               | A       | Hastelloy B, C, D                   |
| Sulfuric Acid (30%)        | H <sub>2</sub> SO <sub>4</sub>                                     | 1.228          |                                | D        | D      | D         | D              | D            | D              | D      | D      | D      | D   | A     | A                 | A     | A      | A    | A               | A       | Rubber or Glass-Lined Equip. Needed |
| Sulfuric Acid (50%)        | H <sub>2</sub> SO <sub>4</sub>                                     | 1.407          |                                | D        | D      | D         | D              | D            | D              | D      | D      | D      | D   | A     | A                 | A     | A      | D    | A               | A       |                                     |
| Sulfuric Acid (85%)        | H <sub>2</sub> SO <sub>4</sub>                                     | 1.790          |                                | D        | D      | B         | D              | B            | B              | A      | D      | D      | D   | A     | A                 | D     | D      | D    | A               | A       |                                     |
| Sulfuric Acid (93%)        | H <sub>2</sub> SO <sub>4</sub>                                     | 1.835          | 23.0                           | D        | D      | B         | D              | B            | B              | A      | C      | D      | D   | A     | A                 | D     | D      | D    | A               | A       |                                     |
| Sulfurized Oil             |                                                                    |                |                                | B        | D      | B         | B              | B            | B              | B      | B      | D      | D   | D     | A                 | A     | A      | A    | A               | A       |                                     |
| Tall Oil                   | Liquid Rosin                                                       |                |                                | D        | B      | B         | A              | B            | B              | B      | B      | B      | D   | A     | A                 | A     | A      | A    | A               | A       |                                     |
| Tallow—Oil                 |                                                                    |                |                                | B        |        |           | A              | A            | A              | A      | A      |        |     | A     | A                 | A     | A      | A    | A               | A       |                                     |
| Tar Oil                    | Creosote                                                           | 1.04-1.10      | 12.0                           | B        | A      | B         | A              | B            | A              | A      | A      | A      | D   | A     | A                 | A     | A      | A    | A               | A       |                                     |
| Tannic Acid (10%)          | C <sub>14</sub> H <sub>10</sub> O <sub>9</sub>                     | 1.04           |                                | C        | B      | C         | C              | C            | A              | A      | B      | A      | A   | A     | A                 | A     | A      | A    | A               | A       |                                     |
| Tergitol Nonionic NPX      | Phenyl Ether                                                       | 1.063          | 373 cks                        |          |        | D         | A              | D            | A              | A      | A      |        |     | A     | A                 | A     | A      | A    | A               | A       |                                     |
| Teritary Amyl Methyl Ether | C <sub>5</sub> H <sub>11</sub> OC <sub>4</sub> H <sub>9</sub>      |                |                                | A        | A      | A         | A              | A            | A              | A      | A      | A      | D   | D     | A                 | A     | A      | A    | A               | A       |                                     |
| Tetrahydrofuran            | C <sub>4</sub> H <sub>8</sub> O                                    | 0.880          |                                | A        | A      | A         | A              | A            | A              | A      | A      | D      | A   | D     | A                 | A     | A      |      | A               | A       |                                     |
| Tetra Methyl Benzene       | (CH <sub>3</sub> ) <sub>4</sub> C <sub>6</sub> H <sub>2</sub>      | 0.896          |                                | A        | A      | A         | A              | A            | A              | A      | A      | A      |     | A     | A                 | A     | A      | A    |                 | A       |                                     |
| Tetrapropylene             | C <sub>12</sub> H <sub>24</sub>                                    | 0.770          |                                | A        | A      | A         | A              | A            | A              | A      | A      | A      | D   | A     | A                 | A     | A      | A    |                 | A       |                                     |
| Textile Spirits            |                                                                    | 0.689          |                                | A        | A      | A         | A              | A            | A              | A      | A      | A      | D   | A     | A                 | A     | A      | A    | A               | A       |                                     |
| Titanium Sulfate (10%)     | (TiSO <sub>4</sub> ) <sub>2</sub> ·9H <sub>2</sub> O               | 1.47           |                                | D        | B      | D         | B              | D            | B              | B      | D      |        |     |       |                   |       | A      |      |                 | B       | Hygroscopic                         |
| Toluene                    | C <sub>6</sub> H <sub>5</sub> CH <sub>3</sub>                      | 0.866          | 0.59                           | A        | A      | A         | A              | A            | A              | A      | A      | D      | D   | A     | A                 | A     | A      | A    | A               | A       |                                     |
| Toluene Diisocyanate       | CH <sub>3</sub> C <sub>6</sub> H <sub>3</sub> (NCO) <sub>2</sub>   | 1.22           | 38-750 SSU                     | D        | D      | A         | A              | A            | A              | A      | A      | D      | A   | B     | A                 | A     | A      | A    | A               | A       |                                     |
| Tomato Paste               |                                                                    |                |                                | B        | C      | C         | A              | C            | A              | A      | A      | D      | A   | D     | A                 | A     | A      | A    | A               | A       |                                     |
| Tri-Chloro-Acetic Acid     | CCl <sub>3</sub> COOH                                              | 1.62           |                                | D        | D      | D         | D              | D            | D              | D      | D      | B      | B   | C     | A                 | A     | A      |      | A               | A       | Glass Linings Needed                |
| Trichloro Ethane (Dry)     | C <sub>2</sub> H <sub>3</sub> Cl <sub>3</sub>                      | 1.44           | 1.20                           | A        | A      | A         | A              | A            | A              | A      | A      | D      | D   | A     | A                 | C     | A      | A    | A               | A       | No Water                            |
| Trichloroethylene          | C <sub>2</sub> HCl <sub>3</sub>                                    | 1.45           | 0.55                           | A        | B      | B         | A              | B            | B              | B      | B      | D      | D   | A     | A                 | C     | A      | A    | A               | A       |                                     |
| Triclene D                 | Trichloroethylene                                                  | 1.45           | 0.55                           | A        | B      | B         | A              | B            | B              | B      | B      | D      | D   | A     | A                 | C     | A      | A    | A               | A       |                                     |
| Tri-Decyl Alcohol          | C <sub>12</sub> H <sub>25</sub> CH <sub>2</sub> OH                 | 0.845          |                                | A        | A      | A         | A              | A            | A              | A      | A      | D      | D   | A     | A                 | A     | A      | A    | A               | A       |                                     |
| Triethanol Amine           | (HOCH <sub>2</sub> CH <sub>2</sub> ) <sub>3</sub> N                | 1.12           | 500 SSU                        | A        | D      | A         | A              | A            | A              | A      | A      | B      | B   | D     | A                 | A     | A      | A    | A               | A       | Note 1                              |
| Triethylene Glycol         | HO(C <sub>2</sub> H <sub>4</sub> O) <sub>3</sub> H                 | 1.12           | 0.47                           | A        | A      | A         | A              | A            | A              | A      | A      | A      | A   | A     | A                 | A     | A      | A    | A               | A       |                                     |
| Trimethylamine             | (CH <sub>3</sub> ) <sub>3</sub> N                                  | 0.662          |                                | A        | D      | A         | A              | A            | A              | A      | A      | B      | A   | D     | A                 | A     | A      | A    | A               | A       | Note 1                              |
| Triethylene Tetraamine     | Na <sub>3</sub> PO <sub>4</sub> ·10H <sub>2</sub> O                | 2.53           |                                | D        | D      | A         | A              | A            | A              | A      | A      | A      | A   | A     | A                 | A     | A      | A    | A               | A       |                                     |
| Tri-Sodium Phosphate       | Na <sub>3</sub> PO <sub>4</sub> ·10H <sub>2</sub> O                | 2.53           |                                | D        | D      | A         | A              | A            | A              | A      | A      | A      | A   | A     | A                 | A     | A      | A    | A               | A       |                                     |
| Triton X-100               | Surfactant                                                         |                | 34.0                           | A        | A      | A         | A              | A            | A              | A      | B      | A      |     | A     | A                 | A     | A      | A    | A               | A       |                                     |
| Tuna Fish Oil              |                                                                    |                |                                | B        | D      | B         | A              | B            | A              | A      | A      | A      |     | A     | A                 | A     | A      | A    | A               | A       |                                     |
| Tung Oil                   | Wood Oil                                                           | 0.936          |                                | B        | B      | B         | A              | B            | A              | A      | A      | A      | D   | A     | A                 | A     | A      | A    | A               | A       |                                     |
| Turpentine                 | C <sub>10</sub> H <sub>16</sub>                                    | 0.87           | 1.48                           | A        | B      | B         | A              | B            | A              | A      | A      | A      | D   | A     | A                 | A     | A      | A    | A               | A       |                                     |
| Urea                       | CO(NH <sub>2</sub> ) <sub>2</sub>                                  | 1.335          |                                | B        | D      | C         | A              | C            | B              | B      | B      | A      | B   |       | A                 | A     | A      | A    | B               | A       |                                     |
| Urea Formaldehyde          |                                                                    |                |                                | D        | D      | A         | A              | A            | A              | A      | A      | A      |     | A     | A                 | A     | A      | A    | A               | A       |                                     |

Note 1: Avoid dissimilar metals.

1 Polytetrafluoroethylene (PTFE)

A - Excellent B - Good C - Poor  
D - Not Recommended  
Blank Space - Insufficient Information

| Chemicals         | Formula                                                       | Sp. Gr.<br>(60°F) | Typical<br>(60°F)<br>Viscosity<br>(CPS) | Aluminum | Bronze | Cast Iron | Tungsten Carb. | Carbon Steel | 304SS-17-4PhSS | 316 SS | 440CSS | Buna-N | EPR | Viton | PTFE <sup>1</sup> | Ryton | Carbon | Peek | Hastelloy C-276 | Chemraz | Remarks         |
|-------------------|---------------------------------------------------------------|-------------------|-----------------------------------------|----------|--------|-----------|----------------|--------------|----------------|--------|--------|--------|-----|-------|-------------------|-------|--------|------|-----------------|---------|-----------------|
|                   |                                                               |                   |                                         |          |        |           |                |              |                |        |        |        |     |       |                   |       |        |      |                 |         |                 |
| Uran-Poly-N       | Fertilizer                                                    |                   |                                         | D        | D      | A         | A              | A            | A              | A      | A      | A      |     | A     | A                 | A     | A      | A    | A               | A       | Note 1          |
| Varnish           | Spar                                                          | 0.900             | 281.0                                   | A        | A      | C         | A              | C            | A              | A      | A      | B      | D   | A     | A                 | A     | A      | A    | A               | A       |                 |
| Vegetable Oil     |                                                               |                   |                                         | A        | B      | B         | A              | B            | A              | A      | B      | A      | A   | A     | A                 | A     | A      | A    | A               | A       | No Cad. Plating |
| Vinyl Acetate     | CH <sub>3</sub> COOCHCH <sub>2</sub>                          | 0.933             |                                         | D        | D      | A         | B              | A            | A              | A      | A      |        | A   | D     | A                 | A     | A      | A    | A               | A       |                 |
| Vinyl Chloride    | CH <sub>2</sub> CHCl                                          | 0.912             |                                         | D        | D      | A         | B              | A            | A              | A      | A      |        |     | A     | A                 | D     | A      | A    | A               | A       |                 |
| Vinegar           | 4% Acetic Acid                                                | 1.04              |                                         | C        | B      | D         | C              | D            | A              | A      | D      | B      | A   | A     | A                 | A     | A      | A    | A               | A       |                 |
| Water (Distilled) | H <sub>2</sub> O                                              | 1.00              |                                         | A        | A      | D         | B              | D            | A              | A      | A      | A      | A   | D     | A                 | A     | A      | A    | A               | A       |                 |
| Water-Sea         | H <sub>2</sub> O                                              | 1.025             |                                         | B        | B      | D         | B              | D            | A              | A      | C      | A      | A   | D     | A                 | A     | A      | A    | A               | A       | Note 1          |
| Water-Fresh       | H <sub>2</sub> O                                              | 1.00              |                                         | A        | A      | C         | B              | C            | A              | A      | A      | A      | A   | D     | A                 | A     | A      | A    | A               | A       | Note 1          |
| Whiskey and Wine  |                                                               |                   |                                         | D        | A      | D         | A              | D            | A              | A      | A      | A      | A   | A     | A                 | A     | A      | A    | A               | A       | SS Preferred    |
| Xylene            | C <sub>6</sub> H <sub>4</sub> (CH <sub>3</sub> ) <sub>2</sub> | 0.868             | 0.620                                   | A        | A      | A         | A              | A            | A              | A      | A      | D      | D   | A     | A                 | A     | A      | A    | A               | A       |                 |
| Zeolites          | Hydrated Silicates                                            |                   |                                         | D        | D      | A         | B              | A            | A              | A      | A      | A      | A   | A     | A                 | A     | A      | A    | A               | A       | Note 1          |
| Zinc Sulfate      | ZnSO <sub>4</sub>                                             | 1.966             |                                         | D        | C      | B         | B              | B            | A              | A      | C      | A      | A   | A     | A                 | A     | A      | A    | A               | A       |                 |
| Zinc Chloride     | ZnCl <sub>2</sub>                                             | 2.91              |                                         | D        | D      | C         | D              | D            | D              | D      | D      | A      | A   | A     | A                 | A     | A      | A    | A               | A       |                 |

Note 1: Avoid dissimilar metals.

1 Polytetrafluoroethylene (PTFE)

Revisions included in AB0A002 Issue/Rev. 0.2 (12/96):

Included Update AB0A002U1 which added Master Gasket, Gylon, Gore Tex, and Chemraz Sealants; and Electroless Nickel, Hard Chrome, and Austenitic Stainless Steel Platings.

Added Ethyl Teritary Butyl Ether (ETBE), Methyl Teritary Butyl Ether (MTBE), and Teritary Amyl Methyl Ether to the list , of Chemicals.

Added Peek, Chemraz, and Hastelloy C-276 to list of Metals.

Editorial Change 12/13: Elastomer reference was changed to PTFE, pages 5-17.

March 2019 - Updated branding and contact information.

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