Department of Energy (DOE) OSH Technical Reference
http://geguchadze.com/PDF/protocols/CPonline/Doc/19880-19880.html
http://www.ansellpro.com/download/Ansell_7thEditionChemicalResistanceGuide.pdf

Chapter 5 - Personal Protective Equipment Appendix C. - **Glove Selection Material**

Frequently used industrial gloves are listed below. Descriptions are provided to make selection easier. Table C.1 is a chemical resistance chart for gloves.

1. **Asbestos Gloves**. Prohibited. Kevlar and Zetex are substitutes. Refer to paragraph five below.

2. **Aluminized Gloves**. Offer both reflective and insulating protection. The insert shall NOT be made of asbestos. Kevlar and Zetex are satisfactory asbestos substitutes. These gloves are generally used for welding, furnace, and foundry work.

3. **Coated Fabric Glove**. Normally made from cotton flannel with napping on one side. The unnapped side is coated with a plastic material. This type glove is a general-purpose protector offering slip-resistant qualities. They are used in laboratory tasks and for handling bricks and wire rope.
4. **Chemical and Liquid Resistant Gloves**. Made from rubber (latex, nitrile, or butyl) or a synthetic composition such as neoprene. Frequently used gloves are described below:

    1. **Butyl Rubber Gloves**. Provide protection from nitric acid, sulfuric acid, hydrofluoric acid, red fuming nitric acid, rocket fuels, and peroxide. These gloves have a high impermeability to gases, chemicals, and water vapor, and resistance to oxidation and ozone attack. They have high abrasion resistance and remain flexible at low temperatures.

    2. **Natural Latex or Rubber Gloves**. Provide protection from most water solutions of acids, alkalis, salts, and ketones. Plus, they are resistant to abrasions occurring in sandblasting, grinding, and polishing. These gloves have excellent wearing qualities, pliability, and comfort and are a good general-purpose glove.

    3. **Neoprene Gloves**. Provide good protection from hydraulic fluids, gasoline, alcohols, organic acids, and alkalis. They have good pliability and finger dexterity, high density and tensile strength, plus high fear resistance.

    4. **Nitrile Rubber Gloves**. Provide protection from chlorinated solvents (trichloroethylene, perchloroethylene). They are intended for jobs requiring dexterity and sensitivity, yet they stand up under mechanical use even after prolonged exposure to substances that cause other glove materials to deteriorate. They also resist abrasion, puncturing, snagging, and tearing.

5. **Substitutes for Asbestos Gloves**. Gloves made out of the fabrics listed below are substitutes for asbestos gloves.

    1. **Kevlar**. Provides protection against heat and cold. Kevlar is a synthetic material and is used by a variety of manufacturers in their gloves. Gloves made of Kevlar material are cut and abrasion resistant and wear well.

    2. **Zetex**. Provides protection against heat and cold. It is also a synthetic material and is used by several manufacturers in their gloves. Gloves made of Zetex material are cut and abrasion resistant and also withstand diluted acids (except hydrofluoric, alkalis, and solvents).

Chemical Resistance of Commonly Used Gloves[a,b]*

Limited Service VG = Very Good G = Good F = Fair P = Poor (not recommended)

Chemical	Neoprene gloves	Latex or rubber gloves	Butyl gloves	Nitrile latex gloves
*Acetaldehyde	VG	G	VG	G
Acetic acid	VG	VG	VG	VG
*Acetone	G	VG	VG	P
Ammonium hydroxide	VG	VG	VG	VG
*Amyl acetate	F	P	F	P
Aniline	G	F	F	P
*Benzaldehyde	F	F	G	G
*Benzene	P	P	P	F
Butyl acetate	G	F	F	P
Butyl alcohol	VG	VG	VG	VG
Carbon disulfide	F	F	F	F
*Carbon tetrachloride	F	P	P	G
Castor oil	F	P	F	VG
*Chlorobenzene	F	P	F	P
*Chloroform	G	P	P	E
Chloronaphthalene	F	P	F	F
Chromic acid (50%)	F	P	F	F
Citric acid (10%)	VG	VG	VG	VG
Cyclohexanol	G	F	G	VG
*Dibutyl phthalate	G	P	G	G
Diesel fuel	G	P	P	VG
Diisobutyl ketone	P	F	G	P
Dimethylformamide	F	F	G	G
Dioctyl phthalate	G	P	F	VG
Diaxane	VG	G	G	G
Epoxy resins, dry	VG	VG	VG	VG
*Ethyl acetate	G	F	G	F
Ethyl alcohol	VG	VG	VG	VG
*Ethyl ether	VG	G	VG	G
*Ethylene dichloride	F	P	F	P
Ethylene glycol	VG	VG	VG	VG
Formaldehyde	VG	VG	VG	VG
Formic acid	VG	VG	VG	VG
Freon 11	G	P	F	G
Freon 12	G	P	F	G
Freon 21	G	P	F	G
Freon 22	G	P	F	G
*Furfural	G	G	G	G
Gasoline, leaded	G	P	F	VG
Gasoline, unleaded	G	P	F	VG
Glycerin	VG	VG	VG	VG
Hexane	F	P	P	G
Hydrazine (65%)	F	G	G	G
Hydrochloric acid	VG	G	G	G
Hydrofluoric acid (48%)	VG	G	G	G
Hydrogen peroxide (30%)	G	G	G	G
Hydroquinone	G	G	G	F
Isooctane	F	P	P	VG
Kerosene	VG	F	F	VG
Ketones	G	VG	VG	P

Lacquer thinners	G	F	F	P
Lactic acid (85%)	VG	VG	VG	VG
Lauric acid (36%)	VG	F	VG	VG
Lineoleic acid	VG	P	F	G
Linseed oil	VG	P	F	VG
Maleic acid	VG	VG	VG	VG
Methyl alcohol	VG	VG	VG	VG
Methylamine	F	F	G	G
Methyl bromide	G	F	G	F
*Methyl chloride	P	P	P	P
*Methyl ethyl ketone	G	G	VG	P
*Methyl isobutyl ketone	F	F	VG	P
Methyl methacrylate	G	G	VG	F
Monoethanolamine	VG	G	VG	VG
Morpholine	VG	VG	VG	G
Naphthalene	G	F	F	G
Naphthas, alyphatic	VG	F	F	VG
Naphthas, aromatic	G	P	P	G
*Nitric acid	G	F	F	F
Nitric acid, red and white fuming	P	P	P	P
Nitromethane * (95.5%)	F	P	F	F
Nitropropane (95.5%)	F	P	F	F
Octyl alcohol	VG	VG	VG	VG
Oleic acid	VG	F	G	VG
Oxalic acid	VG	VG	VG	VG
Palmitic acid	VG	VG	VG	VG
Perchloric acid (60%)	VG	F	G	G
Perchloroethylene	F	P	P	G
Petroleum distillates (naphtha)	G	P	P	VG
Phenol	VG	F	G	F
Phosphoric acid	VG	G	VG	VG
Potassium hydroxide	VG	VG	VG	VG
Propyl acetate	G	F	G	F
Propyl alcohol	VG	VG	VG	VG
Propyl alcohol (iso)	VG	VG	VG	VG
Sodium hydroxide	VG	VG	VG	VG
Styrene	P	P	P	F
Styrene (100%)	P	P	P	F
Sulfuric acid	G	G	G	G
Tannic acid (65%)	VG	VG	VG	VG
Tetrahydrofuran	P	F	F	F
*Toluene	F	P	P	F
Toluene diisocyanate (TDI)	F	G	G	F
*Trichloroethylene	F	F	P	G
Triethanolamine (85%)	VG	G	G	VG
Tung oil	VG	P	F	VG
Turpentine	G	F	F	VG
*Xylene	P	P	P	F

[a] Performance varies with glove thickness and duration of contact. An asterisk indicates limited use. Abbreviations: VG, very good; G, good; F, fair; P, poor (do not use).

[b] Adapted from the July 8, 1998, version of the DOE OSH Technical Reference Chapter 5 (APPENDIX C at *http://tis.eh.doe.gov/docs/osh_tr/ch5c.html*). For more information also see Forsberg and Keith (1999).