Glove Selection Guide

The following Glove Selection & Usage Chart provides advantages and disadvantages for specific glove types. This guide was prepared for laboratory researchers but is helpful for all people working with hazardous materials.

Always Read the Safety Data Sheets (SDSs) for each chemical involved.

Glove Selection & Usage Chart

What to do	How to do it
Identify the hazards of the material(s) you'll be working with	Base selection of glove type and material on the type of exposure and the nature of the hazard. Some chemicals can easily penetrate gloves that work well for other chemicals. Consider these factors: • Chemical types • pH • Toxicity • Temperature extremes, cryogenic properties • Physical hazards (sharps, piercing objects • Infectious potential of biological hazards
Determine if you will have incidental or extended contact with the hazardous materials	A. **Incidental Contact** includes these situations: • Accidental spill or splashes • Accidental overspray from a dispensing device • Handling infectious agents that require barrier protections • To prevent contamination of materials during handling B. **Extended Contact** includes these situations: • Handling highly contaminated materials • Submerging hands in a chemical or other hazardous substance • Need for physical protection from temperature extremes or sharp/piercing objects ❖ If you have incidental contact , go to Step 3 ❖ If you have extended contact, go to Step 4
For incidental contact follow these selection guidelines	1. Type of glove: disposable, surgical-type gloves are appropriated for incidental contact. 2. Nitrile gloves are preferred over latex because of their chemical resistance, their tendency to visibly rip when punctured and to prevent possible latex allergies.

Completed: March, 2018

What to do	How to do it
	3. Disposable gloves usage: • Check for rips or punctures before use • Remove and replace gloves immediately with new ones when a chemical spills or splashes on them • Never wash or reuse disposable gloves • Always remove gloves before touching objects such as door knobs, phones or elevator buttons
For extended contact follow these guidelines	1. Type of glove: More substantial gloves are required for extended use. 2. Norfoil gloves are recommended for highly toxic materials and materials that are absorbed through the skin. 3. See Glove Comparison Chart for advantages & disadvantages if a commonly used gloves is used for extended contact. 4. Reusable glove usage: • Many gloves intended for extended contact are reusable Check the gloves for: • Rips or punctures before and after each use • Prior contamination • Signs of degradation (change in color or texture) • Replace gloves as soon as signs of degradation appear • Wash after removal and air dry. • Consider wearing inner pair of gloves for extra protection
Dispose of used and damaged gloves according to whether or not they're contaminated with a hazardous material	***ALWAYS wash your hands after removing gloves.***

Completed: March, 2018

Glove Comparison Chart

Consult this chart for an overview of commonly used glove types for laboratory use and their general advantages and disadvantages.

NOTE: Pictures are examples and glove appearance and color will vary.

Glove Material	Intended Use	Advantages & Disadvantages	Example Photos
Latex (natural rubber) gloves	Incidental Contact	• Good for biological & water-based materials • Poor for organic solvents • Little chemical protection • Hard to detect puncture holes • Can cause or trigger latex allergies	
Nitrile gloves	Incidental contact (disposable exam glove) Extended contact (heavier, reusable glove)	• Excellent general use glove. Good for solvents, oils, greases and some acids and bases • Clear indication of tears and breaks • Good alternative for those with *latex allergies*	
Butyl rubber gloves	Extended contact	• Good for ketones and esters • Poor for gasoline and aliphatic, aromatic and halogenated hydrocarbons	
Neoprene gloves	Extended contact	• Good For acids, bases, alcohols, fuels, peroxides, hydrocarbons and phenols • Poor for halogenated & aromatic hydrocarbons • Good for most hazardous chemicals	

Completed: March, 2018

Glove Material	Intended Use	Advantages & Disadvantages	Example Photos
Norfoil	Extended Contact	• Good for most hazardous chemicals • Poor fit. Dexterity can be partially regained by using a heavier weight nitrile glove over the Norfoil/Silver Shield glove	
Viton	Extended contact	• Good for chlorinated & aromatic solvents • Good resistance to cut and abrasions • Poor for ketones • Expensive	
Polyvinyl chloride (PVC) gloves	Specific use	• Good for acids, bases, oils, fats, peroxides and amines • Good resistance to abrasions • Poor for most organic solvents	
Polyvinyl alcohol (PVA) gloves	Specific use	• Good for aromatic & chlorinated solvents • Poor for water-based solutions	
Stainless steel Kevlar Leather	Specific use	• Cut-resistant gloves • Sleeves are also available to provide protection to wrists & forearms • If potential for biological or chemical contamination, wear appropriate disposable gloves on top of your cut-resistant gloves and discard after use	

Completed: March, 2018

Glove Material	Intended Use	Advantages & Disadvantages	Example Photos
Cryogenic Resistant Materials gloves Leather	Specific use	• For use with cryogenic materials • Designed to prevent frostbite. NOTE: Never dip gloves directly into liquid nitrogen	
Nomex	Specific use	• For use with pyrophoric materials • Consider wearing a flame-resistant glove such as Nomex "flight" gloves with a thin nitrile exam glove underneath	

Completed: March, 2018

Glove Type and Chemical Use

*****Always check the product SDS to verify that the appropriate glove has been correctly selected for the job*****

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

Chemical	Neoprene	Natural Latex or Rubber	Butyl	Nitrile
*Acetaldehyde	VG	G	VG	G
Acetic acid	VG	VG	VG	VG
*Acetone	G	VG	BG	P
Ammonium Hydroxide	VG	VG	VG	VG
*Amyl Acetate	F	P	F	P
Aniline	G	F	F	P
*Benzaldehyde	F	F	G	G
*Benzene	F	F	F	P
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	P
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
Dioxane	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

Completed: March, 2018

Chemical	*Neoprene*	*Natural Latex or Rubber*	*Butyl*	*Nitrile*
**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*
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*
Isopropyl alcohol	*VG*	*VG*	*VG*	*VG*
Kerosene	*VG*	*F*	*F*	*VG*
Ketones	*G*	*VG*	*VG*	*P*
Lacquer Thinner	*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*
Naphtha, aliphatic	*VG*	*F*	*F*	*VG*
Naphtha, aromatics	*G*	*P*	*P*	*G*
**Nitric Acid*	*G*	*F*	*F*	*F*
Nitromethane (95%)	*F*	*P*	*F*	*F*
Nitropropane (95%)	*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*

Completed: March, 2018

Chemical	*Neoprene*	*Natural Latex or Rubber*	*Butyl*	*Nitrile*
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	*F*	*G*	*G*	*F*
**Trichloroethylene*	*F*	*F*	*P*	*G*
Triethanolamine	*VG*	*G*	*G*	*F*
Tung Oil	*VG*	*P*	*F*	*VG*
Turpentine	*G*	*F*	*F*	*VG*
**Xylene*	*P*	*P*	*P*	*F*

Completed: March, 2018