GLOVES SELECTION CHART

1. Physical Resistance
2. Chemical Resistance
3. Application

2

Check Chemical Classification & Hazards Refer to MSDS

Use Chemical Resistance Chart

Determine Level of Protection
1. Physical Condition
2. Chemical Condition

Select Material of Glove Refer to Material Chart

3

3

Consider features for application: grip, length, dexterity, comfort, insulation, type of cuff

Balance between features for application. Thinner-gauge: extra dexterity & tactility. Heavier-gauge: greater protection and wear. Flock-lined for extra comfort, insulation and wear. Supported for added cut, snag, puncture or abrasion resistance.

Determine finish & grip for your application: rough, smooth, wrinkle, embossed or bisque, etc.

Select glove length: Immersed depth? Splash?

Select size for right fit, dexterity & comfort

Select colour for contamination identification or work area designation

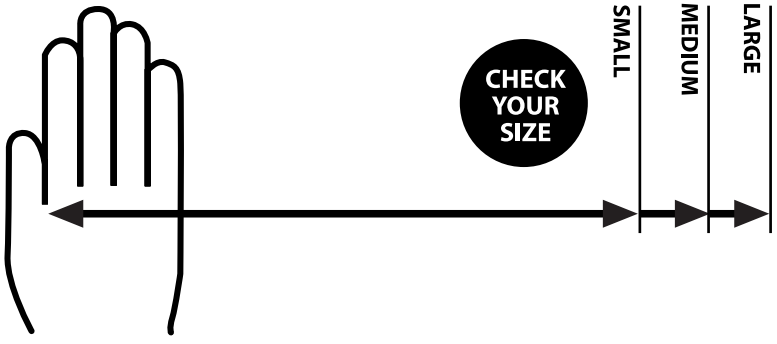
1

Physical Resistance: Abrasion, Cut, Puncture Temperature

Select material of glove needed Refer to Material Chart

For product protection: toughness, fit, thickness & temperature or disposability

3



OVERVIEW OF GLOVE MATERIALS

Ideally, the perfect glove should be made of materials that resists all chemicals, provide excellent tactile sensitivity, protect against all physical hazards and are durable. In practice, this is not available as each material characteristics react differently to certain working conditions.

OVERVIEW OF SPECIAL GLOVE MATERIALS

Butyl	Viton	Polyurethane	PVA	Chlorosulphonated Polyethylene (CSM)
Superior resistance to highly corrosive acids. Excellent for ketones & esters, good resistance to bases, alcohol, ammines and amides, glycol ethers, nitrocompounds and aldehydes	Most chemical resistance of all rubbers against toxic and highly permeating chemicals, eg. PBCs, benzene, aniline and most solvents	Superior resistance against ketonic, organic and aromatic compounds. Good for most solvents like toluene, methanol gasoline, acetone, MEK, etc	Superior against most strong solvents like aromatics and chlorinated	Excellent resistance against strong acids and alkalis
Not good for hydrocarbons	Minimal resistance to cuts and abrasion	Not good for OME, phenol, THF, acids and alkalis	Not good for water based solutions	Does not perform well in organic and aromatic solvents

PHYSICAL RESISTANCE CHART

Material	Abrasion Resistance	Cut Resistance	Flexibilty	Heat Resistance	Ozone Resistance	Puncture Resistance	Tear Resistance
Butyl Rubber (Butyl)	F	G	G	E	E	G	G
Chlorinated Polyethylene (CPE)	E	G	G	G	E	G	G
Natural Rubber	E	E	E	F	P	E	E
Nitrile-Butadiene Rubber (NBR)	E	E	E	G	F	E	G
Neoprene	E	E	G	G	E	G	G
Nitrile Rubber (Nitrile)	E	E	E	G	F	E	G
Nitrile Rubber + Polyvinyl Chloride (Nitrile + PVC)	G	G	G	F	E	G	G
Polyethylene	F	F	G	F	F	P	F
Polyurethane	E	G	E	G	G	G	G
Polyvinyl Alcohol (PVA)	F	F	P	G	E	F	G
Polyvinyl Chloride (PVC)	G	P	F	P	E	G	G
Styrene-Butadience Rubber (SBR)	E	G	G	G	F	F	F
Viton	G	G	G	G	E	G	G
RATING KEY:	E = EXCELLENT		G = GOOD		F = FAIR	P = POOR	

Note: Rating are subject to variation depending on formulation, thickness and whether material is supported by fabric.

CHEMICAL RESISTANCE CHART

The chart below shows the degradation of the gloves. Degradation is the reduction in one or more of the physical properties of the material due to chemical contact. Exposed gloves may swell, get harder or softer, stiffen or weaken or become brittle. Degradation-resistance testing of gloves is important to assure worker safety, however, permeation-resistance testing is also essential. Data shown are the result of laboratory tests and are intended to serve only as a guide. No performance warranty is intended or implied.

DEGRADATION RESISTANCE CHART

Chemical	Natural Rubber	Neoprene	Nitrile	Vinyl
Acetaldehyde	G	G	E	G
Acetic acid	E	E	E	E
Acetone	G	G	G	F
Acrylonitrile	P	G	-	F
Ammonium hydroxide (conc.)	G	E	E	E
Aniline	F	G	E	F
Benzaldehyde	F	F	E	G
Benzene	P	F	G	F
Benzyl Chloride (a)	F	P	G	P
Bromine	G	G	-	G
Butane	P	E	-	P
Butyraldehyde	P	G	-	G
Calcium hypochlorite	P	G	G	G
Carbon disulfide	P	P	G	F
Carbon tetrachloride	P	F	G	F
Chlorine	G	G	-	G
Chloroacetone	F	E	-	P
Chloroform (a)	P	F	G	P
Chromic acid	P	F	F	E
Cyclohexane	F	E	-	P
Dibenzyl ether	F	G	-	P
Dibutyl phthalate	F	G	-	P
Diethanolamine	F	E	-	E
Diethyl ether	F	G	E	P
Dimethyl Sulfoxide (b)	-	-	-	-
Ethyl acetate	F	G	G	F
Ethylene dichloride (a)	P	F	G	P
Ethylene glycol	G	G	E	E
Ethylene trichloride (a)	P	P	-	P
Fluorine	G	G	-	G
Formaldehyde	G	E	E	E
Formic acid	G	E	E	E
Glycerol	G	G	E	E
Hexane	P	E	-	P
Hydrobromic acid (40%)	G	E	-	E
Hydrochloric acid (conc.)	G	G	G	E
Hydrofluoric acid (30%)	G	G	G	E
Hydrogen peroxide	G	G	G	E
Iodine	G	G	-	G
Methylamine	G	G	E	E
Methyl cellosolve	F	E	-	P
Methyl chloride (a)	P	E	-	P
Methylene chloride (a)	F	F	G	F
Methyl ethyl ketone	F	G	G	P
Monoethanolamine	F	E	-	E
Morpholine	F	E	-	E
Naphthalene (a)	G	G	E	G
Nitric acid (conc.)	P	P	P	G
Perchloric acid	F	G	F	E
Phenol	G	E	-	E
Phosphoric acid	G	E	-	E
Potassium hydroxide (sat.)	G	G	G	E
Propylene dichloride	P	F	-	P
Sodium hydroxide	G	G	G	E
Sodium hypochlorite	G	P	F	G
Sulfuric acid (conc.)	G	G	F	G
Toluene (a)	P	F	G	F
Trichloroethylene (a)	P	F	G	F
Tricresyl phosphate	P	F	-	F
Triethanolamine	F	E	E	E
Trinitrotoluene	P	E	-	P
RATING KEY:	E = EXCELLENT	G = GOOD	F = FAIR	P = POOR

(a) Aromatic and halogenated hydrocarbons will attack all types of natural and synthetic glove material. Should swelling occur, the user should change to fresh gloves and allow the swollen gloves to dry and return to normal.

(b) No data on the resistance to dimethyl sulfoxide of natural rubber, neoprene, nitrile rubber, or vinyl materials are available; the manufacturer of the substance recommends the use of butyl rubber gloves.

GLOVE SELECTION

Selecting The Proper Gloves

Before choosing the right glove, it is essential to be familiar with the applications in which gloves will be used. It is also important to understand what level of protection is required. For example, if you are holding hot sheets of metal, it is important to know how hot the metal will get. That will determine whether a 400 degree glove is sufficient or if a glove with a higher temperature rating will be necessary. For chemical-resistant gloves, it is important to know what chemicals and concentrations are being used. There are various glove materials available, each having specific benefits.

Applications

Contamination Protection – Disposable gloves provide limited protection against liquids, oils, chemicals and minor injuries while offering the advantage of easy cleanup. They are ideal for inspections and food preparation since discarding them after a single use avoids transfer of micro-organisms from one area to another.

Chemical Resistance* – Chemical-purpose gloves provide protection against a wide range of chemicals. While they protect against specified chemicals, they also protect against other minor injuries from liquids because the gloves provide a continuous membrane that does not allow even non-hazardous liquids to penetrate the material. Many chemical-resistant gloves also can also be used for protection against abrasion, cuts, punctures and snags. Their applications vary depending on the material used.

General Mechanical Protection – General-purpose gloves provide protection against various injuries depending on the construction of the glove. They are not liquid-proof in nature unless a chemical-resistant glove is worn as a liner.

Cut Resistance – Cut-resistant gloves provide protection against sharp objects such as blades, glass and metals.

* Note that chemical-resistant gloves are not universally resistant to all chemicals. Different types of chemical-resistant gloves are manufactured from different materials that are resistant to specified chemicals and concentrations.

Glove Materials

Natural Rubber – Natural rubber gloves are widely used because of their snag, puncture, abrasion and cut resistance. They are very comfortable and permit excellent dexterity. They are also an economical alternative to nitrile or neoprene. Natural rubber gloves contain proteins that can cause allergic reactions, so they are not recommended for everyone. Natural rubber will also swell and degrade when coming in contact with various animal fats, oils and solvents.

Nitrile – Nitrile gloves are the most effective replacement for natural rubber, vinyl and neoprene. Nitrile offers excellent protection against acids, bases, oils, solvents, esters, greases and animal fats. Nitrile gloves are more resistant to snags, punctures, abrasions and cuts than neoprene or polyvinylchloride gloves. Nitrile does not contain latex proteins which can cause allergic reactions. Because nitrile gloves are so versatile, they are ideal for use in laboratories, automotive and aircraft part-handling and assembly, plant cleaning, chemical processing, food processing, petroleum refining, dip tank operations, acid etching, painting, graphic arts, battery manufacturing, degreasing, electronics and pesticide handling.

Neoprene – Neoprene gloves are an effective replacement for natural rubber and vinyl. Neoprene offers excellent protection against acids, alcohols, oils, solvents, esters, greases and animal fats. Neoprene gloves are resistant to snags, punctures, abrasion and cuts. Neoprene does not contain latex proteins that can cause allergic reactions. Neoprene gloves are versatile because they are chemical-resistant and can withstand temperature fluctuations.

PVC – PVC gloves provide excellent resistance to most fats, oils, acids, caustics and petroleum hydrocarbons. They are resistant to alcohols and glycol ethers but not aromatics, aldehydes and ketones. In particular, PVC gloves are good for handling chemicals such as: citric acid (10%), cyclohexane, ethylene glycol, formaldehyde, formic acid, glycerine, hydrochloric acid (linseed oil, perchloric acid, potassium hydroxide and tannic acid.) Because PVC gloves have excellent abrasion resistance, they are ideal for use in petrochemical, construction and industrial applications.

Polyester/Cotton – Poly/cotton blends are commonly used in the string knit gloves because of their comfort, durability and excellent laundering characteristics. By mixing polyester with cotton, shrinkage can be minimized.

Kevlar® – Kevlar® is a man-made organic fiber developed for use in high performance applications. The par-aramid fiber has high resistance to cuts and slashes which makes it ideal for use in applications where sharp objects are being used. The high tensile strength and low weight of Kevlar® makes it durable yet lightweight to wear. Kevlar® is flame resistant, self-extinguishes and can be used in elevated temperatures. Kevlar® is a registered trademark of the Dupont company.

Leather – Leather is the hide or skin of an animal. The most widely used leather for gloves is cowhide. Other leathers used are pigskin, goatskin and deerskin. Leather is used because it offers abrasion resistance, is flexible and allows air through its pores. Hides are processed in tanneries by applying chrome sulfate and bichromate of potash (the reason they are called "chrome tanned") along with coloring agents. After processing, the hides are split. The durability of leather is in direct proportion to its thickness and not to its location on the animal.

510WSWG1412AE

Description	RUBBER PALM COATED GLOVES

Ergonomic design adds more comfort, enables prolonged usage and avoids hand fatigue. Wrinkled finish, natural rubber palm ensures safe and sure grip for handling slippery or abrasive objects. Natural rubber inhibits liquid penetration. Available in both heavy duty and economical versions.

Applications

- Construction
- Shipping
- Transportation
- Deep-sea fishing
- Quarrying
- Gardening
- Glass handling

Description	Cotton /Polyester shell, wrinkled finish orange latex palm dip gloves
Size	8, 9, 10
Packing	10 prs/bag, 12 bags/case

500WSWG1412K

Description	KEVLAR® PALM COATED LATEX GLOVES

100% rubber coating with seamless liner to enhance comfort and lessen hand fatigue. Wrinkled finish, natural rubber palm ensures safe and sure grip for handling slippery or abrasive objects. Uncoated back design allows gloves to breathe for more comfort.

Applications

- General maintenance work
- Automotive assembly
- Electronics
- Light assembly
- Manufacturing
- Small part handling

Description	10 Gauge Kevlar® liner gloves with wrinkled finish latex palm coat
Size	9, 10
Packing	12 prs/bag, 5 bags/case

Kevlar® is a registered trademark of the Dupont company.