Hand Protection Ready Reference

Updated 10/2018

1. The Law

A. OSHA 1910.138 Hand Protection

- This very general standard that requires a Hazard Assessment to determine the appropriate hand protection when exposed to chemicals, cuts and lacerations, severe abrasions, punctures, burns, and temperature extremes.

2. The Essentials

A. What Size Gloves Do I Need?

- Measure around the widest part of your hand (at the knuckles) Glove Sizing
  - 6" = X-Small
  - 7" = Small
  - 8" = Medium
  - 9" = Large
  - 10" = X-Large
- Some brands of gloves may contradict this sizing description because they are using European sizing which does not correlate to circumference of hand in inches. When in doubt, use the text description to clarify the gloves' size. For example, if you measure your hand and it comes out to about 9" in circumference (Large) and the glove you are looking at purchasing indicates "Medium, 9", this glove will be too small, as it is using the European sizing scheme. In this example, you will need to go up to the "Large, 10", because your measurement indicated that you need a Large.
- Some gloves in our catalog have the European size listed, and not the text version. When in doubt, please contact a Conney Safety Advisor to clarify.
- If a hand measurement is between sizes, choose the larger size.

B. What Are the Categories of Gloves?

Disposable Gloves offer limited chemical protection and intended as a simple barrier between the skin and the product, while allowing greater dexterity and sensitivity with the fingers. Normally intended as a single use glove.

- **Category Options** – Latex rubber, nitrile, vinyl, synthetic, and polyethylene
- **Selection Considerations**

- Exam gloves are approved for blood (must state it meets FDA standards as an exam glove)
- Powdered gloves are easier to put on than powder-free gloves
- USDA accepted gloves are approved for food handling
- Some latex gloves listed as low protein and offer less chance of promoting an allergy
- Varying thickness of 1 – 9 mil (1 mil = 1/1,000")

Chemical-Resistant Gloves help provide protection in a wide range of chemicals as well as from nuisance hand injuries (when supported gloves are used). There is not one single glove that will provide maximum protection against all chemicals.

- **Category Options** – Latex rubber, nitrile, PVC (vinyl), neoprene, butyl, PVA, Viton, and Silvershield
- **Selection Considerations**
  - Supported gloves have a liner to provide additional cut/puncture protection, help with temperature extremes, and absorb sweat.
  - Unsupported gloves are less expensive, have a true thickness listed, and generally have better dexterity.
  - While being double to triple the price of unsupported gloves, the comfort and cut/abrasion protection qualities of a supported glove is well worth the extra cost in many work situations. Does the customers' work situation have a risk for cuts while wearing the chemical gloves?
  - Some chemical gloves are cotton flock lined to make the hand easier to slide glove on/off and feel more comfortable while wearing.
  - Conney's Safety Support Team can help identify which glove provides the best chemical resistance for every situation. We review both permeation and degradation data to help give you the best options to choose from.
- **Selection Process**
  - Determine the work application
  - Determine the exact chemicals involved
  - Determine what kind of glove had previously been used
  - Choose supported or unsupported gloves
  - Determine the length of glove needed
  - Review the chemical guides:
    Ansell Edmont Gloves www.ansellpro.com
    Best Gloves www.chemrest.com
    Mapa Gloves www.mapa-pro.com

- Quick Comparison of Glove Materials
- Disposable Glove Guide

General Purpose Gloves are used where there is a need for help in providing protection against nuisance hand injuries such as cuts, snags, punctures, and abrasions. Not normally intended for use in chemicals and liquids.

- **Category Options –** Glove liners, reversible gloves, dotted or coated palm gloves
- **Selection Considerations**
  - Woven material options include cotton, Kevlar, nylon, polyester
  - Coating options include uncured PVC (tacky grip), polyurethane (most dexterity), rubber (durable, good grip), and nitrile (durable, oil-resistant)

Cut-Resistant Gloves provide varying degrees of cut and laceration protection to the wearer, primarily dependant on the type of material used and the thickness. Thinner style gloves can be used as a liner. The new ANSI standard classifies glove cut resistance from A1 thru A9, A1 being the lowest indicator of cut resistance and A9 being the highest indicator. There also is a new EN388 or European standard of cut resistance) of A thru F, where A is the lowest indicator of cut resistance and F being the highest indicator.

- **Category Options –** Kevlar, Spectra/Dyneema, stainless steel strands, synthetic/composite fiber yarn (like UHMWPE or HPPE), fiberglass, and metal mesh
- **Selection Considerations**

- Coated vs. Uncoated – Coated gloves may have PVC dots or other material to give a better grip to the slippery surface of this category of glove. USDA accepted food gloves can have no dots. Coatings on dipped gloves may be polyurethane, nitrile, foam nitrile, latex, PVC, or blends of different coatings
- Metal mesh has the highest level of cut protection and is a repairable product
- Kevlar is pound-for-pound stronger than steel and is available in various thicknesses
  - Cut-Resistant Glove Standards (for comparing one cut-resistant glove to the next). See the following links:
    Guide to New ANSI Cut Levels for Gloves
    Comparing the New to the Old ANSI Standard for Gloves

Temperature-Resistant Gloves are made of different materials for various heat applications. Cold application gloves can be found in both the chemical resistant and leather glove section. Listed temperature ranges are only estimates and should be carefully tested during initial use.

- **Category Options –** Hot mill, dotted, steam-proof, terrycloth, glass fiber wool, aluminized, and Kevlar
- **Selection Considerations**
  - Type of heat – Picking up a hot object vs. steam protection vs. radiant heat
  - Weight of object – The heavier the object, the quicker the heat transfers through the glove
  - Frequency of handling objects – Heat buildup can occur from frequent handling of hot objects
  - Dexterity – A more flexible glove will typically give less heat protection

Leather Gloves are best for protection from rough objects, sparks, and heat, and for cushioning from blows in heavy-duty work environments. All kinds of leather provide comfort, durability, dexterity, mild heat resistance, and abrasion protection. These advantages make leather a traditional favorite.

- **Category Options**
  - **Cowhide** is the most commonly used leather within the glove industry. The advantages include comfort, durability, excellent abrasion, and breathability. Chrome tanning of this leather provides greater wear and heat resistance.
  - **Pigskin** offers the greatest breathability due to the porous texture of this hide. Additionally, pigskin tends to become softer with use and withstands moisture without stiffening. When laundered, this leather will return to its natural soft texture more so than other leathers.
  - **Goatskin** is a stronger and more durable leather. The natural lanolin produced by goats helps to create the softest, most abrasion resistant leather. This leather is highly recommended for applications requiring tactile sensitivity.
  - **Deerskin** is the warmest of the leathers and is very soft and long-wearing. Use when dexterity is needed and in cold weather.

- **Selection Considerations**
  - **Driver's vs. Palm Glove**
    - A driver's glove is 100% leather, while a palm glove has a fabric backing and is lined in cotton

  - **Thumb Options**
    - **Straight Thumb** is the basic thumb pattern, requiring least material and cost
    - **Wing Thumb** is for more comfort and extra wear in the thumb area. It has no exposed seams to split or wear on the working surface
    - **Keystone Thumb** features a separate inset thumb with a double layer of leather for protection. This provides more dexterity and comfort than other patterns.

  - **Cuts of Leather**
    - **Grain Leather** is the smooth external side of the hide. This type of leather provides durability and dexterity
    - **Split Leather** is the rougher internal side of the hide. We offer 3 different types of split leather:
      - **Side Split Leather** comes from the rib area of the animal. This part of the leather is more durable and provides the greatest protection because of its greater density of fibers.

    - **Shoulder Split Leather** is more economical than side, but less durable. The additional movement in this shoulder area creates less fibers and a more visible texture difference.
    - **Select Split Leather** is the highest grade of leather coming off the hide of both the side and shoulder split. This leather has no blemishes and consistent finish, and also a higher cost.

- **Cuff Options**
    - **Knit Wrist** is designed to hold the glove in place and prevent debris from entering the glove.
    - **Slip-On Cuff** is designed for easy on and off with no seam attachment.
    - **Safety and Gauntlet Cuff** feature glove extensions that help protect the wrist areas. Safety cuffs are usually 2 ½" while the Guantlet Cuffs are 4 ½" or longer to protect the forearm area.

Specialty Gloves have characteristics that are unique to that specific brand and model of glove. Common features of these gloves might include differences in:

- Dexterity
- Foam padding or anti-vibration material
- Reinforcement of glove in various high wear areas
- The closures which tighten the glove on the hand
- Breathability
- Waterproofing
- Insulation from heat or cold
- Grip
- Finger style
- Style and color

Anti-Vibration Gloves are designed specifically with a type of gel or foam material designed to dampen the vibrations caused by various powered tools, such as jack hammers, drills and impact drills, powered saws, and chainsaws.

- Hand and arm vibration syndrome (white finger disease) can develop after prolonged exposure to vibration, without proper hand protection. Tingling and numbness in fingers are initial symptoms.

C. What Materials Are Gloves Made Of?

- **Natural Rubber** (Latex) gloves are widely used because of their snag, puncture, abrasion, and cut resistance. They are very comfortable and permit excellent dexterity and sensitivity. They are also an economical alternative to nitrile or neoprene. Natural rubber blends well with other polymers, and it maintains its integrity from 0°F-300°F. 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** gloves are the most effective replacement for natural rubber, vinyl, or 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 PVC gloves. Nitrile does not contain 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** 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, abrasions, and cuts. Neoprene does not contain proteins that can cause allergic reactions. Neoprene gloves are versatile because they are chemical resistant and can maintain their integrity from 0°F-300°F. Due to their heaviness, they are often supported with a lining. They are sometimes used as a blend or over-dip on natural rubber. Neoprene is generally softer in feel than PVC.

- **Butyl** gloves exhibit the highest permeation resistance to gas or water vapors of any glove available today. Gloves are ideal for use in ketones, esters, and highly corrosive acids. Butyl is surprisingly dexterous for a glove of its caliber. Butyl gloves possess an inherent stickiness when they become wet, even with perspiration. This sticky feeling is often misinterpreted as glove degradation, which it is not. Because Butyl gloves do not support flocking material, they often come lightly powdered to reduce tackiness in storage.

- **PVC (Polyvinyl Chloride)** 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. PVC gloves will maintain their performance in temperatures between 25°F-150°F. Special formulations of PVC may increase the range to -30°F. Because PVC gloves have excellent abrasion resistance, they are ideal for use in petrochemical, construction, and industrial applications. North also carries insulated high-visibility orange PVC gloves that are ideal in the fishing industry, cold storage, signaling to crane operators, and winter applications.

- **Viton** gloves are made specifically for handling aromatic and chlorinated solvents. They exhibit a high degree of impermeability to these solvents and can be used in or around water and water-based solutions. Viton has superior resistance to PCBs. Viton gloves are used for applications in the automotive and chemical industries as well as aircraft maintenance and degreasing operations.

- **Silver Shield®/4H** gloves and accessories resist permeation and breakthrough against the widest range of toxic chemicals. They possess good tactility, and cotton liners can be added underneath to provide added sweat absorption for comfort. They are ideal against aromatics, esters, ketones, and chlorines. They are an excellent choice for chemical and petrochemical laboratories, spill cleanups, hazmat control operations, photo finishing, medical laboratories, and a host of other hazardous applications.

- **Kevlar** is a synthetic organic fiber developed for use in high performance applications. The para-aramid fiber has a medium to high resistance to cuts and slashes which makes it ideal for use in applications where sharp objects are being used, depending on the weight of the knitted Kevlar. 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 offers poor abrasion resistance, unless coated. Kevlar can't be bleached when washing.

- **Dyneema and Spectra** are High Density Polyethylene (HDPE). Both perform about the same for gloves. Both materials launder well and are not affected by bleach, which makes them desirable in the food industry and for many other industrial applications requiring excellent dexterity and cut protection. We offer a Conney Dyneema Cut-Resistant Glove with a polyurethane palm coating that competes with the Best T-Flex Plus gloves which contain Dyneema/Spectra, Lycra, Spandex, and Thermax for warmth. Best Gloves promotes both Dyneema and Spectra as performing equally and either is allowed to be sewn in their gloves.

D. Gloves Shelf life

- Per Mapa: rubber is 2 years
- Neoprene, nitrile, Viton, Butyl - 2 ½ years
- Store between 40 and 95 degrees, no light, relatively dry

3. Product Reference

A. Glove Dispenser – For disposable gloves
B. Glove Rack – For chemical gloves
C. Glove Liners – For added comfort and sweat absorption
D. Glove Grabber – Keeps gloves attached to your belt
E. Sleeves – For chemical, cut, and abrasion resistance
F. Hand Cleaners

G. Bandages

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