



HEALTH INDUSTRY DISTRIBUTORS ASSOCIATION

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# The Right Glove for the Right Job



Gloves are one of the most commonly sold products in healthcare for good reason—everyone must wear them. Gloves have become a necessity, and hardly any activity can take place without them. However, no one glove is acceptable for all settings.

## Safety and Preference Matter

Gloves are personal items that must be used every day, and Federal regulations require the careful, clinical evaluation of these products to ensure quality and safety. Safety encompasses many variables, including the quality and consistency of the product, manufacturing materials, conditions of use, and personal sensitivities to various substances.



A safe, quality glove for one person, patient, or procedure may not be the best choice across all settings, which often mandates the facility's use of multiple types of gloves. The type of glove used will depend on the job or the procedure to be performed, the patient's allergies and sensitivities, and the allergies and sensitivities of the glove wearer.



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## Clinical Considerations of Glove Characteristics

**How will the glove be used?** Requirements for gloves vary widely. For instance, gloves used in orthopedic surgery must be thicker than general-purpose gloves. Conversely, gloves used in ophthalmic procedures must provide increased tactile sensitivity for more intricate maneuvers.

**What is the glove made of?** Gloves can be made of latex, vinyl, neoprene (chloroprene), nitrile, polyurethane, or polyisoprene. Each material has strengths and weaknesses. Latex gloves, for instance, are inexpensive, elastic, and offer a high level of tactile sensitivity. However, nitrile can offer greater permeation resistance against chemicals. The type of glove used should be governed by activity.

**Is the glove multi-layered?** Multi-layered gloves combine an outer (usually latex) layer with a synthetic inner slip coat, providing the elasticity advantages of a latex glove with the strength and donning ease of a synthetic polymer. Quality levels must be monitored in order to ensure that inner coatings don't detach during use, creating particulate residue.

**How is the glove finished?** Glove finish can affect gripping and tactile sensitivity. Therefore, wearers and purchasers should evaluate whether the glove's surface is textured, lightly textured, or smooth, and request product based on activity needs.

**What are the glove's physical properties?** Physical properties include the glove's elasticity, modulus, length, tensile strength, and palm width. Some gloves, particularly latex and nitrile gloves, are more elastic and have higher levels of tensile strength, and can be used in more rigorous clinical situations.

**What is the glove's AQL?** Acceptable Quality Levels (AQL) for critical defects (pinholes) can vary depending on use. The critical defect level for exam gloves is set by the FDA at 2.5 (2.5% failure rate). Surgical gloves, however, cannot exceed 1.5 (1.5% failure rate). Some manufacturers offer Acceptable Quality Level failure rates lower than FDA requirements, and customers focused on quality should consider these products.

**Are the gloves powdered or powder free?** Glove powder has been linked to irritant contact dermatitis, occupational asthma, and latex allergies. Powder-free gloves can be purchased as an alternative.

**Are the gloves comfortable?** A comfortable glove suggests a proper fit. Proper fit contributes to enhanced sensitivity, improved grip, decreased rates of tearing, and ensures the highest level of protection.

**Are the gloves easy to don?** Gloves should don easily in order to prevent tearing or compromising the material's strength. Powder-free gloves can be more difficult to don, but many now possess inner coatings that improve donnability.

**Do the gloves have an odor?** Odor should be considered, as it can annoy patients. Most gloves smell no worse than a balloon, but some can emit a chemical odor. Glove use will determine product choice.

## Glove Terms Defined

**CHLORINATED**—Instead of powdering, some manufacturers dip gloves into a chlorinated solution (for example, sodium hypochlorite acidified with hydrochloric acid). This process reacts with the natural rubber latex to reduce tackiness, eliminating the need for additional dusting powder. Also, extra washing performed during chlorination provides an added benefit by greatly reducing the level of soluble latex proteins. It also affects some mechanical and physical glove characteristics (e.g. softness, color, and odor).

**CORNSTARCH**—The **ONLY** acceptable powder for medical gloves in the United States. A medical-grade donning agent made from corn. Cornstarch is the only agent that meets U.S. Pharmacopeia requirements for use as a donning agent on medical grade gloves.

**MODULUS**—Modulus is the resistance of a material to stretch. The higher the modulus, the more force it takes to stretch the glove. A low modulus glove is easy to stretch, subjecting the hand to less stress and fatigue.

**HYDRATION RATE**—The rate at which a glove absorbs water or other fluids. Vinyl gloves experience almost no hydration, while latex gloves show varying degrees of hydration. Soluble materials in latex, such as manufacturing chemicals, are dissolved by perspiration, blood, or body fluids. As the hydration process continues, the strength of the film barrier deteriorates, increasing the risk of glove failure.

**NITRILE**—A synthetic polymer exhibiting rubber-like characteristics when vulcanized. Primary material is Acrylonitrile Butadiene, hence the name "nitrile." Nitrile gloves are able to resist permeation from a wide variety of solvents and chemicals.

**NON-CHLORINATED**—The elimination of the chlorine treatment through the use of coatings. Non-chlorinated gloves typically have improved shelf life, color (less yellowing), and odor.

**POWDER-FREE**—Gloves with no more than 2 milligrams of any filterable residue of U.S.P. cornstarch powder per glove.

**POLYMER COATED**—A synthetic material applied to the inside of a glove during manufacturing to improve donning and reduce the need for powder.

**SILICONIZED**—The use of silicone to enhance polymer coating or chlorination to facilitate donning of the glove.

**VINYL**—A polyvinyl chloride (PVC) resin used extensively in the manufacture of plastics, including medical devices, such as tubing and gloves. It is also used as a rubber substitute. Plasticizers are added to prevent vinyl gloves from becoming stiff. Vinyl film can have reduced barrier effectiveness with extended use.

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