CATEGORY RESOURCE GUIDE

Exam gloves

Included in this document

(Click to view each section)

Vizient award overview

Awarded suppliers

MS1044 – SafeSource Direct
MS4551 – Cardinal
MS4552 – O&M Halyard
MS4554 – Medline
MS4555 – Sempermed USA
MS4556 – Tronex
MS4557 – Innovative Healthcare
MS4558 – Sri Tang USA dba Ventyv
MS4559 – Ansell Healthcare
NE0070 – Sri Tang USA

Distribution

Both direct and distributed through the following distribution channels:

Medical-surgical

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Questions? Contact supplyassurance@vizientinc.com, pharmacyquestions@vizientinc.com, novaplus@vizientinc.com.

Making supply uncertainty a thing of the past, not the future

To help members maintain supply assurance for essential products, Vizient shares insights via **category resource guides** on vizientinc.com. These category-specific documents contain comprehensive manufacturing, logistics and utilization insights to help members source supplies with confidence. Category resource guides are one way we're building supply assurance together.

Market landscape

Overall glove usage remains escalated following the pandemic but has declined since its peak in 2020/2021. Pricing has significantly declined since its peak in 2021 but remains elevated when compared with pre-pandemic levels and is expected to continue trending down. The market is saturated with suppliers following the pandemic, and members typically still have inventory/stockpiles that they are working through; thus, product availability is no longer a concern in this category.

Manufacturing insights

Product overview

Examination gloves are examples of personal protective equipment (PPE) and used to prevent cross contaimination between caregiver and patient. They are disposable and should always be worn when coming in contact with blood, respiratory secretions, bodily fluids, feces, tissues, mucous memberanes, hazardous drugs or chemicals, or contaminated items.

Selection factors

The Vizient multisource exam glove category includes the following glove types:

- Nitrile
- Latex
- Latex Polymed powder-free
- Vinyl

Gloves 101 comparison C=chart

Type	Advantages	Disadvantages
Nitrile, disposable	• Synthetic rubber • High puncture and chemical resistance • Moderate protection against pathogens • Provide good comfort, soft and flexible • Easy to detect tears • Can handle moderate temperatures • Long shelf life; typically, five years • Latex free	• Stiffer than latex • Reduced dexterity • Reduced touch sensitivity • Can be most expensive option • Highly reactive to silver products due to sulfur components in gloves
Latex, disposable	• Extremely flexible • Offer the best fit and sense of touch • High tensile stretch or ability to resist tearing • Good protection against pathogens • Available as powdered and powder-free	• Rubber creates latex allergies • Latex may be banned in some states • Should not be used with organic soils, oils, gas or grease • Hard to detect tears • Second most expensive disposable glove option • Moderate shelf life typically, one to two years
Vinyl, disposable	• PVC (polyvinyl chloride) • Lightweight and soft • Provide average resistance to some chemicals like alcohols • Can handle low heat • Long shelf life; typically, five years • Latex-free • The least expensive glove	• Will tear easily • Low protection against pathogens • Looser fit and less dexterity than nitrile and latex

Glove varieties

- Powdered gloves add cornstarch to the inside of the glove during manufacturing which reduces the risk of damaging the glove while donning, reduces moisture from sweating and enhances grip.
- Powder-free gloves can undergo a couple of different processes: chlorination or polymer coating
  - Chlorination: The gloves are dipped in a dilute chlorine solution, washed in an aqueous ammonia solution, and then washed in water. This process reduces the level of latex proteins, making it less likely to cause allergies.
  - Polymer coating: The newer process applies the coating to the inside surface of the glove. The coatings normally used are hydrogels, acrylics, silicone polymer, polyurethane, polymer-blends and nitrile.
  - Both processes create gloves that make donning and doffing easier.
- Chemotherapy-approved gloves are nitrile, neoprene or latex gloves which are rated “impermeable” to chemotherapy agents.
- Sterile phlebotomy gloves are free of all viable microorganisms and used during nonsurgical procedures that access sterile sites like certain catheters or acute wounds.
- Nonsterile phlebotomy gloves are latex or latex-free examination gloves which are well-fitting, allow good tactile sensitivity to palpate veins, and can handle chemicals and acids used in the lab.

Sizing

To get the best fit, measure the widest part of your palm on your dominant hand using a cloth tape measure. The dominant hand is used because it is generally a bit bigger. Use the chart below to calculate the best fit for your hand size:

U.S. sizes	
6-7 inches	X-small
7-8 inches	Small
8-9 inches	Medium
9-10 inches	Large
10-11 inches	X-large
11+ inches	XX-large

Thickness

Gloves will be thickest around the fingertips and thinnest around the palm of the hand. Most glove manufacturers provide thickness as it relates to the palm of the glove, but some manufacturers will use the fingertip. Check with your preferred manufacturer to know where they measure their thickness. The U.S. measures the thickness of gloves in mils (1 mil = 0.0001”).

Tensile strength

Glove material strength and stretch are tested to make sure they meet the American Society for Testing and Materials (ASTM) International D412 standards. The glove material is measured for tensile stress (tension), tensile strength, yield point and ultimate elongation.

Tensile strength is the amount of pressure or tension it takes to break the glove. In the metric system, tensile strength is measured in megaPascal (MPa). The minimum tensile strength for latex gloves is 18 MPa and 14 MPa for nitrile.

Elongation

This is the measurement of the glove’s ability to be stretched without tearing or breaking. The minimum elongation for latex gloves is 650% and for nitrile is 500%.

Length

The length of the gloves is the measurement from the middle fingertip to the wrist opening (cuff). Exam gloves are typically a minimum of nine inches in length. Longer gloves are necessary when staff is working in areas of increased risk of cross contamination related to submerging hands in procedures like labor and delivery.

OEM and manufacturing location

- Medline – manufactures out of Malaysia
- O&M Halyard – manufactures out of Malaysia and Thailand
- Cardinal – manufactures out of China and Malaysia
- Tronex – manufactures out of China and Malaysia
- Sri Trang – manufactures out of Thailand
- IHC – manufactures out of China and Malaysia
- Sempermed – manufactures out of China, Malaysia, Sri Lanka, and Thailand
- SafeSource Direct – manufactures out of the U.S. – Broussard, La.

Raw materials

Type	Raw material
Nitrile	Nitrile butadiene rubber (NBR), a synthetic material
Latex	Natural rubber latex
Vinyl	PVC, a synthetic petroleum-based plastic polymer

The lastest manufacturing insights are available here.

Regulatory and approvals

Medical gloves are regulated by the U.S. Food and Drug Administration (FDA) as class I reserved medical devices that require a 510(k) premarket notification. They are tested for durability, puncture resistance, tactile sensitivity, flexibility and comfort, and type 1 allergic reaction risk which is usually evidenced by an immediate dermatitis.

NIOSH PPE information:

ASTM D3578 - 19 – Standard specification for rubber examination gloves

ASTM D5151 - 19 – Standard test method for detection of holes in medical gloves

ASTM D5250 - 19 – Standard specification for poly (vinyl chloride) gloves for medical application

ASTM D6319 - 19 – Standard specification for nitrile examination gloves for medical application

ASTM D7160 - 16 – Standard practice for determination of expiration dating for medical gloves

NIOSHTIC-2 Publication – The effectiveness of rubber latex gloves as a barrier to human immunodeficiency virus (HIV)

The FDA makes recommendations for premarket notification (510(k)) submissions in its 2008 Medical Glove Guidance Manual. It also provides recommendations on how to comply with the quality system regulation (21 CFR part 820).

In 2016, the FDA published a ban on powdered gloves due to the risk of illness or injury to clinicians and patients. For a detailed description of the risks that the FDA identified, refer to the final rule.

On March 24, 2023, the FDA finalized two guidelines which provide recommendations on transitioning from COVID-19 pandemic operations to normal operations. You may find information about these guidance resources along with others here.

Non-awarded suppliers

Following the pandemic, there are a significant number of suppliers in the exam gloves market, with most coming from overseas and a smaller number of suppliers producing gloves domestically. The large, market share leading suppliers all have a contract position at this time.

Logistics insights

Transportation/shipping

Exam gloves are shipped by freight and rail once they reach the U.S. All major ports are utilized depending on country of origin.

See additional freight update here.

Product storage

The best way to help get the most life out of your disposable gloves is to ensure they are stored in a cool, dark, dry, well ventilated area. Ideally, the temperature should range between 50- and 72-degrees F (10 and 22 degrees C), never higher than 90 degrees F or less than 50 degrees F. Avoid storing gloves near chemicals, heat (including electrical equipment, motors and radiators), humidity (including steam pipes), ultraviolet or fluorescent lighting, high-energy radiation, and ozone.

The FDA doesn't mandate estimated shelf lives for disposable gloves; however, most manufacturers do include an expiration date on their products' packaging.

Unopened boxes of disposable gloves made out of synthetic rubber materials like nitrile and PVC offer an average shelf life of about five years. While unopened boxes of vinyl and nitrile gloves do expire, some properly stored nitrile gloves have lasted up to 10 years without any signs of damage or degradation.

Expiration dates are estimated based on these storage conditions. If in doubt, check with the manufacturer.

Utilization insights

Clinical contract support resources

Nitrile glove chemical compatibility reference guide

The reference guide from the University of Pennsylvania shows chemical compatibility for different nitrile gloves.

Occupational Safety and Health Administration (OSHA) glove selection chart

OSHA offers this chart to help find the right gloves that are chemical and liquid resistant.

What phlebotomists must know about gloves

An OSHA expert offers best practice insights into glove selection and care.

Phlebotomists and PPE: How do you decide?

This addresses OSHA standards related to gloves and lab coats.

Oncology Nursing Society: Chemotherapy-tested gloves

It gives examples of chemotherapy-approved PPE, including gloves. ASTM D6978-05 is the new standard for gloves which replaced the older ASTM F739. Glove testing results are available from the manufacturer and printed on boxes.

Best practices

Sequence for putting on PPE

This shows the proper sequence and procedure for donning and doffing PPE.

FDA recommends the following:

- Wash your hands before putting on sterile medical gloves.
- Make sure your medical gloves fit properly to wear them comfortably during all patient care activities.
- Some people are allergic to the natural rubber latex used in some medical gloves. The FDA requires manufacturers to identify on the package labeling the materials used to make the medical gloves. If you are or your patient is allergic to natural rubber latex, you should choose medical gloves made from synthetic materials (such as PVC, nitrile or polyurethane).
- Be aware that sharp objects can puncture medical gloves.
- Always change your medical gloves if they rip or tear.
- After removing medical gloves, wash your hands thoroughly with soap and water or alcohol-based hand rub.
- Never reuse medical gloves.
- Never wash or disinfect medical gloves.
- Never share medical gloves with other users.

Building supply assurance

Conservation strategies

Healthcare providers and other leading organizations have identified and recommend the following actions:

The Centers for Disease Control and Prevention (CDC) offers strategies for optimizing the supply of disposable medical gloves during the pandemic. On its site, you will find assumptions, conventional capacity strategies, contingency capacity strategies, crisis capacity strategies and methods for sanitizing gloved hands for extended use of gloves,

Additionally, as with other products and services do the following:

- Assess and identify all hospital services.
- Identify and list critical products, supplies, and resources required to sustain operation of those areas identified and ranked in the first step.
- Maintain the internal planning team document with accurate information. Review and update the document on a routine basis with current employee contact information. If a team member no longer works in the organization, identify the replacement and communicate the information to all stakeholders.
- Communicate practice changes and procedures frequently to staff and stakeholders.
- Hold regularly scheduled planning meetings in the absence of a supply chain shortage or event. This will help to ensure that identified processes and protocols remain relevant and any issues requiring revisions and/or updates are addressed in advance of a shortage or disaster

Because predicting the next supply shortage is impossible, it is important that healthcare providers not only adopt and implement care practices strategies to conserve critical products and supplies, but it is also equally as important for them to sustain leading practices that will help ensure the availability of essential products post-recovery and in the future. Some hospitals have reported decreasing their intravenous solution use by as much as 50% in some care areas by continuing to adhere to the conservation strategies implemented during the recent shortages.
Healthcare providers and other leading organizations have identified and recommend the following actions:

- Stockpile product from primary manufacturer/distributor
- Resiliency plan through domestic manufacturing

Additionally, with other products and services do the following:

- Assess and identify all hospital services.
- Identify and list critical products, supplies, and resources required to sustain operation of those areas identified and ranked in the first step.
- Maintain the internal planning team document with accurate information. Review and update the document on a routine basis with current employee contact information. If a team member no longer works in the organization, identify the replacement and communicate the information to all stakeholders.
- Communicate practice changes and procedures frequently to staff and stakeholders.
- Hold regularly scheduled planning meetings in the absence of a supply chain shortage or event. This will help to ensure that identified processes and protocols remain relevant and any issues requiring revisions and/or updates are addressed in advance of a shortage or disaster.

If your organization has implemented conservation strategies for exam gloves or any other category, share your information here. The information you share will be anonymous unless you grant Vizient permission to share.

Supply chain programs

Novaplus Enhanced Supply

Sri Tang (NE0070) is part of the Novaplus® Enhanced Supply (NES) Program. A part of Novaplus, the industry's longest-running private label program, NES delivers additional inventory of essential medications and products, including PPE, critical to your clinicians' ability to provide immediate and high-quality patient care.

In addition to incremental product in the marketplace, this innovative contracting model helps providers and suppliers increase supply assurance through clearer data insights, diversified relationships, and visibility into logistical and other considerations that affect production – enabling greater stability between supply and demand.

For information, click here.

Novaplus

Sri Tang USA dba Ventyv (MS4558) is a Vizient Novaplus supplier. Through Novaplus, access to products goes deep with more than 15,000 individual line items — including numerous high-demand items. The brand encompasses a broad range of categories needed across the care continuum, such as anesthesia, business products and services, diagnostic imaging, food, laboratory, medical, orthopedic, pediatric, pharmacy, respiratory, and surgical. As the capabilities, expertise and purchasing power of Vizient grow, we offer expanded value so you can unlock even more from your private-label purchasing. For more information, click here.

Diversity

Tronex (MS4556) is a Vizient diversity supplier. Vizient's Supplier Diversity Program supports the development of minority-, woman-, disability-, LGBT- and veteran-owned business enterprises that meet high-quality standards. We also strive to work with suppliers who proactively seek strategic partnerships with diverse companies. For more information, click here.

Planning for disruptions

Best practice strategies

- Have a clear picture of what types and sizes of gloves your facility uses, who is ordering and what role the glove plays in care delivery. Standardizing suppliers, sizes and types of gloves used will help with cost containment through aggregating the orders and allocation amounts.
- Have open and transparent conversations with your suppliers about emergent and non-emergent supply expectations. Discuss lead times, manufacturing issues, buffer stock, change in use patterns and contingency planning.
- Make sure you have a domestically manufactured glove supplier as either a T1 or T2 option.
- Prevent panic buying and hoarding. This creates supply issues for manufacturers related to producing the goods and providers related to storing the goods.

Vizient offers the following best practices to help members manage disruptions. These suggestions are available to help you gain insight about how the industry is managing supply challenges.

If your inventory is low

Vizient is committed to bringing hospitals, manufacturers, distributors and the industry together to talk about this issue and any long-term implications. We feel continued dialogue by experts from hospitals, manufacturers, distributors and industry will be crucial to ultimately arriving at a solution to a vexing issue. During critical supply periods, members should continue to order their normal levels of products to ensure continued availability for all institutions.

If you begin to experience a shortage:

- Evaluate your current supply.
- Contact your local supplier representative and report exactly how many days' supply you have left.

- If you are not getting a response from suppliers, contact Vizient so we can facilitate communication between a member and a supplier; provide whether you are ordering direct or through distribution (med/surg or pharmacy), and indicate supplier and distributor (if applicable) when you contact Vizient.
- We encourage you to continue the conversation within your organization, with your peers, and with the manufacturers and distributors to identify ways to manage your ongoing needs.
- Submit inquiries to disasterresponse@vizientinc.com.

Expedite supply resolution

To expedite resolution for supply issues, contact your local supplier and provide the following information:

- The description and item number of the product that is experiencing a shortage
- Whether you are purchasing directly or through an Authorized Distributor
- Days' supply remaining in your inventory

If expanding your facility

We suggest members notify suppliers when expanding their facilities to assist in planning and to anticipate increases in allocations. You should consider notifying your suppliers at least three months ahead of the completion of your facility to ensure sufficient capacity.

Building supply assurance together

Collaboration among suppliers, distributors, members and Vizient strengthens the assurance of supply for all stakeholders. Our wealth of experience, actionable data and predictive planning helps to strengthen supply assurance. Further, our work with stakeholders focuses on improving supply chain risk mitigation as we collaborate to enhance data, increase supply visibility and expand inventory access.

Four themes keep us centered and are the pillars of our supply chain assurance efforts: insights, access, enablement and advocacy. Learn more about our supply assurance strategy.

In the event of a supply disruption, Vizient will publish a product disruption brief to the Supply Assurance webpage. Curated by Vizient experts, these documents provide a summary of current conditions and strategies to manage product-level disruptions.

In addition to our disruption briefs, Vizient also compiles the monthly Supply update executive summary which tracks all known supply chain disruptors, including current market challenges, category-specific product updates and recovering markets.

Whether a supply disruption is the result of a natural or human-made disaster, it is imperative that members are informed. The Vizient Disaster Preparedness webpage was developed to help providers meet supply chain needs before, during and after an event. The Supply Update section of the guide is updated on a frequent and routine basis with communication from all awarded suppliers that have manufacturing facilities in areas impacted by a disaster. Additionally, a status update list of those manufacturers whose operations have been affected, as well as a list of impacted product(s), will be maintained and updated as that information is received from suppliers.

The importance of an internal planning team

Identifying an internal planning team is imperative to managing supply, mitigating risks and sustaining operations during a supply shortage. According to the Supply Chain Disaster Preparedness Manual developed by the CDC, internal teams should consist of representatives from supply chain, purchasing, emergency management, each clinical/care delivery area, inventory staff, receiving and distribution staff. Relative to medication and solutions, Vizient member feedback indicated the pharmacy department as an integral member to the internal team, as clinical/pharmacy practice changes may occur. Additional members may include the facilities safety manager, security, risk management, legal, marketing and communications, and public relations.

A simple internal team planning document will help to identify, contact and quickly convene relevant team members. See the sample below:

Name	Title	Department/role	Phone	Email

Once an internal team is identified, additional considerations before beginning the development and implementation of a recovery plan include the following:

- The team's goals
- The responsibilities of each planning team member
- Other department/team members who may need to be involved
- Frequency of team meetings
- How the goal/mission be accomplished
- How information will be documented and communicated to the broader audience
- A current framework for success either within your facility or from a leading organization

Stakeholder communication

During supply chain product disruptions, it is vital that accurate and timely information is disseminated to internal and external stakeholders. The following actions should be considered in an effort to facilitate and ensure informed decisions:

- Designate the point person or persons who will be responsible for developing, disseminating and monitoring all communications coming from the internal planning team.
- The internal planning team should collaborate key messages/information to stakeholders, such as changes in policies and/or practice changes.
- Clearly communicate the roles and responsibilities of all staff based on the agreed upon recovery plan. If there are changes to the plan at any time, timely communication of those changes will help to increase risk mitigation and minimize interruption of patient care.
- Establish communication mechanisms for information exchange. Examples include but are not limited to regularly scheduled briefings and meetings, in-services, staff trainings, live/recorded webinars, memos and emails.
- Determine the frequency of reminders and updates regarding supply disruption status and anticipated resolution.
- Frequent updates and reminders after a supply disruption has been mitigated or eliminated help to ensure ongoing success and sustainability of best practices.

Supply management and logistics

A leading practice identified in managing recent shortages is a centralized management approach of impacted product codes. A key responsibility of the internal planning group is to identify all affected product codes and to determine the

amount of supply on hand, expected and any allocation protocols implemented by the supply source. Once the current product status is determined, the following actions are recommended:

- Update and maintain an accurate inventory list. Each care area that utilizes any product code on the inventory list should identify a point person to collect on hand and usage levels on an agreed upon frequency. That information should be reported back to the internal planning team. Inventory can either be managed by care delivery areas or in a centralized manner.
- Identify space in the facility to store, manage and distribute product. Designate authorized personnel responsible for maintaining the inventory (expiration dates temperature, ventilation, utilization, equipment maintenance and repair, etc.).
- Develop and seek approval for the inventory management protocol and communicate this information to all stakeholders.
- Update and maintain accurate purchase order and allocation protocols from the contracted supplier and your group purchasing organization (GPO).
- Update and maintain accurate emergency contact information for all suppliers as well as internal stakeholders. This process should be done at least every six months.
- Review the inventory management status on an agreed upon frequency with the internal planning group. Assess for barriers to its effectiveness, implement any changes necessary and communicate those changes to all stakeholders.

Planning for all levels of care and ancillary products

Feedback from lessons learned indicated the need to include all levels of care and ancillary products, if applicable, in the conservation plan. If your provider system has children's hospitals, ambulatory surgery centers, outpatient clinics and/or long-term care facilities, utilization and logistics of products and supplies must be incorporated into the plan. Additionally, it is vital that ancillary products are considered when contemplating allocations and purchase orders. During the recent drugs and solutions shortages, as large volume solution bags went on back order, smaller volume bags, compounding products, and syringes also went on back order because of practice changes. Therefore, conservation planning should include actual and the additional ancillary products that may be required to sustain a clinical and/or operational practice change

To learn more, please contact:
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