



Hand Protection

Hand and arm protection enquiries across a range of workplace exposures and tasks.

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HAND PROTECTION PPE

SAFE HANDS | PRODUCTIVE WORK | BRIGHTER TOMORROW

WHAT IS HAND PROTECTION PPE?
Hand protection PPE, such as safety gloves, protects the hands from cuts, abrasions, punctures, chemicals, heat, cold, electrical hazards and other workplace risks.

WHY IS IT IMPORTANT?
Prevents hand injuries and long-term damage
Protects from mechanical, chemical, thermal and electrical hazards
Improves productivity and confidence
Essential in high-risk work environments
Helps meet legal and regulatory requirements

APPLICABLE STANDARDS
EN 388 – Mechanical risks
EN 374 – Chemical risks
EN 407 – Heat and fire risks
EN 511 – Cold risks
EN 60903 – Electrical insulation
IS 6994 (India)
ANSI/ISEA 105 (USA)
AS/NZS 2161 (Australia/NZ)

TYPES OF HAND PROTECTION PPE

GENERAL PURPOSE GLOVES	CUT RESISTANT GLOVES	CHEMICAL RESISTANT GLOVES	HEAT RESISTANT GLOVES	COLD RESISTANT GLOVES	ELECTRICAL INSULATING GLOVES	DISPOSABLE GLOVES	SPECIAL PURPOSE GLOVES
Lightweight and comfortable Good grip Suitable for general handling Used in construction, logistics, manufacturing	High cut protection Durable and strong Suitable for sharp materials Used in metal fabrication, glass handling, automotive	Resistant to chemicals, oils and solvents Protects from skin irritation Suitable for wet and hazardous work Used in chemical, pharmaceutical and cleaning industries	Protects from high temperatures Suitable for welding, foundries and hot material handling Withstands sparks and heat Used in welding, metal and glass industries	Protects from low temperatures Insulated and waterproof Maintains flexibility Used in cold storage, refrigeration and outdoor work	Protects from electric shock Made from insulating rubber Used for electrical maintenance and high-voltage work Must be tested regularly	Single-use (nitrile, latex, vinyl) Protects from contamination Used in food, healthcare and laboratory work Provides hygiene and chemical splash protection	Anti-vibration, anti-slip, impact resistant Suitable for specific hazards Used in oil & gas, mining, lifting and heavy industries Custom designs available

APPLICATIONS IN DIFFERENT INDUSTRIES

CONSTRUCTION	MANUFACTURING	METAL & WELDING	CHEMICAL INDUSTRY	OIL & GAS	FOOD & BEVERAGE	PHARMACEUTICAL	ELECTRICAL
General purpose, cut resistant gloves for material handling and construction work	Cut resistant and general purpose gloves for assembly and machine operations	Heat resistant gloves for welding, hot material handling and fabrication	Chemical resistant gloves for handling acids, solvents and hazardous chemicals	Cut resistant, chemical resistant and impact gloves for harsh environments	Disposable gloves for hygiene and contamination control	Disposable and chemical resistant gloves for clean and sterile environments	Electrical insulating gloves for live electrical work

KEY FEATURES

- Protects from mechanical, chemical, thermal, electrical and biological hazards
- Improves grip, comfort and dexterity
- Available in various materials and sizes
- Compliant with national and international standards
- Suitable for multiple industrial applications

MATERIALS USED

- Leather
- Nitrile
- Latex
- PVC
- Neoprene
- Kevlar®
- HPPE (High Performance Polyethylene)
- Insulated Rubber

INSPECTION & CARE

- Inspect regularly for cuts, holes or deterioration
- Keep clean and dry after use
- Replace if damaged or worn out
- Use proper cleaning method as per manufacturer
- Store in a cool, dry place away from sunlight and chemicals

CORRECT USAGE

- Wear correct size
- Ensure proper fit
- Use the right glove for the hazard
- Follow manufacturer's instructions

Do not use damaged gloves

Hand Protection: Personal Protective Equipment Hand and Arm Protection

Potential hazards to hands and arms include skin absorption of chemical or biological hazards, chemical or thermal burns, electric shock, bruises, abrasions, cuts, punctures, fractures, or amputations. Protective equipment includes gloves, finger guards, and arm coverings.

Selection must be based on the performance characteristics of the glove in relation to the tasks to be performed. Suppliers and manufacturers may provide compliance guidelines or references for food and pharmaceutical applications.



Hand And Arm Hazards

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HAND AND ARM HAZARDS

IDENTIFY | ASSESS | CONTROL | WORK SAFELY

PEOPLE
 PLANET
 PROGRESS
 SAFETY

WHAT ARE HAND AND ARM HAZARDS?

Hand and arm hazards are risks in the workplace that can cause cuts, bruises, fractures, burns, chemical exposure, electrical shock, vibration-related disorders and other injuries to the hands, wrists, forearms and arms.

WHY IS IT IMPORTANT?

- Prevents injuries, disability and long-term damage
- Reduces lost workdays and medical costs
- Improves productivity and efficiency
- Creates a safer work environment
- Meets legal and regulatory requirements

COMMON HAND AND ARM HAZARDS

Mechanical Hazards	Sharp Objects	Chemical Hazards	Thermal Hazards	Electrical Hazards	Vibration Hazards	Ergonomic Hazards	Radiation & Other Hazards
- Cuts and lacerations - Crushing and pinch points - Entanglement in moving parts - Impact from falling objects - Abrasions and bruises	- Cuts and deep wounds - Punctures - Needle injuries - Sharp edges and burrs - Glass handling risks	- Skin irritation and burns - Chemical absorption - Dermatitis and allergies - Corrosion damage to tissue - Harmful fumes and splashes	- Burns from hot surfaces - Scalds from hot liquids - Cold burns from cryogenic - Heat stress - Fire and molten metal hazards	- Electric shock - Arc flash burns - Electrocution - Secondary falls or injuries - Damage to nerves and muscles	- Hand-Arm Vibration Syndrome (HAVS) - Nerve and blood vessel damage - Numbness and tingling - Reduced grip strength - Long-term musculoskeletal disorders	- Repetitive movements - Strain and sprains - Carpal Tunnel Syndrome (CTS) - Tendonitis - Muscle fatigue	- UV radiation (outdoor work) - Ionizing radiation (special areas) - Biological hazards - Extreme weather (hot/cold) - Contact with contaminated surfaces

INDUSTRY EXAMPLES

CONSTRUCTION	MANUFACTURING	OIL & GAS	CHEMICAL INDUSTRY	AUTOMOTIVE	FOOD & BEVERAGE	ELECTRICAL	PHARMACEUTICAL
- Cuts, impact, abrasions - Sharp materials - Falling objects	- Pinch points, entanglement - Cuts, chemical exposure - Vibration from tools	- Chemical exposure - High temperature burns - Pressure and impact hazards	- Chemical burns - Corrosive substances - Skin irritation and allergies	- Sharp edges - Hot surfaces - Vibration from power tools	- Cuts from equipment - Chemical cleaning agents - Hot liquids and steam	- Electric shock - Arc flash burns - Contact with live parts	- Chemical exposure - Repetitive work

CONTROL MEASURES

- Use appropriate PPE (gloves, sleeves, arm guards)
- Guarding of moving parts and sharp edges
- Follow safe work procedures and tool safety
- Proper handling and storage of chemicals
- Ergonomic work practices and job rotation
- Training and awareness

RECOMMENDED PPE

 Protective Gloves
 Cut Resistant Sleeves
 Arm Guards
 Welding Gauntlets

KEY STANDARDS

- EN 388 - Mechanical risks
- EN 374 - Chemical risks
- EN 407 - Heat and fire risks
- EN 511 - Cold risks
- EN 60903 - Electrical insulation (gloves)
- ANSI/ISEA 105 (USA)
- AS/NZS 2161 (Australia/NZ)

REMEMBER

- Identify hazards before starting work
- Select the right PPE for the task
- Inspect PPE regularly for damage
- Keep hands and arms clean and dry
- Replace damaged PPE immediately
- Follow manufacturer's instructions

- Abrasion
- Amputations
- Cuts
- Bloodborne Pathogens
- Biological
- Chemicals (Dry or Liquid)
- Chemical Burns (Acid or Base)
- Electrical Shock
- Extreme Temperatures
- Fractures
- Laceration
- Heat and Cold
- Thermal Burns
- Radiation
- Vibration and Grip



Hand and Arm Protection Hazards

Working with harmful substances

Such as strong acids/bases, toxic or corrosive materials, organic solvents, and radioactive materials, which can be absorbed through the skin, or cause skin irritation, chemical burns, or similar conditions.

Working with tools, equipment, or materials

That can cause cuts, lacerations, punctures, fractures, amputations, or abrasions.

Work involving exposure to harmful temperatures

Such as thermal burns or exposure to extreme heat or cold.

Work involving exposure to bloodborne pathogens

Or other potentially infectious agents.

Work on live electrical systems or components

Additional training is required for the use of electrical protective equipment.

Types of Hand & Arm Protection

Types of Hand & Arm Protection



DISPOSABLE GLOVES

Best for one-time use situations. Provides minimal protection against materials or protects the material from the handler. Available in a variety of materials and for a variety of tasks. Disposable gloves are typically very thin and provide improved sensitivity and dexterity. However, they may tear or puncture easily and are less chemical resistant than standard chemical resistant gloves. Avoid using disposable gloves for processes involving intentional direct chemical contact.

CRITICAL-ENVIRONMENT GLOVES

Used in applications that require extreme cleanliness, such as in the electronic, nuclear, and pharmaceutical industries.



CHEMICAL-RESISTANT GLOVES

Protects against specific chemicals and liquids, also providing minimal protection against abrasion, cuts, punctures, and snags. Generally, any “chemical-resistant” glove can be used for dry powders.

General-Purpose Gloves

Intended to help reduce hand injuries from snags, punctures, abrasions, and cuts.

Coated Gloves

Nitrile and natural rubber coated gloves are often used as substitutes for leather gloves. Offer superior hand protection in wet environments where dexterity is important. However, coated gloves provide minimal protection from physical hazards such as cuts, abrasions, or punctures.

CUT-RESISTANT GLOVES

Available in a wide variety of materials, including metal-mesh, Kevlar®, and aluminized and other cut-resistant materials. Protects against cuts and scrapes caused by knives and other sharp tools and equipment. Cut-resistant gloves are rated according to the level of force required to cut the material.

PUNCTURE-RESISTANT GLOVES

Available in a wide variety of materials. Protects against most sharp objects, including glass, metal, and needle sticks. No glove is completely puncture-proof. Puncture-resistant gloves are rated according to the level of force required to puncture the material.

ANTI-VIBRATION/IMPACT GLOVES

Protection from vibration or impact from tools and equipment. Helps prevent hand, finger, and arm fatigue.

LEATHER GLOVES

Qualities of leather include comfort, durability, dexterity, mild heat resistance, and abrasion resistance. Good all-purpose glove.

TEMPERATURE-RESISTANT GLOVES

Provides protection from high or low temperatures. Common materials used include leather, Kevlar®, cotton, terrycloth, cryogenic gloves, rubber, Nomex®, Zetex®, and Flextra®. Select gloves based on the type of heat or cold source (fire, radiant heat, hot or cold object, hot or cold liquids, etc.). Some temperature-resistant gloves may protect against hot or cold objects but not against hot or cold gases or liquids.

ELECTRICAL GLOVES

- Voltage-rated gloves provided protection against shock hazards.
- See Shock Protective PPE
- See Arc Flash Protective Equipment
- Arc Rated PPE Category & Boundaries For AC Systems
- Arc Rated PPE Category & Boundaries For DC Systems



Glove Selection

The best place to start when selecting gloves for a task is to compare the exposure hazards to the protective qualities of the gloves available from your supplier. Many tasks will involve multiple hazards, and the glove selected should either protect against all of the hazards, or more than one type of glove may have to be worn.

A common example of this is when leather gloves (cut/puncture/abrasion resistant) are worn over voltage-rated rubber gloves. Certain chemical and/or radiation hazards may require double gloving (of the same type).

Before purchasing gloves, review the work activities to determine the degree of dexterity required, the duration, frequency, and degree of exposure to the hazard, and the physical stresses that will be applied. There are several factors to consider when selecting a glove, such as size, the type of cuff, lining, and length.

Sizing

Gloves come in sizes ranging from small to XX-large. It is important to provide a selection of sizes to employees so that a proper fit is obtained. Gloves that are too small will cause fatigue and gloves that are too large may create dexterity issues or entanglement hazards. Improperly sized gloves may affect the protective qualities.

Cuff Type

Pinked cuff – A zigzag finished appearance commonly found on knit-lined rubber gloves. Rolled cuff – Gives additional cuff strength and a finished appearance. Acts as a barrier to keep chemicals from running off the glove and onto the skin. Straight cuff – Provides a snug fit to protect from chemical runoff and skin contact. Gauntlet cuff – Extended length protects the wrist area. Slides on and off easily. Allows for maximum movement of the forearm.

Lining Type

Unlined – Gives better sensitivity and dexterity than lined gloves. Required where particle contamination is a concern. Powdered unlined gloves make donning on/off easier and can increase comfort, but may be an irritant, or a sensitizer, to some individual users. Flock-lined – Shredded fiber, usually cotton, applied to the inside surface of the glove material. Absorbs perspiration. Easy to take on and off.

Knit-lined – Cotton or synthetic material bonded to the inside surface of a glove. Absorbs perspiration, adds some temperature protection. Jersey-lined – Softest, most comfortable lining. Gives additional temperature protection and greater cushioning effect.

Length

- Finger cots – worn on the fingers alone when minimal or no protection is required.
- 9 – 12 inches provides complete hand protection.
- 12 – 18 inches provides hand, forearm to elbow protection for immersion or extra splash protection.
- 24 – 31 inches provides full arm immersion protection.



Chemical Resistant Gloves Selection

Chemical Resistant Gloves Selection

Chemical-resistant glove selection begins with an evaluation of the type of work to be performed and the chemical(s) that personnel will be contacting. No glove provides protection against all potential chemical hazards, and available gloves may provide only limited protection against many chemicals.

It is important to select the most appropriate glove for a particular application and to determine how long it can be worn and whether it can be reused.



Type of Work

Consider the tasks and work environment to be performed.



Chemical Type

Identify the specific chemical(s) personnel will be contacting.



Hazard Level

Assess the concentration, splash or immersion risk, and potential severity of exposure.



Glove Compatibility

Select gloves with proven resistance to the identified chemical(s) for the application.



Wear Time & Reuse

Determine how long the gloves can be worn safely and whether they can be reused.

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Considerations for Glove Selection

The type of chemical(s) to be handled or used. Glove selection guidance is provided for some chemicals by the following manufacturers.

Ansell Glove Selection Database.

Reusable Glove Chart from North by Honeywell.

Contact for additional questions.

The toxic properties of the chemical(s) – in particular, chemicals that can cause local effects on the skin and/or pass through the skin and cause systemic effects, may warrant a higher level of protection.

The frequency and duration of the task for chemical contact. Different chemicals will affect the protective qualities of a glove in different ways.

Breakthrough time: the time it takes for the chemical to pass to the inside of the glove. This is a characteristic of the glove material. Some glove materials are not recommended for certain chemicals. Some materials indicate a time limit before chemical breakthrough of the glove material was detected. Some materials do not have a detectable chemical breakthrough (under laboratory test conditions). Follow manufacturer guidelines or supplier “Chemical Compatibility Guides” for additional information.

Permeation: if a chemical will pass through a glove material.



Degradation: how the chemical will affect the physical properties of the glove material upon contact. Degradation can lead to softening, drying, swelling, shrinkage, increased brittleness, or other undesirable side effects that could allow permeation or breakthrough inside the glove.

The ability of the chemical to penetrate through the glove must be determined.

Latex or natural rubber does not hold up well to organic solvents, oils, greases, or fuels such as kerosene or gasoline.

Nitrile is ideal for stripping and degreasing, chemical washing, and is resistant to animal fats and vegetable oils. Nitrile does not contain latex that causes skin allergies.

Polyvinyl chloride (PVC) provides excellent resistance to most acids, fats, and petroleum hydrocarbons.

Neoprene is strong and durable and provides excellent chemical resistance. Note: Check “Chemical Compatibility Guides” for specific chemical and glove materials recommended.

Polyvinyl alcohol (PVA) has an extremely high resistance to aliphatics, aromatics, chlorinated solvents, esters, and ketones. PVA quickly breaks down when exposed to water and light alcohols.

Butyl provides excellent chemical resistance to gases and ketones. It is ideal for handling hazardous materials. Butyl is severely affected by fuels and aliphatic and aromatic hydrocarbon solvents.

Viton is the most resistant of all, and provides high-temperature, fuel-resistance. Recommended for working with extremely hazardous chemicals, such as carcinogenic or highly toxic chemicals.

Silver-shield provides excellent chemical resistance and is commonly used for hazardous materials work, or work involving multiple chemical hazards.

Mixtures and formulated products (unless specific test data is available) require that gloves should be selected based on the chemical component with the shortest breakthrough time since it's possible for solvents to carry active ingredients through some glove materials.

Personnel must be trained on safe ways to remove gloves to prevent contamination.

Determine if the task will involve splash hazards, and ensure that adequate protection is used.

Consider the concentration of the chemical(s).

Consider the temperature of the chemical(s).

Consider abrasion, cut, puncture, tear-resistance, and grip requirements.

For work involving chemicals where there is a skin absorption hazard, double gloving of the appropriate type may be necessary.

Gloves, whether lined or unlined, can confine perspiration and high humidity inside the gloves, leading to skin irritation and dermatitis. Dry the hands thoroughly between use of gloves.

FAQ

Q. What hazards can hands and arms face at work?

Chemical or biological absorption, chemical and thermal burns, electric shock, cuts, punctures, abrasions, fractures, amputations, extreme temperatures, radiation and vibration.



Q. How should gloves be selected?

On the glove's performance characteristics in relation to the task to be performed. Suppliers may provide compliance guidance for food and pharmaceutical use.

Q. When should disposable gloves not be used?

For processes involving intentional direct chemical contact. They are thin and less chemical-resistant than standard chemical-resistant gloves.

Q. What are critical-environment gloves for?

Applications that need extreme cleanliness, such as the electronics, nuclear and pharmaceutical industries.

Q. Is extra training needed for electrical work?

Yes. Work on live electrical systems requires additional training in the use of electrical protective equipment.

Useful details to share when you enquire

- Tasks, workplace hazards and product specifications
- Required quantities and wearer sizes
- Existing equipment and compatibility needs

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