

Ansell



**SMART SELECTION OF
HAND PROTECTION
FOR RESEARCH
LABORATORIES**



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Specific requirements for hand protection prevail for working with a wide range of chemicals as well as specialised equipment in a laboratory environment. A similar situation applies to laboratories where the integrity of processes and test results are at risk from contamination by human contact or cross-contamination between samples.

Whether hands need to be protected from hazards such as chemicals and bacteria, or cuts and heat, the type of hand protection needs to be carefully selected to provide researchers with optimum safety, comfort and efficiency.

This paper discusses the requirements of the laboratory work environment and examines the different hand protection needs, challenges and solutions.

ALLERGIC REACTIONS

The nature of human skin and its ability to withstand prolonged contact with different materials varies from person to person. Some hand protection materials may be unsuitable in terms of causing irritation through allergic reactions or excess moisture, which may cause discomfort, long-term dermatological conditions or impede movement which may affect efficiency.

One of the most common problems for glove wearers relates to allergies which are caused by a number of factors. In some cases, contact with gloves may cause issues with skin health, often emerging in the form of allergies, some of which may be severe. Adverse reactions to natural rubber latex (NRL) gloves can range from irritant contact dermatitis to serious allergic response such as anaphylaxis.

Allergic reactions to chemical residues from the glove manufacturing process may produce what is known as a Type IV Allergy (Chemical Allergy) or ACD. This type of allergy is a major concern for those working in laboratory environments. A chemical allergy is due to an immunological reaction to a residual chemical leached from finished glove products into the skin of the wearer.

Many glove manufacturers routinely use chemicals in their manufacturing process. These chemicals may include accelerators, accelerator activators, stabilisers, degraders, retarders, fillers and extenders.

In most cases where researchers experience hand allergies caused by contact with gloves made from NRL, these can be successfully resolved by changing to gloves made from synthetic materials that provide similar comfort, elasticity and strength attributes to natural latex.

Gloves with synthetic material options include polyisoprene, neoprene or nitrile and may be used as a direct replacement for latex, or used with double donning as a barrier between skin and an outer glove of NRL. Allergic contact dermatitis may be significantly reduced through better quality manufacturing. Users who experience these type of allergies should select skin-friendly products that have not been exposed to chemical accelerators.

SOLUTIONS FOR LABORATORY HAZARDS

Every task presents its own set of challenges and pathways to achieving the best result. People need to perform their job knowing that protection barriers between skin and product are appropriate for the materials or hazards being handled.

Researchers are often required to wear gloves for extended periods, therefore it is important that glove materials are allergen free and allow hands to remain dry and comfortable.

Whether the application calls for tactility, dexterity, protection against fluid permeation, exposure to bacteria, ability to keep a positive grip on delicate instruments and equipment or protection against cuts and abrasions, it is important to select hand protection based on the needs of the specific task.

PROTECTION AGAINST CHEMICALS

Chemical hazards, often caused by spills and splashes, are the most prevalent hazards when working in a laboratory environment. A typical lab uses acids, bases, inorganic and organic chemicals and solvents with different functional groups.

The breadth of chemicals handled, coupled with new chemical entities, for which complete toxicological testing has not been yet performed, makes protection across a spectrum of chemicals a necessity.

To protect researchers against chemical exposure, it is paramount to understand how gloves protect from chemicals:

- Recognize that every glove style delivers a different level of protection from specific chemicals and hazards based on the materials it is constructed from, added features, and the thickness of its design.
- Conduct a hazard assessment, read chemical labels and consider all substances gloves may come in contact with.
- Ask yourself whether the wearer requires:
 - » Chemical Splash or Chemical Immersion Protection. If so, what chemicals is the wearer working with, and for how long might they be exposed?

During selection of hand protection, additional features, such as grip, comfort and tactility, can be equally important to perform the task at hand.

PROTECTION AGAINST BIOLOGICAL HAZARDS

Laboratory workers conducting microbiological or DNA research or analysis of organismal fluids, risk being exposed to biological hazards.

Sources of biological hazards may include bacteria, viruses, insects, plants, birds, animals, and humans. These sources can cause a variety of health effects ranging from skin irritation and allergies to infections (e.g., tuberculosis, AIDS), cancer and so on.

At the same time, the sensitive nature of such tests may require equal protection of the test results against sources of contamination such as human skin, dust and microorganisms as well as cross-contamination between test samples.

Here glove length will be important, as is dexterity and a high level of tactility.

It is important to select hand protection that allows researchers to perform tasks efficiently providing them with a positive sensory experience combined with a high level barrier protection. Selection of the suitable barrier protection also needs to take into account the ability of the glove to provide positive grip and ease of donning/doffing between tasks.

PROTECTION FROM CUTS AND BURNS

The wide variety of equipment in laboratories calls for specialised hand protection that is appropriate for each work project.

Scalpels, broken glassware, autoclaves, drying ovens - they all risk injuring researchers if the appropriate hand protection is not available.

Selection of suitable hand protection to protect researchers from cuts and burns needs to take into account the appropriate level of protection against the specific hazard, as well as a high level of comfort and tactility.

Whether it is research or routine analytical work, selection of a glove that is appropriate for the purpose will always provide the best level of protection while helping to complete tasks more efficiently.

MATERIALS RESEARCH

Research into new materials and manufacturing techniques has made a major contribution to ensuring that laboratory researchers and workers receive the maximum value for their investment in protecting their workers and test results.

The most common glove polymers for lab gloves are: natural rubber latex, nitrile and neoprene.

While natural rubber latex tends to have a comfortable fit, it provides less protection against chemical splashes compared to other materials such as nitrile and neoprene. Recent innovations however, have substantially increased the level of comfort of neoprene gloves to approach that of latex gloves.

Apart from chemical protection, natural rubber latex poses health risks to people with a Type I allergy, while people who suffer from Type IV allergy may benefit from using nitrile or neoprene gloves that are produced without accelerators.

SOLUTIONS

Ansell provides high performance, task-specific barrier protection solutions across all types of laboratories and applications and has the experience, knowledge and manufacturing skill to produce gloves that protect the hands of workers against biological contamination, allergens and chemical permeation. Other hand protection solutions deliver mechanical, thermal and chemical protection.

Experience throughout the world's most demanding markets has enabled Ansell to evolve and develop a comprehensive range of fit-for-purpose hand protection products that deliver the performance and value demanded in a highly competitive global research environment.

To find out more about how Ansell's range of Hand Protection Solutions for Laboratories can help protect both workers and products or to request a sample, visit www.ansell.com/lifesciences.

