

FREQUENTLY ASKED QUESTIONS

Protecting hands in the workplace

Q1: Why should I worry about protecting workers' hands?

A1: The hands are the prime tools of the human body, whether they are used for typing on a keyboard or assembling a complex of equipment. As such, they are the most vulnerable. According to the German Official Accident Insurance office (DGUV), injuries to the hands account for nearly 35% of all reported industrial injuries (twice as many as injuries to the feet and ankles).

Q2: What hand-related risks should I look out for?

A2: Hands can be injured as a result of blunt trauma or inappropriate manual handling practices, but the most common hand injuries are damage, irritation or infection of the skin. Although the skin is very versatile and serves a wide range of functions, exposed skin can be damaged, irritated and infected from a variety of sources. These include:

- Cuts, abrasions and burns. The skin can be easily cut by sharp or pointed objects. It can be bruised by contact with strong forces. And it can be burnt by excessive heat or cold.
- Exposure to chemicals. Skin contact with a wide range of chemicals can cause skin irritations such as contact dermatitis, in which the skin becomes itchy, blistered and reddened.

Q3: How do I know if a chemical can be harmful to the skin?

A3: Work-related skin problems are very common and are often caused by exposure to, or contact with, a wide range of chemicals. They can also be caused by having wet hands for long periods, particularly in combination with soaps and detergents.

By law (EC 1272/2008), hazardous chemicals should always be labelled. A label should include:

- The name of the substance
- The origin of the substance
- A danger symbol or pictogram
- An indication of the danger involved in using the substance
- A reference to the special risks arising from such dangers (typical symbols indicate that a substance is explosive, an oxidizer, flammable, harmful, a toxic irritant, corrosive or harmful to the environment).

However, some substances that are not considered hazardous, and are consequently not labelled, can also cause skin irritation and damage.

Q4: What are the substances to look out for to avoid skin infections and irritations?

A4: There are two basic substances that cause irritation to the skin: irritants and allergens. Both of these can cause contact dermatitis, a type of eczema triggered by contact with a particular substance.

The ten most common irritants causing contact dermatitis are:

1. Soaps and detergents
2. Solvents
3. Regular contact with water
4. Antiseptics and antibacterials
5. Perfumes and preservatives in toiletries or cosmetics
6. Machine lubricating or cutting oils
7. Disinfectants
8. Acids and alkalis
9. Cement
10. Powders, dust and soil

In some cases, contact dermatitis can occur as allergic contact dermatitis and an allergic reaction may even cause urticaria or hives. Typical causes of urticaria in the industrial environment include an allergic reaction to latex, pressure to the skin or a change in water composition.

Five of the most common allergens that can cause allergic contact dermatitis are:

1. Cosmetic ingredients such as preservatives, fragrances, hair dye and nail varnish hardeners
2. Metals such as nickel and cobalt
3. Rubber, including latex
4. Textiles, particularly with certain dyes or resins
5. Strong adhesives and especially epoxy resin adhesives

Q5: How can I prevent damage to the skin of the hands?

A5: The most effective and reliable way to prevent skin problems in the workplace is to design and develop processes to avoid contact with harmful substances or objects that can cause cuts or bruises. When this is not possible, personal protective equipment (PPE), such as safety gloves, can play a key role in protecting a worker's hands.

However, what is sometimes not realised is that, unless carefully selected, the gloves themselves can actually be a cause of skin irritation or damage. For example, a worker can suffer a hand injury if they are allergic to the glove's material or if there are broken glass fibres in mechanical protection gloves. With this in mind, gloves should always be selected based on the specific task at hand. Similarly, gloves can get old and lose their protective ability and so should be regularly inspected, and then discarded and replaced if needed, to prevent damage resulting from insufficient protection.

Q6: How do I select the right gloves for my application?

A6: There is no such thing as a glove for all situations. There is a wide range of safety gloves, each designed and manufactured to afford protection against specific risks. Safety gloves are stringently tested against these risks and there are European standards that govern all of these tests. All gloves must conform to EN 420, which tests the material and construction of the glove to ensure durability and wearability.

Gloves that protect against mechanical risks are tested for resistance to abrasion, blade cutting, puncture and tear resistance, in accordance with EN 388.

Gloves that protect against chemicals are tested against chemicals from a standard list for permeation, penetration and degradation in line with the EN 374 standard.

Permeation tests involve investigating the molecular diffusion of chemicals through the glove material and establishing the length of time at which permeation takes place and the glove no longer presents a barrier. This is known as the break-through time.

In penetration tests, liquids such as water and gases such as nitrogen are introduced into the glove and a visual inspection is carried out to ensure that no bubbles or droplets are present outside the glove.

Degradation tests are carried out to check a glove's mechanical stability when it is subjected to chemical challenges or when it undergoes hot washing in water and detergents.

Other relevant European Standards include EN 511 (protection against cold), EN 407 (protection against heat), EN 16350 (for anti-static gloves) and EN 60903 (for gloves made of insulating material).

Q7: How can I be certain I have made the correct choice?

A7: All safety gloves carry identification symbols and markings.

Gloves certified to EN 388 have EN 388 printed on them and feature a pictogram of a hammer striking a plate and a series of numbers showing their rating in the various tests.

Gloves certified to EN 374, in its latest version, carry a conical flask pictogram for chemical resistance and a specific pictogram if they offer protection against viruses.

Gloves offering chemical resistance are also marked A, B or C:

- 'A' represents high protection against six chemicals on the standard list of test chemicals.

- 'B' represents medium protection against three chemicals on the list.
- 'C' represents simple protection against one chemical on the list

The chemicals against which protection is provided are also marked on the glove, using their relevant code letter.

For further information, download the whitepaper '[Hand Protection: Understanding Skin Irritation in the Workplace](#)'.

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