



CE Marking & Industry Standards for Gloves

CE Category Information

The Personal Protective Equipment Directives (89/686/CEE) and (93/68/CEE) have been enacted by the European Community to ensure harmonisation of regulations regarding testing of all PPE sold within the community. All gloves of intermediate and complex design must now be tested independently to ascertain their performance and ensure their safety. They must, if they meet these standards, carry a CE Mark on the gloves or their packaging when it is not practical.



CE CATEGORY I

Simple Design - for minimal risks only. Suitable only for low risk applications where hazards can be identified by the wearer in time to deal with them.



CE CATEGORY II

Intermediate Design - reversible risks. Products are type examined by an approved body where they examine the manufacturers' technical specifications and conduct tests for the relevant standards to ascertain their conformity and/or performance.



CE CATEGORY III

Potentially fatal risks, for example in activities where toxic or highly corrosive chemicals are handled. The glove must meet the standards set out for this category. Its compliance is not only certified but also checked by a notified body, the reference number of which is located below the CE logo.

Industry Standards

Knowing the EN standards is essential in helping the right decision to be made when it comes to protecting workers' hands. When buying industrial gloves, an understanding of the numeric or alphabetical codes and symbols used for specifying protection levels in the standards is recommended.

STANDARD EN 420: 2003 - General Requirements for Protective Gloves

MARKINGS

Each glove carries the manufacturer's logo, the reference, the size and CE mark. If it is classed in category III, the number of the notified body that carried out the tests also appears on the glove.

DEXTERITY (1-5)

The higher the rating, the greater the dexterity.

INNOCUOUSNESS (PH)

All gloves are checked for compliance in terms of their pH value (between 3.5 and 9.5).

PERFORMANCE LEVELS

The higher the rating, the greater the performance, the lowest rating being zero.



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STANDARD EN 374: 2003 - Gloves Giving Protection From Chemicals and Micro Organisms

SCOPE

This standard specifies the capability of gloves to protect the user against chemicals and/or micro-organisms.

DEFINITIONS:

Penetration

The movement of a chemical and/or micro-organism through porous materials, seam, pinholes or other imperfections in a protective glove material at a non-molecular level.

Permeation

The rubber and plastic films in gloves do not always act as barriers to liquids. Sometimes they can act as sponges, soaking up the liquids and holding them against the skin. It is therefore necessary to measure break-through times, or the time taken for the hazardous liquid to come in contact with the skin.

REQUIREMENTS

The minimum liquid proof section of the glove shall be at least equal to the minimum length of the glove specified in EN 420.

Penetration: A glove shall not leak when tested to an air and/or water leak test, and shall be tested and inspected in compliance with the Acceptable Quality Level.

AQL: Performance Level	Acceptable quality level unit	Inspection levels
Level 3	< 0.65	G1
Level 2	< 1.5	G1
Level 1	< 4.0	S4

The 'Chemical resistant' glove pictogram must be accompanied by a 3-digit code. This code refers to 3 chemicals (from a list of 12 standard defined chemicals) for which a breakthrough time of at least 30 minutes has been obtained.



Code	Chemical	CAS Number	Class
A	Methanol	67-56-1	Primary alcohol
B	Acetone	67-64-1	Ketone
C	Acetonitrile	75-05-8	Nitrile compound
D	Dichloromethane	75-09-2	Chlorinated paraffin
E	Carbone disulphide	75-15-0	Sulphur containing Organic compound
F	Toluene	108-88-3	Aromatic hydrocarbon
G	Diethylamine	109-89-7	Amine
H	Tetrahydrofurane	109-99-9	Heterocyclic and Ether compound
I	Ethyl acetate	141-78-6	Ether
J	N-Heptane	142-85-5	Saturated Hydrocarbon
K	Sodium hydroxide 40%	1310-73-2	Inorganic base
L	Sulphuric acid 96%	7664-93-9	Inorganic mineral acid



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Permeation: Each chemical tested is classified in terms of breakthrough time (performance level 0 to 6):

Measured breakthrough time	Protection index	Measured breakthrough time	Protection index
> 10 minutes	Class 1	> 120 minutes	Class 4
> 30 minutes	Class 2	> 240 minutes	Class 5
> 60 minutes	Class 3	> 480 minutes	Class 6

The 'Low Chemical resistant' or 'Waterproof' glove pictogram is to be used for those gloves that do not achieve a breakthrough time of at least 30 minutes against at least three chemicals from the defined list, but which comply with the Penetration test.



The 'Micro-organism' pictogram is to be used when the glove conforms to at least a performance level 2 for the Penetration test.



Warning: The chemical data information does not necessarily reflect the actual duration in the workplace.

STANDARD EN 388: 2003 - Gloves Giving Protection From Mechanical Risks

SCOPE

This standard applies to all kinds of protective gloves in respect of physical and mechanical aggressions caused by abrasion, blade cut, puncture and tearing.



DEFINITION AND REQUIREMENTS

Protection against mechanical hazards is expressed by a pictogram followed by four numbers (performance levels), each representing test performance against a specific hazard.

The 'Mechanical Risks' pictogram is accompanied by a 4-digit code:

- 0 to 4 - **Resistance to abrasion**. Based on the number of cycles required to abrade through the sample given.
- 0 to 5 - **Blade cut resistance**. Based on the number of cycles required to cut through the sample at a constant speed.
- 0 to 4 - **Tear resistance**. Based on the amount of force required to tear the sample.
- 0 to 4 - **Puncture resistance**. Based on the amount of force required to pierce the sample with a standard sized point.



STANDARD EN 407: 2004 - Gloves Giving Protection From Thermal Hazards

SCOPE

This standard specifies thermal performance for protective gloves against heat and/or fire.



DEFINITION AND REQUIREMENTS

The nature and degree of protection is shown by a pictogram followed by a series of six performance levels, relating to specific protective qualities. Gloves must also achieve at least Performance level 1 for abrasion and tear.

The 'heat and flame' pictogram is accompanied by a 6-digit number:

a. Resistance to flammability (performance level 0-4)

Based on the length of time the material continues to burn and glow after the source of ignition is removed. The seams of the glove shall not come apart after an ignition time of 15 seconds.

b. Contact heat resistance (performance level 0-4)

Based on the temperature range (100-500oC) at which the user will feel no pain for at least 15 seconds. If an EN level 3 or higher is obtained, the product shall record at least EN level 3 in the flammability test. Otherwise, the maximum contact heat level shall be reported as level 2.

c. Convective heat resistance (performance level 0-4)

Based on the length of time the glove is able to delay the transfer of heat from a flame. A performance level shall only be mentioned if a performance level of 3 or 4 is obtained in the flammability test.

d. Radiant heat resistance (performance level 0-4)

Based on the length of time the glove is able to delay the transfer of heat when exposed to a radiant heat source. A performance level shall only be mentioned if a performance level 3 or 4 is obtained in the flammability test.

e. Resistance to small splashes of molten metal (performance level 0-4)

The number of molten metal drops required to heat the glove sample to a given level. A performance level shall only be mentioned if a performance level 3 or 4 is obtained in the flammability test.

f. Resistance to large splashes of molten metal (performance level 0-4)

The weight of molten metal required to cause smoothing or pin-holing across a simulated skin placed directly behind the glove sample. The test is failed if metal droplets remain stuck to the glove material or if the specimen ignites.



STANDARD EN 421: 2010 - Gloves Giving Protection From Radioactive Containment and Ionising Radiation

SCOPE

This standard applies to gloves to protect from Ionising Radiation and Radioactive Contamination.



DEFINITION AND REQUIREMENTS

The nature of protection is shown by a pictogram relating to the specific protective qualities.

- To protect from radioactive contamination, the glove has to be liquid-proof and needs to pass the penetration test defined in EN 374.
- For gloves used in containment enclosures, the glove shall offer high resistance to permeability of water vapour.
- To protect from ionising radiation, the glove has to contain a certain amount of lead, quoted as 'lead equivalence'. This Lead Equivalence must be marked on each glove.
- Materials exposed to ionising radiation may be modelled by their behaviour to ozone cracking. This test is optional and can be used as an aid to selecting gloves which require resistance to ionising radiation.

STANDARD EN 511: 2006 - Gloves Giving Protection From Cold

SCOPE

This standard applies to any gloves to protect the hands against convective and contact cold down to -50°C.



DEFINITION AND REQUIREMENTS

Protection against cold is expressed by a pictogram followed by a series of 3 performance levels, relating to specific protective qualities.

The 'cold hazard' pictogram is accompanied by a 3-digit number:

a. Resistance to convective cold (performance level 0 - 4)

b. Resistance to contact cold (performance level 0 - 4)

c. Permeability by water (0 or 1)

All gloves must achieve at least EN388 performance level 1 for abrasion and tear.

- **Convective cold resistance:** based on the thermal insulation properties of the glove which are obtained by measuring the transfer of cold via convection.
- **Contact cold resistance:** based on the thermal resistance of the glove material when exposed to contact with a cold object.
- **Water impermeability:** 0 = water penetration after 30 minutes of exposure 1 = no water penetration.



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DIRECTIVE 2002/72 EC - Food Compatibility

European directive 2002/72 (which replaces 90/128/EEC) governs the conditions and restrictions that all plastic materials and objects must comply with if they are intended to come into contact with foods.



STANDARD EN1149-1 - Electrostatic Properties of Protective Clothing

The glove attains the levels of resistivity required by this standard in terms of electrostatic conduction or dissipation.

