

Chemical Resistance Standard and Gloves Classification

Standard EN374: 2003

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

Terminology:

Chemical Penetration & Chemical Permeation

Chemical penetration is the facility for a chemical and/or micro-organism to go through the layers of materials of a protective glove. Gloves are tested according to 3 levels of performance to indicate the chemical barrier properties.

Gloves do not always act as barriers to liquids; they can sometimes soak up the liquid chemicals, which is called **chemical permeation**, which will then slowly penetrate the layers of materials.

It is therefore necessary to measure breakthrough times, i.e. the time it takes for liquids to go through the layers and to come into contact with the skin.

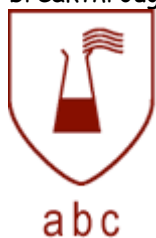
Requirements

Penetration

Gloves are tested to air and/or water leakage test and are regulated under the Acceptable Quality Level (AQL) standard. According to their results, gloves will be classified under 3 levels of penetration.

Performance level	AQL	Inspection levels
Level 3	< 0.65	G1
Level 2	< 1.5	G1
Level 1	< 4.0	S4

A chemical resistant symbol will then show a 3-digit code reflecting the performance level of each glove. This code refers to the code letters of 3 chemicals (from a list of 12 standard defined chemicals), for which a breakthrough time of at least 30 minutes has been obtained.



Code Letter	Chemical		Code Letter	Chemical
A	Methanol		G	Diethylamine
B	Acetone		H	Tetrahydrofurane
C	Acetonitrile		I	Ethyl acetate
D	Dichloromethane		J	n-Heptane
E	Carbone disulphide		K	Sodium hydroxide 40%
F	Toluene		L	Sulfuric acid 96%

Permeation

Gloves are tested according to the breakthrough time each chemical will need to go through the layers of the gloves. Accordingly, gloves are classified under 6 levels of permeation.

Breakthrough time	Performance levels
> 10 minutes	Class 1
> 30 minutes	Class 2
> 60 minutes	Class 3
>120 minutes	Class 4
>240 minutes	Class 5
>480 minutes	Class 6

Should a glove not achieve a breakthrough time of at least 30 minutes against at least three chemicals from the defined list, the following "Low chemical resistant" logo is to be applied instead.



Should a glove achieve a minimum performance level 2 for the Penetration test, the following "Micro-organism" symbol can be applied.



Disclaimer:

The chemical penetration and chemical permeation tests and selection duration will not reflect real applications in the workplace and are for standard evaluation and measurement only.