UNDERSTANDING EN ISO 374-1

The standard for **chemicals** and **micro-organisms** protective **gloves**

MAPA® PROFESSIONAL

The future is in our hands

WHAT IS **EN ISO 374**?

EN ISO 374 is the European standard that defines the requirements for protective gloves intended to protect users against dangerous **chemicals** and **micro-organisms**, including **bacteria**, **fungi**, and **viruses**.

This standard helps safety managers and workers select and use the most appropriate glove for handling hazardous substances by providing clear classifications based on penetration, permeation and degradation testing.

THE STANDARD IS DIVIDED INTO:

EN ISO 374-1
PROTECTION AGAINST DANGEROUS CHEMICALS

HOW TO READ THE EN ISO 374-1 MARKING

Each chemical protective glove tested under EN ISO 374-1 is marked with a beaker pictogram, accompanied by **a type (A, B or C)** and up to six **letters**. These letters indicate the **glove's resistance to specific chemicals**, based on **permeation testing**. Each letter corresponds to one of 18 standard reference chemicals. (see last page)

1 PICTOGRAM - 3 TYPES OF GLOVES

GLOVE TYPE	REQUIREMENTS	EXAMPLE MARKING
TYPE A	Penetration resistance (EN ISO 374-2) Permeation resistance (EN 16523-1) ≥ 30 min for at least 6 chemicals	AJKLPR
TYPE B	Penetration resistance (EN ISO 374-2) Permeation resistance (EN 16523-1) ≥ 30 min for at least 3 chemicals	JKL
TYPE C	Penetration resistance (EN ISO 374-2) Permeation resistance (EN 16523-1) ≥ 10 min for at least 1 chemical	No letter

Did you know?

The list of marked chemicals is not exhaustive – only those that have been specifically tested and certified are listed.

EN ISO 374-5
PROTECTION AGAINST MICRO-ORGANISMS (BACTERIA, FUNGI, VIRUSES)

EN ISO 374-5 EXPLAINED:

This part of the norm is most relevant in healthcare, laboratory, or biohazard settings.

Key features:

Gloves are tested for penetration resistance

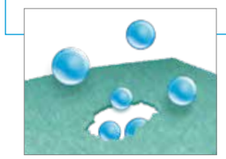
*If the glove is also certified for virus protection, an additional test is required and the «VIRUS» marking appears below the micro-organism pictogram.

EN ISO 374-1: UNDERSTANDING THE TESTS

WHAT ARE THE KEY TESTS BEHIND THE MARKING?

To be certified EN ISO 374-1, gloves undergo three types of testing:

TEST	WHAT IT MEASURES	STANDARD
PENETRATION	Presence of holes or porosity	EN ISO 374-2
PERMEATION	How fast chemicals diffuse through the material	EN 16523-1
DEGRADATION	Material damage after exposure (swelling, hardening, cracks)	EN ISO 374-4

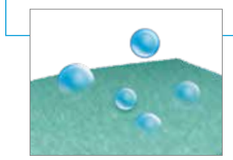


PENETRATION TEST

This test checks the glove for holes or leaks that may allow chemicals to pass through.

Two test methods are used:

- **Air Leak Test:** the glove is inflated with air and **immersed** in a water tank. If air bubbles escape within 2 minutes, the **glove fails**.
- **Water Leak Test:** the glove is **filled with water** and checked for **leaks** over a 2-minute period. Only gloves that pass are considered liquid-tight and suitable for chemical resistance testing.



PERMEATION TEST

This test measures how long it takes a chemical to break through the glove material at a molecular level - known as the **breakthrough time** (measured in minutes).

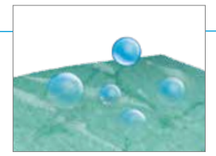
How does the test work?

- The glove is exposed to a **pure chemical** under **continuous contact**.
- Results determine the **permeation level** (Level 1 to 6).

BREAKTHROUGH TIME (in minutes)	≥ 10	≥ 30	≥ 60	≥ 120	≥ 240	≥ 480
PERMEATION LEVEL	1	2	3	4	5	6

Did you know?

Permeation level 2 (≥30 min) is the minimum required to certify a letter. The exact certified level is listed in the instructions for use (IFU).



DEGRADATION TEST

This test measures the changes in the glove's **physical properties** after chemical exposure – like **swelling, softening, cracking** or **stiffening**.

How does the test work?

- The glove material is exposed to the **chemical for 1 hour**.
- The **puncture resistance** is measured using the EN 388 stylus, before and after exposure.
- A **degradation rate** is calculated (results are shown in the instructions for use)
- There is no minimum performance level required, but the test result must be reported in the glove's instructions.

AT MAPA PROFESSIONAL, WE ARE COMMITED TO OUR USER'S SAFETY

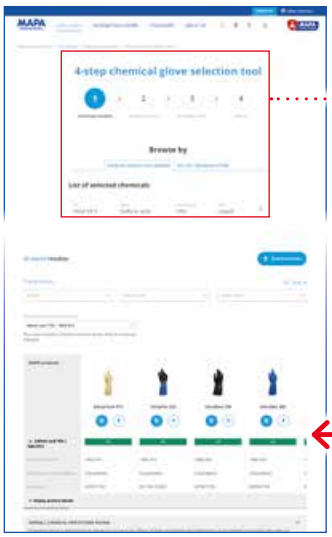
The EN ISO 374-4 standard, does not set **any minimum performance** to include a letter based on the **degradation test**. However, at Mapa Professional, if a chemical glove shows a **high degradation**, we will **not include that chemical letter** in the pictogram - even if the standard allows it.

EN ISO 374-1: LIST OF HAZARDOUS CHEMICALS

FAMILY OF CHEMICALS	CAS NUMBER	EN ISO 374-1 LETTER
ALCOHOLS (methanol 100%)	67-56-1	A
KETONES (acetone 100%)	67-64-1	B
NITRILES (acetonitrile methyl cyanide 99%)	75-05-8	C
CHLORINATED SOLVENTS (methylene chloride/dichloromethane 99%)	75-09-2	D
SULPHUR-BASED CHEMICALS (Carbon disulphide 100%)	75-15-0	E
AROMATIC SOLVENTS (toluene 100%)	108-88-3	F
AMINES (diethylamine 98%)	109-89-7	G
ETHERS (tettahydrofuran (THF) 100%)	109-99-9	H
ESTERS (ethylacetate 99%)	14l-78-6	I
ALIPHATIC SOLVENTS (heptane 99%)	142-82-5	J
ALKALIS (sodium hydroxide (soda) 40%)	1310-73-2	K
INORGANIC ACIDS (sulphuric acid 96%)	7664-93-9	L
OXIDISING ACIDS (nitric acid 65%)	7697-37-2	M
ORGANIC ACIDS (acetic acid 99%)	64-19-7	N
ORGANIC BASES (ammonia 25%)	1336-21-6	O
PEROXIDES (hydrogen peroxide 30%)	7722-84-1	P
HYDROFLUORIC ACIDS (hydrogen fluoride 40%)	7664-39-3	S
ALDEHYDES (formaldehyde 37%)	50-00-0	T

ONE GLOVE DOESN'T FIT ALL CHEMICALS

Different environments present different risks and each material reacts differently to chemical exposure. Using the wrong glove can result in rapid degradation, permeation, and ultimately serious hand injury. **Mapa Professional offers a complete range of chemical protection gloves to match every need.**



FIND THE PERFECT CHEMICAL GLOVE SOLUTION

MAPA SAFE CHEM

4 EASY STEPS TO FIND THE **OPTIMAL PROTECTIVE GLOVE MATCH** FOR YOUR CHEMICAL RISK.

1. Select up to 4 Chemicals you handle
2. Specify your conditions of use
3. Identify your secondary needs
4. Display & refine recommandations

Browse product data and download the results!

Scan here to test it!

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