



Guiding Hands

Your guide to changes in EN Glove standards explained

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Introduction

Revisions to several European Glove Standards could have an impact on your organisation.

The following presentation outlines the key updates based upon the latest available information.

Overview

Several key standards governing performance of protective gloves are under revision:

- EN 420:2003 +A1:2009
- The suite of standards EN 374
- EN 388:2003

This presentation will focus on EN 374 changes that will affect protective gloves.

No changes to product design are required to ensure compliance to the new anticipated standards.



Changes to EN 374

The EN 374 suite of standards specifies the protection capabilities of gloves to various chemicals and micro-organisms.

Summary of changes to EN 374

OLD

NEW

Part 1 - Terminology and performance requirements (EN 374-1:2003)

Part 1 - Terminology and performance requirements for chemical risks (EN ISO 374-1:2016)

Part 2 - Determination of Resistance to Penetration (EN 374-2:2014)

No change

Part 3 - Determination of resistance to permeation by chemicals (EN 374-3:2003)

EN 16523-1:2015 Permeation by liquid chemicals under condition of continuous contact

Part 4 - Determination of Resistance to Degradation by Chemicals (EN 374-4:2013)

Becomes mandatory

N/A

Part 5 - Terminology and performance requirements for micro-organisms risk (EN ISO 374-5:2016)

EN ISO 374-1:2016

Terminology and performance requirements for chemical risks

Gloves are categorised into three Types (A, B or C) based on their chemical permeation performance against an extended list of chemicals, which has increased from 12 to 18.

The new EN ISO 374-1:2016 classifications

New classification	Min. Performance Level Required	Min. Number of Chemicals from the 18 listed
Type A	Level 2 (≥ 30 min breakthrough)	6
Type B	Level 2 (≥ 30 min breakthrough)	3
Type C	Level 1 (≥ 10 min breakthrough)	1

EN ISO 374-1:2016

glove permeation test list

Code Letter	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	Carbon disulphate	75-15-0	Sulphur containing organic compound
F	Toluene	108-88-3	Aromatic hydrocarbon
G	Diethylamine	109-89-7	Amine
H	THF	109-99-9	Heterocyclic and ether compound
I	Ethyl Acetate	141-78-6	Ester
J	N-Heptane	142-82-5	Saturated hydrocarbon
K	Sodium Hydroxide 40%	1310-73-2	Inorganic base
L	Sulphuric Acid 96%	7664-93-9	Inorganic mineral acid
M	Nitric Acid 65%	7697-37-2	Inorganic acide, oxidising
N	Acetic Acid 99%	64-19-7	Organic acid
O	Ammonia 25%	1336-21-6	Organic base
P	Hydrogen Peroxide 30%	7722-84-1	Peroxide
S	Hydrogen Fluoride 40%	7664-39-3	Inorganic mineral acid, contact poison
T	Formaldehyde 37%	50-00-0	Aldehyde

Where no concentration is listed, chemical is tested at saturated concentration

EN ISO 374-1:2016

Terminology and performance requirements for chemical risks

The most visible change will be new icons on glove packaging to reflect the new standards

The beaker pictogram currently used for EN374-1:2003 for chemical splash risk, will no longer be used.



Chemical permeation performance levels will be standardised with the erlenmeyer flask pictogram and information booklet pictogram.

Type A, B or C will be differentiated with the letters associated with the tested chemicals:

Type A – 6 letters

ISO 374-1:2016/Type A



UVWXYZ

Type B – 3 letters

ISO 374-1:2016/Type B



XYZ

Type C – 0 letters

ISO 374-1 :2016 /Type C



Code Letter

A

B

C

D

E

F

G

H

I

J

K

L

M

N

O

P

S

T

Code Letter	Material	EN 374-1	Chemical tested
B	Acetone	01-00-1	Acetone
C	Acetone	70-00-0	Nitrile Compound
D	Hydroperoxide	70-00-0	Oxidising peroxide
E	Carbon disulphide	70-00-0	Sulphur containing organic compound
F	Toluene	100-00-0	Aromatic hydrocarbon
G	Chloroform	100-00-0	Halogenated and aromatic compound
H	70% Isopropanol	100-00-0	Other
I	Hydrochloric acid	100-00-0	Hydrochloric acid
J	Sulphuric Acid 40%	1100-70-2	Inorganic base, inorganic
K	Sulphuric Acid 90%	704-01-0	inorganic acid
L	Hydrofluoric acid 40%	704-01-0	inorganic acid, oxidising
M	Acetic acid 90%	60-49-7	Organic acid, Oxidising
N	Acetone	60-49-7	Other
O	Hydrogen peroxide 30%	7720-41-1	Hydrogen peroxide
P	Hydrogen peroxide 40%	7720-41-1	Hydrogen peroxide
S	Formaldehyde 37%	50-00-0	Aldehyde

The letters in the column in the table on the previous slide detail the tested chemicals

EN374-2:2014

Determination of resistance to penetration

Example of watertightness test according to EN374-2

This standard replaced EN 374- 2:2003 with no major technical changes.

Continues to specify the air and water leak test method for the penetration resistance of protective gloves.

Notable changes include:

- Reference to EN 374-3:2003 has changed to EN 16523-1:2015



EN374-3:2003 withdrawn

Determination of resistance to permeation by chemicals

EN 374-3 has been superseded by EN ISO 16523-1:2015

- Easier to understand testing procedures across a wide range of PPE
- Very similar to EN 374-3:2003
 - Minor changes to apparatus dimensions
 - Higher level of specificity for analytical techniques
 - Not expecting major differences in results
- All data to EN374-3 remains valid
- Any new chemical permeation tests to use new standard

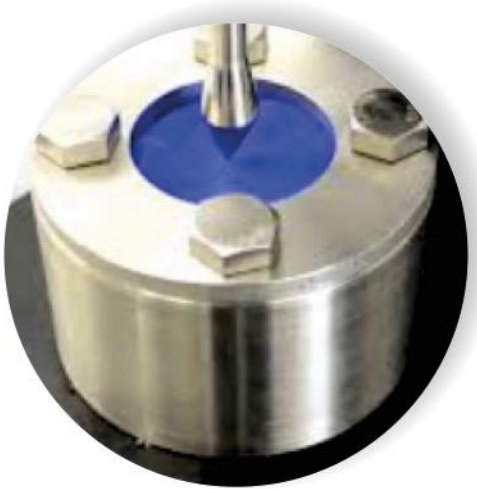


EN374-4:2013

Determination of resistance to degradation by chemicals

Now **mandatory** for each chemical tested for permeation as stated in EN ISO 374-1:2016

- No changes planned
- The degradation test includes:
 - test principles and methods
 - mandatory puncture resistance test for natural or synthetic gloves
 - non-mandatory weight change test for lined gloves
 - experimental equipment and reporting of results as % degradation



EN ISO 374-5:2016

Terminology and performance requirements for micro-organisms risks

For protection against bacteria and fungi a penetration test is required using EN 374-2:2014: air-leak/ water-leak tests.

For protection against viruses, compliance to ISO 16604:2004 (method B) standard is necessary.

New marking on packaging for gloves protecting against bacteria and fungi, and for gloves protecting against bacteria, fungi and viruses:



ISO 374-5: 2016



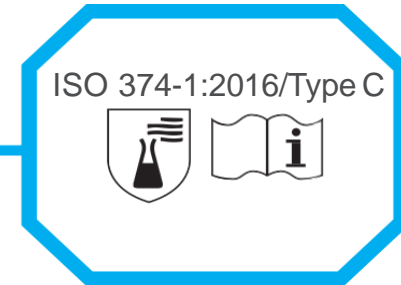
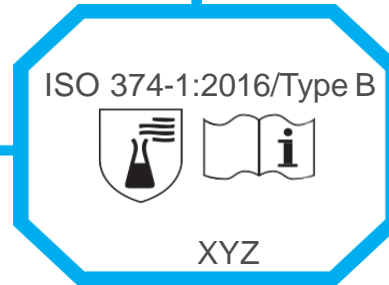
ISO 374-5: 2016



VIRUS

Key Takeaways

- New icons



- Goal is to make PPE selection more simple for users
- Global consistency (in future)

Conclusion

- Actively planning to meet new requirements across our core range
- Staying connected to regulatory bodies
- No changes to product design are required to ensure compliance

Further information available on request
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Download our white paper from
www.kimtech.eu

