

Protective gloves against chemicals and micro-organisms —

Part 1: Terminology and performance requirements

The European Standard EN 374-1:2003 has the status of a
British Standard

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National foreword

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The UK participation in its preparation was entrusted by Technical Committee PH/3, Protective clothing, to Subcommittee PH/3/8, Protective gloves, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
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Protective gloves against chemicals and micro-organisms - Part 1: Terminology and performance requirements

Gants de protection contre les produits chimiques et les
micro-organismes - Partie 1: Terminologie et exigences de
performance

Schutzhandschuhe gegen Chemikalien und
Mikroorganismen - Teil 1: Terminologie und
Leistungsanforderungen

This European Standard was approved by CEN on 24 July 2003.

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Foreword

This document EN 374-1:2003 has been prepared by Technical Committee CEN/TC 162, "Protective clothing including hand and arm protection and lifejackets", the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2004, and conflicting national standards shall be withdrawn at the latest by March 2004.

This document supersedes EN 374-1:1994.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative annex ZA, which is an integral part of this document.

Annex A is normative.

EN 374 consists of the following Parts under the general title, *Protective gloves against chemicals and micro-organisms*:

- Part 1: *Terminology and performance requirements.*
- Part 2: *Determination of resistance to penetration.*
- Part 3: *Determination of resistance to permeation by chemicals.*

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

EN 374-1:2003 (E)

1 Scope

This standard specifies the requirements for gloves to protect the user against chemicals and/or micro-organisms and defines terms to be used.

This standard should be used in conjunction with EN 420.

This standard does not specify requirements for protection against any mechanical hazards.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies (including amendments).

EN 374-2, *Protective gloves against chemicals and micro-organisms — Part 2: Determination of resistance to penetration.*

EN 374-3, *Protective gloves against chemicals and micro-organisms — Part 3: Determination of resistance to permeation by chemicals.*

EN 388, *Protective gloves against mechanical risks.*

EN 420, *General requirements for gloves.*

3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply.

3.1

protective glove material

any material or combination of materials used in a glove for the purpose of isolating the hands or hands and arms from direct contact with a chemical and/or micro-organism

3.2

protective gloves against micro-organisms

at this time it is believed that gloves which resist penetration, when tested according to 5.2, form an effective barrier to bacteria and fungi. This assumption does not apply to protection against viruses.

3.3

degradation

deleterious change in one or more properties of a protective glove material due to contact with a chemical. These changes include flaking, swelling, disintegration, embrittlement, discolouration, dimensions, appearance, hardening, softening, etc

3.4

penetration

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

3.5

permeation

process by which a chemical moves through a protective glove material on a molecular level. Permeation involves the following:

- absorption of molecules of the chemical into the contacted (outside) surface of a material;
- diffusion of the absorbed molecules in the material;
- desorption of the molecules from the opposite (inside) surface of the material.

3.6

test chemical

chemical or mixture of chemicals that is used to determine the breakthrough time in the laboratory test conditions. The chemical will be one which causes adverse effects on the skin or to the human body by contact with the skin.

3.7

breakthrough time

elapsed time between the initial application of a test chemical to the outside surface of a protective glove material and its subsequent presence on the other side of the material, measured as described in EN 374-3.

4 Method of testing

Detailed test methods will be found in the following parts of this standard:

- Penetration: EN 374-2;
- Permeation: EN 374-3.

5 Performance requirements

5.1 Minimum liquid proof length

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

5.2 Penetration

5.2.1 Gloves shall not leak when tested according to the test methods in EN 374-2 (5.2 and 5.3) and both test shall be passed according to the criteria in the relevant clauses of EN 374-2. If one test proves unsuitable, the reasons shall be reported.

5.2.2 A glove shall be considered as micro-organism resistant when it conforms to at least level 2 of the penetration test of annex A of EN 374-2.

5.3 Permeation

5.3.1 Each combination protective glove/test chemical is classified, in terms of breakthrough time, according to each individual chemical for which the glove resists permeation.

NOTE The performance levels given below are based on breakthrough times determined during constant contact with the test chemical under standard laboratory conditions as described in EN 374-3. The actual duration of protection provided in the workplace may vary considerably from these performance levels.

Table 1 — Permeation performance levels

Measured breakthrough time (min)	Permeation performance level
> 10	1
> 30	2
> 60	3
> 120	4
> 240	5
> 480	6

5.3.2 A glove shall have at least a permeation performance level 2 when tested against three chemicals taken from the list of test chemicals in annex A.

5.4 Mechanical characteristics

For each glove style recommended for use against chemicals and/or micro-organisms the obtained performance level shall be reported in the instructions supplied by the manufacturer for the following mechanical tests:

- Abrasion resistance;
- Blade cut resistance;
- Tearing resistance;
- Puncture resistance;

according to the test methods described in EN 388.

6 Marking

Marking of the protective glove shall be in accordance with the marking requirement for gloves of EN 420. The appropriate pictogram (Figure 1 or 2) shall be used. Both pictograms shall not be used together on the same glove. The pictograms shall be accompanied by the number of this standard.

- For gloves complying to the requirements stated in 5.3 and 5.2, the pictogram in Figure 1 shall be used. It shall also be accompanied by the relevant code letter of the chemicals according to annex A (example in Figure 1);



Figure 1 — Chemical pictogram with information (example)

- for gloves complying to the requirements stated in 5.2.1 only, the pictogram in Figure 2 shall be used.

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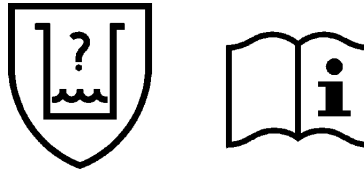


Figure 2 — Chemical pictogram for waterproof gloves and low chemical protection

In both cases, the *i* included in the pictogram may be omitted if the “information” pictogram described in EN 420 is used along with the series of pictograms relevant for the protective gloves.

7 Information supplied by the manufacturer

The information supplied by the manufacturer shall be in accordance with the requirements for information as defined in EN 420 and shall include the list of chemicals to which the gloves have been tested and the performance levels obtained in permeation testing. If this list represents only a section of the available information, then this shall be clearly stated and the reference to where additional information can be obtained shall be mentioned, e.g. separate brochure, telephone or fax numbers, website etc.

Besides the information provided, a warning shall be added that this information does not reflect the actual duration of protection in the workplace due to other factors influencing the performance, such as temperature, abrasion, degradation etc.

The level of performance and associated AQL for penetration production control (annex A of EN 374-2) shall be reported.

Annex A
(normative)**List of test chemicals**

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 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	Ester
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

Annex ZA (informative)

Clauses of this European Standard addressing essential requirements or other provisions of EU Directives

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association and supports essential requirements of EU Directive 89/686/EEC.

Compliance with this Standard provides one means of conforming with the specific essential requirements of the Directive concerned and associated EFTA regulations.

WARNING: Other requirements and other EU Directives may be applicable to the products falling within the scope of this Standard.

The following clauses of this document are likely to support requirements of the Directive 89/686/EEC, Annex II.

BASIC HEALTH AND SAFETY REQUIREMENTS	
Clauses of this standard	Essential requirements of Directive 89/686/EEC, Annex II
5.3	1.1.2. Levels and classes of protection
5.4	1.3.2. Lightness and design strength
7	1.4. Information supplied by the manufacturer
6	2.12. PPE bearing one or more identification or recognition marks directly or indirectly relating to health and safety
5.1; 5.2 and 5.3	3.10.2 Protection against cutaneous and ocular contact

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