INTERNATIONAL STANDARD

ISO 374-4

First edition
2019-10

Protective gloves against dangerous chemicals and micro-organisms —

Part 4: Determination of resistance to degradation by chemicals

Gants de protection contre les produits chimiques dangereux et les micro-organismes —

Partie 4: Détermination de la résistance à la dégradation par des produits chimiques

Reference number
ISO 374-4:2019(E)

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Published in Switzerland

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 94, *Personal safety — Protective clothing and equipment*, Subcommittee SC 13, *Protective clothing*.

This document has been transferred from EN 374-4 without technical changes.

A list of all parts in the ISO 374 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Protective gloves against dangerous chemicals and micro-organisms —

Part 4: Determination of resistance to degradation by chemicals

1 Scope

This document specifies the test method for the determination of the resistance of protective glove materials to degradation by dangerous chemicals with continuous contact.

NOTE Annex A gives information on interlaboratory test results on this method.

It is preferable that other tests used in addition to the evaluation of chemical resistance such as permeation resistance and penetration, as the chemical test do not provide sufficient information on the physical property changes affecting a glove during exposure to a chemical. It is necessary that the outside surface of the glove be exposed to the chemical.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 374-1, *Protective gloves against dangerous chemicals and micro-organisms — Part 1: Terminology and performance requirements for chemical risks*

ISO 21420, *Protective gloves — General requirements and test methods*

ISO 23388:2018, *Protective gloves against mechanical risks*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 374-1 and ISO 21420 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at http://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

4 Test principles

The resistance of a protective glove material to degradation by a liquid chemical is determined by measuring the change in puncture resistance of the glove material after continuous contact of the external surface with the challenge test chemical. The test is applicable to gloves made of natural or synthetic polymer. Lined gloves can produce unusable measurement results.

5 Test methods, puncture resistance test

5.1 Sampling

Select three gloves for testing. Condition the gloves at (23 ± 2) °C, (50 ± 5) % relative humidity for at least 24 h.

In the case of irregular and/or multiple construction, one sample shall be tested from each area. Using the appropriate circular die of 20 mm, cut 6 specimens of each glove for a total of 18 test specimens. For each glove, 3 specimens will be exposed to the challenge chemical and 3 specimens will be unexposed.

Select specimens so that they are homogeneous and representative of the glove's primary construction. Avoid embossed patterned areas or other areas of varying thickness or composition when cutting these specimens.

If a glove is constituted of several unbounded layers, only the layer giving the chemical protection shall be tested.

The sample shall be tested according to the method described in 5.3. An additional non-mandatory informative test method is given as an example in Annex B.

For lined gloves, if it is not possible to separate the liner from the glove (and if the liner is too thick), the test could not be feasible, because it would not be possible to seal the vial and the sample would slide during the test. For some samples, if there is a thick liner, it could not be necessary to use the septa to have a correct vial sealing. In this case, the liner will ensure the leakproofness.

5.2 Apparatus

The following equipment shall be used:

a) (20 ± 1) mm diameter cutting die;

b) (12 ± 1) mm diameter cutting die (for cutting a hole in the centre of each septum);

c) 20 ml crimp top vials (opening (12,5 ± 0,5) mm of diameter);

d) 20 mm diameter septa (e.g. made from chlorobutyl rubber without polytetrafluoroethylene (PTFE) layer);

e) 20 mm open centre aluminium crimp seals;

f) hand crimper;

g) hand decapper;

h) punched-out sample holder with 18 holes of 20 mm diameter;

i) 150 ml beaker;

j) transfer pipette, 2 ml;

k) dynamometer with a puncture stylus according to ISO 23388:2018, 6.5 and a cell to measure compression forces with a precision of ±1 %;

l) sample vial support.