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EN 374-3:1994

Australian/New Zealand Standard™

Occupational protective gloves
Part 10.3: Protective gloves against chemicals and micro-organisms—Determination of resistance to permeation by chemicals

[CEN title: Protective gloves against chemicals and micro-organisms, Part 3: Determination of resistance to permeation by chemicals]

Standards Australia

STANDARDS NEW ZEALAND
Paerewa Aotearoa

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee SF-023, Occupational Protective Gloves.

This Standard is identical with and has been reproduced from the European (CEN) Standard EN 374-3:1994, *Protective gloves against chemicals and micro-organisms*, Part 3: *Determination of resistance to permeation by chemicals.*

As this Standard is reproduced from a European Standard, the following applies.

(a) Its number appears on the cover and title page while the European Standard number appears only on the cover.

(b) In the source text, 'this European Standard' should read 'this Australian/New Zealand Standard'.

(c) A full point substitutes for a comma when referring to a decimal marker.

References to international Standards should be replaced by equivalent Australian, New Zealand or Australian/New Zealand Standards, as follows:

Reference to International Standard or other publication		*Australian/New Zealand Standard*	
EN		AS/NZS	
374	Protective gloves against chemicals and micro-organisms	2161	Occupational protective gloves
374-1	Part 1: Terminology and performance requirements	2161.10.1	Part 10.1: Protective gloves against chemicals and micro-organisms—Terminology and performance requirements
ISO			
4648	Rubber, vulcanized or thermoplastic—Determination of dimensions of test pieces and products for test purposes	—	

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0 Introduction

A simple flow-through, two-compartment permeation cell, of standard dimensions, is used to measure quantitatively the permeation of chemicals through protective glove materials. Breakthrough time is measured and used as a measure of protection.

It has been assumed in the drafting of this standard that the execution of its provisions is entrusted to appropriately qualified and experienced people for whose guidance it has been prepared and that appropriate precautions will be taken to avoid injury to health and contamination of the environment.

1 Scope

This standard covers the determination of the resistance of protective glove materials to permeation by potentially hazardous non-gaseous chemicals under the condition of continuous contact.

It is emphasized that the test does not represent conditions likely to be found in service, and the use of test data should be restricted to comparing materials chiefly on a relative basis in broad categories of breakthrough times.

2 Normative references

This European Standard incorporates by dated or undated reference provisions from other publications. These normative references are cited at the appropriate place 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.

EN 374-1, *Protective gloves against chemicals and micro-organisms — Part 1: Terminology and performance requirements.*

ISO 4648, *Rubber, vulcanized or thermoplastic — Determination of dimensions of test pieces and products for test purposes.*

3 Definitions

For the purposes of this standard, the definitions in EN 374-1 apply with the following definition.

delay time

time between actual arrival of the test chemical on the collecting side of the specimen and the time when the analytical instrumentation can detect it

4 Principle

The resistance of a protective glove material to permeation by a solid or liquid chemical is determined by measuring the breakthrough time of the chemical through the glove material.

In the permeation test apparatus the glove material partitions the test chemical from the collecting medium.

The collecting medium, which can be a gas or a liquid, is analysed quantitatively for its concentration of the chemical and thereby the amount of that chemical that has permeated the barrier as a function of time after its initial contact with the glove material.

5 Collecting media

5.1 Gaseous collecting medium

Dry air, nitrogen or a dry, non-flammable inert gas (e.g. helium).

NOTE This gas is used, under continuous flow conditions, for the collection of diffused molecules from the test chemical capable of vaporization under the conditions of the test in sufficient quantities for analysis.

5.2 Liquid collecting medium

Water or other liquid which does not influence the resistance of a material to permeation.

NOTE This liquid is circulated or stirred, and it is used for the collection of diffused molecules of low volatility that are soluble in the collecting medium under the conditions of the test in sufficient quantities for analysis.

6 Apparatus

6.1 *Test cell.* The test apparatus consists of a two-compartment cell for contacting the specimen with the test chemical on the specimen's normal outside surface and with a collecting medium on the specimen's normal inside surface.

6.1.1 The test cell, as shown in Figure 1 and Figure 2, is constructed of two sections of glass pipe, each nominally sized to an internal 51 mm diameter. Materials other than glass may be used. Such materials would be required for tests involving chemicals (for example, hydrofluoric acid) which are incompatible with glass. The section that is designated to contain the test chemical is 22 mm in length. The second section, which is designated to contain the collecting medium, is 35 mm.