ISO 6529:2026-01 (E)

Protective clothing - Protection against chemicals - Determination of resistance of protective clothing materials to permeation by liquids and gases

Contents

Page

Foreword v

Introduction vi

1 Scope 1

2 Normative references 1

3 Termsanddefinitions 2

4 Principle 5

5 Choice of analytical technique and collection medium 6
5.1 General 6
5.2 Gaseous collection media 6
5.3 Liquid collection media 6
5.4 Limitation due to collection media 6

6 Apparatus 7

7 Systemconfiguration 9
7.1 General 9
7.2 Open-loop 9
7.3 Closed-loop 10

8 Detection 12
8.1 Frequency of analysis 12
8.2 Analytical methods 13
8.3 Anomalous data points 13
8.4 Detection of chemical mixtures 14

9 Sampling procedure 14
9.1 Choice of sample 14
9.2 Size and cutting of specimen 15
9.3 Measurement of test specimen thickness and mass 15
9.4 Conditioning of test specimens 15

10 Test procedure 15
10.1 Pre-screening test 15
10.2 Calibration 16
10.3 Validation 16
10.4 Preparation of test apparatus 16
10.5 Permeation 18
10.5.1 General 18
10.5.2 Method A -- Liquid chemicals with continuous contact 20
10.5.3 Method B -- Gaseous chemicals with continuous contact 21
10.6 Calculation of results 21
10.6.1 General 21
10.6.2 Normalized breakthrough time 21
10.6.3 Cumulative permeation mass 23
10.6.4 Cumulative permeation time 23

10.7 Visual assessment of test specimen 25
10.8 Repeat tests 25
10.8.1 General 25
10.8.2 Repeat tests for NBT variance 25
10.8.3 Repeat tests for CPT variance 26
10.8.4 Repeat tests for CPM variance 27

11 Permissible deviations from this test method 28
11.1 Alternative test temperatures 28
11.1.1 Higher test temperatures 28
11.1.2 Lower test temperatures 29
11.2 Alternative frequencies of analysis 30

12 Test report 30

Annex A (informative) Recommended list of chemicals for comparing permeation resistance of protective clothing materials 33

Annex B (informative) Sources of permeation test cells and permeation test cell parts 36

Annex C (informative)Designsandspecificationsofcommonly-usedpermeationtestcells 38

Annex D (informative) Suggested procedures for calibrating and measuring the sensitivity of permeation-testsystems 46

Annex E (informative) Testing the permeation resistance of seams and closures 50

Annex F (normative) Default conditions for testing and reporting permeation resistance 53

Annex G (informative)Interlaboratoryandinter-samplevariation 54

Annex H (informative) Formulae for calculating permeation rates 75

Annex I (informative)Examplesofcompliantopen-loop(GC-FID)setups 77

Bibliography 80