DIN EN 421:2010-10 (E)

Protective gloves against ionizing radiation and radioactive contamination

Contents

Page

Foreword 4

1 Scope 5

2 Normative references 5

3 Terms and definitions 5

4 Requirements 6
4.1 General 6
4.2 Design principles 7
4.2.1 General principles 7
4.2.2 Glove sizing and dimensions 7
4.3 Attenuation efficiency and uniformity of distribution of protective material 7
4.4 Glove integrity 8
4.5 Mechanical requirements 8
4.6 Chemical requirements 8
4.7 Specific requirements for gloves for containment enclosures 8
4.7.1 General requirement for gloves for containment enclosures 8
4.7.2 Design for gloves for containment enclosures 9
4.7.3 Specific integrity test for gloves for containment enclosures 9
4.7.4 Resistance to ozone cracking (static strain) 9

5 Test methods 10
5.1 Determination of lead equivalent thickness and uniformity of distribution 10
5.1.1 Introduction 10
5.1.2 Sampling 10
5.1.3 Test conditions 10
5.1.4 Expression of results 11
5.1.5 Detection with an X-ray film 11
5.1.6 Detection with numeric films 12
5.1.7 Detection with an ionising chamber 12
5.2 Determination of glove integrity, air leak test 13
5.2.1 Principle 13
5.2.2 Sampling 13
5.2.3 Test apparatus 13
5.2.4 Test procedure 14
5.2.5 Test report 14
5.3 Determination of resistance to ozone cracking (Static Strain Method) 14
5.3.1 Procedure 14
5.3.2 Test conditions 15
5.3.3 Sampling 15
5.3.4 Reporting of results 15
5.4 Pull test for assemblages (sleeve and glove) 15

6 Marking 15

7 Information supplied by the manufacturer 16

Annex A (informative) Determination of water vapour permeability 17

A.1 Requirement for water vapour permeability 17

A.2 Test method 17
A.2.1 Principle 17
A.2.2 Apparatus and materials 17
A.2.3 Sampling 19
A.2.4 Procedure 19
A.2.5 Report, calculation and result 20

Annex B (informative) Warning 21

B.1 General 21
B.2 Special tests: Chemical resistance 21
B.3 Special tests: Radiation resistance 21

Annex C (informative) Uncertainty of measurement and results interpretation 23

Annex D (informative) Significant technical changes between this European Standard and the previous edition 25

Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 89/686/EEC 26

Bibliography 27

Figures Figure 1 -- Examples of glove integrity test apparatus for the air leak test 14

Figure 2 -- Pictogram ISO 7000 - 2484 Protection against particulate radioactive contamination 15

Figure 3 -- Pictogram ISO 7000 - 2809 Protection against ionizing radiation 16

Figure A.1 -- Diagram of dishes and templates (water vapour permeability test) 18

Figure C.1 -- Result pass 23

Figure C.2 -- Result fail 23

Figure C.3 -- Result fail 24