

ISO 17420-4:2021 (E)

Respiratory protective devices — Performance requirements — Part 4: Requirements for supplied breathable gas RPD

Contents

	Foreword
	Introduction
1	Scope
2	Normative references
3	Terms, definitions, abbreviations and symbols
3.1	Terms and definitions
3.2	Abbreviated terms
3.3	Symbols
4	Classification overview
5	General requirements
5.1	General
5.2	Field of vision
5.3	Resistance to flame – Single burner dynamic
5.4	Compatibility with additional equipment
5.5	Monitor performance
5.6	Warning and checking device(s)
5.6.1	Performance of warning device(s)
5.6.2	Type Sxxxx RPD
5.6.3	Type Sxxxx RPD using generated breathable gas
5.6.4	Type SY RPD
5.6.5	Performance of checking device
5.7	Protection class determination
5.7.1	General
5.7.2	Total inward leakage (TIL)
5.8	Validation by practical performance
5.8.1	General
5.8.2	Donning/doffing
5.8.3	Communication performance - hearing and speech
5.8.4	Eye irritation caused by the RPD
5.8.5	Fogging of visor
5.8.6	Ergonomic requirements
5.8.7	Restriction and mobility of low pressure hose(s)
5.9	Requirements for elements/components
6	Requirements for supplied breathable gas RPD
6.1	Temperature of operation
6.2	RPD performance
6.2.1	General
6.2.2	Setting for RPD using compressed breathable air or gas mixtures for respiration only
6.2.3	Setting for RPD using regenerated breathable gas or RPD using enriched oxygen
6.3	Work of breathing (WoB), breathing resistance and elastance
6.4	Determination of capacity of type Sxxxx RPD
6.4.1	General
6.4.2	Type Sxxxx RPD having class T (tight fitting) RIs and using compressed breathable air or gas mixtures for respiration only
6.4.3	Type Sxxxx RPD having class L (loose fitting) RIs using compressed breathable gas
6.4.4	Type Sxxxx RPD - using generated breathable gas or using enriched oxygen

- 6.16.5 Extreme cold temperature requirements
 - 6.16.5.1 General
 - 6.16.5.2 Temperature of operation down to -50 °C
 - 6.16.5.2.1 Working duration of temperature down to -50 °C
 - 6.16.5.2.2 Flexibility of medium pressure hose down to -50 °C
 - 6.16.5.2.3 Flexibility of high pressure hose down to -50 °C
 - 6.16.5.2.4 Resistance of components down to -50 °C
- 6.16.6 Extreme high temperature requirements
- 6.16.7 Hydration
- 6.16.8 Submersion
- 6.16.9 Use of RPD in potentially explosive atmospheres
- 6.16.10 Electromagnetic compatibility of RPD
- 6.16.11 Permeation of medium pressure hoses for Class SY RPD, longer than 10 m including couplings

7 Testing

- 7.1 General
- 7.2 Inspection
- 7.3 Testing of leak tightness
 - 7.3.1 Using positive pressure
 - 7.3.2 Using negative pressure
- 7.4 High pressure leak-tightness test
- 7.5 Resistance to impact of cylinder valve
- 7.6 Testing permeation of medium pressure hoses

8 Marking

- 8.1 General
- 8.2 Marking of RPD without separable components
- 8.3 Marking of RPD replacement parts
- 8.4 Marking of RPD components as part of a system
 - 8.4.1 RI
 - 8.4.2 Other separable components

9 Information supplied by the RPD manufacturer

- 9.1 General
- 9.2 RPD
 - 9.2.1 Minimum information
 - 9.2.2 Additional information
 - 9.2.3 Second high or medium pressure outlet/inlet
 - 9.2.4 Ambient air bypass
 - 9.2.5 Hydration facility
- 9.3 RPD components and replacement parts
 - 9.3.1 RI
 - 9.3.1.1 Minimum information
 - 9.3.1.2 Additional information
 - 9.3.2 Other components or replacement parts

Annex A (informative) Reliability

- A.1 General
- A.2 Abrasion resistance
- A.3 Pressure increase beyond the design limits
- A.4 Exposure to dust
- A.5 Compatibility of materials
 - A.5.1 General
 - A.5.2 Chemical resistance of materials
 - A.5.3 Oxygen compatibility
 - A.5.4 Compatibility of materials with the wearer's body
- A.6 Cleaning, disinfection and/or decontamination

Annex B (informative) Example of failure modes and effect analysis (FMEA)

- B.1 General
- B.2 Procedure guidelines
- B.3 Definitions and explanations

Annex C (normative) Test schedules

- C.1 General**
- C.2 Test schedules for tests using RPD headforms - allocation of RI sizes to headforms, number of samples and preconditioning**
 - C.2.1 RI sizes**
 - C.2.2 RPD headforms**
 - C.2.2.1 General**
 - C.2.2.2 How to read the Table C.1**
 - C.2.2.3 Test schedules tables**
 - C.3 Test schedules for tests not using headforms**
 - C.3.1 General**
 - C.3.2 Tests without test subjects (sample number 1 and 2)**
 - C.4 Test with test subjects (sample number 3 to n)**
 - C.5 Number of samples and test schedule for RPD Components**

Annex D (normative) Normalisation of test results

- D.1 General**
- D.2 Examples for normalization calculation for work of breathing**

Page count: 73