

# ISO 16900-9:2015-10 (E)

## Respiratory protective devices - Methods of test and test equipment - Part 9: Determination of carbon dioxide content of the inhaled gas

---

<b>Contents</b>		<b>Page</b>
Foreword .....		v
Introduction .....		vii
1	Scope .....	1
2	Normative references .....	1
3	Terms and definitions .....	1
4	Prerequisites .....	1
5	General test requirements .....	1
6	Principle .....	2
7	Apparatus .....	2
7.1	General .....	2
7.2	Test method 1 .....	3
7.2.1	Breathing machine .....	3
7.2.2	Carbon dioxide analyser .....	3
7.2.3	Carbon dioxide sampling .....	3
7.2.4	RPD head form/torso .....	4
7.3	Test method 2 .....	4
7.3.1	Breathing machine and ancillary equipment .....	4
7.3.2	RPD carbon dioxide analyser .....	6
7.3.3	RPD head form/torso .....	6
7.3.4	Test gas .....	6
7.3.5	Exhalation and inhalation reservoirs .....	6
7.4	Test method 3 .....	6
7.4.1	Breathing machine .....	6
7.4.2	Carbon dioxide analyser .....	7
7.4.3	RPD Head form/torso .....	7
7.4.4	Carbon dioxide and volume signal synchronisation .....	7
7.4.5	Data acquisition .....	7
8	Test procedures .....	8
8.1	General .....	8
8.1.1	Test sequences .....	8
8.1.2	Testing RPD with respiratory interface type L .....	8
8.2	Test method 1 -- Method for measurement of carbon dioxide in inhalation gas .....	8
8.2.1	Calculation of breathing machine settings .....	8
8.2.2	Operation of breathing machine .....	8
8.2.3	Auxiliary fan .....	9
8.2.4	Exhaled carbon dioxide concentration .....	9
8.2.5	RPD carbon dioxide level .....	9
8.2.6	Fitting the RPD .....	9
8.2.7	Adjusting baseline carbon dioxide concentration when testing supplied breathable gas RPD .....	9
8.2.8	Calculation of carbon dioxide increase .....	9
8.2.9	Completion of test sequences .....	9

8.3	Test method 2 -- Method for measurement of carbon dioxide in inhalation gas .....	10
8.3.1	Exhaled Carbon dioxide concentration .....	10
8.3.2	Exhalation reservoir .....	10
8.3.3	Inhalation reservoir .....	10
8.3.4	Operation of breathing machine .....	10
8.3.5	Auxiliary fan .....	10
8.3.6	Inhaled carbon dioxide concentration .....	10
8.3.7	End of each test sequence .....	10
8.3.8	Fitting the RPD .....	10
8.3.9	Calculation of carbon dioxide increase .....	10
8.3.10	Adjusting baseline carbon dioxide concentration when testing supplied breathable gas RPD .....	10
8.3.11	Completion of test sequences .....	11
8.4	Test method 3 -- Method for measurement of carbon dioxide in inhalation gas .....	11
8.4.1	Operation of breathing machine .....	11
8.4.2	Auxiliary fan .....	11
8.4.3	Setting of initial carbon dioxide flow rate .....	11
8.4.4	Data recording .....	11
8.4.5	Calculation of inspired carbon dioxide .....	11
8.4.6	Fitting the RPD .....	12
8.4.7	Calculation of carbon dioxide increase .....	12
8.4.8	Adjusting baseline carbon dioxide concentration when testing supplied breathable gas RPD .....	12
8.4.9	Completion of test sequence .....	12
9	Test report .....	12
Annex A (normative) Application of uncertainty of measurement .....		14
Annex B (informative) Profile of carbon dioxide concentration in the exhaled gas and use of verification volumes .....		16
Bibliography .....		18