ISO 13137:2022-08 (E)

Workplace atmospheres - Pumps for personal sampling of chemical and biological agents - Requirements and test methods

Contents

Page

Foreword v

Introduction vi

1 Scope 1

2 Normative references 1

3 Termsanddefinitions 1

4 Type of pump 2

5 Requirements 2
5.1 Features 2
5.2 Mass 2
5.3 Design safety 2
5.4 Operating time 2
5.5 Start-up and long-term performance 3
5.6 Short-term interruption of air flow 3
5.7 Temperature dependence 3
5.8 Mechanical strength 3
5.9 Pulsation of flow rate (for type P pumps only) 4
5.10 Flow rate stability under increasing pressure drop 4
5.10.1 Pumps with a nominal flow rate range less or equal than 5 000 ml · min-1 4
5.10.2 Pumps with a nominal flow rate range above 5 000 ml · min-1 5
5.11 Timer accuracy 5
5.12 Electromagnetic compatibility 5
5.13 Explosion hazard 5

6 Test conditions 5
6.1 Number of test objects 5
6.2 Test instruments 5
6.3 Preconditioning and sequence of tests 6
6.4 Adjustment of volumetric flow rate and pressure drop 6
6.5 Test set-up and performance 6

7 Test methods 7
7.1 General 7
7.2 Features 7
7.3 Mass 7
7.4 Design safety 8
7.5 Operating time 8
7.6 Start-up and long-term performance 8
7.6.1 Test set-up 8
7.6.2 Flow rate and pressure drop adjustment 8
7.6.3 Procedure 8
7.7 Short-term interruption of air flow 9
7.7.1 Test set-up 9
7.7.2 Flow rate and pressure drop adjustment 9
7.7.3 Procedure 9
7.8 Temperature dependence 9

7.8.1 Test set-up 9
7.8.2 Flow rate and pressure drop adjustment 9
7.8.3 Procedure 10
7.9 Mechanical strength 10
7.9.1 Test set-up 10
7.9.2 Flow rate and pressure drop adjustment 11
7.9.3 Procedure 11
7.10 Pulsation of flow rate (for type P pumps only) 12
7.10.1 Test set-up 12
7.10.2 Flow rate and pressure drop adjustment 12
7.10.3 Procedure 12
7.11 Flow rate stability under increasing pressure drop 14
7.11.1 Test set-up 14
7.11.2 Flow rate adjustment 14
7.11.3 Procedure 15
7.12 Timer accuracy 15
7.13 Electromagnetic compatibility 15
7.14 Explosion hazard 15

8 Test report 15

9 Instructions for use 15

10 Charger 16
10.1 Requirements 16
10.2 Testing 16

11 Marking 16

Annex A (informative) Types of pump mechanisms and control systems 17

Annex B (informative) Internal sensors of sampling pumps 20

Annex C (informative)Usertestsforpumpsandflowmeters 22

Annex D (informative) Pressure drop due to collection substrates 25

Annex E (informative) Test instruments 28

Bibliography 29