

# DIN EN ISO 17621:2015-12 (E)

## Workplace atmospheres - Short term detector tube measurement systems - Requirements and test methods (ISO 17621:2015)

---

<b>Contents</b>	<b>Page</b>
European foreword.....	4
Foreword.....	5
Introduction.....	6
<b>1 Scope</b> .....	<b>7</b>
<b>2 Normative references</b> .....	<b>7</b>
<b>3 Terms and definitions</b> .....	<b>7</b>
<b>4 Requirements</b> .....	<b>9</b>
4.1 General.....	9
4.2 Detector tubes.....	9
4.2.1 Specified measuring range.....	9
4.2.2 Scale.....	9
4.2.3 Evaluation of the stain.....	10
4.2.4 Shelf life.....	10
4.2.5 Mechanical strength.....	10
4.2.6 Transportation temperature stability.....	10
4.2.7 Packing of the detector tubes.....	10
4.2.8 Interferences.....	10
4.2.9 Overloading.....	10
4.2.10 Environmental influences.....	10
4.2.11 Instruction for use for detector tubes.....	11
4.3 Detector tube pump.....	11
4.3.1 General.....	11
4.3.2 Stroke volume.....	11
4.3.3 Leakage.....	11
4.3.4 Mechanical strength.....	11
4.3.5 Mechanical durability.....	11
4.3.6 Explosion hazard.....	12
4.3.7 Instructions for use for detector tube pumps.....	12
<b>5 Test conditions</b> .....	<b>12</b>
5.1 General.....	12
5.2 Reagents.....	12
5.3 Apparatus.....	12
5.4 Independent method.....	12
5.5 Generation of test gas mixtures.....	12
5.6 Test conditions for detector tubes.....	13
5.7 Test conditions for detector tube pumps.....	13
<b>6 Test methods</b> .....	<b>13</b>
6.1 Detector tubes.....	13
6.1.1 Visual checks.....	13
6.1.2 Test procedures.....	14
6.1.3 Mechanical strength.....	15
6.2 Detector tube pumps.....	16
6.2.1 Stroke volume.....	16
6.2.2 Leakage.....	17
6.2.3 Mechanical strength.....	17
6.2.4 Mechanical durability.....	17
6.2.5 Explosion hazard (electrically driven detector tube pumps only).....	17
6.2.6 Instructions for use.....	17

<b>7</b>	<b>Uncertainty of measurement</b> .....	<b>17</b>
7.1	Potential sources of uncertainty.....	17
7.2	Estimation of the uncertainty components.....	18
7.2.1	Combined stain component .....	18
7.2.2	Pump-stroke volume .....	20
7.2.3	Effect of temperature .....	20
7.2.4	Effect of relative humidity .....	21
7.2.5	Test gas concentration used for evaluation .....	21
7.2.6	Stain-length reading.....	22
7.2.7	Analytical phenomena .....	22
7.2.8	Atmospheric pressure.....	22
7.2.9	Diffusive leakage into detector tube .....	22
7.2.10	Non-constant sampling flow.....	23
7.3	Combined standard uncertainty.....	23
7.4	Expanded uncertainty .....	24
<b>8</b>	<b>Test report</b> .....	<b>24</b>
8.1	Detector tubes .....	24
8.2	Detector tube pumps .....	24
<b>9</b>	<b>Marking</b> .....	<b>25</b>
9.1	Boxes.....	25
9.2	Detector tubes .....	25
9.3	Detector tube pumps .....	25
	<b>Annex A (normative) Test sequence</b> .....	<b>26</b>
	<b>Annex B (normative) List of test instruments</b> .....	<b>27</b>
	<b>Annex C (informative) Example for calculation of expanded uncertainty</b> .....	<b>28</b>
	<b>Bibliography</b> .....	<b>31</b>