DIN EN ISO 8655-7:2024-02 (E)

Piston-operated volumetric apparatus - Part 7: Alternative measurement procedures for the determination of volume (ISO 8655-7:2022, Corrected version 2023-01)

Contents

Page

European foreword ... **4**

Foreword ... **5**

Introduction ... **7**

1 Scope ... **8**

2 Normative references ... **8**

3 Terms and definitions ... **9**

4 General requirements ... **9**
4.1 Metrological confirmation ... 9
4.2 Uncertainty of measurement ... 9
4.3 Operator qualification ... 9

5 Performance requirements ... **10**
5.1 Performance tolerances ... 10
5.2 Operator impact ... 10

6 Test conditions ... **10**
6.1 General ... 10
6.2 Test equipment ... 10
6.3 Test room, environmental conditions ... 10
6.4 Test volumes ... 11
6.4.1 Fixed volume POVA ... 11
6.4.2 Adjustable volume POVA ... 11
6.5 Number of measurements per test volume ... 11
6.6 Test liquids ... 12

7 Evaluation ... **12**
7.1 Mean volume ... 12
7.2 Systematic error of measurement ... 12
7.3 Random error of measurement ... 13

8 Test methods ... **13**
8.1 General ... 13
8.2 Gravimetric method ... 14
8.3 Dual-dye ratiometric photometric method ... 14
8.4 Single dye photometric method ... 15
8.5 Hybrid photometric/gravimetric method for multichannel POVA ... 15
8.6 Titration method ... 15
8.7 Batch testing ... 15

9 Dispense procedures ... **15**
9.1 General ... 15
9.2 Preparation ... 16
9.3 Single-channel air displacement pipettes (in accordance with ISO 8655-2) ... 16
9.3.1 General ... 16
9.3.2 Test cycle ... 16
9.4 Multi-channel pipettes (in accordance with ISO 8655-2) ... 17
9.5 Positive displacement pipettes (in accordance with ISO 8655-2) ... 18
9.6 Burettes (in accordance with ISO 8655-3) ... 18
9.7 Dilutors (in accordance with ISO 8655-4) ... 19
9.7.1 General ... 19
Test cycle

9.7.2 19
9.8 Dispensers (in accordance with ISO 8655-5) 20
9.9 Syringes (in accordance with ISO 8655-9) 20
9.9.1 General 20
9.9.2 Test cycle 20
10 Reporting of results **21**
Annex A (normative) **Gravimetric procedure** **22**
Annex B (normative) **Dual-dye ratiometric photometric procedure** **27**
Annex C (normative) **Single dye photometric procedure** **34**
Annex D (normative) **Photometric/gravimetric hybrid procedure** **38**
Annex E (normative) **Titrimetric procedure** **46**
Annex F (normative) **Conversion of liquid mass to volume** **50**
Bibliography **53**