ISO 8655-8:2022-04 (E)

Piston-operated volumetric apparatus - Part 8: Photometric reference measurement procedure for the determination of volume

Contents

Page

Foreword v

Introduction vi

1 Scope 1

2 Normative references 1

3 Termsanddefinitions 1

4 General requirements 2

5 Test equipment 2
5.1 General 2
5.2 Spectrophotometer 2
5.3 Cuvette and mixer 2
5.4 Measuring devices 3
5.5 Equipment used for solution preparation 3
5.6 Balances 3
5.7 Density meter 4
5.8 pH meter 4

6 Reagents 4
6.1 General requirements 4
6.2 Water 4
6.3 Buffer solution 4
6.4 Copper(II) chloride solution 4
6.5 Ponceau S solutions 4
6.6 Calibrator solutions 5
6.7 Stability of solutions 6
6.7.1 General 6
6.7.2 Preservatives 6
6.7.3 Light sensitivity 6
6.7.4 Storage temperature 6

7 Test conditions 6
7.1 General 6
7.2 Test room 6
7.3 Evaporation 7

8 Procedure 7
8.1 General 7
8.1.1 Summary 7
8.1.2 Test conditions 7
8.1.3 Test volume 7
8.1.4 Number of measurements per volume to be tested 8
8.2 System calibration 8
8.2.1 General 8
8.2.2 System calibration procedure 8
8.2.3 Previous calibration 8
8.3 Photometric procedure 8

8.3.1 Preparation of cuvettes 8
8.3.2 Zero of the spectrophotometer 9
8.3.3 Starting absorbances 9
8.3.4 Dispensing of test liquids 9
8.3.5 Absorbance of the chromophore mixture 9
8.3.6 Calculation of the delivered test volume 9
8.4 Preparation 9
8.5 Single-channel air displacement pipettes (in accordance with ISO 8655-2) 10
8.5.1 General 10

8.5.2 Test cycle 10
8.6 Multi-channel pipettes (in accordance with ISO 8655-2) 11
8.7 Positive displacement pipettes (in accordance with ISO 8655-2) 11
8.8 Burettes (in accordance with ISO 8655-3) 11
8.9 Dispensers (in accordance with ISO 8655-5) 12
8.10 Syringes (in accordance with ISO 8655-9) 12
8.10.1 General 12
8.10.2 Test cycle 12

9 Evaluation 13
9.1 Calculation of volume 13
9.1.1 Calibration constant 13
9.1.2 Volume of test liquid 13
9.1.3 Temperature correction 14
9.1.4 Mean volume 14
9.2 Systematic error of measurement 14
9.3 Random error of measurement 15
9.4 Uncertainty of measurement 15

10 Reporting of results 15

Annex A (normative) Calculation of volumes from balance readings 17

Bibliography 18