DIN 51898-1:2014-05 (E)

Gas analysis - Absolute volumetric method for dynamic preparation of calibration gases - Part 1: Preparation from pure gases , with CD-ROM

Contents

Page

Foreword ... 3

Introduction ... 4

1 Scope ... 5

2 Normative references ... 5

3 Terms and definitions ... 6

4 Principle ... 6

5 Preparation of calibration gases ... 8

6 Influencing factors ... 11
6.1 Influencing factors and effects ... 11
6.2 Supplementary information ... 15

7 Calculation of composition ... 16
7.1 Symbols and abbreviations ... 16
7.2 Rough estimates ... 17
7.3 Calculation of component contents ... 17
7.3.1 General ... 17
7.3.2 Calculation of discharged gas volumes ... 18
7.3.3 Calculation of compression factors ... 18
7.3.4 Calculation of mole fractions ... 19
7.3.5 Calculation of volume fractions ... 19

8 Estimation of uncertainty ... 20
8.1 General ... 20
8.2 Determination of input uncertainties ... 20
8.3 Uncertainty of the mole fractions ... 23
8.4 Uncertainty of the volume fractions ... 24

9 Methods for the verification of a calculated composition ... 24
9.1 General ... 24
9.2 Comparison measurements using traceable gas mixtures ... 24
9.3 Comparison measurements using gas density gauges (sinker densimeters) ... 25
9.4 Symmetry check of the gas mixing pump ... 25

10 Test report ... 25

Annex A (informative) Validation and verification ... 26
A.1 Requirements for validation ... 26
A.2 Verification of linearity ... 26

Annex B (informative) Realized applications ... 28

Annex C (informative) Example calculations ... 29

Annex D (informative) Computer program ... 40

Bibliography ... 41