ISO 21877:2019 (E)

Stationary source emissions — Determination of the mass concentration of ammonia — Manual method

Contents

Foreword

Introduction

1 Scope

2 Normative references

3 Terms and definitions

4 Symbols and abbreviated terms

5 Principle of the method of measurement

6 Sampling system

- 6.1 General
- 6.2 Sampling equipment
- 6.2.1 Non-isokinetic sampling
- 6.2.2 Isokinetic sampling
- 6.2.2.1 General
- 6.2.2.2 Isokinetic sampling with side stream
- 6.2.2.3 Isokinetic sampling without side stream
- 6.3 Other equipment

7 Performance characteristics

- 7.1 General
- 7.2 Performance characteristics of the sampling system
- 7.3 Performance characteristics of the analysis
- 7.3.1 Sources of uncertainty
- 7.3.2 Performance criterion of analysis
- 7.4 Establishment of the uncertainty budget

8 Field operation

- 8.1 Measurement planning
- 8.2 Sampling strategy
- 8.3 Field blank
- 8.4 Leak test
- 8.5 Sampling
- 8.6 Sample transport and storage

9 Analytical determination

10 Calculation of the results

11 Measurement report

Annex A (informative) Validation of the method of measurement in the field

Annex B (informative) Description of the analytical method — Spectrophotometry

- B.1 General
- B.2 Reagents
- B.2.1 General
- B.2.2 Calibration solutions

B.2.3 Reagents for analysis
B.3 Analytical equipment
B.4 Analysis
B.5 Calibration
B.6 Calculation

Annex C (informative) Description of the analytical method — Continuous flow analysis (CFA)

C.1 General
C.2 Reagents
C.2.1 General
C.2.2 Calibration solutions
C.2.3 Reagents for analysis
C.3 Analytical equipment
C.4 Sample preparation
C.5 Calibration
C.6 Calculation

Annex D (informative) Description of the analytical method — Ion chromatography

D.1 General
D.2 Reagents
D.2.1 General
D.2.2 Calibration solutions
D.2.3 Reagents for analysis
D.3 Analytical equipment
D.4 Preparations
D.5 Measurement
D.6 Calibration and checks on the calibration
D.7 Calculation

Annex E (informative) Example of the calculation of the uncertainty budget

E.1 General
E.2 Elements required for the uncertainty determinations
E.3 Example of an uncertainty calculation
E.3.1 Specific conditions in the field
E.3.2 Performance characteristics
E.3.3 Model equation and application of rule of uncertainty propagation
E.3.3.1 Concentration of NH3
E.3.3.2 Calculation of the combined uncertainties of Vm,ref and cm
E.3.3.3 Calculation of sensitivity coefficients
E.3.3.4 Results of the standard uncertainties calculations
E.3.4 Estimation of the combined uncertainty

Annex F (informative) Calculation of the uncertainty associated with a mass concentration expressed on dry gas and at an oxygen reference concentration

F.1 Uncertainty associated with a concentration expressed on dry gas
F.2 Uncertainty associated with a mass concentration expressed at an oxygen reference concentration

Page count: 44