ISO 16000-33:2024-07 (E)

Indoor air - Part 33: Determination of phthalates with gas chromatography/mass spectrometry (GC/MS)

Contents

Page

Foreword ..... **v**

Introduction ..... **vi**

1 Scope **1**

2 Normative references **1**

3 Terms and definitions **1**

4 Abbreviated terms **2**

5 Sampling methods and analytical apparatus **3**
5.1 General 3
5.2 Sampling by adsorption with subsequent thermal desorption 3
5.2.1 Apparatus, operating materials and chemicals 3
5.2.2 Preparation of the thermal desorption tube 4
5.2.3 Sampling 4
5.3 Sampling by adsorption and subsequent solvent extraction 5
5.3.1 Apparatus, operating materials and chemicals 5
5.3.2 Preparation of Florisil® and the adsorption tubes 6
5.3.3 Suggestions regarding the application of Florisil® 6
5.3.4 Sampling 7
5.3.5 Sample conditioning 7

6 Calibration **8**
6.1 General 8
6.2 Calibration of the thermal desorption method 8
6.3 Calibration of the solvent extraction method 8

7 Identification and quantification **9**
7.1 Mass spectrometric analysis 9

8 Establishment of calibration curves and calculation of the analyte mass **14**
8.1 Establishment of a calibration curve 14
8.2 Calculation of the analyte mass 14

9 Calculation of indoor air concentrations **15**

10 Performance characteristics **16**
10.1 Detection limit 16
10.2 Quantification limit and problems related to blank values 16
10.3 Reproducibility standard deviation and repeatability standard deviation 17

11 Quality assurance **18**
11.1 Method verification and determination of blanks 18
11.1.1 General 18
11.1.2 Field blank value of the indoor air 18
11.1.3 Analytical laboratory blank value 18
11.2 Measures for blank value minimization 18
11.3 Documents 19

12 Interferences **19**

Annex A (informative) **General information on phthalates** **20**

Annex B (informative) **Sampling by adsorption with ODS solid phase disk or SDB copolymer cartridge** **23**

Annex C (informative) **Screening phthalates in solvent wipe tests** **29**

Annex D (informative) **Screening phthalates in house dust** **32**

Annex E (informative) **Practical example for the calibration of the thermal desorption method** **36**

Annex F (informative) **Practical example for the calibration of the solvent extraction method using Florisil®** **38**

Annex G (informative) **Practical example for the gas chromatography with thermal desorption** **40**

Annex H (informative) **Practical example for the gas chromatography following solvent extraction** **41**

Annex I (informative) **Problems related to the blank values** **42**

Annex J (informative) **Example of sampling protocol documentation** **43**

Bibliography **44**