

DIN EN ISO 23161:2019-04 (E)

Soil quality - Determination of selected organotin compounds - Gas-chromatographic method (ISO 23161:2018)

| Contents | | Page |
|-------------------------|---|-------------|
| European foreword | | 4 |
| Foreword | | 5 |
| 1 | Scope | 6 |
| 2 | Normative references | 7 |
| 3 | Terms and definitions | 7 |
| 4 | Principle | 7 |
| 5 | Reagents | 9 |
| 5.1 | General | 9 |
| 5.2 | Chemicals | 9 |
| 5.3 | Standards | 10 |
| 5.4 | Preparation of reagents and solutions | 11 |
| 5.4.1 | General requirements | 11 |
| 5.4.2 | Blank solution | 11 |
| 5.4.3 | Aqueous calibration solutions (multicomponent solution of organotin compounds in water) | 11 |
| 5.4.4 | Methanolic potassium hydroxide solution | 12 |
| 5.4.5 | Acetate buffer solution | 12 |
| 5.4.6 | Solvent mixture | 12 |
| 5.4.7 | Derivatization agent | 12 |
| 5.5 | Clean-up | 12 |
| 5.5.1 | General requirements | 12 |
| 5.5.2 | Silica gel for the clean-up column | 12 |
| 5.5.3 | Aluminium oxide for the clean-up column | 12 |
| 5.5.4 | Clean-up column | 12 |
| 5.5.5 | Eluent for extract cleaning with silica gel | 13 |
| 5.5.6 | Eluent for extract cleaning with aluminium oxide | 13 |
| 6 | Apparatus | 13 |
| 7 | Procedure | 14 |
| 7.1 | Sampling and sample pretreatment | 14 |
| 7.2 | Sample extraction | 14 |
| 7.2.1 | General | 14 |
| 7.2.2 | Acidic extraction and derivatization of an aliquot | 15 |
| 7.2.3 | Alkaline treatment and in situ derivatization | 15 |
| 7.2.4 | Separate determination of TTBT in the field-moist sample | 15 |
| 7.3 | Clean-up of the extract | 16 |
| 7.3.1 | General | 16 |
| 7.3.2 | Silica and aluminium oxide clean-up | 16 |
| 7.4 | Determination of dry mass | 16 |
| 7.5 | Measurement | 16 |
| 7.5.1 | Gas chromatographic separation | 16 |
| 7.5.2 | Detection and identification | 17 |
| 8 | Calibration | 17 |

| | | |
|-----------|--|-----------|
| 9 | Recovery rates of the internal standard compounds | 18 |
| 10 | Quantification | 19 |
| 11 | Expression of results | 19 |
| 12 | Validation | 20 |
| 13 | Test report | 20 |
| | Annex A (informative) Information about the procedure | 21 |
| | Annex B (informative) Additional clean-up procedures | 23 |
| | Annex C (informative) Information about typical instrumental conditions | 25 |
| | Annex D (informative) Information about GC-MS identification | 36 |
| | Annex E (informative) Performance data | 38 |
| | Bibliography | 41 |