

ISO 18589-3:2015-02 (E)

Measurement of radioactivity in the environment - Soil - Part 3: Test method of gamma-emitting radionuclides using gamma-ray spectrometry

| Contents | | Page |
|--|---|-------------|
| Foreword | | iv |
| Introduction | | v |
| 1 | Scope | 1 |
| 2 | Normative references | 1 |
| 3 | Terms, definitions and symbols | 2 |
| 3.1 | Terms and definitions | 2 |
| 3.2 | Symbols | 2 |
| 4 | Principle | 2 |
| 5 | Gamma-spectrometry equipment | 3 |
| 6 | Sample container | 4 |
| 7 | Procedure | 4 |
| 7.1 | Packaging of samples for measuring purposes | 4 |
| 7.2 | Laboratory background level | 5 |
| 7.3 | Calibration | 5 |
| 7.3.1 | Energy calibration | 5 |
| 7.3.2 | Efficiency calibration | 5 |
| 7.4 | Measurements of and corrections for natural radionuclides | 6 |
| 8 | Expression of results | 6 |
| 8.1 | Calculation of the activity per unit of mass | 6 |
| 8.1.1 | General | 6 |
| 8.1.2 | Decay corrections | 7 |
| 8.1.3 | Self-absorption correction | 7 |
| 8.1.4 | Summation effects or coincidence losses corrections | 8 |
| 8.2 | Standard uncertainty | 8 |
| 8.3 | Decision threshold | 9 |
| 8.4 | Detection limit | 9 |
| 8.5 | Confidence limits | 10 |
| 8.6 | Corrections for contributions from other radionuclides and background | 10 |
| 8.6.1 | General | 10 |
| 8.6.2 | Contribution from other radionuclides | 10 |
| 8.6.3 | Contribution from background | 12 |
| 9 | Test report | 12 |
| Annex A (informative) Calculation of the activity per unit mass from a gamma spectrum using linear background subtraction | | 14 |
| Annex B (informative) Analysis of natural radionuclides in soil samples using gamma spectrometry | | 16 |
| Bibliography | | 22 |