

ISO 4504:2025-05 (E)

Plastics - Polyethylene (PE) - Determination of co-monomer content by solution state ¹³C-NMR spectrometry

| Contents | | Page |
|---|---|-------------|
| Foreword | | iv |
| 1 | Scope | 1 |
| 2 | Normative references | 1 |
| 3 | Terms, definitions, symbols and abbreviated terms | 1 |
| 3.1 | Terms and definitions | 1 |
| 3.2 | Symbols | 2 |
| 3.3 | Abbreviated terms | 2 |
| 4 | Principle | 2 |
| 5 | Reagents and materials | 2 |
| 6 | Apparatus | 3 |
| 7 | Preparation and preservation of test samples | 3 |
| 8 | Method A -- Inverse gated decoupling method | 3 |
| 8.1 | Sample preparation | 3 |
| 8.2 | Procedure | 4 |
| 8.3 | Calculation | 4 |
| 9 | Method B --Insensitive nuclei enhanced by polarization transfer method | 5 |
| 9.1 | Sample preparation | 5 |
| 9.2 | Procedure | 5 |
| 9.3 | Calculation | 6 |
| 10 | Expression of results | 6 |
| 11 | Precision | 7 |
| 12 | Test report | 7 |
| Annex A (normative) Spectral integration method and integration limits outlines | | 8 |
| Annex B (normative) Summary of formulae | | 10 |
| Annex C (informative) Calculation example of method A | | 13 |
| Annex D (informative) Calculation example of method B | | 16 |
| Annex E (informative) Reference longitudinal relaxation time(T1) values | | 19 |
| Annex F (informative) Chemical shift region of branch CH-carbon of different co-monomers | | 22 |
| Annex G (informative) Summary of precision data | | 23 |
| Annex H (informative) Introduction to pulse program | | 25 |
| Annex I (informative) Consistency validation between Method A and Method B | | 27 |
| Bibliography | | 28 |