

ISO 21809-4:2026-02 (E)

Oil and gas industries including lower carbon energy - External coatings for buried or submerged pipelines used in pipeline transportation systems - Part 4: Polyethylene coatings (2-layer PE)

Contents

| | Page |
|--|-----------|
| Foreword..... | v |
| 1 Scope..... | 1 |
| 2 Normative references..... | 1 |
| 3 Terms and definitions..... | 3 |
| 4 Symbols and abbreviated terms..... | 7 |
| 4.1 Symbols..... | 7 |
| 4.2 abbreviated terms..... | 7 |
| 5 General requirements..... | 8 |
| 5.1 Rounding..... | 8 |
| 5.2 Conformity to requirements..... | 8 |
| 6 Information supplied by the purchaser..... | 8 |
| 6.1 General information..... | 8 |
| 6.2 Additional information..... | 8 |
| 7 Coating classification..... | 9 |
| 7.1 General..... | 9 |
| 7.2 Coating systems..... | 9 |
| 7.3 Coating thickness classes..... | 10 |
| 8 Materials..... | 10 |
| 8.1 Pipe..... | 10 |
| 8.2 Coating materials..... | 11 |
| 8.2.1 Adhesive..... | 11 |
| 8.2.2 Polyethylene material..... | 11 |
| 8.3 Packaging..... | 12 |
| 8.4 Storage and handling of coating materials..... | 12 |
| 9 Qualification processes..... | 13 |
| 9.1 General..... | 13 |
| 9.2 Qualification scheme..... | 13 |
| 9.3 Coating qualification..... | 14 |
| 9.3.1 General..... | 14 |
| 9.3.2 Repair material..... | 15 |
| 10 Application of coating..... | 16 |
| 10.1 General..... | 16 |
| 10.2 Surface preparation..... | 16 |
| 10.2.1 Initial preparation and surface preparation..... | 16 |
| 10.2.2 Abrasive blast cleaning..... | 16 |
| 10.2.3 Surface cleanliness and roughness..... | 16 |
| 10.2.4 Surface pre-treatment and salt contamination..... | 17 |
| 10.2.5 Surface dust contamination..... | 17 |
| 10.3 Coating application..... | 17 |
| 10.3.1 General..... | 17 |
| 10.3.2 Application of adhesive..... | 18 |
| 10.3.3 Application of polyethylene..... | 18 |
| 10.3.4 Cutback..... | 18 |
| 11 Qualification of coating application and coating system..... | 18 |

| | | |
|-----------|--|-----------|
| 11.1 | General..... | 18 |
| 11.2 | Application procedure specification (APS)..... | 18 |
| 11.3 | Inspection and testing plan (ITP)..... | 19 |
| 11.4 | Procedure qualification trial (PQT)..... | 20 |
| 11.5 | Coating system qualification (CSQ)..... | 21 |
| 11.6 | Pre-production trial (PPT)..... | 22 |
| 11.7 | Inspection and testing during production..... | 23 |
| 11.8 | Inspection and testing..... | 23 |
| | 11.8.1 General..... | 23 |
| | 11.8.2 Incoming raw materials testing..... | 25 |
| | 11.8.3 In-process inspection or measurement by applicator..... | 25 |
| 11.9 | Testing of the applied coating..... | 26 |
| | 11.9.1 General..... | 26 |
| | 11.9.2 Minimum requirements of applied coating and frequency of testing..... | 26 |
| | 11.9.3 Retests..... | 27 |
| 11.10 | Test results..... | 28 |
| 12 | Repair of coated pipe..... | 28 |
| | 12.1 Repair..... | 28 |
| | 12.2 Stripping and recoating..... | 28 |
| 13 | Markings..... | 29 |
| | 13.1 General..... | 29 |
| | 13.2 Required markings..... | 29 |
| 14 | Handling and storage in the coating area..... | 29 |
| | 14.1 Handling..... | 29 |
| | 14.2 Storage..... | 29 |
| 15 | Test reports and inspection certificates..... | 29 |
| | 15.1 General..... | 29 |
| | 15.2 Common requirements for reports..... | 30 |
| | 15.3 Specific requirements for test reports..... | 31 |
| | 15.4 Specific requirements for sampling reports..... | 31 |
| | 15.5 Reporting statements of conformity..... | 32 |
| | 15.6 Reporting opinions and interpretations..... | 32 |
| | 15.7 Amendments to reports..... | 32 |
| | Annex A (normative) UV ageing test and thermal ageing test..... | 33 |
| | Annex B (normative) Cathodic disbondment test..... | 36 |
| | Annex C (normative) Impact test..... | 45 |
| | Annex D (normative) Indentation test..... | 47 |
| | Annex E (normative) Flexibility test..... | 50 |
| | Annex F (normative) Peel strength test..... | 52 |
| | Annex G (normative) Peel strength test — Hanging mass..... | 56 |
| | Annex H (normative) Inspection of thickness..... | 59 |
| | Annex I (normative) Holiday detection test..... | 61 |
| | Annex J (normative) Lap shear test..... | 63 |
| | Annex K (normative) Hot water immersion test..... | 66 |
| | Bibliography..... | 68 |