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