# DIN EN ISO 19277:2019-03 (E)

**Petroleum, petrochemical and natural gas industries - Qualification testing and acceptance criteria for protective coating systems under insulation (ISO 19277:2018); English version EN ISO 19277:2018**

## Contents

Page


**Foreword** ..... **v**

**Introduction** ..... **vi**

**1 Scope** ..... **1**

**2 Normative references** ..... **1**

**3 Terms and definitions** ..... **2**

**4 Performance testing design** ..... **3**
4.1 Relationship between artificial testing and natural exposure ..... 3
4.2 Laboratory tests ..... 3
4.3 Additional laboratory tests ..... 4

**5 CUI classification environments** ..... **4**

**6 Test samples** ..... **4**
6.1 Test panels ..... 4
6.2 Steel substrates ..... 4
6.3 Sampling of coatings ..... 5
6.4 Number of test panels ..... 5
6.5 Coating systems ..... 5
6.5.1 Coating application ..... 5
6.5.2 Dry film thickness ..... 5
6.5.3 Overcoating interval ..... 6
6.5.4 Conditioning ..... 6
6.5.5 Heat conditioning ..... 6
6.6 Scribe ..... 6
6.7 Reference system ..... 6

**7 Test procedures and assessment** ..... **6**
7.1 Assessment and acceptance ..... 6
7.2 Assessment of adhesion and artificial ageing ..... 6
7.2.1 Adhesion testing before artificial ageing ..... 6
7.2.2 Artificial ageing ..... 7
7.2.3 Adhesion testing after artificial ageing ..... 7
7.3 Thermal cycling test ..... 8
7.4 Multi-phase CUI cyclic corrosion test ..... 8
7.4.1 Description of test ..... 8
7.4.2 Test equipment-apparatus ..... 8
7.4.3 Test set-up and preparation ..... 11
7.4.4 Test procedure ..... 11
7.4.5 Acceptance ..... 12

**8 Optional tests** ..... **13**
8.1 Optional cryogenic cycling testing ..... 13
8.1.1 General ..... 13
8.1.2 Cryogenic test ..... 13
8.1.3 Adhesion testing after cryogenic test aging 13

8.2 Optional vertical pipe test ..... 14
8.2.1 Application ..... 14
8.2.2 Description of test ..... 14
8.2.3 Test equipment — Apparatus ..... 14
8.2.4 Test process scope ..... 16
8.2.5 Temperature profile calibration ..... 16
8.2.6 Test equipment — Procedure ..... 16
8.3 Additional performance tests ..... 16
**9 Test report ..... 17**

**Annex A** (informative) **Corrosion testing of conditioned and heat conditioned test samples ..... 18**
**Annex B** (informative) **Example of test report for CUI coating acceptance ..... 19**
**Annex C** (informative) **Example of test report for cryogenic testing ..... 23**
**Annex D** (informative) **Example of test report for optional vertical pipe test ..... 24**
**Bibliography ..... 27**