

ISO 18797-2:2021-09 (E)

Petroleum, petrochemical and natural gas industries - External corrosion protection of risers by coatings and linings - Part 2: Maintenance and field repair coatings for riser pipes

Contents		Page
Foreword		vi
Introduction		vii
1	Scope	1
2	Normative references	1
3	Terms and definitions	4
4	Symbols and abbreviated terms	7
4.1	Symbols	7
4.2	Abbreviated terms	7
5	Coating types	7
6	General requirements	8
6.1	Client's requirements	8
6.1.1	Approval of repair coating and repair method	8
6.1.2	Specification of purchase order mandatory information	8
6.1.3	Specification of purchase order additional information	9
6.2	Contractor's requirements	9
6.2.1	Documented information	9
6.2.2	Marking of coating materials	10
6.3	Rounding	10
6.4	Conformity to requirements	10
6.5	Criteria for the condition assessment of an existing coating	10
6.5.1	General - Evaluation of coating condition	10
6.5.2	Applicable inspection techniques	11
7	Qualification processes and application procedures	11
7.1	General	11
7.2	APS and ITP	12
7.2.1	General	12
7.2.2	APS	12
7.2.3	ITP	13
7.3	Technical assessment of coating conformity	13
7.4	Procedure qualification trial	13
7.5	Pre-production trial	14
7.6	Production, testing and inspection	15
7.6.1	General	15
7.6.2	Inspection documents and traceability	15
8	Selection criteria for repair coatings	15
8.1	General	15
8.2	Application constraints	16
8.2.1	Wet substrates	16
8.2.2	Contamination by soluble salts	17
8.2.3	Dust contamination	17

8.2.4	Contamination by oil, grease and other petroleum-like products	17
8.2.5	Compatibility with existing coating	17
8.2.6	Feasibility of surface cleaning	18
8.2.7	Space and riser access constraints	18
8.2.8	Time constraints	18
8.2.9	Temperatures and relative humidity	18
8.2.10	Coating continuity	18
8.3	Operational conditions	19
8.3.1	Resistance to ageing, weathering and water	19
8.3.2	Resistance to mechanical loads	19
8.3.3	Interaction with cathodic protection	19
9	Test programs	19
9.1	Substrate conditions used for tests	19
9.2	Inspections, tests and frequencies	19
9.3	Thickness testing	20
9.4	Retest	20
10	Non-crystalline low-viscosity polyolefin-based coatings	21
10.1	Coating identification	21
10.2	Description of the coatings	21
10.3	Surface preparation	22
10.4	Application of coatings	22
10.4.1	General	22
10.4.2	Overlap	22
10.5	Testing of coatings	22
10.5.1	General	22
10.5.2	Thickness	22
10.5.3	Glass transition temperature and crystallization temperature	23
10.5.4	Holiday detection	23
10.5.5	Drip resistance	23
10.5.6	Adhesion to pipe surface and existing coating	23
10.5.7	Lap shear resistance	24
10.5.8	Specific electrical insulation resistance	24
10.5.9	Impact resistance	24
10.5.10	Indentation resistance	24
10.5.11	Cathodic disbondment resistance	25
10.5.12	Resistance to ageing and weathering	25
10.5.13	Peel strength between layers of outer wrap	25
10.5.14	Thermal ageing resistance	26
10.5.15	Hot-water immersion test	26
11	Petrolatum and wax-based tape wrap systems	31
11.1	Coating identification	31
11.2	Description of the tape wrap systems	32
11.2.1	Petrolatum tape wrap systems (type 11A)	32
11.2.2	Wax-based tape wrap systems (type 11B)	32
11.3	Surface preparation	32
11.4	Application of coating systems	32
11.4.1	General	32
11.4.2	Overlap	32
11.5	Testing of the coating systems	33
11.5.1	General	33
11.5.2	Density	33
11.5.3	Dielectric strength	33
11.5.4	Thickness	33
11.5.5	Holiday detection	34
11.5.6	Impact resistance	34
11.5.7	Specific electrical insulation resistance	34
11.5.8	Cathodic disbondment resistance	34
11.5.9	Adhesion to pipe surface and existing coating	34

11.5.10	Drip resistance	35
11.5.11	Hot water immersion test	35
11.5.12	Resistance to ageing and weathering	35
12	Polychloroprene-based elastomeric coatings	41
12.1	Coating identification	41
12.2	Description of the coatings	41
12.3	Surface preparation	41
12.4	Application of the coating	41
12.4.1	General	41
12.4.2	Overlap	42
12.5	Testing of the coatings	42
12.5.1	General	42
12.5.2	Visual appearance	42
12.5.3	Thickness	42
12.5.4	Holiday detection	42
12.5.5	Hardness	42
12.5.6	Adhesion to pipe surface and existing coating	42
12.5.7	Cathodic disbondment resistance	43
12.5.8	Density	43
12.5.9	Rheometer curve	43
12.5.10	Tensile strength	43
12.5.11	Elongation at break	43
12.5.12	Tear strength	43
12.5.13	Electrical volume resistivity	43
12.5.14	Ozone resistance	43
12.5.15	Resistance to seawater	44
12.5.16	Hot-water immersion test	44
12.5.17	Thermal ageing resistance	44
12.5.18	Resistance to ageing and weathering	44
13	Liquid-applied epoxy coatings	46
13.1	Coating identification	46
13.2	Description of the liquid-applied epoxy coating	47
13.3	Surface preparation	47
13.4	Application of the coatings	47
13.4.1	General	47
13.4.2	Overlap	47
13.5	Testing of the coatings	47
13.5.1	General	47
13.5.2	Dry-film thickness	48
13.5.3	Holiday detection	48
13.5.4	Hardness	48
13.5.5	Impact resistance	48
13.5.6	Indentation resistance	48
13.5.7	Specific electrical insulation resistance	48
13.5.8	Cathodic disbondment resistance	49
13.5.9	Adhesion to pipe surface and existing coating	49
13.5.10	Thermal ageing resistance	49
13.5.11	Hot-water immersion test	49
13.5.12	Resistance to ageing and weathering	49
Annex A (informative)	Likelihood of exposure in splash zone area	54
Annex B (informative)	Tests for coatings applied on wet substrates	56
Bibliography	65