

ISO 18086:2015-06 (E)

Corrosion of metals and alloys - Determination of AC corrosion - Protection criteria

Contents		Page
Foreword		v
Introduction		vi
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	Cathodic protection persons competence	4
5	Assessment of the AC influence	5
5.1	General	5
5.2	Assessment of the level of interference	5
6	Evaluation of the AC corrosion likelihood	6
6.1	Prerequisite	6
6.1.1	General	6
6.1.2	AC voltage on the structure	6
6.2	AC and DC current density	7
6.2.1	General	7
6.2.2	AC current density	7
6.2.3	High cathodic DC current density	7
6.2.4	Low cathodic DC current density	7
6.2.5	Current ratio "I _{a.c.} /I _{d.c.} "	8
6.2.6	Soil resistivity	8
6.3	Corrosion rate	8
6.4	Pipeline coatings	8
6.5	Evaluation of the metal loss	8
7	Acceptable interference levels	8
8	Measurement techniques	9
8.1	Measurements	9
8.1.1	General	9
8.1.2	Selection of test sites	9
8.1.3	Selection of measurement parameter	10
8.1.4	Sampling rate for the recording of interference levels	10
8.1.5	Accuracy of measuring equipment	10
8.1.6	Installation of coupons or probes to calculate current densities	10
8.2	DC potential measurements	10
8.3	AC voltage measurements	10
8.4	Measurements on coupons and probes	11
8.4.1	Installation of coupons or probes	11
8.4.2	Current measurements	11
8.4.3	Corrosion rate measurements	12
8.5	Pipeline metal loss techniques	13
9	Mitigation measures	13
9.1	General	13
9.2	Construction measures	13

9.2.1	Modification of bedding material	13
9.2.2	Installation of isolating joints	13
9.2.3	Installation of mitigation wires	13
9.2.4	Optimization of pipeline and/or powerline route	14
9.2.5	Power line or pipeline construction	14
9.3	Operation measures	14
9.3.1	Earthing	14
9.3.2	Adjustment of cathodic protection level	15
9.3.3	Repair of coating defects	15
10	Commissioning	16
10.1	Commissioning	16
10.2	Preliminary checking	16
10.2.1	General	16
10.2.2	Coupon AC voltage and current startup	17
10.2.3	Verification of effectiveness	17
10.2.4	Installation and commissioning documents	17
11	Monitoring and maintenance	17
Annex A (informative)	Simplified description of the AC corrosion phenomenon	19
Annex B (informative)	Coupons and probes	21
Annex C (informative)	Coulometric oxidation	26
Annex D (informative)	Influence of soil characteristics on the AC corrosion process	27
Annex E (informative)	Other criteria that have been used in the presence of AC influence	28
Annex F (informative)	Parameters to take into account to choose a DC decoupling device	32
Annex G (informative)	Method to determine the reference electrode location to remote earth	34
Annex H (informative)	Simultaneous measurement on coupon current densities with high rate	36
Bibliography	38