

DIN EN ISO 21809-5:2019-01 (E)

Petroleum and natural gas industries - External coatings for buried or submerged pipelines used in pipe line transportation systems - Part 5: External concrete coatings (ISO 21809-5:2017)

Contents		Page
European foreword		4
Foreword		5
Introduction		6
1	Scope	7
2	Normative references	7
3	Terms and definitions	9
4	Symbols and abbreviated terms	12
4.1	Symbols.....	12
4.2	Abbreviated terms.....	12
5	General requirements	12
5.1	Rounding.....	12
5.2	Compliance with this document.....	12
6	Information supplied by the purchaser	13
6.1	General information.....	13
6.2	Additional information.....	13
7	Materials	13
7.1	Pipe.....	13
7.2	Cement.....	14
7.3	Supplementary cementitious materials.....	14
7.4	Aggregate — Fine and coarse.....	15
7.5	Heavyweight aggregate.....	15
7.6	Lightweight aggregate.....	15
7.7	Recycled concrete as aggregate.....	16
7.8	Water.....	16
7.9	Steel reinforcement.....	16
7.10	Concrete admixtures.....	16
7.11	Reclaimed concrete.....	16
8	Concrete mix	17
9	Coating application	17
9.1	Qualification.....	17
9.2	Application of concrete coating.....	19
9.3	Environmental conditions.....	19
9.4	Pipe.....	19
9.4.1	Pre-coated pipe.....	19
9.4.2	Bare pipe.....	20
9.5	Steel reinforcement.....	20
9.5.1	General.....	20
9.5.2	Cage reinforcement.....	20
9.5.3	Welded wire mesh reinforcement.....	20
9.5.4	Woven wire mesh reinforcement.....	20
9.5.5	Reinforcement placement.....	21
9.6	Concrete cutback.....	21
9.7	Anode installation.....	21

10	Curing methods	22
11	Inspection and testing	22
11.1	General	22
11.2	Test procedures	23
11.2.1	Concrete coating thickness — Diameter measurement	23
11.2.2	Placement of reinforcement	24
11.2.3	Pre-concrete coated pipe weight in air	24
11.2.4	Concrete coated pipe weight in air	24
11.2.5	Concrete coating density	25
11.2.6	Compressive strength	25
11.2.7	Water absorption	25
11.2.8	Impact resistance	26
11.2.9	Shear resistance	26
11.2.10	Visual inspection	26
11.3	Retesting	26
11.4	Test results	26
12	Repair of concrete coated pipe	27
12.1	General	27
12.2	Damaged areas	27
12.3	Cracks	27
12.4	Gaps	27
12.5	Stripping	27
13	Markings	27
14	Handling and storage	28
15	Test reports and inspection documents	28
Annex A (normative) Water absorption test		29
Annex B (normative) Shear resistance test		31
Bibliography		32