

# DIN EN 16299:2013-06 (E)

## Cathodic protection of external surfaces of above ground storage tank bases in contact with soil or foundations

---

<b>Contents</b>		<b>Page</b>
Foreword .....		4
Introduction .....		5
1	Scope .....	6
2	Normative references .....	6
3	Terms and definitions .....	7
4	Abbreviations and symbols .....	8
5	Competence of personnel .....	8
6	Corrosion risks and their prevention by cathodic protection .....	9
6.1	General .....	9
6.2	Corrosion risks of external surfaces of above ground storage tank bottoms in contact with soil or foundations .....	9
7	Pre-requisites for the application of cathodic protection .....	12
7.1	General .....	12
7.2	New tanks .....	12
7.3	Existing tanks .....	15
7.4	Tank design and feasibility of cathodic protection .....	17
8	Criteria for cathodic protection and measurement techniques .....	18
8.1	General .....	18
8.2	Criteria .....	18
8.3	Alternative criteria and methods .....	19
9	Design of cathodic protection systems .....	20
9.1	General .....	20
9.2	Structure details and data .....	21
9.3	Environment .....	22
9.4	Electrical isolation .....	22
9.5	Current requirements .....	23
9.6	Cathodic protection systems and anode configuration .....	23
9.7	Cable connections to the tank .....	23
9.8	Reference electrodes, coupons and test stations .....	24
9.9	Explosion hazard prevention .....	25
9.10	Galvanic anode systems .....	26
9.11	Impressed current systems .....	26
9.12	Cables .....	27
9.13	Interference .....	28
10	Installation of cathodic protection systems .....	28
10.1	General .....	28
10.2	Installation of cables .....	29
10.3	Isolating joints .....	30
10.4	Anodes .....	30
10.5	Impressed current stations .....	31

10.6	Test stations, measuring points, permanent reference electrodes, and coupons .....	31
10.7	Bonding .....	32
10.8	Labelling .....	32
10.9	Installation checks .....	32
10.10	As-built documentation .....	33
11	Commissioning .....	33
11.1	General .....	33
11.2	Preliminary checking .....	33
11.3	Start-up .....	34
11.4	Verification of the cathodic protection effectiveness .....	35
11.5	Determination of relevant measuring points .....	35
11.6	Commissioning documents .....	35
12	Inspection and maintenance .....	35
12.1	General .....	35
12.2	Inspection .....	35
12.3	Maintenance .....	37
	Annex A (informative) Groundbed data .....	39
A.1	General considerations .....	39
A.2	Types of ground beds .....	39
A.3	Anodes types .....	40
	Bibliography .....	42