

DIN EN ISO 22476-1:2013-10 (E)

Geotechnical investigation and testing - Field testing - Part 1: Electrical cone and piezocone penetration test (ISO 22476-1:2012 + Cor. 1:2013) (includes Corrigendum :2013)

Contents		Page
Introduction		5
1	Scope	6
2	Normative references	7
3	Terms, definitions and symbols	7
3.1	Terms and definitions	7
3.2	Symbols	14
4	Equipment	15
4.1	Cone penetrometer	15
4.2	Tolerances	15
4.3	Surface roughness	16
4.4	Cone	16
4.5	Friction sleeve	17
4.6	Filter element	18
4.7	Gaps and soil seals	20
4.8	Push rods	20
4.9	Measuring system	20
4.10	Thrust machine	21
5	Test procedures	21
5.1	Selection of cone penetrometer	21
5.2	Selection of equipment and procedures	22
5.3	Position and level of thrust machine	24
5.4	Preparation of the test	24
5.5	Pushing of the cone penetrometer	24
5.6	Use of friction reducer	25
5.7	Frequency of logging parameters	25
5.8	Registration of penetration length	25
5.9	Dissipation test	26
5.10	Test completion	26
5.11	Equipment checks and calibrations	26
5.12	Safety requirements	27
6	Test results	27
6.1	Measured parameters	27
6.2	Correction of parameters	27
6.3	Calculated parameters	29
7	Reporting	29
7.1	General	29
7.2	Reporting of test results	29
7.3	Presentation of test results	31
7.4	Presentation of test results and calculated parameters	31
Annex A (normative) Maintenance, checks and calibration		33

Annex B (normative) Calculation of penetration depth	37
Annex C (informative) Correction of sleeve friction for water pressure	38
Annex D (informative) Preparation of the piezocone	39
Annex E (informative) Uncertainties in cone penetrometer testing	40
Bibliography	41
Figures Figure 1 -- Cross section of an example of a cone penetrometer	8
Figure 2 -- Locations of pore pressure filters	11
Figure 3 -- Penetration length and penetration depth (schematic only)	12
Figure 4 -- Tolerance requirements for use of 1000 mm cone penetrometer	172
Figure 5 -- Geometry and tolerances of friction sleeve	18
Figure 6 -- Correction of cone resistance and sleeve friction due to the unequal end area effect	28
Figure A.1 -- Pressure chamber for determination of the net area ratio, a	35
Tables Table 1 -- Types of cone penetration test	22
Table 2 -- Application classes	23
Table A.1 -- Control scheme for maintenance routines	34