



**SLOVENSKI STANDARD**  
**oSIST prEN ISO 22476-14:2019**  
**01-julij-2019**

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**Geotehnično preiskovanje in preskušanje - Preskušanje na terenu - 14. del:  
Dinamični preskus vrtin (ISO/DIS 22476-14:2019)**

Geotechnical investigation and testing - field testing - Part 14: Borehole dynamic probing  
(ISO/DIS 22476-14:2019)

Geotechnische Erkundung und Untersuchung - Felduntersuchungen - Teil 14:  
Bohrlochchrammsondierung (ISO/DIS 22476-14:2019)

Reconnaissance et essais géotechniques - Essais en place - Partie 14: Sondage  
dynamique au carottier (ISO/DIS 22476-14:2019)

**Ta slovenski standard je istoveten z: prEN ISO 22476-14**

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**ICS:**

93.020	Zemeljska dela. Izkopavanja. Gradnja temeljev. Dela pod zemljo	Earthworks. Excavations. Foundation construction. Underground works
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**oSIST prEN ISO 22476-14:2019**

**en**



# DRAFT INTERNATIONAL STANDARD

## ISO/DIS 22476-14

ISO/TC 182

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## Geotechnical investigation and testing — Field testing — Part 14: Borehole dynamic probing

*Reconnaissance et essais géotechniques — Essais en place —  
Partie 14: Sondage dynamique au carottier*

ICS: 93.020

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## ISO/DIS 22476-14:2019(E)

## Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

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This document was prepared by Technical Committee [or Project Committee] ISO/TC [or ISO/PC] ###, [name of committee], Subcommittee SC ##, [name of subcommittee].

This second/third/... edition cancels and replaces the first/second/... edition (ISO #####:#####), which has been technically revised.

The main changes compared to the previous edition are as follows:

— xxx xxxxxxxx xxx xxxxx

A list of all parts in the ISO ##### series can be found on the ISO website.

# Geotechnical investigation and testing — Field testing —

## Part 14: Borehole dynamic probing

### 1 Scope

This part of ISO 22476 specifies the equipment requirements, execution of and reporting on borehole dynamic probing.

NOTE This document fulfills the requirements for borehole dynamic probing as part of the geotechnical investigation and testing according to EN 1997-1 and EN 1997-2.

The standard specifies technical requirements in respect to equipment and implementation, in order to extensively prevent incorrect appraisals of the subsoil conditions as well as limit scatter in the probing results due to equipment and implementation.

### 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 10025-2, *Hot rolled products of structural steels - Part 2: Technical delivery conditions for non-alloy structural steels*

EN 10204, *Metallic products — Types of inspection documents*

ISO 710 (all parts), *Graphical symbols for use on detailed maps, plans and geological cross-sections*

ISO 14688-1, *Geotechnical investigation and testing — Identification and classification of soil — Part 1: Identification and description*

ISO 22475-1, *Geotechnical investigation and testing — Sampling methods and groundwater measurements — Part 1: Technical principles for execution*

ISO 22476-1, *Geotechnical investigation and testing — Field testing — Part 1: Electrical cone and piezocone penetration test*

ISO 22476-2, *Geotechnical investigation and testing — Field testing — Part 2: Dynamic probing*

ISO 22476-3, *Geotechnical investigation and testing — Field testing — Part 3: Standard penetration test*

### 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

## ISO/DIS 22476-14:2019(E)

### 3.1

#### **Probing**

indirect subsoil exploration method in soils normally by driving a cone vertically while measuring the penetration resistance to derive geotechnical parameters

### 3.2

#### **Borehole dynamic probing**

probing in the borehole, which is carried out by driving by impact from the borehole base over a defined penetration depth; here the impact device is directly above the probe in the borehole

### 3.3

#### **Number of blows**

##### $N_{30}$

The number of blows required the probe to penetrate by 30 cm, in relation to the depth ranges of 15 cm to 45 cm of the probe depth

### 3.4

#### **Penetration resistance**

Sum of tip resistance and negligible skin friction recorded by the number of blows  $N_{30}$

### 3.5

#### **Derived values**

Values of a geotechnical parameter determined by theory, correlation or empirically

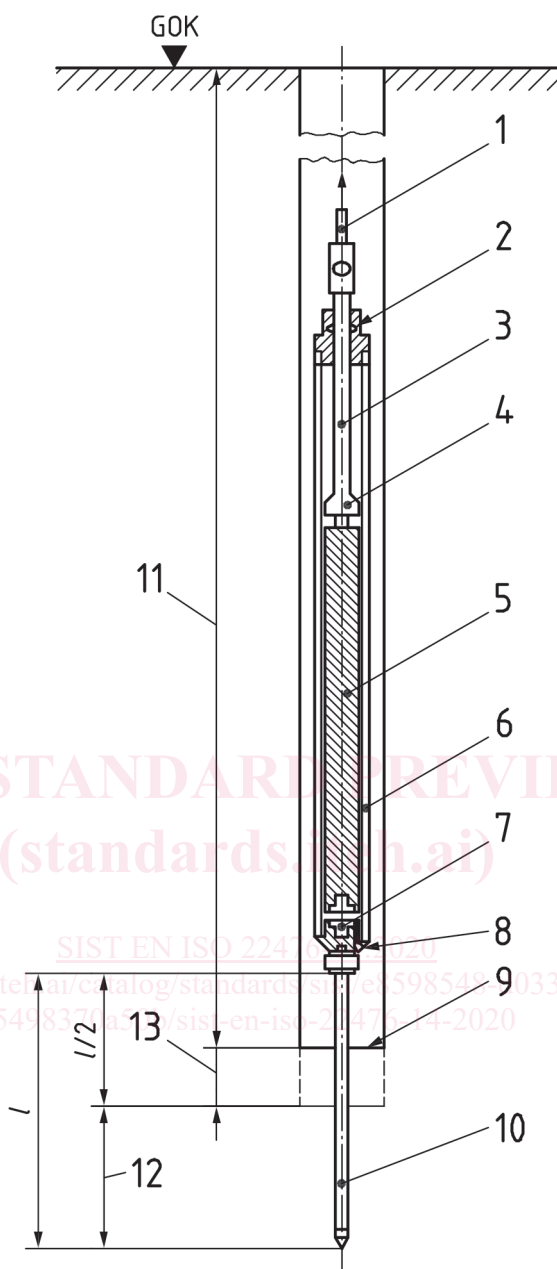
Note 1 to entry: The derived values are used as an initial basis for determining characteristic values according to EN 1997-1:2010, 2.4.3.

## 4 Equipment

The device for the borehole dynamic probing is shown in [Figure 1](#). The technical data are shown in [Table 1](#).

The device is lowered into the borehole with an encased impact device on the rope and the probe is driven in from there without a rod.





**Key**

- |   |                              |          |  |
|---|------------------------------|----------|--|
| 1 | Rope                         | 8        | Drain plug                                 |
| 2 | Packing box                  | 9        | Borehole base                              |
| 3 | Lifting rod                  | 10       | Cone                                       |
| 4 | Automatic releasing device   | 11       | Borehole depth                             |
| 5 | Hammer                       | 12       | Test range                                 |
| 6 | Hollow cylinder, water tight | 13       | Penetration under the weight of the device |
| 7 | Anvil                        | <i>l</i> | Probe length                               |

**Figure 1 — Device for borehole dynamic probing**

Table 1 — Technical data

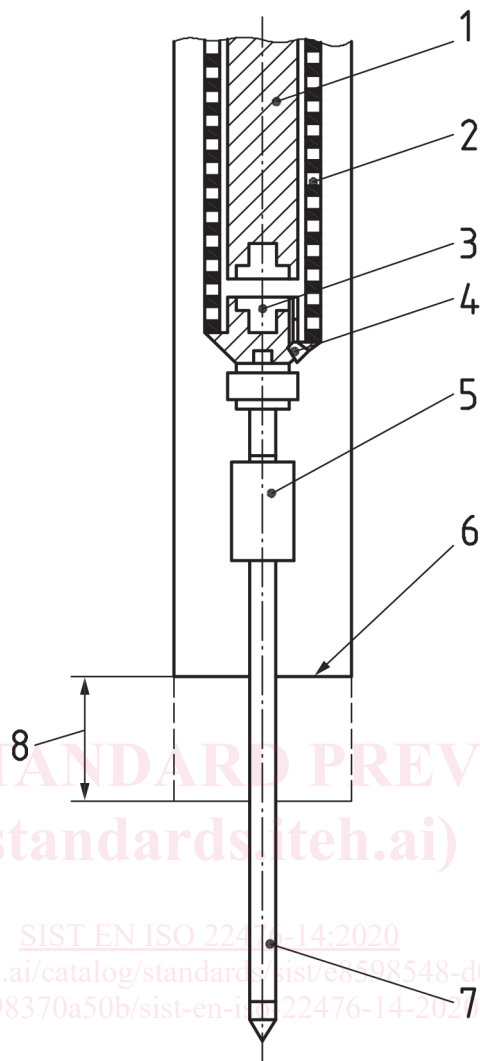
Technical data	Symbol	Unit	Value
Tip cross-section area	$A_c$	cm <sup>2</sup>	20
Tip diameter	$d$	mm	50,5 ± 0,5 <sup>a</sup>
(Wear limit)	( $d_{min}$ )		(49)
Mass of hammer	$m$	kg	63,5 ± 0,5 <sup>a</sup>
Height of fall	$h$	m	0,76 ± 0,01 <sup>a</sup>
Diameter of the lifting rod	$D_h$	mm	45 <sup>c</sup>
External diameter of the cone	$d$	mm	120 <sup>c</sup>
Mass of the drive-in device <sup>b</sup> without additional weight	$m_1$	kg	91 ± 2 <sup>c</sup>
Cone length	$l$	m	0,9 <sup>c</sup>
Test depth from borehole base	$t$	m	0,45
<sup>a</sup> Production tolerances. <sup>b</sup> These are the parts (hollow cylinder, anvil and probe) without the moving parts for lifting and releasing the hammer. <sup>c</sup> There is no need to indicate production tolerances here.			

The hammer shall be located in a watertight hollow cylinder. In case of application depths of more than 20 m under water, additional weights shall be used between the cone and hollow cylinder (see [Figure 2](#)).

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**Key**

- 1 Hammer
- 2 Hollow cylinder
- 3 Anvil
- 4 Drain plug
- 5 Additional weight
- 6 Borehole base
- 7 Cone
- 8 Penetration under the weight of the device

**Figure 2 — Location of the additional weight**

The dimensions of the cone tip are given in [Table 1](#) and [Figure 3](#). The material shall correspond to a steel quality S 235 JR minimum according to EN 10025-2.