



# SLOVENSKI STANDARD

## SIST EN 12223:2000

01-oktober-2000

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**Neporušitveno preskušanje - Ultrazvočne preiskave - Specifikacije za umeritveni vzorec št. 1**

Non-destructive testing - Ultrasonic examination - Specification for calibration block No. 1

Zerstörungsfreie Prüfung - Ultraschallprüfung - Beschreibung des Kalibrierkörpers Nr 1

Essais non destructifs - Contrôle par ultrasons - Spécifications relatives au bloc d'étalonnage n° 1

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Ta slovenski standard je istoveten z: **EN 12223:1999**

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**ICS:**

19.100          Neporušitveno preskušanje          Non-destructive testing

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

EN 12223

December 1999

ICS 19.100

English version

Non-destructive testing - Ultrasonic examination - Specification  
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Essais non destructifs - Contrôle par ultrasons -  
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Zerstörungsfreie Prüfung - Ultraschallprüfung -  
Beschreibung des Kalibrierkörpers Nr 1

This European Standard was approved by CEN on 29 October 1999.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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## Foreword

This European Standard has been prepared by Technical Committee CEN/TC 138 "Non-destructive testing", the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2000, and conflicting national standards shall be withdrawn at the latest by June 2000.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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## 1 Scope

This standard specifies requirements for the dimensions, material and manufacture of a steel block for calibrating ultrasonic flaw detection and inspection equipment used in manual testing. The calibration block dealt with in this standard is identified calibration block No. 1 to distinguish it from other calibration blocks.

## 2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

prEN 1330-4:1999, *Non-destructive testing - Terminology - Part 4 : Terms used in ultrasonic testing*.

EN 10025+A1, *Hot rolled products of non-alloy structural steels - Technical delivery conditions (Includes amendment A1:1993)*.

## 3 Terms and definitions

For this standard the definitions given in prEN 1330-4:1999 apply.

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## 4 Manufacture

### 4.1 Steel

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Blocks shall be manufactured from steel grade S355JO specified in EN 10025 +A1.

### 4.2 Dimensions

The dimensions of calibration block No. 1 shall be as shown in figure 1.

NOTE This standard does not include any requirement for a plastics insert.

### 4.3 Machining, heat treatment and surface finish

Blocks shall be rough-machined to a dimension of 320 mm x 120 mm x 30 mm before heat treatment which shall consist of :

- austenitizing at 920 °C for 30 min ;
- rapid cooling (quenching) in water ;
- tempering by heating to 650 °C for 3 h ; and then
- cooling in air.

All external surfaces shall be machined to an  $R_a$  value not greater than 0,8  $\mu\text{m}$ . It is permissible to chromium plate or electroless nickel plate the surfaces of the block.

NOTE If chromium plating is used, care should be taken to use a thickness of plating that will avoid separation.

Prior to final machining, the block shall be proved free from internal discontinuities. For this purpose, an ultrasonic examination shall be carried out after the heat treatment, with a compressional wave probe of at least 10 MHz frequency and having a crystal size of 10 mm to 15 mm. The block shall be checked on the basis of all four long faces to cover the complete volume. With the probe positioned on the largest face of the block, the equipment gain shall be set to achieve a grain scatter noise of 10 % of the screen height. No echo shall have an amplitude greater than that of the grain scatter noise.

#### 4.4 Reference marks

Reference marks shall be permanently marked as shown in figure 1 and in table 1.

### 5 Velocities

The velocities shall be measured as described in Annex A. The velocities shall be measured within a tolerance of  $\pm 0,2\%$ , i.e. with an uncertainty of  $\pm 6$  m/s for transverse waves and  $\pm 12$  m/s for compressional waves.

The measured longitudinal wave velocity,  $v_l$ , shall be 5920 m/s  $\pm$  30 m/s and the transverse wave velocity,  $v_t$ , shall be 3255 m/s  $\pm$  15 m/s.

### 6 Marking

The block shall be permanently marked in the area shown in figure 1, as follows:

- EN 12223 ;
- manufacturer's serial number and trade mark.

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### 7 Certificate

A certificate shall be issued by the manufacturer for each block, detailing :

- statement that the block complies with EN 12223 ;
- the mean value of the measured longitudinal wave velocities,  $v_l$  ; see clause 5 ;
- the mean value of the measured transverse wave velocities,  $v_t$  ; see clause 5.

### 8 Possible modifications to block no. 1

#### 8.1 General

If required the modifications in 8.2 to 8.4 may be made to the block.

#### 8.2 Slots at zero point

One or two slots at the zero point can be provided , see figure 2, which will give calibrating signals at intervals of 100 mm.

### 8.3 Alternative reflector

An alternative reflector, in the form of a circular arc and accessible from the longer sides of the block, can be provided, see figure 3. This will give calibrating signals at beam path lengths of 25 mm, 225 mm, 350 mm, etc.

### 8.4 Greater block thicknesses

Blocks with greater thicknesses are permitted.

## 9 Existing blocks manufactured to other standards or specifications

Existing blocks fulfil the requirements of this standard provided that they meet the requirements on velocities (see clause 5) and dimensions (see 4.2) with the exception that the small drill hole may have a diameter of 1,5 mm.

After verification of the above parameters these blocks shall be marked in accordance with clause 6.

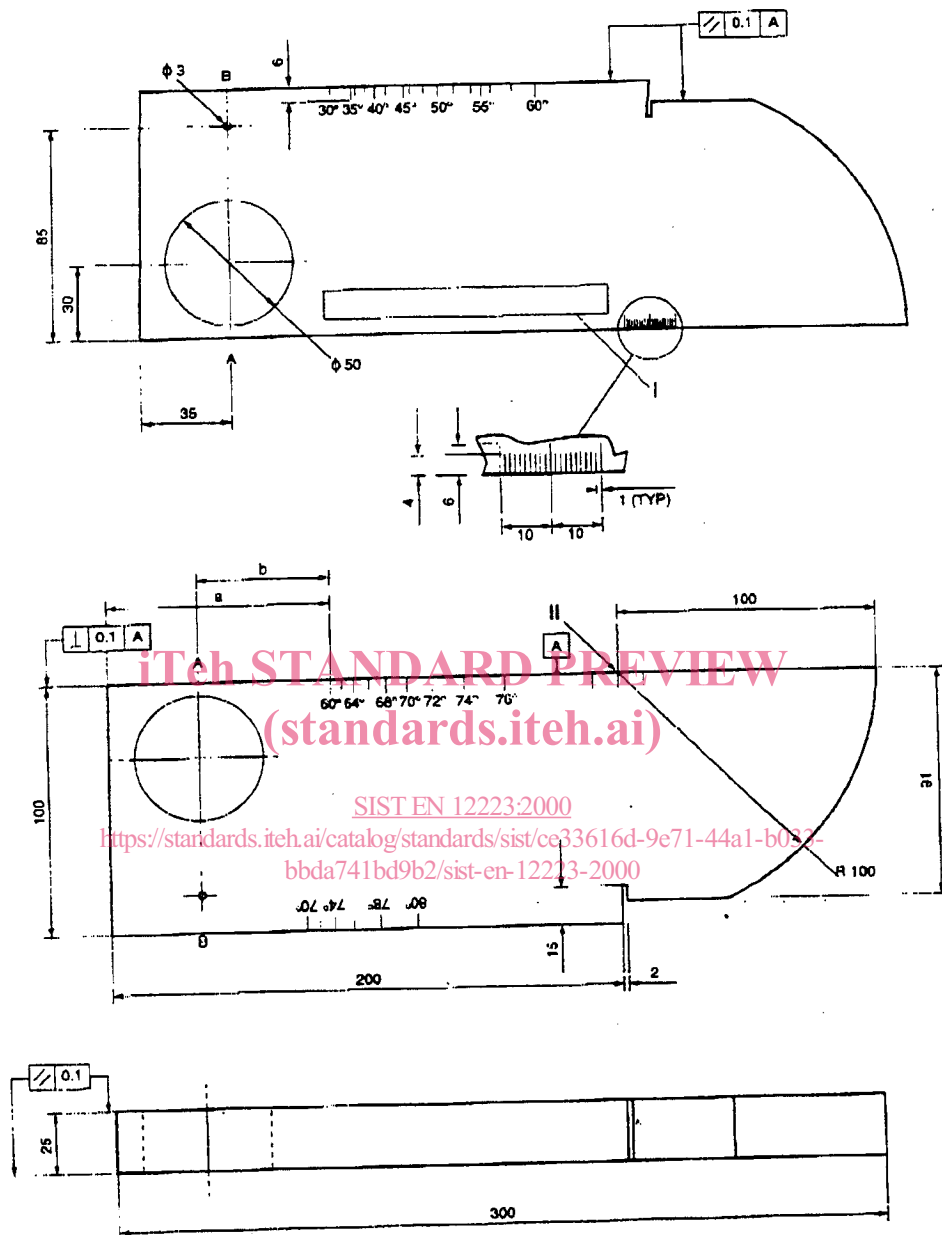
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All dimensions in mm



**Key**

- I Area for marking
- II Zero point

NOTE : Tolerances unless otherwise stated  $\pm 0,10$  mm. Angle identification and index mark lengths  $\pm 0,4$  mm. Angle indents should be in 5 mm high characters. Surface finish  $0,8 \mu\text{m}$  all over.

**Figure 1 - Block dimensions**