



SLOVENSKI STANDARD
SIST EN ISO 3953:2000

01-december-2000

Metallic powders - Determination of tap density (ISO 3953:1993)

Metallic powders - Determination of tap density (ISO 3953:1993)

Metallpulver - Bestimmung der Klopfdichte (ISO 3953:1993)

Poudres métalliques - Détermination de la masse volumique après tassement (ISO 3953:1993)

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Ta slovenski standard je istoveten z: EN ISO 3953:1995

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ICS:

77.160

Metalurgija prahov

Powder metallurgy

SIST EN ISO 3953:2000

en

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EUROPEAN STANDARD

EN ISO 3953

NORME EUROPÉENNE

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English version

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Poudres métalliques - Détermination de la masse
volumique après tassement (ISO 3953:1993)

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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.

The European Standards exist 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.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
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Foreword

The text of the International Standard from ISO/TC 119 "Powder metallurgy" of the International Organization for Standardization (ISO) has been taken over as a European Standard by CEN.

This European Standard supersedes EN 23953:1993.

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of an identical text or by endorsement, at the latest by January 1996, and conflicting national standards shall be withdrawn at the latest by January 1996.

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

Endorsement notice

The text of the International Standard ISO 3953:1993 has been approved by CEN as a European Standard without any modification.

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INTERNATIONAL
STANDARD

ISO
3953

Third edition
1993-10-15

**Metallic powders — Determination of tap
density**

iTeh STANDARD PREVIEW
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*Poudres métalliques — Détermination de la masse volumique après
tassement*

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Reference number
ISO 3953:1993(E)

ISO 3953:1993(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 3953 was prepared by Technical Committee ISO/TC 119, *Powder metallurgy*, Sub-Committee SC 2, *Sampling and testing methods for powders (including powders for hardmetals)*.

This third edition cancels and replaces the second edition (ISO 3953:1985), in which table 2 has been modified.

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Metallic powders — Determination of tap density

1 Scope

This International Standard specifies a method for the determination of tap density, i.e. the density of a powder that has been tapped in a container under specified conditions.

2 Principle

A specified amount of powder in a container is tapped by means of a tapping apparatus until no further decrease in the volume of the powder takes place. The mass of the powder divided by its volume after the test gives its tap density.

By agreement, the tapping may be carried out by hand.

3 Symbols

Table 1

Symbol	Meaning	Unit
ρ_t	Tap density	g/cm^3
m	Mass of the powder	g
V	Volume of the tapped powder	cm^3

4 Apparatus

4.1 Balance, of appropriate capacity and accuracy to satisfy the requirements shown in table 2.

4.2 Graduated glass cylinder, calibrated to contain 100 cm^3 , the height of the graduated portion being approximately 175 mm. The graduations shall be at 1 cm^3 intervals, thus allowing a measuring accuracy of $\pm 0,5 \text{ cm}^3$.

Alternatively:

Graduated glass cylinder, calibrated to contain 25 cm^3 , the height of the graduated portion being ap-

proximately 135 mm. The graduations shall be at $0,2 \text{ cm}^3$ intervals.

A 25 cm^3 cylinder shall be used for powders of apparent density higher than 4 g/cm^3 , in particular for refractory metal powders, but may also be used for powder of lower apparent density.

4.3 Tapping apparatus, which permits the tapping of the graduated cylinder against a firm base. The tapping shall be such that a densification of the powder can take place without any loosening of its surface layers. The stroke shall be 3 mm and the tapping frequency shall be between 100 and 300 taps per minute. An example of a tapping apparatus is shown in figure 1.

Alternatively, by agreement only:

Hard rubber slab (measuring approximately $100 \text{ mm} \times 100 \text{ mm} \times 5 \text{ mm}$).

5 Sampling

5.1 For the quantities of powder required for each test, see table 2.

Table 2

Apparent density	Cylinder capacity	Mass of test portion
g/cm^3	cm^3	g
≥ 1	100	$100 \pm 0,5$
< 1	100	$50 \pm 0,2$
> 7	25	$100 \pm 0,5$
> 2 to 7	25	$50 \pm 0,2$
0,8 to 2	25	$20 \pm 0,1$
$< 0,8$	25	$10 \pm 0,1$

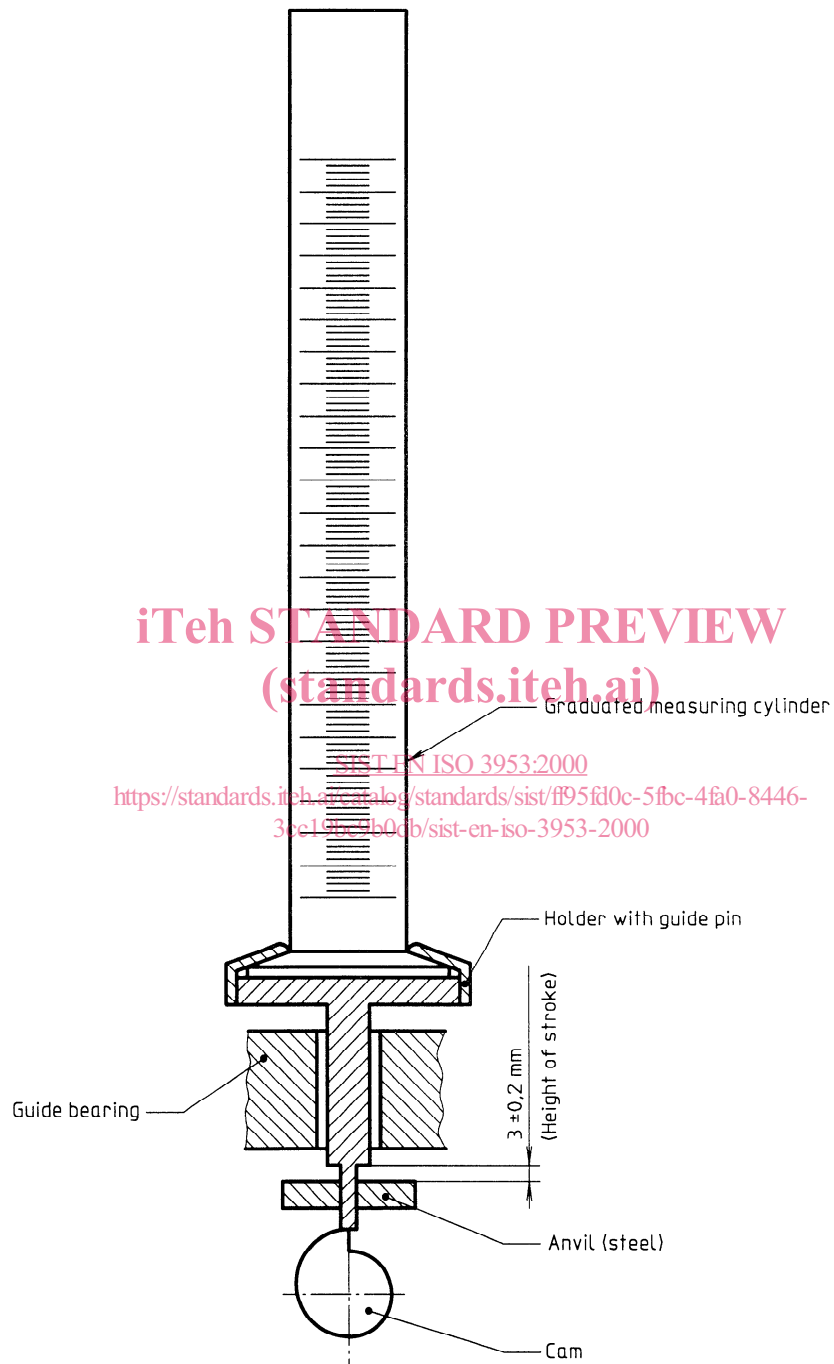


Figure 1 — Example of tapping apparatus