

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

Introduction

This standard consists of the Swedish and the English version of the European Standard EN ISO 3953:1995.

This standard supersedes the Swedish Standard SS-EN 23 953.

The two versions are printed with the pages side by side, but are numbered in consecutive order, so that each set of pages has only one page number.

The official French and German versions can also be bought through SIS.

Swedish Standards corresponding to documents referred to in this Standard are listed in "Catalogue of Swedish Standards", annually issued by SIS. The Catalogue lists, with reference number and year of Swedish approval, International and European Standards approved as Swedish Standards as well as other Swedish Standards.

Metalliska pulver – Bestämning av skakdensitet (ISO 3953:1993)

Orienteering

Denna standard utgörs av både den svenska och den engelska versionen av europastandarden EN ISO 3953:1995.

Standarden ersätter SS-EN 23 953.

Vid tryckningen har de två versionerna lagts sida mot sida, men nummerats löpande, så att varje uppslag nummerats som en sida.

De officiella franska och tyska versionerna kan också köpas genom SIS.

Motsvarigheten och aktualiteten i svensk standard till de publikationer som omnämns i denna standard framgår av "Katalog över svensk standard", som årligen ges ut av SIS. I katalogen redovisas internationella och europeiska standarder som fastställts som svenska standarder och övriga gällande svenska standarder.

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 3953

July 1995

ICS 77.160

Descriptors: powder metallurgy, metallic powder, tests, determination, bulk density, test equipment

Supersedes EN 23953:1993

English version

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

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

Metallpulver – Bestimmung der Klopfdichte
(ISO 3953:1993)

This European Standard was approved by CEN on 1995-06-30. 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.

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.

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

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 BRUSSELS

EUROPASTANDARD
EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 3953

July 1995

ICS 77.160

Nyckelord: pulvermetallurgi, metalliskt pulver, provning, täthet, densitet, densitetsmätning

Ersätter EN 23953:1993

Svensk version

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(ISO 3953:1993)**

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

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Denna standard är den officiella svenska versionen av EN ISO 3953. För översättningen svarar SIS.

Denna europastandard antogs av CEN 1995-06-30. CEN-medlemmarna är förpliktade att följa fordringarna i CEN/CENELECS interna bestämmelser som anger på vilka villkor denna europastandard i oförändrat skick skall ges status som nationell standard.

Aktuella förteckningar och bibliografiska referenser rörande sådana nationella standarder kan på begäran erhållas från CENs centralsekretariat eller från någon av CENs medlemmar.

Denna europastandard finns i tre officiella versioner (engelsk, fransk, tysk). En version på något annat språk, översatt under ansvar av en CEN-medlem till sitt eget språk och anmäld till CENs centralsekretariat har samma status som de officiella versionerna.

CENs medlemmar är de nationella standardiseringsorganen i Belgien, Danmark, Finland, Frankrike, Grekland, Irland, Island, Italien, Luxemburg, Nederländerna, Norge, Portugal, Schweiz, Spanien, Storbritannien, Sverige, Tyskland och Österrike.

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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.

Förord

Innehållet i denna europastandard har utarbetats av ISO/TC 119 "Powder metal-lury" inom den internationella standardiseringsorganisationen (ISO) och överförs till europastandard av CEN.

Standarden ersätter EN 23953:1993.

Denna europastandard skall ges status av nationell standard antingen genom publicering av en identisk text eller genom ikraftsättning, senast i januari 1996 och motstridande nationella standarder skall dras in senast i januari 1996.

Enligt CEN/CENELECs interna bestämmelser är följande länder förpliktade att införa denna europastandard: Belgien, Danmark, Finland, Frankrike, Grekland, Irland, Island, Italien, Luxemburg, Nederländerna, Norge, Portugal, Schweiz, Spanien, Storbritannien, Sverige, Tyskland och Österrike.

Meddelande om ikraftsättning

Texten i den internationella standarden ISO 3953:1993 antogs utan ändring av CEN som europastandard.

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 $4 \text{ g}/\text{cm}^3$, 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	$10 \pm 0,1$