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Sintered metal materials excluding hardmetals — Determination of compressive yield strength

Matériaux métalliques frittés, à l'exclusion des métaux-durs — Détermination de la limite d'élasticité en compression

Reference number
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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).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: Foreword — Supplementary information.

The committee responsible for this document is ISO/TC 119, *Powder metallurgy*, Subcommittee SC 3, *Sampling and testing methods for sintered metal materials (excluding hardmetals)*.

This second edition cancels and replaces the first edition (ISO 14317:2006), which has been technically revised.

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Sintered metal materials excluding hardmetals — Determination of compressive yield strength

1 Scope

This International Standard specifies a method for the determination of the compressive yield strength of sintered metal materials, excluding hardmetals.

This method is applicable to sintered materials (excluding hardmetals) that might or might not have been subjected to heat treatment after sintering and also to materials that have been sized or coined after sintering.

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.

ISO 7500-1, *Metallic materials — Verification of static uniaxial testing machines — Part 1: Tension/compression testing machines — Verification and calibration of the force-measuring system*

3 Test method

Test pieces shall be tested in compression, with a machine which has been calibrated to class 1, in accordance with ISO 7500-1. In this test, machined or compacted test cylinders are compressed axially to their yield points while measuring strain with an extensometer with an error of strain not exceeding the greater of: fixed error (0,000 2 m/m), relative error (±0,5 % of strain).

The top and bottom anvil contact faces shall be parallel within 0,002 mm/cm. Faces shall be polished to achieve a good finish, less than 0,4 *Ra*. To avoid imprinting, care shall be taken to ensure that contact faces are always harder than test pieces. To improve parallelism, it is acceptable practice to use an adjustable bearing block (ball and cone self-aligning device) in the test machine.

No lubrication is required between sample and anvil faces.

4 Test piece

The test piece shall be nominally 9,0 mm in diameter (D) and 27,0 mm in length (L); L/D ratio of 3:1. It shall be machined from a compacted specimen, such as the Charpy impact test bar (see ISO 5754). The compressive test specimen axis will therefore be perpendicular to the direction of compaction of the compacted specimen from which it is machined. Cylindrical end faces shall be machined to be perpendicular to the sample centre axis, within 0,005 mm/cm.

The test piece shall be cleaned prior to testing. Measure the diameter to the nearest 0,005 mm.

5 Procedure

5.1 Place the test piece on end on the centre of the anvil. Close the top anvil so as to make light contact with the test piece. Engage the extensometer: gauge lengths of 12,7 mm are typical. Gauge length points shall be at least 1/2 test sample diameter away from end faces.

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