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ISO TC 119/SC 2

Metallic powders — Determination of green strength by transverse rupture of rectangular compacts

Poudres métalliques — Détermination de la résistance de comprimés rectangulaires à cru

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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.

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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 119, *Powder metallurgy*, Subcommittee SC 2, *Sampling and testing methods for powders (including powders for hardmetals)*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/SS M11, *Powder metallurgy*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 3995:1985), which has been technically revised.

The main changes are as follows:

- allowing automated compacting sequence in 7.4;
- adding second compacting pressure option and tighter tolerance in 7.5;
- mandatory reporting of lubrication technique and lubrication details in [Clause 9](#);
- replacing stearic acid by synthetic wax;
- removing the use of solvent;

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— clause 2 “Normative references” and clause 3 “Terms and Definitions” have been added.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html

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Metallic powders — Determination of green strength by transverse rupture of rectangular compacts

1 Scope

This document specifies a method for the determination of green strength by measuring the transverse rupture strength of compacts of rectangular cross-section.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

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

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

4 Principle

Subjection of a compact pressed from metallic powder to a uniformly increasing transverse force under controlled conditions until fracture occurs. Determination of the transverse rupture strength, or green strength as used herein, as the stress, calculated from the flexure formula, required to break the compact as a simple beam supported near the ends and applying the force midway between the fixed centre of supports.

The green strength is determined on compacts either having a particular density or after compaction at a specific compacting pressure.

5 Apparatus

5.1 Die, preferably of cemented carbide or alternatively of tool steel, and two punches for producing rectangular test pieces with dimensions according to Clause 6.

All mating parts shall be fitted and lapped. An example of a design for tooling is shown in Figure 1.

The cylinders shall be mounted parallel and the distance between the centres of the support cylinders shall be $25,0\text{ mm} \pm 0,2\text{ mm}$ or $25,4\text{ mm} \pm 0,2\text{ mm}$, measured with an accuracy of $\pm 0,1\text{ mm}$. The load cylinders shall be mounted midway between the support cylinders.

The mounting of the cylinders shall be such as to account for the permitted deviation from parallelism of the top and bottom faces of the test piece.

A diagrammatic arrangement of a typical test fixture is shown in Figure-2.

