# INTERNATIONAL STANDARD ISO 4884

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# Hardmetals — Sampling and testing of powders using sintered test pieces

*Métaux-durs — Échantillonnage et essais des poudres au moyen d'éprouvettes frittées*

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## FOREWORD

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 4884 was developed by Technical Committee ISO/TC 119, *Powder metallurgical materials and products*, and was circulated to the member bodies in April 1977.

It has been approved by the member bodies of the following countries :

| | | |
|---|---|---|
| Australia | Italy | Sweden |
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| Canada | Poland | U.S.A. |
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No member body expressed disapproval of the document.

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# Hardmetals — Sampling and testing of powders using sintered test pieces

## 1 SCOPE AND FIELD OF APPLICATION

This International Standard relates to the sampling and testing of powder mixtures for the manufacture of hardmetals, using sintered test pieces, and to the preparation of test pieces.

## 2 REFERENCES

ISO 3326, *Hardmetals — Determination of (the magnetization) coercivity.*

ISO 3327, *Hardmetals — Determination of transverse rupture strength.*

ISO 3369, *Impermeable sintered metal materials and hardmetals — Determination of density.*

ISO 3738, *Hardmetals — Rockwell hardness test (scale A).*

ISO 3878, *Hardmetals — Vickers hardness test.*

ISO 3954, *Powder for powder metallurgical purposes — Sampling.*

ISO 4499, *Hardmetals — Metallographic determination of microstructure.*

ISO 4505, *Hardmetals — Metallographic determination of porosity and uncombined carbon.*

## 3 DEFINITIONS

For terms and definitions, see ISO 3954.

## 4 SAMPLING

**4.1** Sampling from a lot shall be carried out in conformity with ISO 3954.

**4.2** In the event that a batch is blended into one lot in one blender as the last operation before separation into containers, then by agreement between producer and consumer one or more test samples may be taken from the blender.

## 5 PREPARATION OF TEST PIECES

**5.1** The test pieces shall be processed from the test sample in conformity with their grade and dimensions. All the test pieces for each type of testing shall be sintered simultaneously under the same conditions and in the same furnace.

**5.2** To ensure that the properties of the test pieces prepared from the lot of powder are significant, the appropriate manufacturing conditions shall be used in the production of the test pieces.

**5.3** The dimensions of the test pieces shall comply with the requirements of the relevant International Standards. For the determination of porosity, one or more test pieces shall be sectioned to enable a total area of not less than 1 $cm^2$ to be examined.

## 6 TESTING

Tests usually carried out on sintered test pieces from a lot of powder are given in the following table.

| Type of testing | International Standard |
|---|---|
| Determination of coercivity | ISO 3326 |
| Determination of transverse rupture strength | ISO 3327 |
| Determination of density | ISO 3369 |
| Determination of hardness HRA | ISO 3738 |
| Determination of hardness HV | ISO 3878 |
| Determination of microstructure | ISO 4499 |
| Determination of porosity and uncombined carbon | ISO 4505 |

NOTES

1 The determination of the properties listed in the table may be carried out on the same test pieces but the determination of hardness, microstructure and porosity shall not be carried out before the determination of transverse rupture strength.

2 Because of the high scatter given by the transverse rupture test, its value is limited when testing an individual lot of powder.

3 Chemical analysis may be carried out on a test sample taken from the powder lot or on a sintered test piece.

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