Irish Standard
I.S. EN ISO 4499-2:2010

Hardmetals - Metallographic determination of microstructure - Part 2: Measurement of WC grain size (ISO 4499 -2:2008)

I.S. EN ISO 4499-2:2010

Incorporating amendments/corrigenda/National Annexes issued since publication:

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I.S. EN ISO 4499-2:2010

EUROPEAN STANDARD

NORME EUROPÉENNE

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EN ISO 4499-2

May 2010

ICS 77.040.99; 77.160

Supersedes EN 24499:1993

English Version

Hardmetals - Metallographic determination of microstructure - Part 2: Measurement of WC grain size (ISO 4499-2:2008)

Métaux-durs - Détermination métallographique de la microstructure - Partie 2: Mesurage de la taille des grains de WC (ISO 4499-2:2008)

Hartmetalle - Metallographische Bestimmung der Mikrostruktur - Teil 2: Messung der WC Korngröße (ISO 4499-2:2008)

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Ref. No. EN ISO 4499-2:2010: E

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Foreword

The text of ISO 4499-2:2008 has been prepared by Technical Committee ISO/TC 119 “Powder metallurgy” of the International Organization for Standardization (ISO) and has been taken over as EN ISO 4499-2:2010.

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of an identical text or by endorsement, at the latest by November 2010, and conflicting national standards shall be withdrawn at the latest by November 2010.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 24499:1993.

ISO 4499-2, together with ISO 4499-1, cancels and replaces ISO 4499:1978, which has been technically revised. A new section has been added for the quantitative measurement of the WC grain size of hardmetals.

ISO 4499 consists of the following parts, under the general title *Hardmetals — Metallographic determination of microstructure*:

— *Part 1: Photomicrographs and description*

— *Part 2: Measurement of WC grain size*

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Endorsement notice

The text of ISO 4499-2:2008 has been approved by CEN as a EN ISO 4499-2:2010 without any modification.

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I.S. EN ISO 4499-2:2010

INTERNATIONAL STANDARD

ISO 4499-2

First edition
2008-09-15

Hardmetals — Metallographic determination of microstructure —

Part 2: Measurement of WC grain size

Métaux-durs — Détermination métallographique de la microstructure —

Partie 2: Mesurage de la taille des grains de WC

Reference number
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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.

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The main task of technical committees is to prepare International Standards. 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.

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ISO 4499-2 was prepared by Technical Committee ISO/TC 119, *Powder metallurgy*, Subcommittee SC 4, *Sampling and testing methods for hardmetals*.

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Hardmetals — Metallographic determination of microstructure —

Part 2: Measurement of WC grain size

1 Scope

This part of ISO 4499 gives guidelines for the measurement of hardmetal grain size by metallographic techniques only using optical or electron microscopy. It is intended for sintered WC/Co hardmetals (also called cemented carbides or cermets) containing primarily WC as the hard phase. It is also intended for measuring the grain size and distribution by the linear-intercept technique.

This part of ISO 4499 essentially covers four main topics:

— calibration of microscopes, to underpin the accuracy of measurements;

— linear analysis techniques, to acquire sufficient statistically meaningful data;

— analysis methods, to calculate representative average values;

— reporting, to comply with modern quality requirements.

The part of ISO 4499 is supported by a measurement case study to illustrate the recommended techniques (see Annex A).

The part of ISO 4499 is not intended for the following.

— Measurements of size distribution.

— Recommendations on shape measurements. Further research is needed before recommendations for shape measurement can be given.

Measurements of coercivity are sometimes used for grain-size measurement, but this current guide is concerned only with a metallographic measurement method. It is also written for sintered hardmetals and not for characterising powders. However, the method could, in principle, be used for measuring the average size of powders that are suitably mounted and sectioned.