



Technical Specification

ISO/TS 23867

Ultrasonic testing of hardmetals

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Foreword

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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 4, *Sampling and testing methods for hardmetals*.

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.

Introduction

Ultrasonic testing of hardmetals is a method used for judging the nature of internal defects. It is based on the reflection characteristics of similar waveforms by comparison with the reflection waveforms of standard test blocks with internal defects. It describes how to use high-frequency sound waves to detect micron-sized defects such as carbon defect, eta-phase, tungsten carbide (WC) aggregates, under-sintered area, cobalt pool, and other structural defects. The equivalent size of hole was determined by distance amplitude defect (DAC), and the indicating length of crack was determined by judging the boundary of defect.

This document covers requirements for personnel qualification, surface requirements of the tested products, environment and coupling agent during ultrasonic testing of hardmetals. This document also covers the requirements for ultrasonic testing equipment performance, materials of test block, tolerance of internal flat bottom hole, sensitivity design and defect identification.

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Ultrasonic testing of hardmetals

1 Scope

This document specifies an A-type ultrasonic pulse contact method applying the ultrasonic longitudinal wave technique to hardmetals.

This document is applicable to the ultrasonic inspection for a hardmetal rod that has a circular end face with a diameter not less than 6,0 mm and a rod length of 40,0 mm to 380,0 mm, or a hardmetal product that has a non-circular testing area not smaller than the coverage area of the probe (not less than 12,0 mm in diameter) and a height of 10,0 mm to 380,0 mm.

Within the detection range specified in this document, the sound transmission energy is expressed by the probe driving voltage, and the range is 100,0 V to 200,0 V.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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/>

3.1 hole

defects with diameter >25 µm and depth >2,0 mm inside the product

3.2 mixed materials

mixture of tungsten carbide and cobalt in a certain proportion that is mixed with the mixture of tungsten carbide and cobalt in another proportion

EXAMPLE A mixture of 8 % cobalt and 92 % WC is mixed with a mixture of 4 % cobalt and 96 % WC or a mixture of 20 % cobalt and 80 % WC. A mixture of tungsten carbide and cobalt with WC particle size of 0,8 µm is mixed with the mixture of tungsten carbide and cobalt with WC particle size of 1,8 µm.

Note 1 to entry: Alternatively, the mixture of tungsten carbide and cobalt in one particle size is mixed with the mixture of tungsten carbide and cobalt in another particle size.

3.3 cobalt pool

specific areas inside the product where the cobalt contents are higher than the other areas

3.4 tungsten carbide aggregation

coarse agglomerates of tungsten carbide particles