



Designation: ~~B886-98~~ Designation: **B 886 – 03 (Reapproved 2008)**

Standard Test Method for Determination of Magnetic Saturation (Ms) of Cemented Carbides¹

This standard is issued under the fixed designation B 886; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This test method covers the determination of magnetic saturation (Ms) of cemented carbide powder materials and sintered products using magnetic saturation induction test instrumentation.

~~1.2 The values stated in SI units are to be regarded as the standard.~~

1.2 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.3 This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

2. Referenced Documents

2.1 ASTM Standards:²

A 340 Terminology of Symbols and Definitions Relating to Magnetic Testing

B 243 Terminology of Powder Metallurgy

E 1316 Terminology for Nondestructive Examinations

3. Terminology

3.1 Definitions:

3.1.1 For definition of terms used in this procedure refer to Terminology A 340, Terminology B 243, and Terminology E 1316.

3.1.2 *dc*—direct current.

4. Summary of Test Method

4.1 A weighed test specimen is statically positioned in the magnetic field generated by ~~dc magnetic field/sensing coils~~ or a permanent magnet and sensing coils of the test apparatus. The specimen is magnetized to induction saturation by the field and translated linearly in such a manner that the intrinsic magnetic moment of the magnetic portion of the specimen's binder phase induces a ~~dc~~ current to flow in the sensing coils of the test apparatus. The induced current is proportional to the amount of magnetic binder phase present in the test specimen. Measurement of the induced current permits calculation of the intrinsic magnetic saturation of the test sample.

5. Significance and Use

5.1 This test method allows the non-destructive measurement of the magnetic fraction of the binder phase in cemented carbide powder materials and sintered product, and may be used as an indirect measure of the carbon level in the material or product.

5.2 Measurement of magnetic saturation provides a comparison of the relative fraction of magnetic binder phase that is, cobalt, nickel, or iron, present in the material and can be used for acceptance of product to specification.

5.3 Measurement of magnetic saturation can be used as a measure of the quality of powder material.

¹This test method is under the jurisdiction of ASTM Committee B-9 on Metal Powders and Metal Powder Products and is the direct responsibility of Subcommittee B09.06 on Cemented Carbides.

Current edition approved May 10, 1998. Published November 1998.

¹This test method is under the jurisdiction of ASTM Committee B09 on Metal Powders and Metal Powder Products and is the direct responsibility of Subcommittee B09.06 on Cemented Carbides.

Current edition approved April 1, 2008. Published April 2008. Originally approved in 1998. Last previous edition approved in 2003 as B 886-03.

²For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For Annual Book of ASTM Standards volume information, refer to the standard's Document Summary page on the ASTM website.