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Hardmetals — Determination of (the magnetization) coercivity

Métaux-durs — Détermination de la coercitivité (d'aimantation)

Reference number
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Foreword

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ISO 3326 was prepared by Technical Committee ISO/TC 119, *Powder metallurgy*, Subcommittee SC 4, *Sampling and testing methods for hardmetals*.

This second edition cancels and replaces the first edition (ISO 3326:1975), of which it constitutes a minor revision.

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Hardmetals — Determination of (the magnetization) coercivity

1 Scope

This International Standard specifies a method of determining (the magnetization) coercivity of hardmetals containing not less than 3 % of a ferromagnetic binder by mass.

2 Principle

Magnetization of a test piece in a d.c. magnetic field up to the state of technical saturation; determination of the coercivity H_{cM} of reverse direction which is necessary for complete demagnetization of the test piece ($M = 0$).

3 Symbols and designations

Coercivity H_{cM}, in amperes per metre, as applied is the value of the reversed magnetic field required to reduce the intensity of magnetization in the test piece to zero (see Figure 1).

Table 1 — Symbols and designations

Symbol	Designation	Unit
H	Magnetic field strength	kA/m
M	Magnetization of the test piece	kA/m
M_S	Magnetization at the technical saturation	kA/m
H_{cM}	(Magnetization) coercivity	kA/m

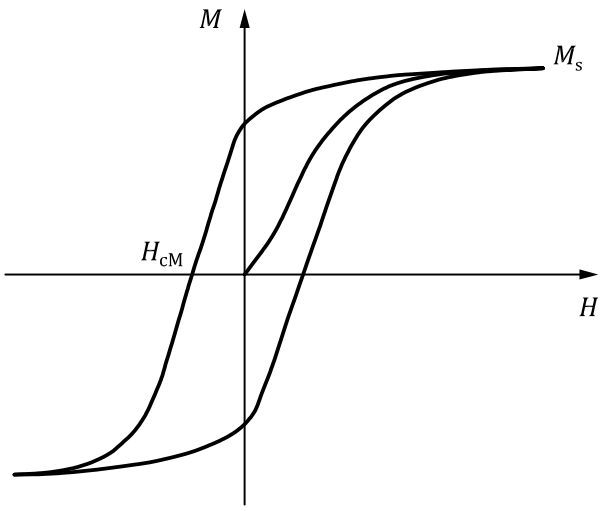

Figure 1 — Typical magnetic hysteresis loop of a ferromagnetic material

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4 Apparatus

Apparatus capable of the d.c. magnetization of the test piece up to the state of technical saturation in the d.c. magnetic field and providing its demagnitization.

The apparatus shall have a precision of 0,2 kA/m for coercivity values up to 20 kA/m and 1 % for values over 20 kA/m.

In order to reach technical saturation, the value of the magnetic field strength shall be 200 to 400 kA/m depending on the type of apparatus used.

5 Procedure

5.1 Place the test piece in a d.c. magnetic field with its longest dimension in the direction of the field and magnetize it up to technical saturation.

5.2 Demagnetize the test piece in the d.c. magnetic field of reverse direction. The speed of demagnetization must be sufficiently low to give the precision specified in Clause 4.

5.3 Determine the coercivity H_{cM} necessary for demagnetization of the test piece.

6 Expression of results

The result of the determination of coercivity H_{cM} shall be rounded to the nearest 0,1 kA/m.

7 Test report

The test report shall include the following information:

a) a reference to this International Standard;

b) all details necessary for identification of the test sample;

c) the result obtained;

d) all operations not specified in this International Standard, or regarded as optional;

e) details of any occurrence which may have affected the result.

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