

JIS

JAPANESE INDUSTRIAL STANDARD

**Methods of measurement of
the magnetic properties of
amorphous metals by means of
a single sheet tester**

JIS H 7152^{—1996}

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Methods of measurement of the magnetic properties of
amorphous metals by means of a single sheet tester

H 7152-1996

1. Scope This Japanese Industrial Standard specifies the methods for measuring the core loss characteristics and a.c. magnetization properties of thin strip of amorphous metals at commercial frequencies by means of a single sheet tester based on the H-coil methods.

For the applicable range in the characteristic tests, the magnetic flux density applicable to normal core loss measurement shall be up to 1.5 T, and the magnetic field strength applicable to alternating current magnetization measurement shall be up to 1 kA/m.

Remarks 1. Since the thin strip of amorphous metals is high permeability material, magnetic flux density B is almost equal to magnetic polarization J . In this Standard, the magnetic flux density B is used.

2. The following standard is cited in this Standard :

JIS H 7004 Glossary of terms used in amorphous metals

Informative reference : The value measured by using a magnetic flux detecting coil and an air gap compensating coil in this test method is magnetic polarization J . The magnetic polarization means the intensity of polarization per unit sectional area by which the magnetic flux of a uniformly magnetized sample is generated. Where the magnetic field strength is H , and the permeability in vacuum is μ_0 , $B = J + \mu_0 H$.

2. Definitions The definitions of main terms used in this Standard shall be as specified in JIS H 7004.

3. Principle of measurement The measurement of the core loss characteristics and a.c. magnetization properties is performed by the method of simultaneous detection of the magnetic field strength and the magnetic flux applied to the sample as follows.

The magnetic field strength is detected with the H-coil placed within a range of uniform magnetic field and magnetic flux, and the magnetic flux is detected with the B-coil. The core loss is obtained from output voltages of the H-coil and the B-coil. A yoke is used in order to enlarge the range of uniform magnetic field applied to the sample as far as possible.

4. Test conditions

4.1 Test temperature The tests shall, as a rule, be performed at a temperature of $23 \pm 5^\circ\text{C}$.

4.2 Power supply for test The power supply used for the tests shall be as follows.

- (1) In the tests, a power supply capable of satisfying the magnetization conditions of 4.3 (refer to 2.1 of Annex) shall be used. The stability of voltage and frequency during the tests shall be within $\pm 0.2\%$.