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Soft magnetic irons

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Descriptors : iron, magnetic properties of materials, magnetic materials, electromagnetism, magnets, electromagnets, electrical equipment, magnetic cores, armatures

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Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of International Trade and Industry through deliberations at the Japanese Industrial Standards Committee in accordance with the Industrial Standardization Law. Consequently, two standards of **JIS C 2503 : 1990 *Soft magnetic iron bars*** and **JIS C 2504 : 1990 *Soft magnetic iron plates*** have been revised and unified in this standard, and newly named as "Soft magnetic irons".

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In the event of any doubts arising as to the contents,
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Soft magnetic irons

Introduction This Japanese Industrial Standard has been prepared based on Alloy class A (Irons) classified and standardized in IEC 60404-8-6 draft (68/157/CDV) *Magnetic materials, Part 8 : Specification for individual materials Section 6—Soft magnetic metallic materials* without modifying the technical contents for the corresponding parts.

In this Standard, the portions underlined with dots are the matters not specified in the corresponding International Standard.

1 Scope This Japanese Industrial Standard specifies the general matters, characteristics, shapes and test methods of soft magnetic iron bars (hereafter referred to as “bars”), soft magnetic iron rods (hereafter referred to as “rods”), soft magnetic iron wires (hereafter referred to as “wires”), soft magnetic iron sheets (hereafter referred to as “sheets”), and soft magnetic iron strips (hereafter referred to as “strips”) which are used as the iron cores, yokes, contacts of relays, electromagnets, magnetic clutches, brakes, generators and motors, and other magnetic shieldings.

Note : The International Standard corresponding to this Standard is given below.

IEC 60404-8-6 Draft (68/157/CDV) : 1996 *Magnetic materials, Part 8 : Specifications for individual materials Section 6—Soft magnetic metallic materials*

Informative reference : The IEC Standard number above is based on the new numbering system of IEC Standards put in force on January 1st 1997, and the Standard published before the said date is numbered by adding 60000 to the former number. This is only the change in the numbering system and the contents remain unchanged.

2 Normative references The following standards contain provisions which, through reference in this Standard, constitute provisions of this Standard. If the indication of the year of coming into effect is given to these referred standards, only the edition of indicated year constitutes the provision of this Standard but the revision and amendment made thereafter are not applied. The normative references without the indication of the year of coming into effect apply limiting only to the most recent edition (including the amendment).

JIS Z 2244 *Vickers hardness test—Test method*

JIS Z 2245 *Rockwell hardness test—Test method*

IEC 60404-1 Draft (68/174/CDV) : 1998 *Magnetic materials, Part 1 : Classification*

IEC 60404-4 : 1995 *Magnetic materials, Part 4 : Method of measurement of d.c. magnetic properties of iron and steel*

3 Definitions For the purpose of this Standard the following principal definitions apply:

- a) **magnetic flux density** A vector quantity along a solenoid axis which defines the magnetic field at an optional point. It is expressed in the unit of tesla (T).
- b) **coercive field strength** The magnetic field strength which makes the magnetic flux density zero. It is expressed in the unit of ampere per meter (A/m).
- c) **ageing** The relative change in coercive field strength resulting from a heat treatment at $100\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$ for 100 h. It is expressed in the unit of percent (%).
- d) **bar** A straight product of uniform cross-section of round, square, rectangular or regular polygonal.
- e) **rod** A cold-drawn product of uniform cross-section of round or rectangular, supplied in straight lengths.
- f) **wire** A rolled or drawn product of uniform cross-section of round or rectangular, supplied in coil.
- g) **sheet and plate** A flat rolled product of uniform cross-section supplied singly or in coil. The one with a width exceeding 600 mm and a thickness not more than 5 mm is called a sheet, and the one with a thickness exceeding 5 mm is called a plate.
- h) **strip** A flat rolled product of uniform cross-section supplied in coil or slit product, which is not more than 600 mm in width and not more than 5 mm in thickness.
- i) **lot** Material from the same heat, of the same form, produced at the same time, and if annealed, heat treated together or sequentially in a continuous furnace.
- j) **edge camber** The edge camber is characterized by the greatest distance e between an edge of the sheet or strip and the line joining the two extremities of the reference length L (refer to Fig. 1).

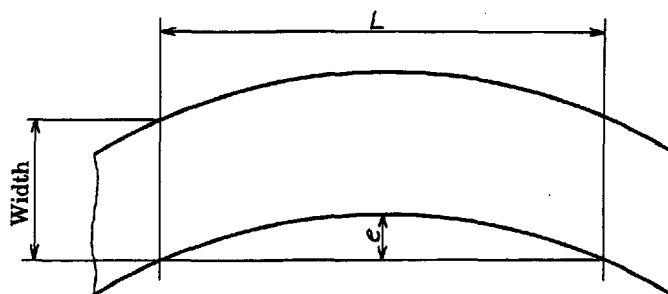


Fig. 1 Example of edge camber

- k) **flatness** Flatness of a sheet or strip is characterized by the wave factor (which is the relation of the height h of the wave to its length L) (refer to Fig. 2). It is expressed in the unit of percent (%).