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(JEMA/JSA)

**Test methods for electrical steel strip  
and sheet — Part 1: Methods of  
measurement of the magnetic properties  
of electrical steel strip and sheet by  
means of an Epstein frame**

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In the event of any doubts arising as to the contents,  
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## Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee according to the proposal for establishment of Japanese Industrial Standard submitted by The Japan Electrical Manufacturers' Association (JEMA)/Japanese Standards Association (JSA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law.

Consequently **JIS C 2550** : 2000 has been withdrawn and partially replaced with this Standard.

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**JIS C 2550** series consists of the following 5 parts under the general title “*Test methods for electrical steel strip and sheet*”:

- Part 1: Methods of measurement of the magnetic properties of electrical steel strip and sheet by means of an Epstein frame*
- Part 2: Methods of determination of the geometrical characteristics of electrical steel strip and sheet*
- Part 3: Methods of measurement of the magnetic properties of electrical steel strip and sheet at medium frequencies*
- Part 4: Methods of test for the determination of surface insulation resistance of electrical strip and sheet*
- Part 5: Methods of measurement of density, resistivity and stacking factor of electrical strip and sheet*

# Test methods for electrical steel strip and sheet — Part 1 : Methods of measurement of the magnetic properties of electrical steel strip and sheet by means of an Epstein frame

## Introduction

This Japanese Industrial Standard has been prepared based on Edition 3.1 of **IEC 60404-2** published in 2008 with some modifications of the technical contents in order to harmonize with the technology commonly used in Japan.

The portions given sidelines or dotted underlines are the matters in which the contents of the corresponding International Standard have been modified. A list of modifications with the explanations is given in Annex JB.

## 1 Scope

This Standard is applicable to the measuring methods of magnetic properties of grain oriented and non-oriented electrical steel strip and sheet under a.c. excitation at frequencies up to 400 Hz and those under d.c. excitation.

The object of this Standard is to define general principles and technical details of the measuring methods of the magnetic properties of electrical steel strip and sheet by means of an Epstein frame.

The Epstein frame is applicable to test specimens sampled from electrical steel strip and sheet of any grade. The a.c. magnetic properties are determined under the excitation condition that the induced voltage becomes sinusoidal (hereafter referred to as “sinusoidal magnetic flux excitation condition”) by designating the peak value of magnetic flux density and the frequency.

The measurements are to be made at an ambient temperature of  $23\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$  on test specimens that have first been demagnetized.

Measurements at frequencies higher than 400 Hz are to be made as specified in **JIS C 2550-3**.

NOTE 1 Although the term “magnetic polarization” defined in **IEC 60050-221** is used in **IEC 60404-2 : 2008** that is the corresponding International Standard of this Standard, the term “magnetic flux density” is used in some standards of **IEC 60404** series. In this Standard, the latter term common in Japan is used.

NOTE 2 The International Standard corresponding to this Standard and the symbol of degree of correspondence are as follows.

IEC 60404-2 : 2008 *Magnetic materials — Part 2 : Methods of measurement of the magnetic properties of electrical steel strip and sheet by means of an Epstein frame* (MOD)