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Copper-manganese alloy wires, bars and sheets for electrical resistance

ICS 29.060.10

Descriptors : resistors, sheet materials, bars (materials), non-ferrous alloys, manganese alloys, nickel alloys, copper alloys, filaments, electrical resistance materials

Reference number : **JIS C 2522 : 1999 (E)**

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 **JIS C 2522** : 1986 is replaced with **JIS C 2522** : 1999.

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In the event of any doubts arising as to the contents, the original JIS is to be the final authority.

Copper-manganese alloy wires, bars and sheets for electrical resistance

Introduction This Japanese Industrial Standard has been prepared based on the first edition of **IEC 60182-4** *Basic dimensions of winding wires—Part 4 : Diameters of conductors for round resistance wires* issued in 1971 for the corresponding part without modifying its technical contents. Particular requirements not specified in the relevant **IEC** Standard are additionally included as the Japanese Industrial Standard. The dotted-underlined descriptions (see Attached Table 2) are not contained in the corresponding International Standard.

Further, **IEC 60182-4** was withdrawn in 1990 and replaced by **IEC 60317-0-1** *Specifications for particular types of winding wires—Part 0 : General requirements—Section 1 : Enamelled round copper wire.* This Standard has no corresponding relations to the said International Standard, since the scope is different from that of this Standard.

1 Scope This Standard specifies copper-manganese alloy wires, bars and sheets for electrical resistance (hereafter referred to as "wires, bars and sheets"), which are mainly composed of copper, manganese and nickel and have small temperature coefficient of electrical resistance (hereafter referred to as "temperature coefficient") and small thermoelectromotive force to copper.

Remarks : The corresponding International Standard is as follows.

IEC 60182-4 : 1971 *Basic dimensions of winding —Part 4 : Diameters of conductors for round resistance wires*

2 Normative references The standards given in Attached Table 1 contain provisions which, through reference in this Standard, constitute provisions of this Standard. The most recent editions of the standards shall be applied.

3 Definitions The definitions of the major terms used in this Standard shall be as follows:

a) **volume resistivity** Electrical resistance per unit cross section and unit length (Ωm).

b) **conductor resistance** The electrical resistance per unit length in longitudinal direction of a conductor having a uniform cross section (Ω).

Unit length is, in general, 1 m or 1 km and the conductor resistance is respectively given in Ω/m or Ω/km.

c) **linear temperature coefficient and quadric temperature coefficient** If the change of electrical resistance of an electrical conductor is expressed in the form of a quadric function of temperature, the linear temperature coefficient is denoted coefficient on the linear term of the function and the quadric temperature coefficient is denoted coefficient on the quadric term of the function. Generally the temperature coefficients are denoted by the following symbols:

Linear temperature coefficient: α
Quadric temperature coefficient: β
Linear temperature coefficient at t °C: α_t