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**Non-insulated crimp-type sleeves
for copper conductors**

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Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee, as the result of proposal for revision of Japanese Industrial Standard submitted by the Japan Electrical Manufacturers' Association (JEMA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14.

Consequently **JIS C 2806 : 1991** is replaced with this Standard.

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

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Non-insulated crimp-type sleeves for copper conductors

1 Scope This Japanese Industrial Standard specifies non-insulated crimp-type sleeves for copper conductors (hereafter referred to as “sleeves”) which are intended for connection of annealed stranded or solid wires principally used as internal wiring of machine and apparatus and indoor wiring in such a manner that the wires are connected to each other by crimping using the connecting tools specified in **JIS C 9711** or those assigned by the sleeve manufacturer (hereafter referred to as “tools”)(¹).

Note (¹) A tool for non-insulated crimp-type terminal lugs shall be used for connection of straight butt-joint sleeves and straight lap-joint sleeves and a single-hand operated ring sleeve tool shall be used for connection of end lap-joint sleeves.

2 Normative references The following standards contain provisions which, through reference in this Standard, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS B 7507 *Vernier, dial and digital callipers*

JIS C 1602 *Thermocouples*

JIS C 3306 *Polyvinyl chloride insulated flexible cords*

JIS C 3307 *600 V Polyvinyl chloride insulated wires*

JIS C 9711 *Compression tools for wire connectors of interior wiring*

JIS H 3100 *Copper and copper alloy sheets, plates and strips*

JIS H 3300 *Copper and copper alloy seamless pipes and tubes*

JIS H 8501 *Methods of thickness test for metallic coatings*

JIS H 8619 *Electroplated coatings of tin*

JIS Z 3261 *Silver brazing filler metals*

JIS Z 3264 *Copper phosphorus brazing filler metals*

JIS Z 8703 *Standard atmospheric conditions for testing*

JIS Z 8704 *Temperature measurement—Electrical methods*

3 Classification, symbols and nominal size The classification, symbols and nominal size of sleeves shall be as given in Table 1.

Table 1 Classification, symbols and nominal size

Classification	Symbol	Nominal size	Applicable place	Applicable tool
Straight butt-joint sleeve	B	See Attached Table 1	For internal wiring of machines and devices, and indoor wiring	Tool for non-insulated crimp-type terminal lugs
Straight lap-joint sleeve	P	See Attached Table 2	For internal wiring of machines and devices, and indoor wiring	Tool for non-insulated crimp-type terminal lugs
End lap-joint sleeve ⁽²⁾	E	See Attached Table 3	For connection in an indoor wiring box	Tool for ring sleeves

Note ⁽²⁾ The end lap-joint sleeves are also called ring sleeves.

4 Performance

4.1 Secureness of crimped connection When sleeves are tested in accordance with 7.5, the sleeves shall show no cracking, splitting of the brazed part, or other trouble detrimental to service.

4.2 Temperature rise The temperature rise shall be as follows:

- When sleeves with symbol B and P are tested in accordance with 7.6, the temperature rise of crimped connection (hereafter referred to as "crimping zone") shall not be higher than the temperature rise of the connected wire.
- When sleeves with symbol E are tested in accordance with 7.6, the temperature rise of the crimping zone shall not exceed 30 K.

4.3 Cyclic heating The cyclic heating shall be as follows:

- When sleeves with symbol B and P are tested in accordance with 7.7, the temperature rise of the crimping zone at the 25th cycle shall not be higher than the temperature rise of the connected wire, and the temperature rise at the 125th cycle shall not exceed the measured temperature rise at the 25th cycle plus 8 K.
- When sleeves with symbol E are tested in accordance with 7.7, the temperature rise of the crimping zone at the 25th cycle shall not exceed 50 K, and the temperature rise at the 125th cycle shall not exceed the measured temperature rise at the 25th cycle plus 8 K.

4.4 Tensile strength When sleeves with symbol B and P are tested in accordance with 7.8, no slipping, coming out of wire, breaking, deformation of the sleeve, or other trouble detrimental to service shall take place at the crimping zone between the sleeve and the wire.

5 Appearance, dimensions and metallic coating The appearance, dimensions, and metallic coating shall comply with the following:

- Sleeves shall be free from scratches, rust, splitting, cracking, or other defects detrimental to service.
- Sleeves with symbol E shall have the maximum working currents and applicable combinations of wires complying with Attached Table 4.

- c) Sleeves shall have the dimensions complying with Attached Tables 1, 2 and 3.
- d) The thickness of metallic coating of sleeves shall be not less than 1 μm , when the test of 7.4 is carried out.

6 Materials and manufacturing method

6.1 Materials The materials for sleeves shall be the copper seamless tubes with symbol C1100T or C1100TS specified in **JIS H 3300**, or the copper sheets or strips with symbol C1020P or C1020R specified in **JIS H 3100** or materials at least equivalent in quality.

6.2 Manufacturing method Sleeves shall be manufactured in such a manner that the copper tubes specified in 6.1 are cut and finished to the dimensions specified in Attached Tables 1, 2 and 3, or the copper sheets or strips specified in 6.1 are punched and formed to barrel type convenient for insertion of bare wire and crimped connection, finished to the dimensions specified in Attached Tables 1, 2 or 3, then the seams are brazed firmly with the silver brazing filler metal specified in **JIS Z 3261**, the copper phosphorous brazing filler metal specified in **JIS Z 3264** or materials at least equivalent, and a sleeve with symbol B is processed to have a wire stop at its centre. Sleeves shall, further, be treated by means of the electroplated coating of tin specified in **JIS H 8619**. The thickness of metallic coating shall be not less than 1 μm .

7 Test methods

7.1 Test conditions The test conditions shall be as follows:

- a) Unless otherwise specified, the tests shall be carried out in a room at ordinary temperature $20\text{ }^{\circ}\text{C} \pm 15\text{ }^{\circ}\text{C}$ and ordinary humidity $(65 \pm 20)\%$, as specified in **JIS Z 8703**. The tests of 7.6 and 7.7 shall be carried out by holding the specimens in draft free air at $15\text{ }^{\circ}\text{C}$ to $35\text{ }^{\circ}\text{C}$.
- b) Individual sleeves shall be used as the specimens for the tests of 7.2 to 7.4, and the new wires⁽³⁾ given in Table 3 which are appropriate to the combination given in Table 2 are, without the joint surface being polished, crimped in the sleeve using an adequate connecting tool suitable for the dimensions of the sleeve, to prepare the specimens for the tests of 7.5 to 7.8. A brazed sleeve shall be crimped to leave the tooth mark at its brazed side.

Note ⁽³⁾ The wire shall be the stranded or solid wire without tin coating specified in **JIS C 3307**. The single-core cord (VSF) specified in **JIS C 3306** shall be used as the wire of 0.75 mm².

- c) For the test, the appropriate current and tensile load given in Table 3 shall be used.