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Line post insulators

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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 **JIS C 3812 : 1994** is replaced with **JIS C 3812 : 1999**.

In this revision, conforming with International Standard has been made in such a manner that the former **JIS** was revised and specified as the body and the International Standard corresponding to this body in various parts was specified as Annex (normative).

Attention is drawn to the possibility that some parts of this Standard may conflict with a patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have technical properties. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying the patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have the said technical properties.

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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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Line post insulators

Introduction This Japanese Industrial Standard has been prepared based on **IEC 60720** *Characteristics of post insulators* published in 1981 as the first edition in such a manner, that the contents (performances) specified in the former **JIS** were specified in the body and the specification of International Standard corresponding to this body are stated in Annex without modification in the technical contents.

The **IEC** Standard number 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.

1 Scope This Standard specifies porcelain line post insulators of tie-top type and clamp-top type (hereafter referred to as “insulators”), and applies to the following insulators:

- a) The tie-top type insulators specified in the former **JIS**, which are specified in this body.
- b) The tie-top type and clamp-top type line post insulators intended for a.c. overhead lines with a nominal voltage higher than 1 000 V and a frequency not higher than 100 Hz, which are specified in **IEC 60720** and in Annex (normative) of this Standard.

Either of the specifications stated in this body or those stated in Annex (normative) shall be applied throughout to a product, and it is not allowed to apply the corresponding items and contents in the body and Annex confusedly.

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 indicated below shall be applied.

JIS B 0205 *Metric coarse screw threads*

JIS B 0209 *Limits of sizes and tolerances for metric coarse screw threads*

JIS B 1181 *Hexagon nuts and hexagon thin nuts*

JIS B 1256 *Plain washers*

JIS C 3801-1 *Testing method for insulators—Part 1: Insulators for overhead line*

JIS C 3802 *Permissible limits of visual defects for insulating porcelains*

JIS C 3803 *Glossary of terms for insulator and bushing*

JIS G 3101 *Rolled steels for general structure*

JIS G 3113 *Hot-rolled steel plates, sheets and strip for automobile structural uses*

JIS G 5501 *Grey iron castings*

JIS G 5502 *Spheroidal graphite iron castings*

JIS R 5210 *Portland cement*

3 Definitions For the purposes of this Standard, the principal definitions shall comply with **JIS C 3803**.

4 Classification Insulators are classified as follows:

LP-10, LP-20, LP-30, LP-40, LP-60, LP-70

Remarks 1 LP denotes line post insulators.

2 The numerals indicate the values of nominal voltage (kV) of electric lines usually used divided by 1.1.

5 Performance The performances of insulators shall be as given in Table 1 when the tests are carried out in accordance with 9.

Table 1 Performance

Item	Classification						Applicable subclause for test method
	LP-10	LP-20	LP-30	LP-40	LP-60	LP-70	
Wet power-frequency withstand voltage (kV)	37	55	75	95	135	155	9.3
Lightning impulse withstand voltage (kV)	100	140	185	230	330	370	9.4
Bending withstand load	Shall not cause deviation of 5° or more under the load of 7 kN nor any abnormality at any part of insulator.						9.5
Temperature cycle	No abnormality is observed on any part of insulator when subjected to such immersion that the temperature difference is 70 °C or more (cold water temperature is 0 °C to 20 °C), immersion time is 15 min each, and 3 times immersion each.						9.6
Porosity	No penetration of liquid into porcelain						9.7
Galvanizing	The amount of coating shall be 350 g/m ² or more for pins and nuts, 400 g/m ² or more for washers and 500 g/m ² or more for other parts. However, thread parts of tapped nuts may be excluded.						9.8

6 Shapes and dimensions The shapes and dimensions shall be as given in Attached figure 1, and the porcelain shall be of solid-core.

Insulators shall be equipped with a locking setup to prevent the threads of pins from loosening.

The threads of pins shall comply with **JIS B 0205**, and their accuracy before galvanizing shall be grade 8 g specified in **JIS B 0209**.

The dimensions of nuts other than those of thread part shall comply with **JIS B 1181**, and the washers shall be those specified as "regular circular" in **JIS B 1256**. The nuts may be tapped after galvanizing. All the bodies and nuts after galvanizing shall have interchangeability, and ensure good engagement.

7 Appearance There shall be no defects detrimental to practical service on the appearance, and the appearance of porcelain parts shall comply with **JIS C 3802**.

8 Materials and assembly

8.1 Materials The materials given in Table 2 shall be used, and all the surface of metal fittings except thread parts of bases shall be completely and uniformly galvanized by hot-dipping. A suitable rust-preventive oil treatment shall be applied to thread parts of bases.

Table 2 Materials

Name of part	Material
Porcelain	Porcelain whose entire exposed surfaces, except the parts where glazing is impractical due to burning process, are uniformly glazed. White in colour unless colour is specified.
Base	FC200 or FC250 specified in JIS G 5501 , SAPH400 specified in JIS G 3113 , or FCD400 or FCD450 specified in JIS G 5502 .
Pin	High-tensile steel with tensile strength of 637 N/mm ² or more and elongation of 17 % or more.
Nut and washer	SS400 specified in JIS G 3101 .
Cement	The Portland cement specified in JIS R 5210 .

8.2 Assembly An insulator shall be so assembled that the centre line of porcelain coincides with that of metal fittings.

9 Test methods

9.1 Construction test The construction test shall follow 5 of **JIS C 3801-1**.

9.2 Appearance test The appearance test shall follow 6 of **JIS C 3801-1**.

9.3 Wet power-frequency withstand voltage test The wet power-frequency withstand voltage test shall follow 7.4 of **JIS C 3801-1**.

9.4 Lightning impulse withstand voltage test The lightning impulse withstand voltage test shall follow 7.9 of **JIS C 3801-1**.

9.5 Bending withstand load test The bending withstand load test shall follow 8.1.2 of **JIS C 3801-1**.

9.6 Temperature cycle test The temperature cycle test shall follow 10 of **JIS C 3801-1**.

9.7 Porosity test The porosity test shall follow 11 of **JIS C 3801-1**.

9.8 Galvanizing test The galvanizing test shall follow 12 of **JIS C 3801-1**.