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Laminated thermosetting rods

ICS 83.140.20

Descriptors : thermosetting polymers, laminates, bars (materials), phenolic resins,
epoxy resins, plastics

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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:

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In the event of any doubts arising as to the contents,
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Laminated Thermosetting Rods

1. **Scope** This Standard specifies the laminated thermosetting rods, (hereinafter referred to as the "rods".) The laminated rods referred to in this Standard are defined as the round rods composed of paper or cloth base impregnated with phenolic resin and glass fibre cloth base impregnated with epoxy resin.

Remarks 1. The standards cited in this Standard are as follows:

JIS K 6911-Testing Methods for Thermosetting Plastics

JIS K 7112-Methods for Determining the Density and Specific Gravity of Plastics

2. The units and numerical values given in { } in this standard are based on the traditional units, and are appended for reference.

2. **Types, Uses and Notations** The types, uses and notations of the rods shall be as given in Table 1.

Table 1 Types, Uses and Notations of Rods

Type	Use	Notation
Paper-base phenolic rods	For withstand voltage and damp-proof use; For electrical and mechanical use	PB-PEV PB-PEM
Cloth-base phenolic rods	Thick weave cloth base: for mechanical use; Thin weave cloth base: for electrical and mechanical use	PB-FCM PB-FLE
Glass fibre cloth base epoxy rods	Long glass fibre cloth base: for electrical and mechanical use	EB-GEM

Remark: Detailed information on the uses of the rods is as given in the Appendix.

3. Quality The qualities of the rods shall be tested by the methods specified in 7., and the results shall satisfy the requirements specified in Table 2. The tests, however, may be partially omitted, when agreed upon between the parties concerned.

Table 2 Qualities of Rod

Test items	Unit	Condition- ing ⁽¹⁾	PB-PEV	PB-PEM	PB-FCM	PB-FLE	EB-GEM
Withstand voltage ⁽²⁾		C - 90/20/65	To withstand the test voltage for 1 minute to afford the potential gradient given in Table 7.	—	—	To withstand the test voltage for 1 minute to afford the potential gradient given in Table 7.	
Insulation resistance (normal state) ⁽³⁾	MΩ	C - 90/20/65	10 ³ min.	10 min.	—	5 x 10 ² min.	10 ⁴ min.
Insulation resistance (after boiling) ⁽⁴⁾	MΩ	C - 90/20/65 + D - 2/100	10 min.	—	—	5 min.	—
Bending strength ⁽⁵⁾	N/mm ² (kgf/mm ²)	A	93 (9.5) min.	108 (11.0) min.	108 (11.0) min.	88 (9.0) min.	245 (25.0) min.
Compressive strength ⁽⁶⁾	N/mm ² (kgf/mm ²)	A	137 (14.0) min.	137 (14.0) min.	147 (15.0) min.	147 (15.0) min.	—



Table 2 (Continued)

Test items	Unit	Condition- ing (1)	PB-PEV	PB-PEM	PB-FCM	PB-FLE	EB-GEM
Appearance after heating (7)	—	A	Marked change (8) shall not be observed at a test temperature given in Table 8.				
Acetone resistance	—	A	Marked change shall not be observed.				
Water absorption (9)	%	E - 24/50 + D - 24/23	To satisfy the requirements given in Table 3.				
Specific gravity	—	A	1.25 min.	1.30 min.	1.28 min.	1.26 min.	1.60 min.

Notes (1) (i) The alphabet letter indicates the conditioning method for the test piece, as follows:

- A: No conditioning shall be made for the test piece in the state as it is received.
- C: Conditioning shall be made in the air of constant temperature and constant humidity.
- D: Dipping treatment shall be made in the water of constant temperature.
- E: Conditioning shall be made in the air of constant temperature.

- (ii) The first figure indicates the time required for conditioning.
- (iii) The second figure indicates the temperature at which the conditioning shall be made.
- (iv) The third figure indicates the relative humidity at which the conditioning shall be made.
- (v) Alphabet shall be separated from figure with a dash and figures shall be separated from each other with an oblique line.