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STANDARD

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JIS C 3660-3-1 : 2003

(IEC 60811-3-1 : 1985 / Amd.1 : 1994 / Amd.2 : 2001)
(JCMA)

**Common test methods for insulating
and sheathing materials of electric and
optical cables—Part 3-1 : Methods
specific to PVC compounds—Pressure
test at high temperature—Test for
resistance to cracking**

ICS 29.035.20; 29.060.20

Reference number : JIS C 3660-3-1 : 2003 (E)

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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 Japanese Electric Wire & Cable Makers' Association (JCMA) 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 3660-3-1 : 1998** is replaced with this Standard.

This revision has been made based on **IEC 60811-3-1 : 1985** *Common test methods for insulating and sheathing materials of electric and optical cables—Part 3-1 : Methods specific to PVC compounds—Pressure test at high temperature—Test for resistance to cracking* for the purposes of making it easier to compare this Standard with International Standard; to prepare Japanese Industrial Standard conforming with International Standard; and to propose a draft of an International Standard which is based on Japanese Industrial Standard.

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.

JIS C 3660 consists of the following parts and sections under the general title *Common test methods for insulating and sheathing materials of electric and optical cables*:

Part 1-1 : Methods for general application—Measurement of thickness and overall dimensions—Tests for determining the mechanical properties

Part 1-2 : Methods for general application—Thermal ageing methods

Part 1-3 : Methods for general application—Methods for determining the density—Water absorption tests—Shrinkage test

Part 1-4 : Methods for general application—Test at low temperature

Part 2-1 : Methods specific to elastomeric compounds—Ozone resistance, hot set and mineral oil immersion tests

Part 3-1 : Methods specific to PVC compounds—Pressure test at high temperature—Test for resistance to cracking

Part 3 : Methods specific to PVC compounds—Section 2 : Loss of mass test—Thermal stability test

Part 4 : Methods specific to polyethylene and polypropylene compounds—Section 1 : Resistance to environmental stress cracking—Wrapping test after thermal ageing in air—Measurement of melt flow index—Carbon black and/or mineral filler content measurement in PE

Part 4 : Methods specific to polyethylene and polypropylene compounds—Section 2 : Elongation at break after pre-conditioning—Wrapping test after pre-conditioning—Wrapping test after thermal ageing in air—Measurement of mass increase—Long-term stability test (Appendix A)—Test method for copper-catalysed oxidative degradation (Appendix B)

Part 5 : Methods specific to filling compounds—Section 1 : Drop point—Separation of oil—Lower temperature brittleness—Total acid number—Absence to corrosive components—Permittivity at 23 °C—D.C. resistivity at 23 °C and 100 °C.

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the original JIS is to be the final authority.

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Common test methods for insulating and sheathing materials of electric and optical cables—Part 3-1 : Methods specific to PVC compounds—Pressure test at high temperature—Test for resistance to cracking

Introduction This Standard is the Japanese Industrial Standard prepared based on *IEC 60811-3-1 Common test methods for insulating and sheathing materials of electric and optical cables—Part 3-1 : Methods specific to PVC compounds—Pressure test at high temperature—Test for resistance to cracking* published 1985 as the first edition, Amendment 1 (1994) and Amendment 2 (2001) without modifying their technical contents.

Portions underlined with dots are the matters not stated in the original International Standard.

1 General

1.1 Scope This Standard specifies the test methods to be used for testing polymeric insulating and sheathing materials of electric cables for power distribution and telecommunications including cables used on ships.

This Standard gives the methods for pressure test at high temperature and for tests for resistance to cracking, which apply to PVC compounds.

NOTE : The International Standards corresponding to this Standard are given below.

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standard and JIS are IDT (identical), MOD (modified), and NEQ (not equivalent) according to ISO/IEC Guide 21.

IEC 60811-3-1 : 1985 *Common test methods for insulating and sheathing materials of electric and optical cables—Part 3-1 : Methods specific to PVC compounds—Pressure test at high temperature—Test for resistance to cracking*, Amendment 1 (1994) and Amendment 2 (2001) (IDT)

1.2 Normative references The following standards contain provisions which, through reference in this Standard, constitute provisions of this Standard. If the indication of the year of publication is given to these referred standards, only the edition of indicated year constitutes the provision of this Standard but the revision and amendment made thereafter do not apply. The normative references without the indication of the year of coming into effect apply limiting only to the most recent edition (including amendments).

JIS C 3660-1-1 *Common test methods for insulating and sheathing materials of electric and optical cables—Part 1-1 : Methods for general application—Measurement of thickness and overall dimensions—Tests for determining the mechanical properties*

NOTE : **IEC 60811-1-1 : 1993** *Common test methods for insulating and sheathing materials of electric and optical cables—Part 1-1 : Methods for general application—Measurement of thickness and overall dimensions—Tests for determining the mechanical properties* and Amendment 1 (2001) are identical with the said standard.

JIS C 3660-1-2 *Common test methods for insulating and sheathing materials of electric and optical cables—Part 1-2 : Methods for general application—Thermal ageing methods*

NOTE : **IEC 60811-1-2 : 1985** *Common test methods for insulating and sheathing materials of electric and optical cables—Part 1-2 : Methods for general application—Thermal ageing methods*, Amendment 1 (1989) and Amendment 2 (2000) are identical with the said standard.

2 Test values Full test conditions (such as temperatures, durations, etc.) and full test requirements are not specified in this Standard; it is intended that they should be specified by the standard dealing with the relevant type of cable.

Any test requirements which are given in this Standard may be modified by the relevant cable standard to suit the needs of a particular type of cable.

3 Applicability Conditioning values and testing parameters are specified for the most common types of insulating and sheathing compounds and of cables, wires and cords.

4 Type tests and other tests The test methods described in this Standard are intended, in the first instance, to be used for type tests. In certain tests, where there are essential differences between the conditions for type tests and those for more frequent tests, such as routine tests, these differences are indicated.

5 Pre-conditioning All the tests shall be carried out not less than 16 h after the extrusion or vulcanization (or cross-linking), if any, of the insulating or sheathing compounds.

6 Test temperature Unless otherwise specified, tests shall be carried out at room temperature.

7 Median value When several test results have been obtained and ordered in an increasing or decreasing succession, the median value is the middle value if the number of available values is odd, and is the mean of the two middle values if the number is even.

8 Pressure test at high temperature for insulations and sheaths

NOTE : This test is not recommended for thicknesses of insulations and sheaths less than 0.4 mm.