INTERNATIONAL STANDARD

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Electrical installations in ships –

Part 351: Insulating materials for shipboard and offshore units, power, control, instrumentation, telecommunication and data cables

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRICAL INSTALLATIONS IN SHIPS –

Part 351: Insulating materials for shipboard and offshore units, power, control, instrumentation, telecommunication and data cables

FOREWORD

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International Standard IEC 60092-351 has been prepared by subcommittee 18A: Cables and cable installations, of IEC technical committee 18: Electrical installations of ships and of mobile and fixed offshore units.

This third edition cancels and replaces the second edition published in 2000, and constitutes a technical revision. The title has been updated and changes introduced to the tables.

The text of this standard is based on the following documents:

FDIS	Report on voting
18A/252/FDIS	18A/254/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

IEC 60092 consists of the following parts under the general title *Electrical installations in ships:*

Part 101: Definitions and general requirements

Part 201: System design – General

Part 202: System design – Protection

Part 203: System design – Acoustic and optical signals

Part 204: System design – Electric and electrohydraulic steering gear

Part 301: Equipment – Generators and motors

Part 302: Low-voltage switchgear and controlgear assemblies

Part 303: Equipment – Transformers for power and lighting

Part 304: Equipment – Semiconductor convertors

Part 305: Equipment – Accumulator (storage) batteries

Part 306: Equipment – Luminaires and accessories

Part 307: Equipment – Heating and cooking appliances

Part 350: Shipboard power cables – General construction and test requirements

Part 351: Insulating materials for shipboard and offshore units, power, control, instrumentation, telecommunication and data cables

Part 352: Choice and installation of cables for low-voltage power systems

Part 353: Single and multicore non-radial field power cables with extruded solid insulation for rated voltages 1 kV and 3 kV

Part 354: Single- and three-core power cables with extruded solid insulation for rated voltages 6 kV (Um = 7,2 kV) up to 30 kV (Um = 36 kV)

Part 359: Sheathing materials for shipboard power and telecommunication cables

Part 373: Shipboard telecommunication cables and radio-frequency cables – Shipboard flexible coaxial cables

Part 374: Shipboard telecommunication cables and radio-frequency cables – Telephone cables for non-essential communication services

Part 375 Shipboard telecommunication cables and radio-frequency cables – General instrumentation, control and communication cables

Part 376: Cables for control and instrumentation circuits 150/250 V (300 V)

Part 390: Cable penetrations – Fire type test procedures

Part 401: Installation and test of completed installation

Part 501: Special features – Electric propulsion plant

Part 502: Tankers – Special features

Part 503: Special features – A.C. supply systems with voltages in the range above 1 kV up to and including 11 kV

Part 504: Special features – Control and instrumentation

Part 506: Special features – Ships carrying specific dangerous goods and materials hazardous only in bulk

Part 507: Pleasure craft

Part 508: Switchgear and controlgear assemblies for rated voltages above 1kV and up to and including 15kV (in preparation)

The committee has decided that the contents of this publication will remain unchanged until 2008. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

A bilingual version may be issued at a later date.

INTRODUCTION

IEC 60092 forms a series of International Standards concerning electrical installations in sea-going ships and fixed and mobile offshore units, incorporating good practice and co-ordinating as far as possible existing rules.

These standards form a code of practical interpretation and amplification of the requirements of the International Convention on Safety of Life at Sea, a guide for future regulations which may be prepared and a statement of practice for use by shipowners, shipbuilders, mobile and fixed offshore unit owners and builders and appropriate organisations.

ELECTRICAL INSTALLATIONS IN SHIPS –

Part 351: Insulating materials for shipboard and offshore units, power, control, instrumentation, telecommunication and data cables

1 Scope

This part of IEC 60092 specifies the requirements for electrical, mechanical and particular characteristics of insulating materials intended for use in shipboard and fixed and mobile offshore unit power, control, instrumentation, telecommunication and data cables.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60502-1:1997, *Power cables with extruded insulation and their accessories for rated voltages from 1 kV (U_m = 1,2 kV) up to 30 kV (U_m = 36 kV) – Part 1: Cables for rated voltages of 1 kV (U_m= 1,2 kV) and 3 kV (U_m = 3,6 kV)*

IEC 60754-2, *Test on gases evolved during combustion of electric cables – Part 2: Determination of degree of acidity of gases evolved during the combustion of materials taken from electric cables by measuring pH and conductivity*

IEC 60811-1-1:1993, *Common test methods for insulating and sheathing materials of electric cables – Part 1: Methods for general application – Measurement of thickness and overall dimensions – Tests for determining the mechanical properties* [1)]
Amendment 1 (2001)

IEC 60811-1-2:1995, *Common test methods for insulating and sheathing materials of electric cables – Part 1: Methods for general application – Section Two: Thermal ageing methods*
Amendment 1 (1989)
Amendment 2 (2000)

IEC 60811-1-4:1985 *Common test methods for insulating and sheathing materials of electric cables – Part 1: Methods for general application – Section four: Test at low temperature*
Amendment 1 (1993)
Amendment 2 (2001)

IEC 60811-2-1:1998 *Insulating and sheathing materials of electric and optical cables – Common test methods – Part 2-1: Methods specific to elastomeric compounds – Ozone resistance, hot set and mineral oil immersion tests* [2)]
Amendment 1 (2001)

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

[1)] A consolidated edition 2.1 (2001) exists, including edition 2.0 and its Amendment 1.

[2)] A consolidated edition 2.1 (2001) exists, including edition 2.0 and its Amendment 1.

IEC 60811-3-2:1985 *Common test methods for insulating and sheathing materials of electric cables – Part 3: Methods specific to PVC compounds – Section Two: Loss of mass test – Thermal stability test*
Amendment 1 (1993)

ISO 48, *Rubber, vulcanized or thermoplastic – Determination of hardness (hardness between 10 IRHD and 100 IRHD)*