



IEC 60092-354

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INTERNATIONAL STANDARD



**Electrical installations in ships –
Part 354: Single- and three-core power cables with extruded solid insulation for
rated voltages 6 kV ($U_m = 7,2$ kV) up to 30 kV ($U_m = 36$ kV)**

INTERNATIONAL
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CONTENTS

| | |
|--|----|
| FOREWORD | 4 |
| 1 Scope | 6 |
| 2 Normative references | 6 |
| 3 Terms and definitions | 7 |
| 4 General requirements | 7 |
| 4.1 Rated voltage | 7 |
| 4.2 Markings | 7 |
| 4.2.1 Indication of origin and voltage identification | 8 |
| 4.2.2 Continuity of marking | 8 |
| 4.2.3 Core identification for three-cores | 8 |
| 5 Constructional requirements | 8 |
| 5.1 General cable description | 8 |
| 5.1.1 Overview | 8 |
| 5.1.2 Armoured single-sheathed cable with outer sheath only | 8 |
| 5.1.3 Armoured double-sheathed cable with inner and outer sheath | 8 |
| 5.1.4 Armoured single-sheathed cable with inner sheath only | 9 |
| 5.1.5 Unarmoured single-sheathed cable | 9 |
| 5.2 Conductors | 9 |
| 5.3 Insulation | 10 |
| 5.3.1 Material | 10 |
| 5.3.2 Application | 10 |
| 5.3.3 Thickness of insulation | 10 |
| 5.4 Screening of cores | 10 |
| 5.4.1 General | 10 |
| 5.4.2 Conductor screening | 10 |
| 5.4.3 Insulation screening | 11 |
| 5.5 Metallic screen | 11 |
| 5.5.1 Construction | 11 |
| 5.5.2 Requirements | 11 |
| 5.6 Assembly of three-core cables, inner coverings and fillers | 11 |
| 5.7 Inner covering | 11 |
| 5.7.1 General | 11 |
| 5.7.2 Thickness of inner covering | 11 |
| 5.8 Inner sheath | 12 |
| 5.8.1 Material | 12 |
| 5.8.2 Application | 12 |
| 5.8.3 Thickness of inner sheath | 12 |
| 5.9 Braid armour | 12 |
| 5.9.1 General | 12 |
| 5.9.2 Braid wire armour | 13 |
| 5.9.3 Braid wire diameter | 13 |
| 5.10 Outer sheath | 13 |
| 5.10.1 Material | 13 |
| 5.10.2 Application | 13 |
| 5.10.3 Thickness of outer sheath | 13 |
| 5.10.4 Colour of outer sheath | 14 |

6 Tests – Methods and requirements 14

Annex A (informative normative) Electrical tests after installation..... 17

Bibliography..... 18

Table 1 – Insulation thickness..... 10

Table 2 – Thickness of extruded inner covering for calculation of fictitious diameters 12

Table 3 –Tests applicable to all cables 14

Table 4 – Additional tests for halogen-free cables..... 16

Table 5 – Additional test for low smoke cables..... 16

Table 6 – Additional tests when required..... 16

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRICAL INSTALLATIONS IN SHIPS –

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

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International Standard IEC 60092-354 has been prepared by subcommittee 18A: Electric cables for ships and mobile and fixed offshore units, of IEC technical committee 18: Electrical installations of ships and of mobile and fixed offshore units.

This fourth edition cancels and replaces the third edition published in 2014. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) Editorial adaptations have been made.

The text of this International Standard is based on the following documents:

| CDV | Report on voting |
|-------------|------------------|
| 18A/419/CDV | 18A/424/RVC |

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

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

The list of all the parts of the IEC 60092 series, under the general title *Electrical installations in ships*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
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ELECTRICAL INSTALLATIONS IN SHIPS –

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

1 Scope

This part of IEC 60092 is applicable to shipboard and offshore power cables with extruded solid insulation, conductor and core screening, having a voltage rating of one of the following: 3,6/6 (7,2) kV, 6/10 (12) kV, 8,7/15 (17,5) kV, 12/20 (24) kV, 18/30 (36) kV.

NOTE 1 Subclause 4.1 gives more details.

The cables are intended for fixed installations.

The various types of power cables are given in 5.1. The constructional requirements and test methods are aligned with those indicated in IEC 60092-350, unless otherwise specified in this document.

The object of this document is:

- to standardize cables whose safety and reliability is ensured when they are installed in accordance with the requirements of IEC 60092-352 or IEC 61892-4;
- to lay down standard manufacturing requirements and characteristics of such cables directly or indirectly bearing on safety;
- to specify test methods for checking conformity with those requirements.

NOTE 2 Only radial field cables are covered.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 60038, *IEC standard voltages*

IEC 60228, *Conductors of insulated cables*

IEC 60092-350:~~2014~~—, *Electrical installations in ships – Part 350: General construction and test methods of power, control and instrumentation cables for shipboard and offshore applications*¹

IEC 60092-360, *Electrical installations in ships – Part 360: Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation and telecommunication cables*

¹ Under preparation. Stage at the time of publication: IEC/BPUB 60092-350:2019.

IEC 60332-1-2, Tests on electric and optical fibre cables under fire conditions – Part 1-2: Test for vertical flame propagation for a single insulated wire or cable – Procedure for 1 kW pre-mixed flame

IEC 60332-3-22, Tests on electric cables under fire conditions – Part 3-22: Test for vertical flame spread of vertically-mounted bunched wires or cables – Category A

IEC 60684-2, Flexible insulating sleeving – Part 2: Methods of test

IEC 60754-1, Test on gases evolved during combustion of materials from cables – Part 1: Determination of the halogen acid gas content

IEC 60754-2, Test on gases evolved during combustion of materials from cables – Part 2: Determination of acidity (by pH measurement) and conductivity

IEC 60885-2, Electrical test methods for electric cables. Part 2: Partial discharge tests

IEC 61034-1, Measurement of smoke density of cables burning under defined conditions – Part 1: Test apparatus

IEC 61034-2, Measurement of smoke density of cables burning under defined conditions – Part 2: Test procedure and requirements

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Electrical installations in ships –
Part 354: Single- and three-core power cables with extruded solid insulation for
rated voltages 6 kV ($U_m = 7,2$ kV) up to 30 kV ($U_m = 36$ kV)**

**Installations électriques à bord des navires –
Partie 354: Câbles d'énergie unipolaires et tripolaires à isolement massif extrudé
pour des tensions assignées allant de 6 kV ($U_m = 7,2$ kV) jusqu'à 30 kV
($U_m = 36$ kV)**

CONTENTS

| | |
|--|----|
| FOREWORD | 4 |
| 1 Scope | 6 |
| 2 Normative references | 6 |
| 3 Terms and definitions | 7 |
| 4 General requirements | 7 |
| 4.1 Rated voltage | 7 |
| 4.2 Markings | 8 |
| 4.2.1 Indication of origin and voltage identification | 8 |
| 4.2.2 Continuity of marking | 8 |
| 4.2.3 Core identification for three-cores | 8 |
| 5 Constructional requirements | 8 |
| 5.1 General cable description | 8 |
| 5.1.1 Overview | 8 |
| 5.1.2 Armoured single-sheathed cable with outer sheath only | 8 |
| 5.1.3 Armoured double-sheathed cable with inner and outer sheath | 8 |
| 5.1.4 Armoured single-sheathed cable with inner sheath only | 9 |
| 5.1.5 Unarmoured single-sheathed cable | 9 |
| 5.2 Conductors | 9 |
| 5.3 Insulation | 9 |
| 5.3.1 Material | 9 |
| 5.3.2 Application | 10 |
| 5.3.3 Thickness of insulation | 10 |
| 5.4 Screening of cores | 10 |
| 5.4.1 General | 10 |
| 5.4.2 Conductor screening | 10 |
| 5.4.3 Insulation screening | 10 |
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| 5.5.2 Requirements | 11 |
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| 5.9.2 Braid wire armour | 13 |
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| 5.10 Outer sheath | 13 |
| 5.10.1 Material | 13 |
| 5.10.2 Application | 13 |
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| 5.10.4 Colour of outer sheath | 14 |

6 Tests – Methods and requirements 14

Annex A (normative) Electrical tests after installation 17

Bibliography 18

Table 1 – Insulation thickness 10

Table 2 – Thickness of extruded inner covering for calculation of fictitious diameters 12

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ELECTRICAL INSTALLATIONS IN SHIPS –**Part 354: Single- and three-core power cables
with extruded solid insulation for rated voltages
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SOMMAIRE

| | |
|--|----|
| AVANT-PROPOS | 22 |
| 1 Domaine d'application | 24 |
| 2 Références normatives | 24 |
| 3 Termes et définitions | 25 |
| 4 Exigences générales | 25 |
| 4.1 Tension assignée | 25 |
| 4.2 Marquages | 26 |
| 4.2.1 Indication de l'origine et de la tension | 26 |
| 4.2.2 Continuité du marquage | 26 |
| 4.2.3 Identification des conducteurs pour les câbles tripolaires | 26 |
| 5 Exigences de construction | 26 |
| 5.1 Description générale des câbles | 26 |
| 5.1.1 Vue d'ensemble | 26 |
| 5.1.2 Câble armé à une seule gaine, externe uniquement | 26 |
| 5.1.3 Câble armé à deux gaines, interne et externe | 27 |
| 5.1.4 Câble armé à une seule gaine, interne uniquement | 27 |
| 5.1.5 Câble non armé à une seule gaine | 27 |
| 5.2 Ames | 27 |
| 5.3 Enveloppe isolante | 28 |
| 5.3.1 Matériau | 28 |
| 5.3.2 Application | 28 |
| 5.3.3 Epaisseur de l'enveloppe isolante | 28 |
| 5.4 Blindage des conducteurs | 28 |
| 5.4.1 Généralités | 28 |
| 5.4.2 Ecran sur âme | 29 |
| 5.5 Ecran métallique | 29 |
| 5.5.1 Construction | 29 |
| 5.5.2 Exigences | 29 |
| 5.6 Assemblage des câbles tripolaires, revêtements d'assemblage et bourrages | 29 |
| 5.7 Revêtement d'assemblage | 29 |
| 5.7.1 Généralités | 29 |
| 5.7.2 Epaisseur du revêtement d'assemblage | 30 |
| 5.8 Gaine interne | 30 |
| 5.8.1 Matériau | 30 |
| 5.8.2 Application | 30 |
| 5.8.3 Epaisseur de la gaine interne | 30 |
| 5.9 Armure tressée | 30 |
| 5.9.1 Généralités | 30 |
| 5.9.2 Armure du fil tressé | 31 |
| 5.9.3 Diamètre du fil tressé | 31 |
| 5.10 Gaine externe | 31 |
| 5.10.1 Matériau | 31 |
| 5.10.2 Application | 31 |
| 5.10.3 Epaisseur de la gaine externe | 31 |
| 5.10.4 Couleur de la gaine externe | 32 |
| 6 Essais – Méthodes et exigences | 32 |

| | |
|---|----|
| Annexe A (normative) Essais électriques après installation..... | 35 |
| Bibliographie..... | 36 |
| Tableau 1 – Epaisseur de l'enveloppe isolante..... | 28 |
| Tableau 2 – Epaisseur du revêtement d'assemblage extrudé pour le calcul des diamètres fictifs | 30 |
| Tableau 3 – Essais applicables à tous les câbles..... | 32 |
| Tableau 4 – Essais supplémentaires pour les câbles sans halogène..... | 34 |
| Tableau 5 – Essai supplémentaire pour les câbles à faibles émissions de fumées | 34 |
| Tableau 6 – Essais supplémentaires lorsqu'ils sont exigés | 34 |

COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

INSTALLATIONS ÉLECTRIQUES À BORD DES NAVIRES –

Partie 354: Câbles d'énergie unipolaires et tripolaires à isolement massif extrudé pour des tensions assignées allant de 6 kV ($U_m = 7,2$ kV) jusqu'à 30 kV ($U_m = 36$ kV)

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Cette quatrième édition annule et remplace la troisième édition parue en 2014. Cette édition constitue une révision technique.

Cette édition inclut les modifications techniques majeures suivantes par rapport à l'édition précédente:

a) des adaptations rédactionnelles ont été effectuées.

Le texte de cette Norme internationale est issu des documents suivants:

| CDV | Rapport de vote |
|-------------|-----------------|
| 18A/419/CDV | 18A/424/RVC |

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à l'approbation du présent document.

Ce document a été rédigé selon les Directives ISO/IEC, Partie 2.

Une liste de toutes les parties de la série IEC 60092, publiées sous le titre général *Installations électriques à bord des navires*, peut être consultée sur le site web de l'IEC.

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- amendé.

INSTALLATIONS ÉLECTRIQUES À BORD DES NAVIRES –

Partie 354: Câbles d'énergie unipolaires et tripolaires à isolement massif extrudé pour des tensions assignées allant de 6 kV ($U_m = 7,2$ kV) jusqu'à 30 kV ($U_m = 36$ kV)

1 Domaine d'application

La présente partie de l'IEC 60092 est applicable aux câbles d'énergie installés à bord des navires et des unités en mer à isolement massif extrudé, avec écran sur âme et blindage des conducteurs, et ayant l'une des tensions assignées suivantes: 3,6/6 (7,2) kV, 6/10 (12) kV, 8,7/15 (17,5) kV, 12/20 (24) kV, 18/30 (36) kV.

NOTE 1 Le 4.1 fournit davantage d'informations à ce sujet.

Les câbles sont destinés à des installations fixes.

Les différents types de câbles d'énergie sont présentés en 5.1. Les exigences de fabrication et les méthodes d'essai sont alignées sur celles qui sont indiquées dans l'IEC 60092-350, sauf spécification contraire dans le présent document.

L'objet du présent document est:

- de normaliser les câbles dont la sécurité et la fiabilité sont assurées lorsqu'ils sont installés conformément aux exigences de l'IEC 60092-352 ou de l'IEC 61892-4;
- d'établir des exigences et caractéristiques de fabrication normalisées pour ces câbles se référant directement ou indirectement à la sécurité;
- de spécifier les méthodes d'essai visant à vérifier la conformité à ces exigences.

NOTE 2 Seuls les câbles à champ radial sont couverts.

2 Références normatives

Les documents suivants sont cités dans le texte de sorte qu'ils constituent, pour tout ou partie de leur contenu, des exigences du présent document. Pour les références datées, seule l'édition citée s'applique. Pour les références non datées, la dernière édition du document de référence s'applique (y compris les éventuels amendements).

IEC 60038, *Tensions normales de la CEI*

IEC 60228, *Ames des câbles isolés*

IEC 60092-350:—, *Electrical installations in ships – Part 350: General construction and test methods of power, control and instrumentation cables for shipboard and offshore applications* (disponible en anglais seulement) ¹

IEC 60092-360, *Installations électriques à bord des navires – Partie 360: Matériaux d'isolation et de gainage des câbles d'alimentation, de commande, d'instrumentation et de télécommunication installés à bord des navires et des unités en mer*

¹ En cours de préparation. Stade au moment de la publication: IEC/BPUB 60092-350:2019.

IEC 60332-1-2, *Essais des câbles électriques et à fibres optiques soumis au feu – Partie 1-2: Essai de propagation verticale de la flamme sur conducteur ou câble isolé – Procédure pour flamme à prémélange de 1 kW*

IEC 60332-3-22, *Essais des câbles électriques soumis au feu – Partie 3-22: Essai de propagation verticale de la flamme des fils ou câbles montés en nappes en position verticale – Catégorie A*

IEC 60684-2, *Gaines isolantes souples – Partie 2: Méthodes d'essai*

IEC 60754-1, *Essai sur les gaz émis lors de la combustion des matériaux des câbles – Partie 1: Détermination de la quantité de gaz acide halogéné*

IEC 60754-2, *Essai sur les gaz émis lors de la combustion des matériaux prélevés sur câbles – Partie 2: Détermination de la conductivité et de l'acidité (par mesure du pH)*

IEC 60885-2, *Méthodes d'essais électriques pour les câbles électriques. Deuxième partie: Essais de décharges partielles*

IEC 61034-1, *Mesure de la densité de fumées dégagées par des câbles brûlant dans des conditions définies – Partie 1: Appareillage d'essai*

IEC 61034-2, *Mesure de la densité de fumées dégagées par des câbles brûlant dans des conditions définies – Partie 2: Procédure d'essai et exigences*