

ICS 29.060.20
CCS K 13



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 33596-2025

Replacing GB/T 33596-2017

**Electrical installations in ships - Insulating and sheathing
materials for shipboard and offshore units, power, control,
instrumentation and telecommunication cables**

船舶电气装置 船用和海上设施用电力、控制、仪表和通信电缆绝缘和护套材料
(English Translation)

Issued on: October 5, 2025

Implemented on: May 1, 2026

Issued by: State Administration for Market Regulation

Table of Contents

Foreword	
1 Scope	
2 Normative references	
3 Terms and Definitions	
4 Cross-linked insulating mixtures	
4.1 Overview	
4.2 Electrical performance	
4.3 Mechanical properties	
5 Cross-linked sheath compound	
5.1 Overview	
5.2 Mechanical properties	
6 Thermoplastic sheath compound	
6.1 Overview	
6.2 Mechanical properties	
7 Additional optional properties of the sheathing compound	
7.1 Overview	
7.2 Test Requirements	
Appendix A (Normative) Measurement of HEPR Insulation Hardness	
A.1 Sample	
A.2 Test Procedures	
Appendix B (Normative) Determination of HEPR Elastic Modulus	
B.1 Procedure	
B.2 Requirements	
Appendix C (Normative) Enhanced Oil Immersion Test Method for Sheath Compounds	
C.1 Sampling and Sample Preparation	
C.2 Determination of the cross-sectional area of the specimen	
C.3 Test Oil	
C.4 Test Procedures	
C.5 Expression of Experimental Results	
C.6 Test Requirements	
Appendix D (Normative) Drilling Fluid Immersion Test Method for Casing Mixtures	
D.1 Drilling fluid resistance test	

D.2 Test liquid

D.3 Test Procedure

D.4 Expression of Experimental Results

D.5 Test Requirements

Foreword

This document conforms to GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting is scheduled.

This document replaces GB/T 33596-2017 "Electrical Installations of Ships - Power, Control, Instrumentation and Communication Cables for Marine and Offshore Facilities".

Compared with GB/T 33596-2017, the main technical changes in "Insulation and Sheathing Materials" are as follows, except for structural adjustments and editorial modifications.

--The load time for the heat stretching test has been changed (see Tables 4 and 6, Tables 4 and 6 in the 2017 version).

--Change the linear rate of change to the volumetric expansion rate of change (see Tables 9 and 10, Tables 9 and 10 in the 2017 edition).

--Added mechanical property tests and requirements for the sheath mixture after immersion in oil-based test liquid aging (see Table 10);

--Added the expression for the rate of change of volume expansion (see Appendix C and Appendix D);

--Added provisions for oil-based test liquids (see Appendix D).

This document is equivalent to IEC 60092-360:2021 "Marine electrical installations - Part 360: Electrical power supply and control for marine and offshore installations".

Insulation and sheathing materials for manufacturing, instrumentation and communication cables.

The following minimal editorial changes have been made to this document.

--To harmonize with existing standards, the standard title has been changed to "Marine Electrical Installations. Electricity, Control, Instrumentation and..." Insulation and sheathing materials for communication cables.

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed by the China Electrical Equipment Industry Association.

This document is under the jurisdiction of the National Technical Committee on Standardization of Wires and Cables (SAC/TC 213).

1 Scope

This document specifies the insulation and sheathing materials for power, control, instrumentation, and communication cables used in marine and offshore fixed and mobile installations.

The electrical, mechanical, and special performance requirements are described, along with the corresponding test methods.

The types and codes of insulation and sheathing materials are shown in Table 1.

Table 1. Material Types and Codes

type

Cross-linked insulating mixture Cross-linked sheath compound thermoplastic sheathing compound code name EPR, HEPR, XLPE, S 95, HF 90 SE, SH, SHF 2 SHF 1, ST 2

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are listed below.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies.

This document.

ISO 48-2:2018 Determination of hardness of vulcanized or thermoplastic rubber - Part 2: Hardness between 10 IRHD and 100 IRHD Rubber, vulcanized or thermoplastic-Determination of hardness-Part 2: Hardness between 10 IRHD and 100 IRHD) ISO 1817 Test method for resistance of vulcanized or thermoplastic rubber to liquids.

mination of the effect of liquids) Note. GB/T 1690-2010 Test methods for resistance to liquids of vulcanized or thermoplastic rubber (ISO 1817:2005, MOD) IEC 60092-350:2020 Marine electrical equipment - Part 350: Cables for power, control and instrumentation in ships and offshore platforms General construction and test methods (Electrical installations in ships - Part 350) power, control and instrumentation cables for shipboard and offshore applications) Note. GB/T 20637-2006 General structural and test requirements for marine electrical installations and power cables (IEC 60092-350:2001, IDT) IEC 60684-2:2011 Flexible insulating sleeving - Part 2: Methods of test) Note. GB/T 7113.2-2014 Insulating hoses - Part 2: Test methods (IEC 60684-2:2003, MOD) IEC 60754-1 Test methods for

gases released during combustion of materials from cables or optical fibers - Part 1: Total amount of halogen acid gases Test on gases evolved during combustion of materials from cables-Part 1: Determination of the halogen acid gas content) Note. GB/T 17650.1-2021 Test methods for gases released during combustion of materials taken from cables or optical fibers - Part 1: Determination of total halogen acid gases (IEC 60754-1:2019, IDT) IEC 60754-2 Test methods for gases released during combustion of materials from cables or optical fibers - Part 2: Acidity (measured by pH value)