

AS/NZS 3599.2:1999

Reconfirmed 2017

Australian/New Zealand Standard™

**Electric cables—Aerial bundled—
Polymeric insulated—Voltages
6.35/11(12) kV and 12.7/22(24) kV**

Part 2: Non-metallic screened

AS/NZS 3599.2:1999

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee EL/3, Electric Wires and Cables. It was approved on behalf of the Council of Standards Australia on 14 April 1999 on behalf of the Council of Standards New Zealand on 16 April 1999. It was published on 5 June 1999.

The following interests are represented on Committee EL/3:

Australasian Railway Association
Department of Defence, Australia
Electrical regulatory authorities
Electricity Supply Association of Australia
Institution of Engineers, Australia
Ministry of Commerce, New Zealand
New Zealand Electrical Contractors Association
New Zealand Electrical and Electronic Manufacturers Federation
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Testing interests

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This Standard was issued in draft form for comment as DR 97546.

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

RECONFIRMATION

OF

AS/NZS 3599.2:1999

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and 12.7/22(24) kV**

Part 2: Non-metallic screened

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Technical Committee EL-003 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

Certain documents referenced in the publication may have been amended since the original date of publication. Users are advised to ensure that they are using the latest versions of such documents as appropriate, unless advised otherwise in this Reconfirmation Notice.

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The following are represented on Technical Committee EL-003:

Australian Cable Makers' Association
Australian Industry Group
Electrical Compliance Testing Association
Electrical Regulatory Authorities Council
National Electrical and Communications Association
Queensland University of Technology

NOTES

Australian/New Zealand Standard™

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Part 2: Non-metallic screened

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL/3, Electric Wires and Cables, and is based on requirements laid down by the Electricity Supply Association of Australia. This Standard supersedes AS 3599.2—1991.

The objective of the Standard is to specify construction, dimensions and test requirements for cross-linked polyethylene insulated, non-metallic screened, three phase, aerial bundled cables (ABCs), incorporating a support conductor, for working voltages 6.35/11 kV and 12.7/22 kV.

For reasons of standardization and rationalization, this Standard provides for the construction, dimensions, and test requirements of only a limited range of non-metallic screened three-core cables.

This Standard is complementary to the range of cables covered in AS 3599.1, *Electric cables—Aerial bundled—Polymeric insulated—Voltages 6.35/11(12) kV and 12.7/22(24) kV*, Part 1: *Metallic screened*, and in AS 1429, *Electric cables—Polymeric insulated*, Part 1: *For working voltages 1.9/3.3(3.6) kV up to and including 19/33(36) kV* and Part 2: *For working voltages above 19/33(36) kV up to and including 76/132(145) kV*. Other than differing requirements for the insulation screen and the lack of a metallic screen or sheath, this Standard is generally compatible with the appropriate requirements specified in those Standards.

This Standard differs from the 1991 edition as follows:

- (a) Cable construction allows for the insulation screen to be either a cross-linked semi-conductive compound or a cross-linked semi-conductive compound with an outer layer of semi-conductive HDPE.
- (b) Tests have been added to Table 2 for the case where the insulation screen is XLPE plus HDPE.
- (c) The tests in Table 2 reference the AS/NZS 1660 series, *Test methods for electric cables, cords and conductors* (all Parts).
- (d) Material tests in Table 2 refer to AS/NZS 3808, *Insulating and sheathing materials for electric cables*.

The term ‘informative’ has been used in this Standard to define the application of the appendix to which it applies. An ‘informative’ appendix is only for information and guidance.

Statements expressed in mandatory terms in notes to tables and figures are deemed to be requirements of this Standard.

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STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard**Electric cables—Aerial bundled—Polymeric insulated—
Voltages 6.35/11(12) kV and 12.7/22(24) kV****Part 2: Non-metallic screened****1 SCOPE**

This Standard specifies the construction, dimensions and test requirements for cross-linked polyethylene (XLPE) insulated, non-metallic screened (without further protection), three phase, aerial bundled cables (ABC) incorporating a support conductor (see Figures 1 and 2), for electricity supply.

NOTE: Cable data to assist in the selection of the appropriate cables is given in Appendix A.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS

- | | |
|--------|---|
| 1125 | Conductors in insulated electric cables and flexible cords |
| 1429 | Electric cables—Polymeric insulated |
| 1429.1 | Part 1: For working voltages 1.9/3.3(3.6) kV up to and including 19/33(36) kV |
| 1531 | Conductors—Bare overhead—Aluminium and aluminium alloy |
| 1931 | High voltage test techniques |
| 1931.1 | Part 1: General definitions and test requirements |
| 1931.2 | Part 2: Measuring systems |
| 3983 | Metal drums for insulated electric cables and bare conductors |

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| 1429 | Electric cables—Polymeric insulated |
| 1429.2 | Part 2: For working voltages above 19/33(36) kV up to and including 76/132(145) kV |
| 1660 | Test methods for electric cables, cords and conductors (all Parts) |
| 2857 | Timber drums for insulated electric cables and bare conductors |
| 3808 | Insulating and sheathing materials for electric cables |

IEC

- | | |
|-------|---|
| 60287 | Electric cables—Calculation of the current rating (all Parts) |
|-------|---|

3 DEFINITIONS

For the purpose of this Standard, the definitions below apply:

3.1 Approximate value

A value that is neither guaranteed nor checked; e.g. it is used to calculate dimensions for cable users.

3.2 Conductor screen

A layer or layers of non-metallic semi-conductive material applied directly over the conductor.

3.3 Direction of lay

The slope of the conductor wires or phase cable when the phase cable or, in the case of complete cable, the cable bundle is held vertically. It is right-hand when the slope is in the direction of the central part of the letter Z, and left-hand when the slope is in the direction of the central part of the letter S.

3.4 Installation tests

Tests made on installed cable to demonstrate the integrity of the cable and its accessories.

3.5 Insulation screen

A layer of non-metallic semi-conductive material applied directly over the insulation.

3.6 Length of lay

The axial distance of one complete turn of the helix formed by a cable component, e.g. a phase cable.

3.7 Maximum conductor temperature

The maximum temperature at which the conductor of the cable may be operated. It is the temperature resulting from the combined effect of the ambient conditions and the current flowing in the conductor.

3.8 Phase cable

An assembly comprising a conductor, semi-conductive conductor screen, insulation and semi-conductive insulation screen (see Figures 1 and 2).

3.9 Re-qualification tests

Tests made by the manufacturer on an already qualified range of cables following any changes in critical cable component materials or in the method of cable manufacture.

3.10 Routine tests

Tests made by the manufacturer on all production lengths of completed bundled cable to demonstrate its integrity.

3.11 Sample tests

Tests made by the manufacturer on samples of completed bundled cable, or on components taken from completed bundled cable, at a specified frequency so as to verify that the finished product meets the design specification.

3.12 Support conductor

A conductor that supports the three laid-up phase cables and which may act as the earth conductor.

3.13 Type tests

Tests made by a manufacturer before supplying on a general commercial basis a type of cable covered by this Standard, in order to demonstrate satisfactory performance characteristics to meet the intended application. These tests are of such a nature that, after they have been made, they need not be repeated, unless changes are made in the cable materials, design or method of manufacture, which might change the performance characteristics.

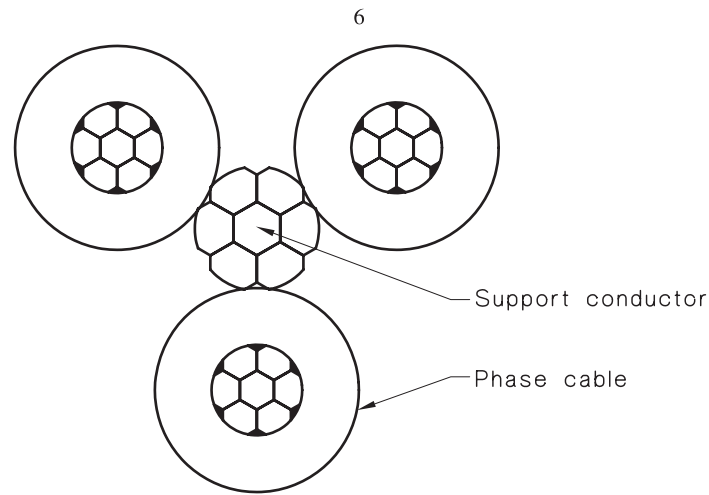
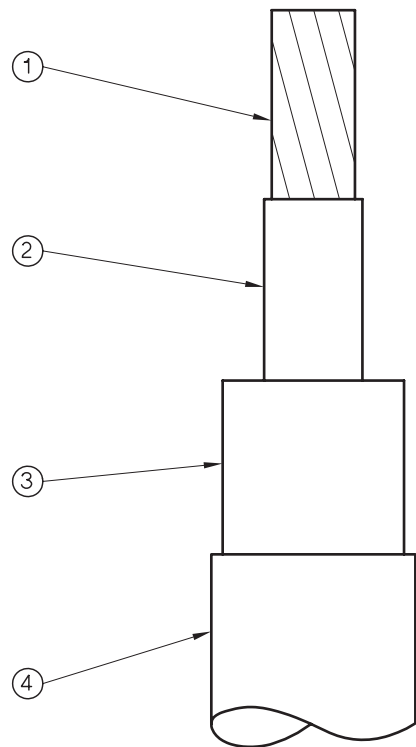


FIGURE 1 CROSS-SECTION OF HV ABC



- LEGEND
- 1 = conductor
 - 2 = conductor screen
 - 3 = insulation (XLPE)
 - 4 = insulation screen

FIGURE 2 COMPONENTS OF 'PHASE CABLE' OF HV ABC