AS 3599.2—1991

Australian Standard®

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

Part 2: Non-metallic screened

STANDARDS AUSTRALIA

This Australian Standard was prepared by Committee EL/3, Electric Wires and Cables. It was approved on behalf of the Council of Standards Australia on 19 March 1991 and published on 13 May 1991.

The following interests are represented on Committee EL/3:

Australian Electrical and Electronic Manufacturers Association
Department of Defence
Department of Minerals and Energy, N.S.W.
Electrical Contractors Associations of Australia
Electrical regulatory authorities
Electricity Supply Association of Australia
Railways of Australia Committee
Testing interests

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PREFACE

This Standard was prepared by the Standards Australia Committee on Electric Wires and Cables and is based on requirements laid down by the Electricity Supply Association of Australia. The Standard applies to aerial bundled cables (ABC) intended for electricity supply at working voltages of 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 individually 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, *Polymeric insulated cables for electricity supply at working voltages 1.9/3.3 kV up to and including 19/33 kV*. Other than in respect to differing requirements for the insulation screen and the lack of a metallic screen or sheath, it is generally compatible with the appropriate requirements specified in those Standards.

CONTENTS

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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 C.

2 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS
1018 Partial discharge measurements
1049 Telecommunication cables—Insulation and sheath—Polyethylene
1125 Conductors in insulated electric cables and flexible cords
1429 Polymeric insulated cables for electricity supply at working voltages 1.9/3.3 kV up to and including 19/33 kV
1531 Aluminium conductors for overhead power transmission purposes
1660 Methods of test for electric cables, cords and conductors
1931 High voltage testing techniques
2857 Timber drums for insulated electric cables and bare conductors
C365 Drums for bare stranded conductors
Part II—Metal drums*

IEC
287 Calculation of the continuous current rating of cables (100% load factor)

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

3.1 Phase cable—an assembly comprising a conductor, semiconductive conductor screen, insulation and semiconductive insulation screen (see Figure 2).

3.2 Conductor screen—a layer or layers of non-metallic semiconductive material applied directly over the conductor.

3.3 Insulation screen—a layer of non-metallic semiconductive material applied directly over the insulation.

3.4 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.

3.5 Support conductor—a conductor provided to support the three laid-up phase cables and which may act as the earth conductor.

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 Voltage designation The rated voltages are expressed in the form $U_o/U(U_m)$ where—

U_o = the r.m.s. power frequency voltage to earth of the supply system for which the cable is designed

U = the r.m.s. power frequency voltage between phases of the supply system for which the cable is designed

U_m = the maximum r.m.s. power-frequency voltage between any two conductors for which cables and accessories are designed. It is the highest voltage that can be sustained under normal operating conditions at any time and at any point in a system. It excludes temporary voltage variations due to fault conditions and sudden disconnection of large loads.

* Being revised to include covered conductors