Australian Standard®

ELECTRIC CABLES—AERIAL BUNDLED—POLYMERIC INSULATED—VOLTAGES 6.35/11(12) kV AND 12.7/22(24) kV

Part 1—METALLIC SCREENED

This Australian Standard was prepared by Committee EL/3, Electric Wires and Cables. It was approved on behalf of the Council of the Standards Association of Australia on 14 September 1988 and published on 3 October 1988.

The following interests are represented on Committee EL/3:

Australian Electrical and Electronic Manufacturers Association
Civil Aviation Authority (Commonwealth)
Confederation of Australian Industry
Department of Defence
Department of Mineral Resources, New South Wales
Electrical regulatory authorities
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Australian Porcelain Insulators Association
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PREFACE

This Standard was prepared by the Association's 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 screened three-core cables.

This Standard is complementary to the range of cables covered in AS 1429, *Polymeric insulated cables for electricity supply at working voltages 1.9/3.3 kV up to and including 19/33 kV*, and is compatible with the appropriate requirements specified therein.

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PART 1: METALLIC SCREENED

1 SCOPE. This Standard specifies the construction, dimensions, and test requirements for cross-linked polyethylene (XLPE) insulated, individually metallic screened, high density polyethylene (HDPE) sheathed, catenary supported, three phase cables, aerial bundled cable (ABC) (see Figure 1), for electricity supply.

Additionally, it provides cable data and recommendations to assist in the selection of the appropriate cables (see Appendix D).

2 REFERENCED DOCUMENTS. The documents below 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
1222 Steel conductors and stays for overhead power transmission purposes
1222.1 Part 1: Galvanized (SC/GZ)
1222.2 Part 2: Aluminium clad (SC/AC)
1429 Polymeric insulated cables for electricity supply at working voltages 1.9/3.3 kV up to and including 19/33 kV
1660 Methods of test for electric cables, cords and conductors
1931 High voltage testing techniques
1931.1 Part 1: General definitions, test requirements, test procedures and measuring devices
2857 Timber drums for insulated electric cables and bare conductors

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

3 DEFINITIONS. For the purpose of this Standard, the following definitions apply.

3.1 Core (of a cable)—an assembly comprising a conductor, semiconductive conductor screen, insulation and semiconductive insulation screen.

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

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

3.4 Metallic screen—a screen of copper wires applied over each core.

3.5 Phase cable—an assembly comprising a core, tapes, metallic screen and sheath, which together form one phase of the bundled cable (see Figure 2).

3.6 Direction of lay—the slope of the conductor wires; screen wires, phase cable, or the like 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.

3.7 Support catenary—a steel conductor provided to support the three laid-up phase cables.

3.8 Length of lay—the axial distance of one complete turn of the helix formed by a cable component, e.g. a wire of the metallic screen or a phase cable.

3.9 Maximum conductor temperature—the maximum temperature at which the conductor of the cable may be operated and it is the temperature resulting from the combined effect of the ambient conditions and the current loading of the conductor.

3.10 Voltage designation. The rated voltages are expressed in the form $U_0/U(U_m)$ where—

U_0 = 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.

3.11 Routine tests—tests made by the manufacturer on all production lengths of completed bundled cable to demonstrate its integrity.

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

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

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