AS 3198—1990

Australian Standard®

Approval and test specification—Electric cables—XLPE insulated—For working voltages up to and including 0.6/1 kV

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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 1990 and published on 6 August 1990.

The following interests are represented on Committee EL/3:

Australian Electrical and Electronic Manufacturers Association

Department of Defence

Department of Minerals and Energy, New South Wales

Electrical Contractors Associations of Australia

Electrical Regulatory Authorities

Electricity Supply Association of Australia

Railways of Australia Committee

Regulatory Authorities

Testing Interests

This Standard was issued in draft form for comment as DR 89089.

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First published as AS 3198—1977.
Second edition 1990.

PUBLISHED BY STANDARDS AUSTRALIA
(STANDARDS ASSOCIATION OF AUSTRALIA)
STANDARDS HOUSE, 80 ARTHUR ST, NORTH SYDNEY NSW
ISBN 0 7262 6249 8

PREFACE

This Standard was prepared by Standards Australia Committee on Electric Wires and Cables to supersede AS 3198—1977, *Approval and test specification for XLPE insulated electric cables for working voltages, up to and including 0.6/1 kV.*

This Standard is one of a series of approval and test specifications issued by Standards Australia. These specifications are accompanied by a general specification, AS 3100, containing definitions and general requirements for electric materials and equipment. The purpose of these specifications is to outline the conditions which must be met to secure approval for the sale and use of electrical equipment in Australia. Only safety matters and conditions closely allied thereto are covered. For guidance on details for enquiry and order, see Appendix C.

This Standard differs from the 1977 edition as follows:

(a) A range of halogen free cables featuring low smoke emission, and low flame propagation properties in fire conditions has been included. Additional insulation and sheath materials have been specified for these cables together with an appropriate range of tests and criteria.

(b) Major changes have been made to the tables of tests and criteria for insulation, non-metallic outer sheaths and cable.

(c) The provisions for cables with metallic layers have been considerably expanded.

(d) Cables with copper-clad aluminium conductors have been deleted.

(e) The approximate overall diameters quoted in the tables of dimensions have been recalculated and except for single core cables with solid sectoral conductors, tables no longer provide dimensions for cables with solid aluminium conductors.

(f) The provision for interlocked steel tape armour has been deleted.

(g) Appendix A specifies the fictitious calculation method for the determination of the dimensions of protective coverings.

In the preparation of this Standard, consideration was given to IEC 502* and acknowledgement is made of the assistance received from that source.
The dimensions and sheath thickness are identical with the values in IEC 502.

The nominal cross-sectional areas of the conductors specified herein are identical with the values recommended in IEC 228.†

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* IEC 502, Extruded solid dielectric insulated power cables for rated voltages from 1 kV to 30 kV.

† IEC 228, Conductors of insulated cables.

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Approval and test specification—Electric cables—XLPE insulated—For working voltages up to and including 0.6/1 kV

1 SCOPE. This Standard specifies construction, dimensions and tests for cables insulated with two types of cross-linked polyethylene (XLPE), one of which has reduced combustion propagation characteristics. The cables are intended for use in electrical installations at working voltages up to and including 0.6/1 KV.

Except where otherwise specified in tables of construction and dimensions, cables covered by this Standard are suitable for use as underground cables.

It does not apply to specialized XLPE insulated cables for which there are separate Australian Standards, e.g. Concentric wire neutral cables, Neutral screened cables, Aerial bundled cables and the like.

In addition to providing detailed requirements for cables of the types and sizes in the tables of construction and dimensions, this Standard provides the basis of requirements for other types and sizes in the range of materials covered by this Standard.

NOTE: Purchasing guidelines are contained in Appendix C.

2 REFERENCED DOCUMENTS. The documents below are referred to in this Specification:

AS
1125 Conductors in insulated electric cables and flexible cords

1178 Concentric wire neutral cables—XLPE insulated—For electricity supply at working voltages of 0.6/1 kV

1660 Methods of test for electric cables, cords and conductors

2122 Combustion propagation characteristics of plastics

2893 Electric cables—Lead and lead alloy sheaths—Composition

3000 SAA Wiring Rules

3100 Approval and test specification—Definitions and general requirements for electrical materials and equipment

3155 Approval and test specification—Neutral screened cables for working voltages of 0.6/1 kV

3560 Electric cables—Aerial bundled—Voltages up to and including 0.6/1kV.

SAA
MP49 Register of colours of manufacturers' identification threads for electric cables and flexible cords

BS
1442 Specification for galvanized mild steel wire for armouring cables

3 DEFINITIONS. For the purposes of this Specification the relevant definitions given in the referenced Standards and those below apply:

3.1 Core (of a cable)—the conductor with its insulation but not including any protective covering.

3.2 Multicore cable—a cable comprising two or more cores.

3.3 Maximum continuous conductor temperature—the maximum temperature at which the conductor of the cable may be operated continuously and which is the temperature resulting from the combined effect of the ambient temperature and the current loading of the conductor.

3.4 Voltage designation—for cables for a.c. systems, the rated voltages U_o and U expressed in the form U_o/U; or for cables for d.c. systems, the rated voltage U_o:

where

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

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