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# Australian Standard 3198—1977

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APPROVAL AND TEST  
SPECIFICATION FOR  
**XLPE INSULATED  
ELECTRIC CABLES**  
FOR WORKING VOLTAGES  
OF 0.6/1 kV

[Title allocated by Defence Cataloguing Authority:  
CABLE, POWER, ELECTRICAL and WIRE, ELECTRICAL  
(XLPE Insulated, for Working Voltages of 0.6/1 kV)]

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STANDARDS

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**THE FOLLOWING SCIENTIFIC, INDUSTRIAL AND GOVERNMENTAL ORGANIZATIONS and departments were officially represented on the committee entrusted with the preparation of this standard:**

**Associated Chambers of Manufactures of Australia**

**Australian-British Trade Association**

**Australian Electrical Manufacturers Association**

**Copper and Brass Information Centre**

**Department of Construction**

**Department of Defence**

**Department of Transport**

**Electrical Contractors Associations of Australia**

**Electrical Testing Laboratories**

**Electricity Supply Association of Australia**

**Railways of Australia Committee**

**Statutory Electricity Authorities**

**Telecom Australia**

**Also represented on the committee was SAA Committee EL/2; Electrical Approvals Standards.**

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**This specification, prepared by Committee EL/3, Electric Wires and Cables, for the Electrical Approvals Standards Committee, was approved on behalf of the Council of the Standards Association of Australia on 10 December 1976, and was published on 1 June 1977.**

**The Association desires to call attention to the fact that this specification does not purport to include all the necessary conditions of a contract.**

**To keep abreast of progress in industry, Australian standards are regularly reviewed. Suggestions for improvements to published standards, addressed to the head office of the Association, are welcomed.**

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**AUSTRALIAN STANDARD  
APPROVAL AND TEST SPECIFICATION**

**XLPE INSULATED  
ELECTRIC CABLES**

**FOR WORKING VOLTAGES OF 0.6/1 kV**

**AS 3198—1977**

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## PREFACE

This standard was prepared by the Association's Committee on Electric Wires and Cables.

The nominal cross-sectional areas of the conductors specified herein are taken from AS 1125, Conductors in Insulated Electric Cables and Flexible Cords (Metric Units), and are identical with the values recommended in IEC 228, Nominal Cross-sectional Areas and Composition of Conductors in Insulated Cables.

The dimensions for insulation and sheath thicknesses of the cables specified herein are identical with the values recommended in IEC 502, Extruded Solid Dielectric Insulated Power Cables for Rated Voltages from 1 kV up to 30 kV.

The format of metric specifications for electrical cables has been substantially altered from that which was in use for imperial unit cables. Of significance is the fact that only cables having a voltage rating of 0.6/1 kV are to be the subject of approval and test specifications. Cables with higher voltage ratings are primarily used by electricity supply authorities and will be the subject of separate standard specifications to cover suitability for public or private use. Experience also indicates that the higher voltage cables are very rarely submitted for approval to the Approvals Authorities. Hence it is proposed that whilst cables with a voltage rating of 0.6/1 kV will continue to be the subject of approval and test specifications, cables with higher voltage ratings will be the subject of separately published standard specifications.

The format of this (and other) approval and test specifications for cables of voltage rating 0.6/1 kV has further been adjusted so that:

- (a) all requirements for conductors are cross-referred to AS 1125, Conductors in Insulated Electric Cables and Flexible Cords (Metric Units);
- (b) all criteria for tests on insulation and non-metallic sheath are listed in this specification, but the actual test methods are described in AS 1660, Methods of Test for Electric Cables and Flexible Cords (including Conductors, Insulation and Sheath);
- (c) all criteria for tests on the finished cable are listed in this specification, but the actual test methods are described in AS 1660.

AS 1660 is published in a number of parts dealing with test methods for conductors, insulation, sheath, flexible cords, finished cables with voltage ratings of 0.6/1 kV, and finished cables with voltage ratings above 0.6/1 kV, and further parts dealing with specialized cable types may be published later.

During the preparation of this standard reference was made to the following IEC documents in addition to IEC 228 and 502 referred to above:

- 20A (Central Office) 45 — Draft Test Methods for Insulations and Sheaths of Electric Cables and Cords (Elastomeric and Thermoplastic)

20A (Central Office) 51 — Draft Supplement to IEC Publication 502.1.  
Acknowledgement is made of the assistance received therefrom.

This standard may require reference to the following standards:

AS 1125 Conductors in Insulated Electric Cables and Flexible Cords  
(Metric Units)

AS 1152 Test Sieves

AS 1660 Methods of Test for Electric Cables and Flexible Cords.  
(Including Conductors, Insulation and Sheath)

Part 1 Test Methods for Conductors

Part 2 Test Methods for Insulation, Sheath and Braid

Part 3 Test Methods for Complete Cable

Part 4 Test Methods for Complete Flexible Cords

AS 3147 PVC Insulated Electric Cables and Flexible Cables for  
Working Voltages of 0.6/1 kV

AS 3191 Electric Flexible Cords (Metric Units)

AS C91 Lead and Lead Alloy Sheaths of Electric Cable

BS 1442 Galvanized Mild Steel Wire for Armouring Cables (Metric  
Units)

ASTM D297 Chemical Analysis of Rubber Products

ASTM D1603 Carbon Black in Ethylene Plastics.

This specification is one of a series of approval and test specifications issued by the Association under Part 2 of the SAA Wiring Rules. These specifications are accompanied by a general specification AS C100, 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. In respect of the cables covered by this specification, however, it has been found that the minimum requirements for approvals purposes are so similar to the requirements which must be included in a purchasing specification that the two purposes can be achieved in one standard. It is intended, therefore, that in addition to being used for approvals purposes, this specification will be used as a standard for purchasing purposes but both matters are clearly delineated. (See Note 3 to Clause 1.)

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## CONTENTS

		<i>Page</i>
<b>SPECIFICATION</b>		
1	Scope .. .. .	6
2	Definitions .. .. .	6
3	Operating Voltage .. .. .	7
4	Maximum Conductor Temperature .. .. .	7
5	Conductors .. .. .	8
6	Insulation .. .. .	8
7	Laying up of Cores .. .. .	10
8	Fillers, Tapes, and Binders .. .. .	10
9	Provision of Metallic Covering over Cores .. .. .	10
10	Bedding .. .. .	11
11	Armour .. .. .	11
12	Metal Sheath .. .. .	14
13	Non-metallic Sheath .. .. .	14
14	Serving .. .. .	17
15	Marking .. .. .	17
16	Construction and Dimensions .. .. .	18
17	Tests .. .. .	19
<b>APPENDICES</b>		
A	Information Required with Enquiry and Order .. .. .	38
B	Solvent Extraction Test.. .. .	39

TABLES	<i>Page</i>
1 Tests and Criteria for Insulation .. .. .	9
2 Average Thickness of Bedding .. .. .	12
3 Diameter of Round Galvanized Steel Wire Armour ..	13
4 Thickness of Steel Tape Armour .. .. .	13
5 Dimensions of Galvanized Interlocked Steel Tape Armour	14
6 Average Thickness of Lead-alloy Sheath .. .. .	15
7 Tests and Criteria for Non-metallic Sheath .. .. .	16
8 Tests and Criteria for Cables .. .. .	19
9 Construction and Dimensions—0.6/1 kV Circular XLPE Insulated PVC Sheathed Single, 2, 3 or 4 Core Cables (including Underground Cables) .. .. .	21
10 Construction and Dimensions — 0.6/1 kV Circular XLPE Insulated Galvanized Single Wire Armoured 2, 3 or 4 Core Cables with Optional Further Protection (including Underground Cables) .. .. .	24
11 Construction and Dimensions — 0.6/1 kV Circular XLPE Insulated Lead-alloy Sheathed Single, 2, 3 or 4 Core Cable with Further Protection (including Underground Cable) ..	28
12 Construction and Dimensions — 0.6/1 kV Circular XLPE Insulated, Lead-alloy Sheathed Galvanized Single Wire Armoured 2, 3 or 4 Core Cables with Optional Further Protection (including Underground Cables) .. .. .	33
13 Construction and Dimensions — 0.6/1 kV Circular XLPE Insulated Unsheathed Single-core Cable for Use by Supply Authorities Only .. .. .	37

## STANDARDS ASSOCIATION OF AUSTRALIA

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**Australian Standard**  
**Approval and Test Specification**  
**for**  
**XLPE INSULATED ELECTRIC CABLES**  
**FOR WORKING VOLTAGES OF 0.6/1 kV**

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**1 SCOPE.** This specification applies to cables insulated with cross-linked polyethylene, hereinafter called XLPE, and intended for use at working voltages up to and including 0.6/1 kV.

It does not apply to XLPE insulated concentric wire neutral conductor cables, which are specified in AS . . . ., Concentric Wire Neutral XLPE Insulated Cables for Electricity Supply at Working Voltages of 0.6/1 kV.\*

**NOTES:**

1. The single-core XLPE insulated unsheathed cables specified in Table 13 should not be used in electrical installations unless approval has been obtained from the appropriate inspecting authority.
2. This specification is intended to apply only to cables of the types and sizes provided for in the tables of construction and dimensions.  
It is not intended, however, that the use of other types or sizes of cables should be precluded from use and Approvals Authorities may give approval to new types and sizes as they are developed. Appropriate requirements for new types and sizes will eventually be included in this specification as the need arises.
3. The additional requirements of this specification for purchasing purposes (see Preface) are printed with a rule in the margin. The requirements without the rule form a mandatory part of the specification for approvals and for purchasing purposes, whereas those with the rule are not mandatory for approvals purposes but form an essential part of the specification for purchasing (see Appendix A).

**2 DEFINITIONS.** For the purpose of this specification the definitions for conductors in AS 1125,† and the following definitions, shall apply.

**2.1 Core (of a cable)**—the conductor and its insulation but not including any protective covering.

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

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\* In course of preparation.

† AS 1125, Conductors in Insulated Electric Cables and Flexible Cords (Metric Units).