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Australian Standard®
3187—1986

APPROVAL AND TEST SPECIFICATION—
MINERAL-INSULATED METAL-SHEATHED CABLES

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CABLE, POWER, ELECTRICAL (Mineral Insulated, Metal Sheathed) . . . NSC 6145]

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The following interests are represented on Committee EL/3:

Australian Electrical and Electronic Manufacturers Association
Confederation of Australian Industry
Department of Aviation
Department of Defence
Department of Industrial Relations, N.S.W.
Electrical Contractors Associations of Australia
Electrical Regulatory Authorities
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(endorsement of BS 3207, Part 1--1960
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PREFACE

This specification, prepared by Committee EL/3, Electric Wires and Cables, was approved on behalf of the Council of the Standards Association of Australia on 1 December 1970. It is a revision of and supersedes AS C351, Mineral-insulated Cables, Part 1 — 1963, Copper-sheathed Cables with Copper Conductors, which was the endorsement with Australian amendment of BS 3207: Part 1: 1960.

The proposal to withdraw AS C351, Part 1 and replace it with an approval and test specification stemmed from the fact that the majority of requirements necessary to specify MIMS cables relate to electrical safety. The issue of an approval and test specification was also considered to be consistent with the existing range of such specifications for other types of cables.

This specification is therefore one of a series of approval and test specifications issued by the Association under Part II of the SAA Wiring Rules. These specifications are accompanied by a general specification, AS C100 Ap., containing definitions and general requirements for electrical materials and equipment. The purpose of the 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 mineral-insulated metal-sheathed cables, 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 by one standard (see Clause 1.1). It is intended, therefore, that in addition to being used for approvals purposes this specification be used as a standard for purchasing purposes. As indicated in Clause 1.1, the approvals and purchasing requirements are distinguished by the use of different type faces.

It is intended that further sections will be added to this specification from time to time as the need arises, and in order to provide for particular types of MIMS cables not at present included.

Attention is drawn to the fact that requirements for MIMS cable terminations and glands are covered in AS C188 Ap., Terminations and Glands for Mineral-insulated Metal-sheathed Cables.

In the preparation of this specification, cognizance was taken of BS 3207, Mineral-insulated Cables, Part 1: 1968, Copper-sheathed Cables with Copper Conductors, and acknowledgment is expressed of the assistance received therefrom. It should be noted that there are very significant differences between this specification and the British standard.

In order to keep abreast of progress in the industries concerned, the publications of the Standards Association of Australia are subject to regular review. Suggestions for improvement, addressed to the headquarters of the Association, will be welcomed.

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

This specification may require reference to AS C363.

PREFACE

This standard was prepared by the Association's Committee on Electric Wires and Cables to supersede AS 3187—1973.

It is one of the series of approval and test specifications issued by the Association. These specifications are accompanied by a general specification, AS 3100, containing definitions and general requirements for electrical 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 MIMS cables, 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 by one standard. It is intended, therefore, that in addition to being used for approvals purposes this specification may be used as a standard for purchasing purpose, but both matters are clearly delineated (see Clause 1.1, Scope).

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

In this standard provision has been made for 300 mm^2 and 400 mm^2 cables and appropriate adjustments have been made to the methods of testing cables to cater for the larger sizes. In addition the standard has been generally updated to align with other Australian standards and specifications.

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SECTION 1. SCOPE, REFERENCED DOCUMENTS AND DEFINITIONS

1.1 SCOPE. This standard specifies requirements for mineral-insulated metal-sheathed (MIMS) cables intended for use in electrical installations at working voltages not exceeding 1 kV r.m.s or d.c.

NOTES:

1. This specification is intended to apply only to MIMS 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 MIMS cables should be precluded from use and Regulatory 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.
2. 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 B).
3. For information required with enquiry and order see Appendix C.

1.2 REFERENCED DOCUMENTS. The following standards are referred to in this standard:

AS 1125 Conductors in Insulated Electric Cables and Flexible Cords

AS 1279 Copper Refinery Shapes

AS 1660 Methods of Test for Electric Cables, Cords and Conductors

AS 1866 Wrought Aluminium and Aluminium Alloy Drawn Wire, Rod, Bar and Strip for General Engineering Purposes

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

1.3 DEFINITIONS. For the purpose of this standard, the definitions in AS 1125 and the following apply:

1.3.1 Voltage designation—the rated voltages U_o and U expressed in the form U_o/U where—

U_o is the r.m.s power frequency voltage to earth 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.

1.3.2 Routine tests—tests made by the manufacturer on all production lengths of finished cable to demonstrate the integrity of the cable.

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

These tests are only made if requested by the purchaser at the time of ordering.

1.3.4 Type tests—tests made by a manufacturer before supplying on a general commercial basis 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 or design which might change the performance characteristics.