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TELECOMMUNICATION CABLES— INSULATION AND SHEATH— POLYETHYLENE

STANDARDS ASSOCIATION OF AUSTRALIA
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This Australian standard was prepared by Committee TE/9, Polyethylene Insulation for Telecommunication Cables. It was approved on behalf of the Council of the Standards Association of Australia on 18 July 1986 and published on 5 September 1986.

The following interests are represented on Committee TE/9:

Confederation of Australian Industry

Department of Defence

Plastics Institute of Australia Inc.

Railways of Australia Committee

Telecom Australia

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AUSTRALIAN STANDARD

TELECOMMUNICATION CABLES— INSULATION/SHEATH— POLYETHYLENE

AS 1049—1986

First published 1971
Second edition 1986

PUBLISHED BY THE STANDARDS ASSOCIATION OF AUSTRALIA
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PREFACE

This edition of this standard was prepared by the Association's Committee on Polyethylene Insulation for Telecommunication Cables to supersede AS 1049—1971, Polyethylene Insulation and Sheath for Telecommunication Cables. The standard has been organized in sections with the test methods given as appendices. In this edition a considerable number of test methods were added which are based on ASTM standard methods or tests from BS 2782, Methods of Testing Plastics. Grateful acknowledgment is made of the assistance received from these sources.

The purpose of the standard is to provide specifications of the materials used for insulating and sheathing telecommunication cables, in terms of the physical and electrical characteristics of the cables. Test methods to evaluate the properties of the various polyethylene insulation systems are specified. The requirements and tests apply to either solid or cellular insulation of metallic conductors of cables of both filled and air core construction. They also apply to solid sheath with and without a screen or moisture barrier, where it is used on cables.

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Australian Standard
for
TELECOMMUNICATION CABLES—INSULATION AND SHEATH—POLYETHYLENE

SECTION 1. GENERAL

1.1 SCOPE. This standard specifies the requirements for polyethylene used for insulation and sheathing of the telecommunications cables and provides test methods to evaluate the properties specified. The requirements and tests apply to both solid and cellular insulation of metallic conductors of both filled and aircored cables and to solid sheath with or without a metallic screen or moisture barrier.

The standard specifies the composition, physical and electrical requirements of various types of polyethylene in three main parts as follows:

(a) *Section 2.* Specifies the requirements of the polyethylene compounds as supplied to the cable manufacturers and forming the basis of the raw material quality control procedures for both the polymer manufacturer and the cable manufacturer.

(b) *Section 3.* Specifies the requirements of various types of polyethylene taken from completed cable or, where specified, during manufacture, providing the basis of the cable manufacturer's quality control and end-user acceptance procedures for the completed cable.

(c) *Appendices.* Provide a set of reference test methods for determination of compliance with the requirements of this standard.

1.2 APPLICATION. The standard applies to the testing of polyethylene materials for insulation and sheath prior to, during, and following manufacture of telecommunication cables.

This standard also applies to polyethylene used in telecommunication cables but it does not apply to compounds that are semiconductive, formulated for cross-linking or to be fire retardent.

It is recognized that whereas polyethylene is, however, used extensively in a much wider range of cables e.g. coaxial, electrical and control cables, it is not the intent of the standard to preclude the use of polyethylene in such applications.

The standard does not include dimensions or electrical and mechanical properties of completed cables.

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

AS 1152 Test Sieves

AS 1886 Terms Relating to Plastics

AS 2001 Methods of Test for Textiles
Part 4.1—Colourfastness tests—Definitions and General Requirements

AS 2164 One-mark Volumetric Flasks

AS 2165 Burettes and Bulb Burettes

AS 2166 One-mark Pipettes

AS 2193 Methods of Calibration and Grading of Force-measuring Systems of Testing Machines

AS 6?? Nessler Cylinders

ANSI/EIA RS359-A-84 Colours for Colour Identification and Coding

ASTM D638-77 Tensile Properties of Plastics

ASTM D1510-75 Test for Iodine Adsorption Number of Carbon Black

ASTM E1 ASTM Thermometers

1.4 DEFINITIONS. For the purpose of this standard, terms defined in AS 1886 and the following definitions apply:

1.4.1 Filled cable—a term denoting the continuous filling of the interstices of the cable core to prevent water penetration into the cable.

NOTE: The filler should not be confused with the polyethylene additives or mineral filler. An unfilled cable is termed an aircore cable.

1.4.2 Moisture-barriered cable—cable with an aluminium foil bonded to the inner surface of the sheath to prevent moisture permeation into the cable core.

NOTE: The aluminium foil may also serve as an electrical screen.