

AS 1049.2:2022



STANDARDS
Australia



Telecommunication cables — Insulation, sheath and jacket

Part 2: Test methods

currently in preview, click buy full version

AS 1049.2:2022

This Australian Standard ® was prepared by CT-001, Interconnection of Information Technology equipment. It was approved on behalf of the Council of Standards Australia on 23 April 2022.

This Standard was published on 6 May 2022.

The following are represented on Committee CT-001:

- Australian Chamber of Commerce and Industry
- Australian Council of Trade Unions (ACTU)
- Australian Digital & Telecommunications Industry Association
- Australian Industry Group
- Australian Information Industry Association
- BICSI South Pacific (Australia)
- Energy Networks Australia
- Engineers Australia
- KNX National Group
- National Electrical and Communications Association
- NBN Co
- Telstra Corporation
- TITAB

Additional Interests

- BICSI South Pacific (New Zealand)
- Telecommunications Users Association of New Zealand
- VTI Services

This Standard was issued in draft form for comment as DP AS 1049.2:2021.

Keeping Standards up-to-date

Ensure you have the latest versions of our publications and keep up-to-date about Amendments, Rulings, Withdrawals, and new projects by visiting:

www.standards.org.au

ISBN 978 1 76113 723 5

Telecommunication cables — Insulation, sheath and jacket

Part 2: Test methods

Originates AS 1049:1971.
Previous edition AS 1049.2—2008.
Second edition AS 1049.2:2022.

© Standards Australia Limited 2022

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher, unless otherwise permitted under the Copyright Act 1968 (Cth).

Preface

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee CT-001, Communications Cabling, to supersede AS 1049.2—2008.

The objective of this document is to specify test methods to evaluate the properties of materials used to manufacture telecommunication cables. This document is intended for use by polymer manufacturers, communication cable manufacturers and end-users.

AS 1049 is divided in two parts, as follows:

AS 1049.1, *Telecommunication cables — Insulation, sheath and jacket, Part 1: Materials*

AS 1049.2, *Telecommunication cables — Insulation, sheath and jacket Part 2: Test methods* (this document)

Part 1 specifies the material requirements for the insulation, sheath and jacket of the finished products and some of the compounds used to manufacture telecommunication cables.

Part 2 provides a set of reference test methods for evaluating these material requirements.

The major changes in this edition are as follows:

- (a) Removal of [Appendix C](#) Test method 3: Softness number.
- (b) Correction of the ASTM G155 weatherometer apparatus types in [Appendix E](#).
- (c) Addition of thermogravimetric analysis as per IEC 60814-605 as an alternative test method for the determination of the carbon black concentration in [Appendix R](#).
- (d) Apparatus changed from as specified in AS/NZS 2122.2 to as specified in ISO 4589-2 for the combustion test in [Appendix DD](#).
- (e) Update of reference designation from AS/NZS 1660.5.4 to AS/NZS IEC 60754.2 for the acidity of gases evolved during combustion test in [Appendix EE](#).
- (f) General update to meet the requirements of Standards Australia drafting rules, including dividing test methods into consistent subclauses (where appropriate) and the addition of the test report subclause where previously missing.

The terms “normative” and “informative” are used in Standards to define the application of the appendices or annexes to which they apply. A “normative” appendix or annex is an integral part of a Standard, whereas an “informative” appendix or annex is only for information and guidance.

Contents

Preface	ii
Section 1 Scope and general	1
1.1 Scope	1
1.2 Application	1
1.3 Normative references	1
1.4 Terms and definitions	2
1.5 Abbreviations	7
Section 2 Summary of material tests	9
Appendix A (normative) Test method 1: Density	12
Appendix B (normative) Test method 2: Melt-flow index	16
Appendix C (normative) This test method has been deleted	18
Appendix D (normative) Test method 4: Hot set	19
Appendix E (normative) Test methods 5 and 6: Tensile strength at break/elongation at break — Before and after ageing	21
Appendix F (normative) Test method 7: Flexibility after ageing	26
Appendix G (normative) Test method 8: Pressure test at high temperature	28
Appendix H (normative) Test method 9: Shrinkback	30
Appendix I (normative) Test method 10: Stripping	32
Appendix J (normative) Test method 11: Cold bend performance	34
Appendix K (normative) Test method 12: Heat shock	37
Appendix L (normative) Test method 13: Environmental stress cracking	39
Appendix M (normative) Test method 14: Bond strength	41
Appendix N (normative) Test method 15: Bonding performance	44
Appendix O (normative) Test method 16: Compatibility of PE insulation with filling compound	46
Appendix P (normative) Test method 17: Corrosion	53
Appendix Q (normative) Test method 18: Volatile loss	55
Appendix R (normative) Test method 19: Carbon black concentration	58
Appendix S (normative) Test method 20: Carbon black dispersion	61
Appendix T (normative) Test method 21: Absorption coefficient of polymer containing carbon black	64
Appendix U (normative) Test method 22: Colour difference by visual assessment	66
Appendix V (normative) Test method 23: Colour difference by instrumental assessment	69
Appendix W (normative) Test method 24: Qualitative evaluation of bleeding of colorants	71
Appendix X (normative) Test method 25: Colourfastness in water	74
Appendix Y (normative) Test method 26: PVC Plasticizer compatibility	76
Appendix Z (normative) Test method 27: Volume resistivity	78
Appendix AA (normative) Test method 28: Dielectric strength	80
Appendix BB (normative) Test method 29: Spark test	82
Appendix CC (normative) Test method 30 and 31: Dielectric dissipation factor and relative permittivity	84

Appendix DD (normative) Test method 32: Combustion	86
Appendix EE (normative) Test method 33: Acidity of gases evolved during combustion	88
Appendix FF (normative) Test method 34: Thermal oxidative stability	90
Appendix GG (normative) Preparation of compression moulded PE plaque	98
Appendix HH (normative) Preparation of compression moulded PVC plaque	102
Bibliography	104

Currently in preview, click buy full version

Australian Standard®

Telecommunication cables — Insulation, sheath and jacket

Part 2: Test methods

Section 1 Scope and general

1.1 Scope

This document specifies test methods to evaluate the properties of materials used to manufacture telecommunication cables.

This document does not include the following:

- (a) Cables using non-metallic semi-conductive compound.

NOTE In the context of this document, semi-conductive compound is a polymer with the addition of a conductive additive such as carbon black which increases the conductivity of the polymer.

- (b) Aspects of telecommunication cables such as spacers or cores in coaxial cables.
- (c) Dimensions or electrical requirements of completed cables.
- (d) Cables used to conduct mains electrical power.

[Table 2.1](#) provides a summary of the material tests that are set out in the Appendices of this document.

1.2 Application

This document is intended for use by the following:

- (a) Polymer manufacturers, to form the basis of the raw material quality control procedures for the manufacture of polymer compounds.
- (b) Cable manufacturers, to form the basis of the cable material quality control procedures for the manufacture of a range of insulation, sheath and jacket of different materials.
- (c) Cable end users, to form the basis of the cable acceptance procedures for the completed cable.

1.3 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document.

NOTE Documents referenced for informative purposes are listed in the Bibliography.

AS 1049.1, *Telecommunication cables—Insulation, sheath and jacket, Part 1: Materials*

AS 2700, *Colour standards for general purposes*

AS 4004, *Lighting booths for visual assessment of colour and colour matching*

AS/NZS 1580.601.3, *Paints and related materials—Methods of test, Method 601.3: Colour—Methods of colour measurement*

AS/NZS 1660.2.1:1998, *Test methods for electric cables, cords and conductors, Method 2.1: Insulation, extruded semi-conductive screens and non-metallic sheaths—Methods for general application*