

Australian/New Zealand Standard™

**Cables—Classification of characteristics
when exposed to fire**



AS/NZS 4507:2006

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee EL-003, Electric wires and cables. It was approved on behalf of the Council of Standards Australia on 14 December 2005 and on behalf of the Council of Standards New Zealand on 21 December 2005.
This Standard was published on 25 January 2006.

The following are represented on Committee EL-003:

Australasian Railway Association
Australian Electrical and Electronic Manufacturers Association
Australian Industry Group
Canterbury Manufacturers Association New Zealand
Department of Defence (Australia)
Department of Primary Industries, Mine Safety (NSW)
Electrical Contractors Association of New Zealand
Electrical Regulatory Authorities Council
Energy Networks Association
Engineers Australia
Ministry of Economic Development (New Zealand)

Keeping Standards up-to-date

Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about joint Australian/New Zealand Standards can be found by visiting the Standards Web Shop at www.standards.com.au or Standards New Zealand web site at www.standards.co.nz and looking up the relevant Standard in the on-line catalogue.

Alternatively, both organizations publish an annual printed Catalogue with full details of all current Standards. For more frequent listings or notification of revisions, amendments and withdrawals, Standards Australia and Standards New Zealand offer a number of update options. For information about these services, users should contact their respective national Standards organization.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Please address your comments to the Chief Executive of either Standards Australia or Standards New Zealand at the address shown on the back cover.

This Standard was issued in draft form for comment as DR 05313.

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

RECONFIRMATION

OF

AS/NZS 4507:2006

Cables—Classification of characteristics when exposed to fire

RECONFIRMATION NOTICE

Technical Committee EL-003 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

Certain documents referenced in the publication may have been amended since the original date of publication. Users are advised to ensure that they are using the latest versions of such documents as appropriate, unless advised otherwise in this Reconfirmation Notice.

Approved for reconfirmation in accordance with Standards Australia procedures for reconfirmation on 10 October 2016.

Approved for reconfirmation in New Zealand on behalf of the Standards Council of New Zealand on 13 December 2016.

The following are represented on Technical Committee EL-003:

Australian Cable Makers' Association
Australian Industry Group
Electrical Compliance Testing Association
Electrical Regulatory Authorities Council
National Electrical and Communications Association
Queensland University of Technology

NOTES

Australian/New Zealand Standard™

**Cables—Classification of characteristics
when exposed to fire**

Originated as AS/NZS 4507:1998.
Second edition 2006.

COPYRIGHT

© Standards Australia/Standards New Zealand

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.

Jointly published by Standards Australia, GPO Box 476, Sydney, NSW 2001 and Standards New Zealand, Private Bag 2439, Wellington 6020

ISBN 0 7337 7083 5

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-003, Electric Wires and Cables, to supersede AS/NZS 4507:1998, *Cables—Fire performance*.

The objective of the Standard is to provide manufacturers and suppliers with performance requirements for flame retardant and fire rated cables.

AS/NZS 3013, *Electrical installations—Classification of the fire and mechanical performance of wiring system elements*, specifies the classification of the circuit integrity performance for components of wiring systems, including cables, when exposed to the effects of fire, but it does not specify flame propagation, smoke emission and acid and corrosive gas emission requirements for cables. This Standard specifies these requirements.

Another type of cable classification, ‘Low Fire Hazard (LFH)’, was considered, to complete the range of cables. This classification, in addition to requirements for reduced fire hazard, was to include requirements for toxic gas emission. After examining all known test regimes for toxicity, it was concluded that no test was universally accepted; in fact, IEC Technical Committee 89 have yet to agree on a test procedure, as well as requirements. Therefore, this classification must remain under consideration.

This Standard differs from the 1998 edition as follows:

- (a) The title has been changed to reflect more accurately the subject matter.
- (b) The classification termed ‘Reduced fire hazard (RFH)’ was changed to ‘Reduced hazardous effects (RHE).’
- (c) The classification of ‘Wiring system circuit integrity (WS)’ has been deleted and reference made to AS/NZS 3013.
- (d) The Table of classifications has been greatly expanded.
- (e) The test for vertical flame propagation for a single insulated cable has been included.

The term ‘informative’ has been used in this Standard to define the application of the appendix to which it applies. An ‘informative’ appendix is only for information and guidance.

CONTENTS

	<i>Page</i>
SECTION 1 SCOPE AND GENERAL	
1.1 SCOPE	4
1.2 REFERENCED DOCUMENTS	4
1.3 DEFINITIONS	5
1.4 CABLE CLASSIFICATION	5
SECTION 2 PERFORMANCE REQUIREMENTS	
2.1 TESTS	7
2.2 FLAME PROPAGATION	7
2.3 SMOKE DENSITY	7
2.4 ACID AND CORROSIVE GAS EMISSION.....	7
2.5 CIRCUIT INTEGRITY	8
APPENDIX A PURCHASING GUIDELINES	9

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard**Cables—Classification of characteristics when exposed to fire**

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies the performance requirements of cables when exposed to fire with respect to specific characteristics and allocates a classification. The Standard specifies the criteria for tests that may be in addition to those requirements specified in relevant cable Standards.

This Standard does not address issues with respect to cables initiating or being the cause of fire.

Wiring system circuit integrity (WS) is covered by AS/NZS 3013 and is an additional and separate cable requirement.

This Standard classifies the following characteristics:

- (a) Reduced flame propagation (RFP).
- (b) Reduced hazardous effects (RHE).
- (c) Cable circuit integrity (CI).

NOTES:

- 1 For purchasing guidelines, see Appendix A.
- 2 Although this Standard specifies cable characteristics under defined fire conditions, it cannot be assumed that cables would behave in the same manner in a real fire. For example, the propagation of the flame along a cable installation is influenced by a number of factors independent of the cable itself, such as—
 - (a) the volume of combustible material exposed to the fire and to any flame which may be produced by the combustion of the cables;
 - (b) the geometrical configuration of the cables and their relationship to any enclosure;
 - (c) the rate of temperature rise and the peak fire temperature which influence the ignition of gases emitted from the cables;
 - (d) the volume of air passing through the cable installation;
 - (e) installation conditions (on ladders or trays, in conduit);
 - (f) vertical or horizontal installation; and
 - (g) fire quenching techniques at the installation (water sprinkler, gas suppression).

1.2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS/NZS

- 1660 Test methods for electric cables, cords and conductors
- 1660.5.1 Method 5.1: Fire tests—Test for vertical flame spread of vertically-mounted bunched wires or cables
- 1660.5.2 Method 5.2: Fire tests—Measurement of smoke density of cables burning under defined conditions