

Australian/New Zealand Standard

Cable trunking systems

AS/NZS 4296:1995

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Australian/New Zealand Standard

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL/4 on Electrical Accessories. It is issued as a Joint Standard.

The object of this Standard is to provide requirements for a system of enclosures consisting of lengths of trunking, with covers and appropriate fittings, intended for the installation and protection of cables. The following types of trunking are covered:

- (a) Solid wall.
- (b) Open-slotted.
- (c) Closed-slotted.

Flammability, electrical and mechanical tests are specified to determine fitness for purpose, and certain tests applicable to UPVC conduit are included as they are considered also to be applicable to trunking.

During the preparation of this Standard, reference was made to IEC 1084-1(1991), *Cable trunking and ducting systems for electrical installations*, Part 1: *General requirements*. However, as this Standard only applies to cable trunking, the format of IEC 1084-1 has not been followed.

The term 'normative' has been used in this Standard to define the application of the appendix to which it applies. A 'normative' appendix is an integral part of a Standard.

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STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard**Cable trunking systems**

1 SCOPE This Standard specifies requirements for cable trunking systems intended for the accommodation, protection and, if required, the segregation of cables in an electrical installation.

This Standard does not apply to cable trays, cable ladders or to conduits (including closed non-circular sections).

2 REFERENCED DOCUMENTS The documents below are referred to in this Standard:

AS

1660 Test methods for electrical cables, cords and conductors

1660.5 Fire tests

1660.5.3 Determination of the amount of halogen acid gas evolved during the combustion of polymeric materials taken from cables

1939 Degrees of protection provided by enclosures for electrical equipment (IP code)

AS/NZS

2053 Conduits and fittings for electrical installations (all Parts)

3350 Approval and test specification—Safety of General requirements for household and similar electrical appliances
Part 1: General requirements

3 DEFINITIONS For the purpose of this Standard, the following definitions apply.

3.1 Cable trunking system—a system of trunking lengths and components, used for the accommodation and protection of cables.

3.2 Composite components—a system component consisting of both conductive and insulating material.

3.3 External influence—the presence of oil, water, building materials, low or high temperatures, corrosive or polluting substances, solar radiation or mechanical stress.

3.4 Fitting—a system component used to connect, change direction or to terminate a trunking length.

3.5 Fixing device—a system component used to secure other system components to a supporting structure.

3.6 Floor access unit—a component used with an underfloor cable trunking system that provides access to cables.

3.7 Floor service unit—an apparatus mounting device used with an underfloor cable trunking system.

3.8 Halogen-free component—a component which produces a low level of acid gas emission during combustion.

3.9 Insulated components—a system component consisting only of insulating material and having no conductive parts.

3.10 Metal components—a system component consisting only of metal.

3.11 Non-flame propagating component—a component, which may or may not ignite when a flame is applied, but which will not propagate the flame.

3.12 System accessory—a system component used for supplementary functions such as cable separation, cable retention and for cable outlets.

3.13 System components—parts of a cable trunking system including—

- (a) trunking lengths;
- (b) trunking fittings;
- (c) fixing devices;
- (d) apparatus mounting devices; and
- (e) system accessories.

NOTE: The components listed above may not all be used in a particular cable trunking system. Various combinations of components may be used.

3.14 Trunking length—the main component of a trunking system, consisting of a base and a removable cover.

Trunking lengths may be of the following types:

- (a) *Solid-wall* —a trunking length which completely encloses the cable it supports.
- (b) *Open-slotted* —a trunking length which has open slots in its side walls.
- (c) *Closed-slotted* —a trunking length which has closed slots in its side walls.

4 GENERAL REQUIREMENTS A cable trunking system shall —

- (a) provide adequate and reliable mechanical and electrical protection to the cables it accommodates; and
- (b) withstand the stresses likely to occur when installed in accordance with the manufacturer's recommendations.

In general, compliance is checked by carrying out all the tests specified in this Standard; such tests being those related to classifications claimed by the manufacturer.

5 GENERAL CONDITIONS FOR TEST

WARNING: SOME OF THE TESTS PRESCRIBED BY THIS STANDARD MAY LEAD TO THE EMISSION OF TOXIC OR HAZARDOUS SUBSTANCES. PRECAUTIONS SHALL BE TAKEN TO PROTECT PERSONNEL PERFORMING THE TESTS.

For all the tests specified by this Standard, the following shall apply:

- (a) Unless otherwise specified in the relevant test, tests shall be performed with a cable trunking system installed as in normal use and with components assembled in accordance with the manufacturer's instructions.
- (b) Tests on specimens containing insulating or composite material shall not commence earlier than 240 h after manufacture. During this period, specimens may be conditioned at temperatures other than ambient temperature, if required by a particular test.
- (c) Unless specified in a particular test, tests shall be performed at an ambient temperature of $20 \pm 5^\circ\text{C}$.
- (d) Tests shall be performed on specimens not previously tested or installed.
- (e) Unless otherwise specified in a particular test, three specimens of a cable trunking system component shall be tested. If more than one specimen fails a test, the cable trunking system component shall be deemed to have failed the test.

If one specimen of a set of three specimens fails a test, that test shall be repeated on another set of three specimens all of which shall then comply with the repeated tests.

6 CLASSIFICATION Cable trunking systems may be classified in accordance with any or all of Clauses 6.1 to 6.9.

6.1 According to material—

- (a) metal;
- (b) insulating; or
- (c) composite.

6.2 According to construction—

- (a) solid;
- (b) open slotted; or
- (c) closed slotted.

6.3 According to mechanical properties, suitable for—

- (a) light mechanical stresses;
- (b) medium mechanical stresses; or
- (c) heavy mechanical stresses.

6.4 According to temperature—Cable trunking systems may be classified in accordance with the maximum and minimum service temperatures specified by the manufacturer.

6.5 According to protection against flame propagation—

- (a) cable trunking systems which propagate flame; or
- (b) cable trunking systems which do not propagate flame (see Clause 11).

6.6 According to electrical characteristics—

- (a) cable trunking systems without electrical continuity;
- (b) cable trunking systems with electrical continuity (see Clause 12(a));
- (c) cable trunking systems without electrical insulating characteristics;
- (d) cable trunking systems with electrical insulating characteristics (see Clause 12(b)).

6.7 According to protection against external influences Cable trunking systems may be classified according to their protection against external influences in accordance with Clauses 6.7.1 to 6.7.4.

If a cable trunking system is classified as providing protection against external influences, the classification shall apply with the cable trunking system assembled and mounted in accordance with the manufacturer's instructions.

6.7.1 Protection against the ingress of water Cable trunking systems may be classified according to their protection against the ingress of water in accordance with AS 1939.

6.7.2 Protection against the ingress of foreign objects Cable trunking systems may be classified according to their protection against the ingress of foreign objects in accordance with AS 1939.

6.7.3 According to protection against the corrosive or polluting substances Cable trunking systems may be classified in accordance with their resistance to corrosive and polluting substances complying with Clauses 6.7.3.1 and 6.7.3.2.

6.7.3.1 Cable trunking systems with the same protection on the outside and inside These systems may be classified as having—

- (a) low protection;
- (b) medium protection; or
- (c) high protection.

6.7.3.2 Cable trunking systems with greater protection on the outside than on the inside These systems may be classified as having—

- (a) medium protection outside and low protection inside;
- (b) high protection outside and low protection inside; or
- (c) high protection outside and medium protection inside.

6.7.4 Protection against solar radiation Cable trunking systems may be classified according to their level of protection against solar radiation as being—

- (a) without protection against solar radiation;
- (b) with low protection against solar radiation;
- (c) with medium protection against solar radiation; and
- (d) with high protection against solar radiation.

6.8 According to the method of cover retention Cable trunking systems may have—

- (a) a cover removable without the use of tools; or
- (b) a cover which cannot be removed without the use of tools.

6.9 According to acid gas emission properties Cable trunking systems may be classified according to their acid-gas emission properties as either—

- (a) halogen-free; or
- (b) not halogen-free.

7 MARKING

7.1 Information to be marked Each trunking fitting and the base of each trunking length shall be marked with—

- (a) the name, trade mark or other identifying symbol of the manufacturer or supplier; and
- (b) the nominal size of the trunking system.

For solid wall trunking classified as having a cover removable without the use of a tool, the side of the trunking shall be marked with the substance of the following:

The cover can be removed without the use of a tool.

A cable trunking system may be marked with the following information—

- (i) the designation giving the relevant degree of protection in accordance with AS 1939;
- (ii) the letter 'T' if indicating protection against radiation; if appropriate;
- (iii) the letters 'HF' or the words 'HALOGEN FREE' if complying with Clause 14; or
- (iv) the number of this Standard, if complying with all its requirements.

NOTE: Manufacturers making a statement of compliance with this Australian Standard on a product, packaging, or promotional material related to that product are advised to ensure that such compliance is capable of being verified.

7.2 Method of application Marking shall be durable and easily legible.

NOTE: Marking may be applied, for example, by stamping, moulding, printing labels or water-slide transfers. Suitable protection may be applied to the marking.