CANADIAN STANDARDS ASSOCIATION

C22.2 No. 232-09

Optical fiber cables

Contents

Technical Committee on Wiring Products *iv*

Subcommittee on Control, Instrument, Communication, and Marine Cables *v*

Preface *viii*

1 Scope *1*

2 Reference publications *1*

3 Definitions *2*

4 General requirements *2*

5 Construction *2*
5.1 General *2*
5.2 Conductive members *2*
5.3 Jackets *2*

6 Tests *3*
6.1 Flammability *3*
6.1.1 FT1 flame test *3*
6.1.2 FT4 flame test *3*
6.1.3 FT4-ST1 flame test *3*
6.1.4 FT6 flame and smoke test *3*
6.2 Thermal aging of jackets *3*
6.3 Cold bend *4*
6.4 Continuity of conductive members *4*
6.5 Weather (sunlight) resistance — optional *4*

7 Markings *4*
7.1 Marking on products *4*
7.2 Package marking *4*
7.3 Optional marking *4*

Preface

This is the second edition of C22.2 No. 232, *Optical fiber cables*, one of a series of Standards issued by the Canadian Standards Association under Part II of the *Canadian Electrical Code*. It supersedes the previous edition published in 1988.

This Standard is necessary to provide performance requirements for the product covered under Section 56 of the *Canadian Electrical Code, Part I*.

This Standard is considered suitable for use for conformity assessment within the stated scope of the Standard.

Optical fiber cables used in Canada have previously been made to utility standards and installed and owned by the utility. Recent changes in regulations, however, permit non-utility installations, with attendant safety requirements. This Standard was therefore authorized by the Standards Steering Committee on the *Canadian Electrical Code, Part II*.

For general information on the Standards of the *Canadian Electrical Code, Part II*, see the preface of the latest edition of CSA C22.2 No. 0.

This Standard was prepared by the Subcommittee on Control, Instrument, Communication, and Marine Cables under the jurisdiction of the Technical Committee on Wiring Products and the Strategic Steering Committee on Requirements for Electrical Safety, and has been formally approved by the Technical Committee.

Interpretations: The Strategic Steering Committee on Requirements for Electrical Safety has provided the following direction for the interpretation of standards under its jurisdiction: "The literal text shall be used in judging compliance of products with the safety requirements of this Standard. When the literal text cannot be applied to the product, such as for new materials or construction, and when a relevant committee interpretation has not already been published, CSA's procedures for interpretation shall be followed to determine the intended safety principle."

September 2009

Notes:

(1) *Use of the singular does not exclude the plural (and vice versa) when the sense allows.*

(2) *Although the intended primary application of this Standard is stated in its Scope, it is important to note that it remains the responsibility of the users of the Standard to judge its suitability for their particular purpose.*

(3) *This publication was developed by consensus, which is defined by* CSA Policy governing standardization — Code of good practice for standardization *as "substantial agreement. Consensus implies much more than a simple majority, but not necessarily unanimity". It is consistent with this definition that a member may be included in the Technical Committee list and yet not be in full agreement with all clauses of this publication.*

(4) *CSA Standards are subject to periodic review, and suggestions for their improvement will be referred to the appropriate committee.*

(5) *All enquiries regarding this Standard, including requests for interpretation, should be addressed to Canadian Standards Association, 5060 Spectrum Way, Suite 100, Mississauga, Ontario, Canada L4W 5N6.*

Requests for interpretation should

(a) define the problem, making reference to the specific clause, and, where appropriate, include an illustrative sketch;

(b) provide an explanation of circumstances surrounding the actual field condition; and

(c) be phrased where possible to permit a specific "yes" or "no" answer.

Committee interpretations are processed in accordance with the CSA Directives and guidelines governing standardization *and are published in CSA's periodical* Info Update*, which is available on the CSA Web site at www.csa.ca.*

C22.2 No. 232-09
Optical fiber cables

1 Scope

1.1
This Standard applies to non-conductive optical fiber cable and conductive optical fiber cable intended to be installed indoors in non-hazardous locations in accordance with the *Canadian Electrical Code, Part I*.

1.2
This Standard does not cover hybrid optical fiber cables whose construction (excluding the optical fiber component) is covered in other applicable standards of the *Canadian Electrical Code, Part II*.

1.3
In CSA Standards, "shall" is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the standard; "should" is used to express a recommendation or that which is advised but not required; "may" is used to express an option or that which is permissible within the limits of the standard; and "can" is used to express possibility or capability. Notes accompanying clauses do not include requirements or alternative requirements; the purpose of a note accompanying a clause is to separate from the text explanatory or informative material. Notes to tables and figures are considered part of the table or figure and may be written as requirements. Annexes are designated normative (mandatory) or informative (non-mandatory) to define their application.

2 Reference publications
This Standard refers to the following publications, and where such reference is made, it shall be to the edition listed below, including all amendments published thereto.

CSA (Canadian Standards Association)
C22.1-09
Canadian Electrical Code, Part I

C22.2 No. 0 (under development)
General requirements — Canadian Electrical Code, Part II

C22.2 No. 0.3-01 (R2009)
Test methods for electrical wires and cables

CAN/CSA-C22.2 No. 2556-07
Wire and cable test methods

ASTM International (American Society for Testing and Materials)
D5424-05
Standard Test Method for Smoke Obscuration of Insulating Materials Contained in Electrical or Optical Fiber Cables When Burning in a Vertical Cable Tray Configuration