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Group**

**CSA C22.2 No. 227.1:19**  
**National Standard of Canada**



## **Electrical nonmetallic tubing**

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***CSA C22.2 No. 227.1:19  
February 2019***

**Title:** *Electrical nonmetallic tubing*

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***Electrical nonmetallic tubing***



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ICS 29.120.10  
ISBN 978-1-4883-1425-4

Fifth Edition, Dated February 15, 2019

**Summary of Topics**

***The fifth edition of the Standard for Electrical Nonmetallic Tubing, with the following changes:***

***Includes References to the Mexican Electrical Installation Code, Reference Publications and ANCE References***

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Association of Standardization and Certification  
NMX-J-760-ANCE  
First Edition



CSA Group  
CSA C22.2 No. 227.1:19  
Fifth Edition



Underwriters Laboratories Inc.  
UL 1653  
Third Edition

## Electrical Nonmetallic Tubing

February 15, 2019



ANSI/UL 1653-2019



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## Preface

This is the harmonized ANCE, CSA Group, and UL standard for Electrical Nonmetallic Tubing. It is the First edition of NMX-J-760-ANCE, the fifth edition of CSA C22.2 No. 227.1 and the third edition of UL 1653. This edition of CSA C22.2 No. 227.1 supersedes the previous editions published in 1997 and 2006. This edition of UL 1653 supersedes the previous edition published in 2006.

This harmonized standard was prepared by the Association of Standardization and Certification, (ANCE), CSA Group and Underwriters Laboratories Inc. The efforts and support of the Technical Harmonization Committee 23A ENT Working Group of the Council on the Harmonization of Electrotechnical Standards of the Nations of the Americas (CANENA) are gratefully acknowledged.

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

The present Mexican standard was developed by the CT 23 Electrical Accessories (Wiring Devices) from the Comité de Normalización de la Asociación de Normalización y Certificación, A.C., CONANCE, with the collaboration of the electrical manufacturers and users.

This standard was reviewed by the CSA Subcommittee on ICCM01-Nonmetallic Conduit, Tubing and Fittings, under the jurisdiction of the CSA Technical Committee on Wiring Products and the CSA Strategic Steering Committee on Requirements for Electrical Safety, and has been formally approved by the CSA Technical Committee.

This standard has been developed in compliance with Standards Council of Canada requirements for National Standards of Canada. It has been published as a National Standard of Canada by CSA Group.

### Application of Standard

Where reference is made to a specific number of samples to be tested, the specified number is to be considered a minimum quantity.

**Note:** 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.

### Level of harmonization

This standard uses the IEC format but is not based on, nor is it considered equivalent to, an IEC standard.

This standard is published as an equivalent standard for ANCE, CSA Group and UL.

An equivalent standard is a standard that is substantially the same in technical content, except as follows: Technical national differences are allowed for codes and governmental regulations as well as those recognized as being in accordance with NAFTA Article 905, for example, because of fundamental climatic, geographical, technological, or infrastructural factors, scientific justification, or the level of protection that the country considers appropriate. Presentation is word for word except for editorial changes.

### Reasons for differences from IEC

The Technical Harmonization Committee determined the safe use of electrical nonmetallic tubing and fittings is dependent on the design and performance of the raceway and cable systems with which they are intended to be installed. Significant investigation is required to assess safety and system compatibility

issues that may lead to harmonization of traditional North American nonmetallic tubing and fittings with those presently addressed in the known IEC standards. The THC agreed such future investigation might be facilitated by completion of harmonization of the North American standards for electrical nonmetallic tubing and fittings.

### **Interpretations**

The interpretation by the standards development organization of an identical or equivalent standard is based on the literal text to determine compliance with the standard in accordance with the procedural rules of the standards development organization. If more than one interpretation of the literal text has been identified, a revision is to be proposed as soon as possible to each of the standards development organizations to more accurately reflect the intent.

# Electrical Nonmetallic Tubing

## 1 Scope

1.1 This Standard applies to corrugated electrical nonmetallic tubing (ENT) and mechanically-attached fittings, for use in accordance with C22.1, Canadian Electrical Code, Part I (CE Code), NFPA 70, National Electrical Code (NEC) and NOM-001-SEDE, Standard for Electrical Installations (Mexico). These requirements also apply to mechanically-attached fittings integral with an outlet box.

1.2 Products covered by this Standard are intended for use:

- a) at a maximum continuous operating temperature of 75°C (167°F);
- b) at a maximum ambient temperature of 50°C (122°F);
- c) in attics provided that the ENT is installed no higher than 900 mm (3 ft) above the bottom of the ceiling joist, and the ENT material is rated minimum 60°C (140°F); and
- d) underground (direct burial), in Canada only.

1.3 This Standard does not apply to fittings that are intended to be joined by solvent cement. Solvent-attached fittings are covered by UL 651 or CSA C22.2 No. 211.2. Solvent-attached fittings integral with an outlet or flush device box are covered by UL 514C or CAN/CSA-C22.2 No. 85.

1.4 For products intended for use in Canada, general requirements are given in CSA-C22.2 No. 0.

## 2 Definitions

2.1 The following definitions apply to this Standard:

**Adapter** – a fitting used to terminate the ENT at an electrical enclosure.

**Coupling** – a fitting intended to connect two lengths of ENT.

**Coupling, Split-Type** – a two-piece coupling normally used to connect two lengths of ENT after conductors have been pulled.

**Electrical Nonmetallic Tubing (ENT)** – a pliable corrugated raceway of circular cross-section, capable of being bent by hand with a reasonable force, but without other assistance.

**Fitting, Mechanically Attached** – a component in the ENT system used to terminate a length of ENT and secured to the ENT by means other than solvent cement.

**Fitting, Solvent-Attached** – a component in the ENT system used to terminate a length of ENT and secured to the ENT by solvent cement.