CSA Group

CSA C22.2 No. 227.2.1:19
National Standard of Canada

Liquid-tight flexible nonmetallic conduit

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National Standard of Canada

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Liquid-tight flexible nonmetallic conduit

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Third Edition, Dated January 30, 2019

Summary of Topics

New Edition of the Standard for Liquid-Tight Flexible Nonmetallic Conduit, with the following changes:

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

Association of Standardization and Certification
NMX-J-764-ANCE
First Edition

CSA Group
CSA C22.2 No. 227.2.1:19
Third Edition

Underwriters Laboratories, Inc.
UL 1660
Sixth Edition

Liquid-Tight Flexible Nonmetallic Conduit

January 30, 2019

ANSI/UL 1660-2019

Commitment for Amendments

This standard is issued jointly by the Association of Standardization and Certification (ANCE), the Canadian Standards Association (operating as "CSA Group"), and Underwriters Laboratories Inc. (UL). Comments or proposals for revisions on any part of the standard may be submitted to ANCE, CSA Group, or UL at anytime. Revisions to this standard will be made only after processing according to the standards development procedures of ANCE, CSA Group, and UL. CSA Group and UL will issue revisions to this standard by means of a new edition or revised or additional pages bearing their date of issue. ANCE will incorporate the same revisions into a new edition of the standard bearing the same date of issue as the CSA Group and UL pages.

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This Standard is subject to review within five years from the date of publication, and suggestions for its improvement will be referred to the appropriate committee. To submit a proposal for change, please send the following information to inquires@csagroup.org and include ″Proposal for change″ in the subject line: Standard designation (number); relevant clause, table, and/or figure number; wording of the proposed change; and rationale for the change.

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This ANSI/UL Standard for Safety consists of the Sixth Edition. The most recent designation of ANSI/UL 1660 as an American National Standard (ANSI) occurred on January 30, 2019. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, Title Page (front and back), or the Preface.

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Preface

This is the harmonized ANCE, CSA Group, and UL standard for Liquid-Tight Flexible Nonmetallic Conduit. It is the first edition of NMX-J-764-ANCE, the third edition of CSA C22.2 No. 227.2.1 and the sixth edition of UL 1660. This edition of CSA C22.2 No. 227.2.1, supersedes the previous editions published in 1993 and 2014. This edition of UL 1660 supersedes the previous edition published on 2014.

This harmonized standard was prepared by the Association of Standardization and Certification, (ANCE), CSA Group and Underwriters Laboratories Inc. (UL). The efforts and support of the Technical Harmonization Committee 23A LFNC 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 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 THSC determined the safe use of electrical liquid-tight flexible conduit and fittings is dependent on the design and performance of the conduit 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 electrical conduit and cable fittings with those presently addressed in the known IEC standards. The THSC agreed such future investigation might be facilitated by completion of harmonization of the North American standards for electrical liquid-tight flexible conduit 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.

Liquid-Tight Flexible Nonmetallic Conduit

1 Scope

1.1 These requirements cover liquid-tight flexible nonmetallic conduit in the 3/8 – 4 (12 – 103) trade sizes of Type LFNC-A (Layered), Type LFNC-B (Integral), and Type LFNC-C (Corrugated) constructions. The conduit is intended for installation in accordance with the National Electrical Code (NEC), the CE Code, Part 1, and the Mexican Electrical Code, NOM-001-SEDE. The values in parentheses are metric trade designators of conduit.

1.2 Conduit covered by this Standard is intended for use in wet, dry, or oily locations at a maximum of 60°C (140°F), unless otherwise marked. (See Section 6.)

1.3 Fittings for liquid-tight flexible nonmetallic conduit are covered in UL 514B, CSA C22.2 No. 18.3, or NMX-J-017-ANCE.

2 Definitions

2.1 For the purposes of this Standard the following definitions apply.

LIQUID-TIGHT FLEXIBLE NONMETALLIC CONDUIT – A conduit that is resistant to the ingress of vapors, machine oils and other liquids, and solids, and can be bent by hand without other assistance, and is intended to flex throughout its life.

TYPE LFNC-A (Layered) – A liquid-tight conduit with a smooth seamless inner core and cover bonded together with one or more reinforcement layers between the core and cover.

TYPE LFNC-B (Integral) – A liquid-tight conduit with a smooth inner surface with integral reinforcement within the conduit wall.

TYPE LFNC-C (Corrugated) – A liquid-tight conduit with corrugated internal and external surfaces without integral reinforcement within the conduit wall.

3 General

3.1 Reference publications

3.1.1 Where reference is made to any Standards, such reference shall be considered to refer to the latest editions and revisions thereto available at the time of printing, unless otherwise specified.

ANCE Standards

NMX-E-208-CNCP
Plastics industry – Determination of characteristics of plastic conduit under external loads using parallel plates – Test method

NMX-E-029-CNCP
Plastics industry – Impact resistance for conduit and fittings – Test method

NMX-J-017-ANCE
Fittings for Cables and Tubing – Specifications and Test Methods