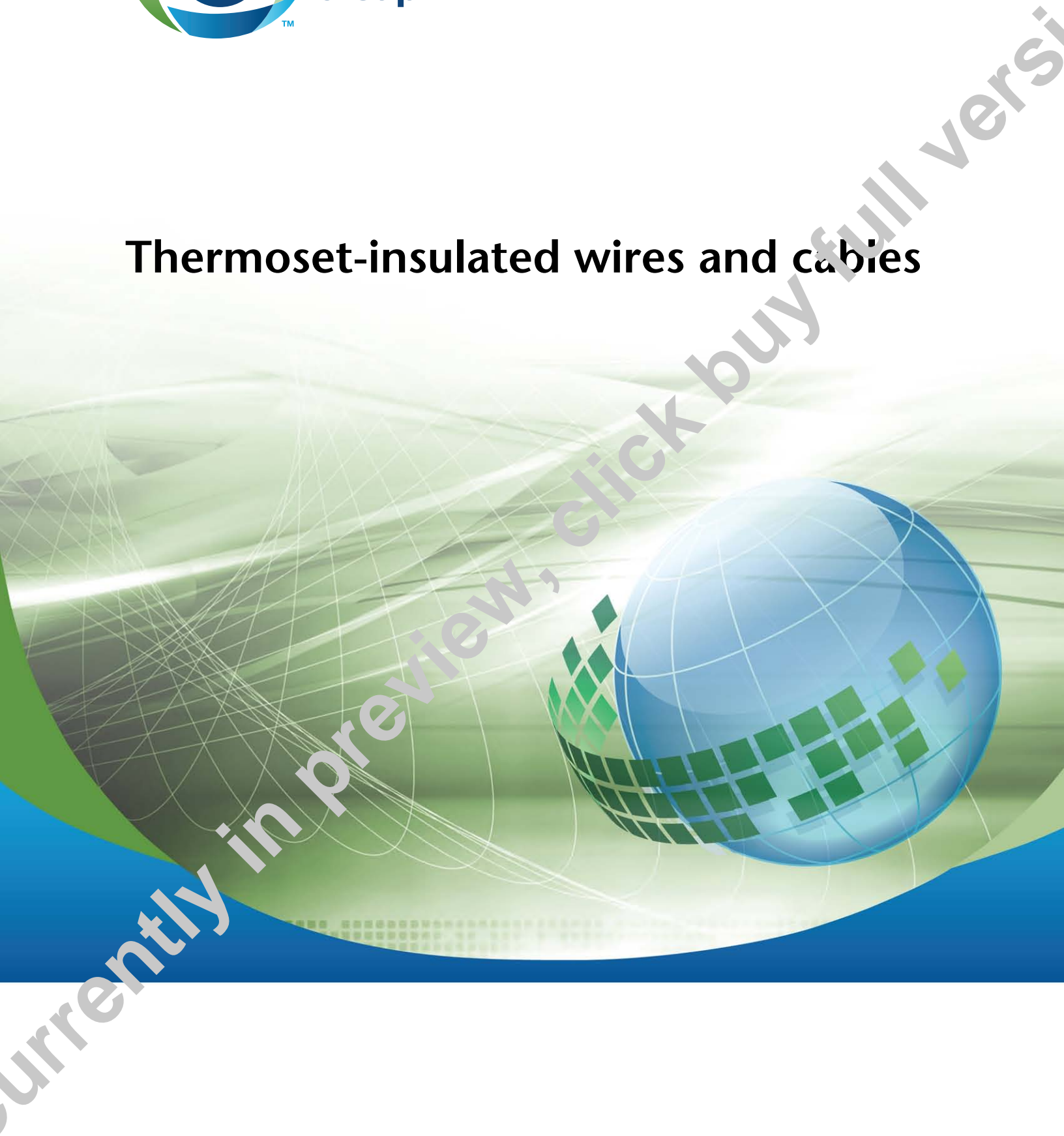




**CSA  
Group**

**C22.2 No. 38-14**

# Thermoset-insulated wires and cables



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UL 44  
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## Thermoset-Insulated Wires and Cables

March 28, 2014



ANSI/UL 44-2014

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## PREFACE

This is the harmonized ANCE, CSA Group, and UL standard for Thermoset-Insulated Wires and Cables. It is the Fifth edition of NMX-J-451-ANCE, the Tenth edition of CSA C22.2 No. 38, and the Eighteenth edition of UL 44. This edition of NMX-J-451-ANCE supersedes the previous edition published in 2010. This edition of CSA C22.2 No. 38 supersedes the previous edition published in 2010. This edition of UL 44 supersedes the previous edition published in 2010.

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 for Electrical Wires and Cables, 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 20 Conductores from the Comité de Normalización de la Asociación de Normalización y Certificación, A.C., CONANCE, with the collaboration of the SC 20B Conductores para Baja Tensión.

This standard was reviewed by the CSA Integrated Committee on Fixed Installation Wires and Cables, 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 approved by the American National Standards Institute (ANSI) as an American National Standard.

### 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 provides requirements for insulated wires and cables for use in accordance with the electrical installation codes of Canada, Mexico, and the United States. At present there is no IEC standard for wires and cables for use in accordance with these codes. Therefore, this standard does not employ any IEC standard for base requirements.

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.

**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.

**ANCE Effective Date**

The effective date for ANCE will be announced through the Diario Oficial de la Federación (Official Gazette) and is indicated on the cover page.

**CSA Group Effective Date**

The effective date for CSA Group will be announced through a *CSA Informs* or *CSA Group Certification Notice*.

**UL Effective Date**

As of March 28, 2014 all products Listed or Recognized by UL must comply with the requirements in this standard.

A UL effective date is one established by Underwriters Laboratories Inc. and is not part of the ANSI approved standard.

# Thermoset-Insulated Wires and Cables

## 1 Scope

1.1 This Standard specifies the requirements for single-conductor and multiple-conductor thermoset-insulated wires and cables rated 600 V, 1000 V, 2000 V, and 5000 V, for use in accordance with the rules of the *Canadian Electrical Code (CEC), Part I, CSA C22.1*, in Canada, *Standard for Electrical Installations, NOM-001-SEDE*, in Mexico, and the *National Electrical Code (NEC), NFPA-70*, in the United States of America.

See Annex A for the complete list of types covered by this Standard and the specific electrical codes for which they are intended, and Annex B for a summary of construction and test requirements for these types.

1.2 Table 1 provides a summary of the maximum conductor temperature, voltage ratings, and the number of insulated conductors for the types to which this Standard applies.

1.3 This Standard also specifies the requirements for submersible pump cables, with or without jackets, in Clause 7. No type-letter designations are assigned to these cables.

1.4 Products within this Standard might have applications not covered by the electrical codes listed in Clause 1.1.

## 2 General

### 2.1 Units of measure

The unit of measure shall be SI. If a value for measurement is followed by a value in other units in parentheses, the second value represents a direct conversion or an alternative value. Except for conductor size, the first stated value is the requirement.

### 2.2 Reference publications

2.2.1 This Standard refers to the following publications and where reference is made to ANCE, CSA, or UL Standards, such reference shall be considered to refer to the latest edition and all amendments published to that edition. Where such reference is made to other publications, it shall be to the edition listed below.

#### ANCE Standards

NOM-001-SEDE  
*Standard for Electrical Installations*

NMX-E-034-SCFI  
*Plastics Industry – Carbon Black Contents on Polyethylene Materials – Test Method*

NMX-J-008-ANCE  
*Tinned Soft or Annealed Copper Wire for Electrical Purposes – Specifications*

NMX-J-012-ANCE  
*Wires and Cables – Concentric Lay Stranded Copper Conductors for Electrical Purposes – Specifications*