JOINT CANADA-UNITED STATES
NATIONAL STANDARD

ANSI/CAN/UL 969A:2020

STANDARD FOR SAFETY

Marking and Labeling Systems – Flag Labels, Flag Tags, Wrap-Around Labels and Related Products

Approved American National Standard
ANSI
ANSI/UL 969A-2020

Standards Council of Canada
Conseil canadien des normes

National Standard of Canada

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UL Standard for Safety for Marking and Labeling Systems – Flag Labels, Flag Tags, Wrap-Around Labels and Related Products, ANSI/CAN/UL 969A

First Edition, Dated July 29, 2020

Summary of Topics

This First Edition of ANSI/CAN/UL 969A has been issued to reflect the latest ANSI and SCC approval dates, and to incorporate the proposals dated February 21, 2020.

The new requirements are substantially in accordance with Proposal(s) on this subject dated February 21, 2020.

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ANSI/UL 969A-2020

JULY 29, 2020

ANSI/CAN/UL 969A:2020

Standard for Marking and Labeling Systems – Flag Labels, Flag Tags, Wrap-Around Labels and Related Products

First Edition

July 29, 2020

This ANSI/CAN/UL Safety Standard consists of the First Edition.

The most recent designation of ANSI/UL 969A as an American National Standard (ANSI) occurred on May 22, 2020. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, Title Page, Preface or SCC Foreword.

This standard has been designated as a National Standard of Canada (NSC) on July 29, 2020.

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Preface

This is the First Edition of ANSI/CAN/UL 969A Standard for Marking and Labeling Systems – Flag Labels, Flag Tags, Wrap-Around Labels and Related Products.

UL is accredited by the American National Standards Institute (ANSI) and the Standards Council of Canada (SCC) as a Standards Development Organization (SDO).

This Standard has been developed in compliance with the requirements of ANSI and SCC for accreditation of a Standards Development Organization.

This ANSI/CAN/UL 969A Standard is under continuous maintenance, whereby each revision is approved in compliance with the requirements of ANSI and SCC for accreditation of a Standards Development Organization. In the event that no revisions are issued for a period of four years from the date of publication, action to revise, reaffirm, or withdraw the standard shall be initiated.

In Canada, there are two official languages, English and French. All safety warnings must be in French and English. Attention is drawn to the possibility that some Canadian authorities may require additional markings and/or installation instructions to be in both official languages.

Comments or proposals for revisions on any part of the Standard may be submitted to UL at any time. Proposals should be submitted via a Proposal Request in UL's On-Line Collaborative Standards Development System (CSDS) at http://csds.ul.com.

To purchase UL Standards, visit the UL Standards Sales Site at http://www.shopulstandards.com/HowToOrder.aspx or call tollfree 1-888-853-3503.

This Edition of the Standard has been formally approved by the UL Standards Technical Panel (STP) on Marking and Labeling Systems, STP 969.

This list represents the STP 969 membership when the final text in this standard was balloted. Since that time, changes in the membership may have occurred.

STP 969 Membership

Name	Representing	Interest Category	Region
Abbott, M.	CSA Group	Testing and Standards	USA
Caligiuri, J.	Interpower Corp	Supply Chain	USA
Campbell, L.	The Label Printers	Producer	USA
Campolo, S.	Leviton Manufacturing Co.	Supply Chain	USA
Desai, A.	Avery Dennison Corporation	Producer	USA
Fink, M.	Armor USA	Supply Chain	USA
Freeman, C.	Self	General Interest	USA
Haskins, G.	3M	Producer	USA

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STP 969 Membership Continued

Name	Representing	Interest Category	Region
Hensley, K.	Mactac	Producer	USA
Hofer, G.	Zebra Technologies Corporation	Supply Chain	USA
Houle, R.	UL LLC	Testing and Standards	USA
Jordan, D. P.	Underwriters Laboratories Inc.	STP Chair – Non-voting	USA
Kendall, D.	ABB Ltd.	Commercial/Industrial User	USA
Monsen, M.	Underwriters Laboratories Inc.	STP Project Manager – Non-voting	USA
Murray, N.	Consumer Association of Canada	Consumer	Canada
Potter, J.	FLEXcon Co. Inc.	Producer	USA
Rock, B.	Hubbell Incorporated	Commercial/Industrial User	USA
Strohmenger, D.	Orafol Americas Inc.	Producer	USA
Vieira, P.	Flint Group	Supply Chain	USA
Winton, R.	Self	General Interest	USA

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This Standard is intended to be used for conformity assessment.

The intended primary application of this standard is stated in its scope. It is important to note that it remains the responsibility of the user of the standard to judge its suitability for this particular application.

CETTE NORME NATIONALE DU CANADA EST DISPONIBLE EN VERSIONS FRANÇAISE ET ANGLAISE

INTRODUCTION

1 Scope

1.1 These requirements cover flag labels, flag tags, wrap-around labels, and related products affixed to an electrical flexible cord or fluid carrying hose. These products provide information, instructions, or identification in the form of text or pictographs. When an adhesive is employed, it may be pressure sensitive, heat activated, or solvent activated. These products are intended to be applied by manufacturers at the location they produce their end-products.

1.2 These requirements also cover:

a) Unprinted materials and other label components used by label converters to produce finished flag labels, flag tags, and wrap-around labels, and

b) Specific combinations of label material, ink and printing process evaluated as a system.

1.3 These products are evaluated for use on specific electrical flexible cords or fluid carrying hoses for conditions to which they are intended to be exposed to during actual use.

1.4 These requirements apply to flag labels, flag tags, wrap-around labels, and related products used on complete devices, appliances, or equipment. The acceptability of these products in a particular application are to be judged under the applicable requirements in the standard covering the device, appliance, or equipment on which the product is used.

1.5 These requirements do not cover labels applied to smooth, flat, and rigid surfaces which are covered by the Standard for Marking and Labeling Systems, UL 969.

2 Units of Measurement

2.1 Values and their respective units of measurement that are stated without parentheses constitute the requirement of the standard and those in parentheses constitute explanatory or approximate information.

3 Normative References

3.1 The following standards are referenced in this standard, and portions of these referenced standards may be essential for compliance.

ASTM G151, *Standard Practice for Exposing Nonmetallic Materials in Accelerated Test Devices That Use Laboratory Light Sources*

ASTM G155, *Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Nonmetallic Materials*

UL 969, *Marking and Labeling Systems*

4 Glossary

4.1 For the purpose of this Standard, the following definitions apply.

4.2 FACE STOCK – A polymeric film, metal foil, paper, and fabric or laminated material capable of receiving print.

4.3 FLAG LABEL – An adhesive backed printed construction, with or without an overlamination or overprint coating, that is intended to be wrapped around a cord or hose and adhered to itself extending from the cord or hose like a flag.

4.4 FLAG TAG – A printed film or similar material, with or without an overlamination or overprint coating, with a hole for a securement strap (i. e., cable tie or similar device) that is capable of being affixed permanently (i.e., requiring tools to remove) to a cord or hose extending from the cord or hose like a flag.

4.5 FLOOD COAT – A layer of ink that coats an area of the face stock, generally intended to provide background color.

4.6 LABEL STOCK – The combination of face stock, adhesive, and release liner.

4.7 LIMITED SLIPPAGE RATING – A performance rating granted to flag labels and flag tags that are intended to remain in place without significant slippage.

4.8 OVERLAMINATION – A transparent film or transparent portion of the face stock applied over the printed area for protection.

4.9 OVERPRINT COATING – A transparent coating, such as a varnish applied over the printed face stock or label stock for protection.

4.10 PRINTING PROCESS – A means by which ink is applied to a face stock.

4.11 RELEASE LINER – A removable component of a label or label stock that protects the adhesive prior to application.

4.12 SECUREMENT STRAP – Typically, a cable tie or similar device used to secure a Flag Tag to a cord or hose.

4.13 SUBSURFACE PRINTING – Printing on the underside of the face stock.

4.14 TEMPERATURE RATING, MAXIMUM – The highest surface temperature at which a label or tag is intended to be used.

4.15 TEMPERATURE RATING, MINIMUM – The lowest surface temperature at which a label or tag is intended to be used.

4.16 TOP COAT – A coating applied to the face stock or label stock to improve ink receptivity.

4.17 TOP-SURFACE PRINTING – Printing applied to the topside of the face stock or label stock.

4.18 WRAP-AROUND LABEL – An adhesive backed printed construction that is intended to be wrapped around the complete circumference of a cord or hose and may incorporate an additional clear area to overlaminate the first wrap.

PERFORMANCE

5 General

5.1 Flag labels, flag tags, and wrap-around labels, applied to representative cords and hoses and exposed to the applicable conditions as described in Section 7, shall show permanence and legibility as described in Section 8.

6 Test Samples

6.1 Flag label, flag tag, and wrap-around label samples

6.1.1 Samples for test are to be representative of the actual construction, i.e. overlamination, print, label stock, etc. Significant construction variables such as topsurface printing or subsurface printing; top coating; face stock; overlamination or adhesive thickness range; partial adhesive coverage; differing types or colors of similar face stock or adhesive (for example, clear, pigmented, or metallized); and alternative printing processes and inks (including flood coating for subsurface printed constructions,) reverse or positive print, etc. are to be represented in the samples provided.

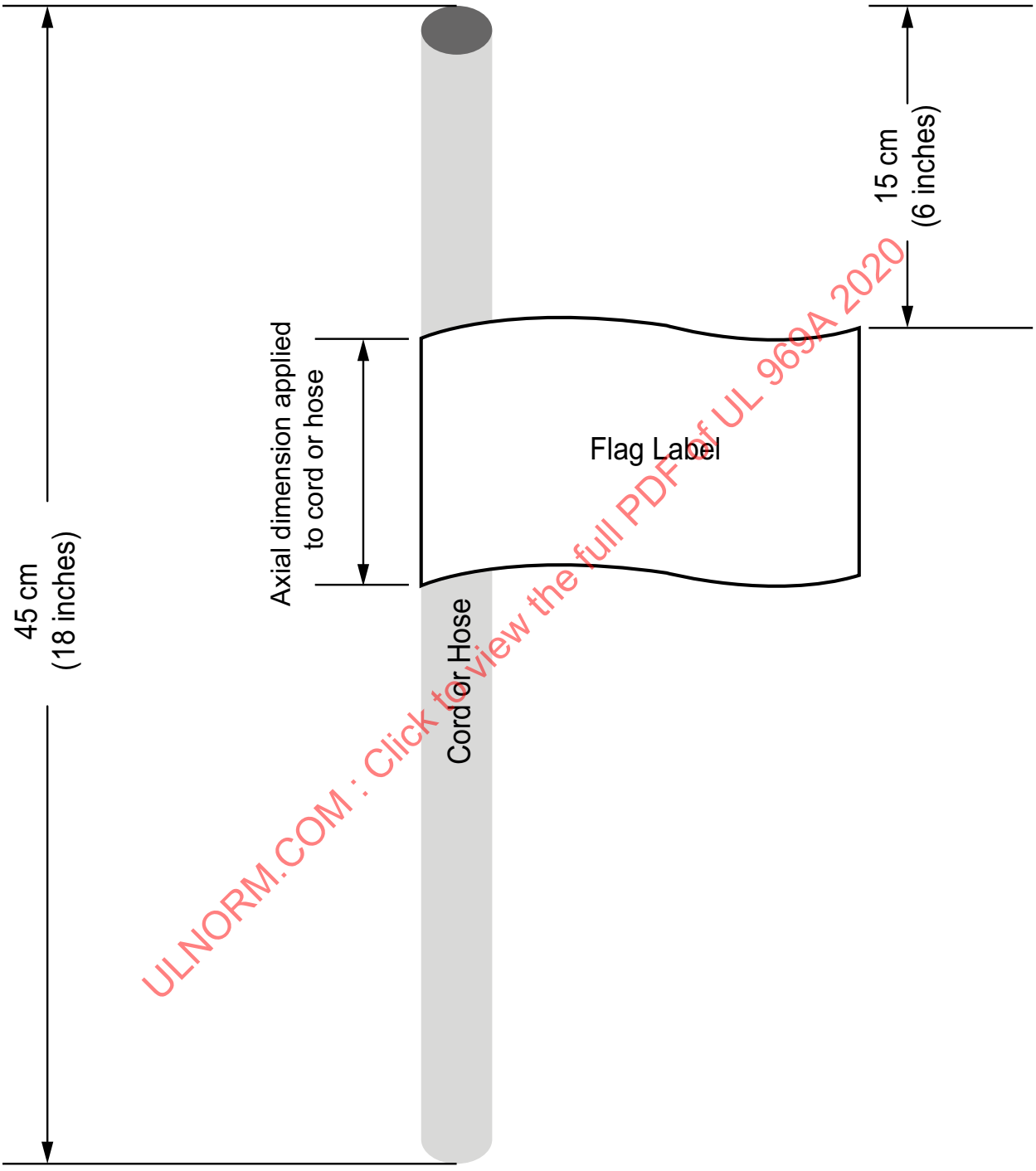
6.1.2 Flag label samples shall be provided having the axial dimension (the length to be applied to the cord or hose) at the minimum length, as shown in Figure 6.1, in which the label is intended to be produced.

6.1.3 Flag tag samples shall be provided with a hole for the securement strap. The hole shall be located the minimum distance from the edge of the tag, as shown in Figure 6.2, in which it is intended to be produced.

6.1.4 Wrap-around label samples shall be provided having the minimum length (the length to be wrapped around the circumference of a cord or hose) and minimum width, as shown in Figure 6.3, in which the label is intended to be produced. Multiple sets of wrap-around label samples may need to be provided to represent the full range of sizes.

Figure 6.1

Flag label applied to a cord or hose



su3106c

Figure 6.2

Flag tag applied to a cord or hose

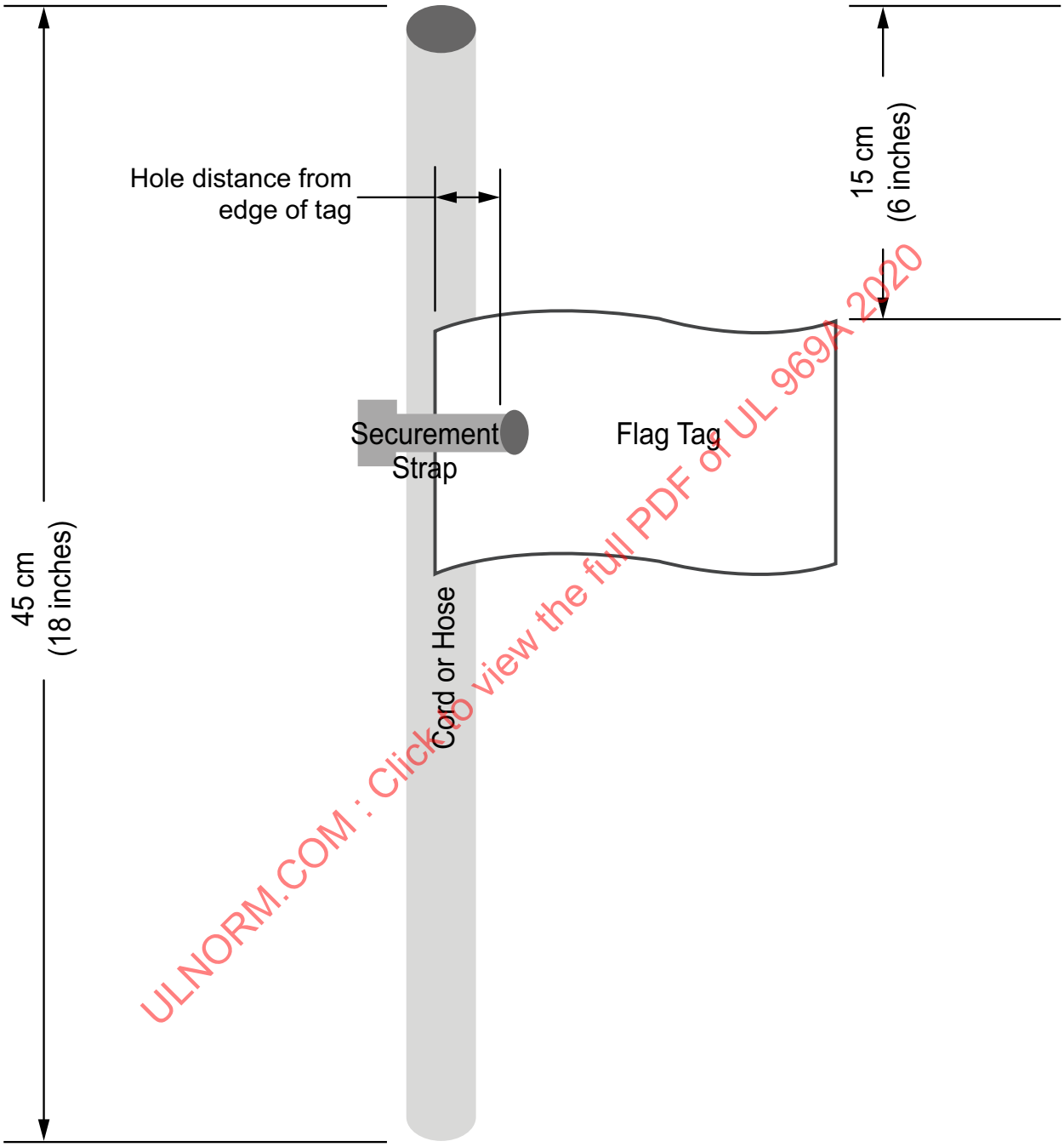


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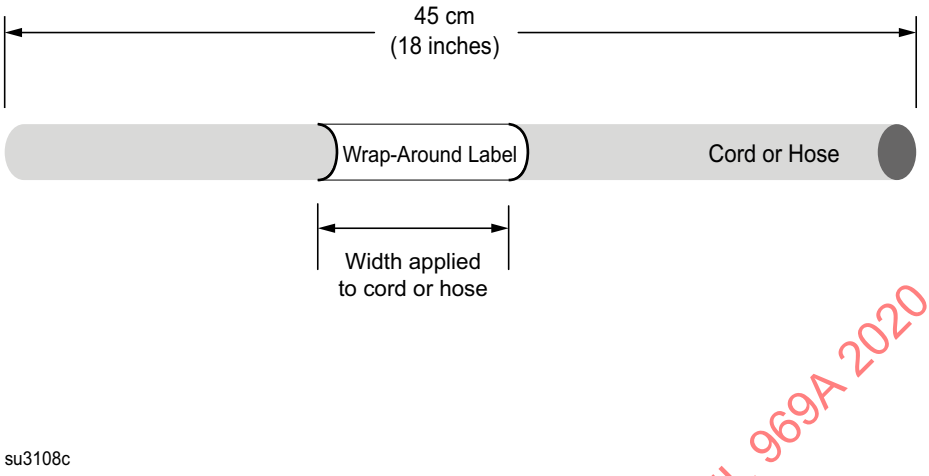
Figure 6.3

Wrap-around label applied to a cord or hose



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6.2 Cord and hose samples

6.2.1 For flag labels, flag tags, and wrap-around labels intended to be affixed to cords or hoses for indoor use applications with no additional exposures, 12 sample pieces of the representative cord or hose of each applicable type are to be provided. For indoor and outdoor use applications with no additional exposures, 18 sample pieces of the representative cord or hose for each applicable type is to be provided. For each additional exposure, six additional lengths are to be provided. Each cord or hose sample piece is to measure approximately 45 cm (18 inches) in length. Table 6.1 provides a list of representative cord types that may be used in the testing and the cord types covered by the representative cord.

Table 6.1
Representative Flexible Cord Types for Test and the Covered Flexible Cord Types

Representative flexible cord type for test	Flexible cord types covered
SJOW	Representative of thermoset outer covering, round cord types: SJ, SJO, SJOW, SJOO, SJOOW, S, SO, SOW, SOO, SOOW, HSJ, HSJO, HSJOW, HSJOO, HSJOOW
SJEOW	Representative of thermoplastic elastomer outer covering, round cord types: SJE, SJEW, SJEO, SJEOO, SJEOW, SJEOOW, SE, SEW, SEO, SEOW, SEOO, SEOOW
SJTOW	Representative of thermoplastic outer covering, round cord types: SJT, SJTO, SJTW, SJTO, SJTOW, SJTOO, SJTOOW, ST, STW, STO, STOW, STOO, STOOW
SVO	Representative of thermoset outer covering, vacuum cleaner round cord types: SV, SVO, SVOO
SVEO	Representative of thermoplastic elastomer outer covering, vacuum cleaner round cord types: SVE, SVEO, SVEOO
SVTO	Representative of thermoplastic outer covering, vacuum cleaner round cord types: SVT, SVTO, SVTOO
SP-1	Representative of thermoset outer covering, parallel cord types: HPN, SP-1, SP-2, SP-3, SRD
SPE-1	Representative of thermoplastic elastomer outer covering, parallel cord types: SPE-1, SPE-2, SPE-3, SRDE
SPT-1W	Representative of thermoplastic outer covering, parallel cord types: SPT-1, SPT-2, SPT-3, SPT-1W, SPT-2W, SRDT

Table 6.1 Continued on Next Page

Table 6.1 Continued

Representative flexible cord type for test	Flexible cord types covered
NISP-1	Representative of thermoset outer covering, non-integral parallel cord types: NISP-1, NISP-2
NISPE-1	Representative of thermoplastic elastomer outer covering, non-integral parallel cord types: NISPE-1, NISPE-2
NISPT-1	Representative of thermoplastic outer covering, non-integral parallel cord types: NISPT-1, NISPT-2
CXTW, twisted assembly	Representative of thermoplastic outer covering, twisted assembly cord types: CXTW, CXTW-S, CXTW-IS, CXTWES, CXTW-X
XTW	Representative of thermoplastic outer covering, parallel cord types: XTW
Note: If a representative flexible cord type is not available for testing, another flexible cord type within the same representative grouping may be substituted and considered representative of cord types of the same or larger round/parallel cord types.	

6.2.2 Cord samples are to be provided in the smallest AWG (outside diameter) size and fewest number of conductors.

6.2.3 Hose samples are to be provided in the smallest outside diameter size.

6.2.4 Cord or hose samples are to be provided in a smooth surface finish. When flag labels, flag tags, and wrap-around labels are to be applied additionally or alternatively to a ribbed, braided, or other textured surface finish, cord or hose samples in that specific surface finish are to be provided.

6.3 Securement strap samples

6.3.1 For flag tags, samples of a representative securement strap are to be provided.

6.4 Application

6.4.1 If provided, the manufacturer's application instructions such as the method for cleaning the cord or hose prior to tag or label application, and the method for affixing a label or a tag with a securement strap are to be followed. In the absence of such instructions, the cord or hose is to be repeatedly wiped with cheesecloth (bleached cotton gauze) dampened with denatured ethyl alcohol or isopropanol until it appears clean and then allowed to dry in air for at least one minute.

6.4.2 If alcohol affects the cord or hose surface or is not considered the solvent of choice for a particular cord or hose surface:

a) An alternative solvent that does not affect the cord or hose surface or leave a film is to be used; or

b) A detergent and water solution is to be used, after which the surface is to be thoroughly rinsed with demineralized water, wiped with clean dry cheesecloth, and allowed to dry in air at room temperature for one hour; or

c) A dry cheesecloth (bleached cotton gauze) is to be used to remove debris.

6.4.3 Flag labels are to be applied to cord or hose as they are intended to be in production, with one tag applied to each cord or hose length as shown in Figure 6.1.

Exception: As an alternative, the manufacturer may supply the flag labels applied to the cord or hose.

6.4.4 Flag tags intended to be affixed with a securement strap are to be applied as they are intended to be in production without damaging the insulation, with one label applied to each cord or hose length as shown in Figure 6.2.

Exception: As an alternative, the manufacturer may supply the flag tags applied to the cord or hose.

6.4.5 Wrap-around labels are to be applied as they are intended to be in production with one label applied to each cord or hose length as shown in Figure 6.3.

Exception: As an alternative, the manufacturer may supply the wrap-around labels applied to the cord or hose.

6.4.6 Samples applied to the cords or hoses shall be stored at 23 ±5° C (73.4 ±9.0° F) and a relative humidity of 50 ±20% until they are subjected to the applicable exposure conditions in Section 7.

7 Exposure Conditions

7.1 All flag labels, flag tags, and wrap-around labels

7.1.1 Three or more applied flag labels, flag tags, and wrap-around labels (test samples) are to be subjected to each exposure. Separate test samples are to be subjected to each exposure.

7.1.2 Test Samples are to be tested following the exposures noted in Table 7.1 for indoor dry use locations or Table 7.2 for indoor use locations where exposed to high humidity or occasional exposure to water.

7.1.3 Test samples intended for outdoor use, are to be tested following the exposures noted in Table 7.3 in addition to the exposures noted in Table 7.2.

Table 7.1
Indoor Dry Use Exposures (Dry Locations)

Exposure conditions	Time of evaluation
As-Received: At least 72 hours at 23 ±2°C (73.4 ±3.6°F), 50 ±5% RH	Following the exposure period
Elevated Temperature: At least 24 hours at 23 ±2°C (73.4 ±3.6°F), 50 ±5% RH followed by 240 hours in an air circulating oven at a test temperature corresponding to the maximum temperature rating[a,b]	After cooling for 30 minutes at 23 ±2°C (73.4 ±3.6°F), 50 ±5% RH
Humidity: At least 24 hours at 23 ±2°C (73.4 ±3.6°F), 50 ±5% RH followed by 72 hours in a humidity cabinet at 32 ±2°C (89.6 ±3.6°F) and 85 ±5 percent relative humidity[c]	Within one minute after exposure

[a] Reference Table 7.4 for the Maximum Temperature Rating / Test Temperature values.

[b] In a full draft air-circulating oven capable of maintaining the test temperature with a minimum of five air changes per hour.

[c] In a humidity cabinet capable of maintaining the test temperature and humidity.

Table 7.2
Indoor Use Exposures – High Humidity or Occasional Exposure to Water (Damp Locations)

Exposure conditions	Time of evaluation
As-Received: At least 72 hours at 23 ±2°C (73.4 ±3.6°F), 50 ±5% RH.	Following the exposure period
Elevated Temperature: At least 24 hours at 23 ±2°C (73.4 ±3.6°F), 50 ±5% RH followed by 240 hours in an air circulating oven at a test temperature corresponding to the maximum temperature rating.[a,b]	After cooling for 30 minutes at 23 ±2°C (73.4 ±3.6°F), 50 ±5% RH
Water Immersion: At least 24 hours at 23 ±2°C (73.4 ±3.6° F), 50 ±5% RH followed by 48 hour immersion in demineralized water at 23 ±2°C (73.4 ±3.6°F).	Within one minute after exposure
[a] Reference Table 7.4 for the Maximum Temperature Rating / Test Temperature values. [b] In a full draft air-circulating oven capable of maintaining the test temperature with a minimum of five air changes per hour.	

Table 7.3
Outdoor Use Exposures (Wet Locations)

Exposure conditions	Time of evaluation
Low Temperature: At least 24 hours at 23 ±2°C (73.4 ±3.6°F), 50 ±5% RH followed by seven hours in a cold box maintained at a temperature ±2°C (±3.6°F), corresponding to the minimum temperature rating. [a,b]	Within one minute after exposure
Ultraviolet Light and Water: At least 24 hours at 23 ±2°C (73.4 ±3.6°F), 50 ±5% RH followed by 1000-hour Xenon-arc in accordance with, ASTM G151, and the, ASTM G155. The spectral power distribution of the xenon lamp shall conform to the requirement in Table 1 in ASTM G155 for a xenon lamp with daylight filters. A programmed cycle of 120 minutes consisting of a 102-minute light exposure and an 18-minute exposure to water spray with light shall be used. The apparatus shall operate with a spectral irradiance of 0.35 W/m^2 nm at 340 nm and a black-panel temperature of 63 ±3°C (145 ±5°F).	After 24 hours at 23.0 ±2.0°C (73.4 ±3.6°F), 50 ±5% RH
[a] The minimum temperature rating shall be -10°C (14°F) or lower. [b] In a cold box capable of maintaining the test temperature.	

Table 7.4
Air Circulating Oven Test Temperatures

Maximum temperature rating °C (°F)	Test Temperature °C (°F)
40 (104)	60 ±1 (140 ±1.8)
60 (140)	87 ±1 (189 ±1.8)
80 (176)	105 ±3 (221 ±5.4)
100 (212)	121 ±3 (250 ±5.4)
125 (257)	150 ±4 (302 ±7.2)
150 (302)	180 ±4 (356 ±7.2)
175 (347)	210 ±4 (410 ±7.2)