# STANDARDS UPDATE NOTICE (SUN)
# ISSUED: June 4, 2018

## STANDARD INFORMATION

**Standard Number:** CSA C22.2 No 239
**Standard Name:** Control and Instrumentation Cables
**Standard Edition and Issue Date:** 4th Edition Dated April 1, 2017
**Date of Revision:** April 1, 2017
**Date of Previous Revision of Standard:** September 1, 2015

## EFFECTIVE DATE OF NEW/REVISED REQUIREMENTS

**Effective Date:** **January 11, 2020**

## IMPACT, OVERVIEW, AND ACTION REQUIRED

**Impact Statement:** A review of all Listing Reports is necessary to determine which products comply with new/revised requirements and which products will require re-evaluation. **NOTE:** Effective immediately, this revised standard will be exclusively used for evaluation of new products unless the Applicant requests in writing that current requirements be used along with their understanding that their listings will be withdrawn on Effective Date noted above, unless the product is found to comply with new/revised requirements.

**Overview of Changes:**

- The reference standard for thermocouple and thermocouple extensions grade alloys has been updated.
- New clause has been added that polyethylene insulation shall be rated 75C dry and wet and meet the requirements of Long Term Insulation resistance test (in water) of C22.2 No. 75 for Type TW75.
- Updated requirements of silicone insulation.
- New clause added stating that cables shall have one or more outer coverings.
- The detailed method for determining the thickness and examining the interior surface of sheaths and armour has been added.
- The reference method for the FT4-ST1 rating has been updated to indicate Method 2-FT4 in CSA C22.2 No. 2556.
- The reference method for tests on interlocked armoured and metal sheathed cables has been updated.
- The requirements for long term insulation resistance in water for wet rated fluorine-containing polymers, has been added.
- Markings for type designation of thermocouple alloys has been updated.

Specific details of new/revised requirements are found in table below.

**If the applicable requirements noted in the table are not described in your report(s), these requirements will need to be confirmed as met and added to your report(s) such as markings, instructions, test results, etc. (as required).**

**Client Action Required:**

**Information** – To assist our Engineer with review of your Listing Reports, please submit technical information in response to the new/revised paragraphs noted in the attached or explain why these new/revised requirements do not apply to your product (s).

***Current Listings Not Active? – Please immediately identify any current Listing Reports or products that are no longer active and should be removed from our records. We will do this at no charge as long as Intertek is notified in writing prior to the review of your reports.***

## STANDARD INFORMATION

| CLAUSE | VERDICT | COMMENT |
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| | | *Additions to existing requirements are underlined and deletions are shown ~~lined out~~ below.* |
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| 5 | Info | **Construction** |
| 5.1 | Info | **Conductors** |
| 5.1.7 | Info | **Thermocouples** |
| 5.1.7.1 | | Thermocouple grade and thermocouple extension grade alloys shall comply with the requirements of ~~ISA MC96.1~~ ASTM E230/E230M for the specified type. |
| 5.2 | Info | **Insulation** |
| 5.2.1 | Info | **Materials** |
| 5.2.1.3 | | PE insulation shall meet the following requirements:<br>a) Before application to the conductors, PE insulation<br>i) shall meet the requirements of ASTM D1248 for Type I or II, Class A or B, Grade E4 or E5;<br>ii) have a melt index not greater than 1.5; and<br>iii) meet the requirements of Items a)i) and a)ii) after extrusion on a conductor.<br>b) After application to the conductor, PE insulation shall meet the following minimum elongation requirements:<br>i) Type I — low-density polyethylene shall be 350%; and<br>ii) Type II — medium-density polyethylene shall be 250%.<br>Polyethylene insulation shall be rated 75 °C dry and wet and meet the requirements of the long-term insulation resistance test (in water) CSA C22.2 No. 75, for type TW75. |

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| | | **Silicone rubber (silicone)** |
| 5.2.1.8 | | Silicone insulation shall meet the requirements of CSA C22.2 No. 38 for materials suitable for Type RW75 silicone R90 silicone, RW90 silicone. ~~except for insulation thickness values, which shall be as shown in Table 5 of this Standard.~~ |
| 5.5 | Info | **Assembly and identification** |
| 5.5.1 | Info | **Assembly** |
| 5.5.1.5 | | ***New clause added;***<br><br>Cables shall have one or more outer coverings over the assembled conductors of the types specified in Clause 5.6.4 or 5.7. |
| 5.7 | Info | **Metallic outer coverings** |
| 5.7.2 | Info | **Aluminum or copper sheath** |
| 5.7.2.3 | | The thickness shall be determined ~~in accordance with the metal sheath thickness test specified in CSA C22.2 No. 0.3.~~ by removing a section of the sheath from the cable, where possible, and making direct measurements using a micrometer caliper having a rounded anvil with a radius smaller than the internal radius of the sheath. Where it is not possible to remove the sheath intact, the thickness shall be determined by the difference method, using a micrometer described in the insulation and jacket material test (thickness) in CSA C22.2 No. 2556. Average thickness shall be calculated from measurements of thickness or diameter as applicable, taken at five points equidistant around the wire or cable circumference. |
| 5.7.3 | Info | **Interlocked armour** |
| 5.7.3.3 | | The interior surface of the armour shall be free from burrs and sharp edges that are a potential cause of abrasion of the cable assembly. The condition of the interior surface of the armour shall be determined ~~in accordance with the internal condition of armour test specified in CSA C22.2 No. 0.3.~~ by removing all of the components from inside a short specimen of armoured cable, and the internal surface of the armour shall be examined from each end while the interior is illuminated by a suitable light source of sufficient intensity to allow for such an examination. |
| 6 | Info | **Tests** |
| 6.2 | Info | **Physical and flammability tests on complete cable** |
| 6.2.3 | Info | **Flammability** |
| 6.2.3.3 | | **FT4-ST1 rating (optional)**<br>In addition to the requirements specified in Clause 6.2.3.2, when an FT4-ST1 rating is required, the completed cable shall ~~not exhibit a char length in excess of 1.5 m or smoke release in excess of the requirements for the FT4-ST1 classification when tested in accordance with ASTM D5424 or with ANSI/UL 1685~~. meet the requirements for the ST1 (Method 2-FT4) classification when tested in accordance with CSA C22.2 No. 2556. Cables meeting the requirements of this Clause need not be tested in accordance with Clause 6.2.3.1. |

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| 6.3 | Info | **Tests on interlocked armoured cable** |
| 6.3.1 | Info | **Flexibility** |
| 6.3.1.2 | | Compliance with the flexibility requirements in Clause 6.3.1.1 shall be determined in accordance with the flexibility of armored cable and metal-sheathed cable (method ~~No. 2~~ 1 – interlocking armored cables) test in ~~CSA C22.2 No 0.3~~ CSA C22.2 No. 2556. |
| 6.3.2 | Info | **Tension** |
| 6.3.2.2 | | Compliance with the tension test requirements in Clause 6.3.2.1 shall be determined in accordance with the apparatus and method specified in the test for strength and elongation of cable in tension as specified in ~~CSA C22.2 No 0.3~~ CSA C22.2 No. 2556. For interlocked armoured cable with an overall jacket, the clamps shall be fastened directly over the overall jacket. |
| 6.3.3 | Info | **Elongation** |
| 6.3.3.2 | | Compliance with the elongation test requirement in Clause 6.3.3.1 shall be determined in accordance with the apparatus and method specified in the test for strength and elongation of cable in tension as specified in ~~CSA C22.2 No 0.3~~ CSA C22.2 No. 2556. |
| 6.4 | Info | **Flexibility tests on metal sheathed cables** |
| 6.4.2 | | Compliance with the flexibility test in Clause 6.4.1 shall be determined in accordance with the flexibility of armoured cable and metal-sheathed cable test (~~Method No. 2) in CSA C22.2 No. 0.3.~~ in CSA C22.2 No. 2556. |
| 8 | Info | **High-temperature control and instrumentation cable** |
| 8.2 | Info | **Construction** |
| 8.2.2 | Info | **Insulation** |
| 8.2.2.2 | | ***New clause added;***<br><br>**Testing for long-term insulation resistance in water**<br><br>The minimum acceptable value of the insulation resistance shall not be less than 100 MΩ based on 1000 conductor feet or 30.5 GΩ based on a conductor kilometer after a 12 week immersion in tap water at 60 °C, 75 °C, or 90 °C and energized at 600 V. The immersion temperature of the tap water shall be equal to the wet rating of the cable.<br><br>Compliance shall be in accordance with the long-term insulation resistance (method I) test in CSA C22.2 No. 2556. |
| 8.4 | Info | **Marking** |
| 8.4.1 | Info | **Marking on product** |
| 8.4.1 k) | | Type designation of thermocouple alloy (where applicable, e.g., J, K, JX, KX, etc.) in accordance with ~~ISA MC96.1~~ ASTM E230/E230M; |
| 8.4.2 | Info | **Marking on packages** |

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| 8.4.2 k) | Type designation of thermocouple alloy (where applicable, e.g., J, K, JX, KX, etc.) in accordance with ~~ISA MC96.1~~ ASTM E230/E230M; |
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| | CUSTOMERS PLEASE NOTE: This Table and column “Verdict” can be used in determining how your current or future production is or will be in compliance with new/revised requirements. |