

STANDARD INFORMATION

Standard Number: CSA C22.2 No 245
Standard Name: Marine Shipboard Cables
Standard Edition and Issue Date: 3rd Edition Dated July 1, 2017
Date of Revision: July 1, 2017
Date of Previous Revision of Standard: March 1, 2015

EFFECTIVE DATE OF NEW/REVISED REQUIREMENTS

Effective Date: **September 30, 2019**

IMPACT, OVERVIEW, AND ACTION REQUIRED

Impact Statement: A review of all Listing Reports is necessary to determine which products comply with new/revise 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requests in writing that current requirements be used along with their understanding that their listings will be withdrawn on Effective Date noted above, unless the product is found to comply with new/revise requirements.

Overview of Changes:

- The type designation for low smoke halogen-free thermoplastic jacket and low smoke halogen-free thermoset jacket have been changed to "LSZH" and "LSZH-XL" respectively.
- The reference standards for the circuit integrity tests have been revised to IEC 60331-1, 60331-2 and 60331-3, and ULC-S139.
- The conditioning temperature for the test "Pulling through metal plates" has been revised to minus 10°C.
- The heat deformation for CPE-XL has been added.

Specific details of new/revise 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/revise paragraphs noted in the attached or explain why these new/revise 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 – Please immediately identify any current Listing Reports or products that are no longer active and should be removed from our records.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.

4	Info	Construction
4.12	Info	Cable jackets
4.12.1	Info	General

The cable jacket shall be one of the following types:

4.12.1.1

Marking code symbol	Material	Temperature rating, °C
T	Polyvinyl chloride thermoplastic	60, 75 or 90
TPE	Thermoplastic elastomer	60, 75 or 90
N	Neoprene	75 or 90
CP	Thermosetting chlorosulfonated polyethylene	75 or 90
XP	Polyolefin	90
CPE-XL	Thermosetting chlorinated polyethylene	90
LSZH-XL	Low smoke halogen-free thermoset	90
TPP <u>LSZH</u>	Low smoke halogen-free thermoplastic polyolefin	75 <u>or 90</u>

5	Info	Testing details and performance requirements of cable types
5.3	Info	Qualification and capability tests
5.3.4	Info	Flame test
5.3.4.2	Info	Circuit integrity test (optional)

To be marked “IEC 60331”

5.3.4.2.2

Circuit integrity cables shall pass the flame test classification FT4, in addition to the circuit integrity test of IEC 60331 using the equipment of IEC 60331-11 and the procedures of IEC 60331-21 for cables rated up to 1 kV, IEC 60331-23 for electric data cables, or IEC 60331-25 for optical fiber cables. Cables shall pass the circuit integrity tests of IEC 60331-1, IEC 60331-2, and IEC 60331-3.

To be marked “ULC S139”

5.3.4.2.3

~~Optionally, cables that pass the UL 2196 “Tests for Fire Resistive Cables” and are tested without conduit may also be marked per Clause 6.1 j).~~ Cables that pass the CAN/ULC-S139 tests may also be marked per Clause 6.1 j).



CLAUSE	VERDICT	COMMENT
5.3.8	Info	<p>Pulling through metal plates test</p> <p>Procedure</p> <p>A reel containing 45 m (150 ft) of finished cable shall be mounted on a stand and placed on the floor so that the distance between the bottom of the cable reel and a line perpendicular to the centre of the plates is 2.03 m (80 in). The cable shall be cooled to $\pm 10 \pm 1$ °C for 24 h. The distance between the first plate and a line tangent to the coil at the point where the cable comes off the coil shall be 460 mm (18 in). Upon completion of the period of cooling, the following procedures shall be carried out immediately.</p> <p>One end of the sample shall be threaded in succession through the holes labelled A, B, C, and D in Figure 1. As soon as the first part of the sample has been threaded through the four holes, the end of the sample emerging from hole D (head end) shall be grasped securely by one or two persons standing on the floor in a position such that the cable emerges from hole D at an angle of about 45° to the vertical. While maintaining this angle, 15 m (50 ft) of the sample shall be pulled (hand-over-hand whenever possible) entirely through the holes until the end of this sample (tail end) emerges from hole D. The sample shall be pulled through rapidly, and no effort shall be made to straighten or adjust the sample except to remove kinks that would prevent the sample from being pulled completely through the four holes. All of the pulling shall be done from beyond hole D, not from between plates.</p> <p>As soon as the tail end of the sample emerges from hole D, the sample shall be cut to provide a 15 m (50 ft) length, and the head end of this sample shall be threaded in succession through the holes labelled E, F, G, and H in Figure 1. The entire length of the sample shall be pulled through in the manner indicated in the preceding paragraph.</p> <p>As soon as the tail end of the sample emerges from hole H, the head end of the sample shall be threaded in succession through the holes labelled I, J, K, and L in Figure 1, and the entire length of the sample shall be pulled through in the manner indicated above. Immediately thereafter, the overall sample shall be examined visually to determine if the cable is damaged and the degree of damage.</p>
5.3.8.3		
6	Info	Cable type and product markings
6.1	Info	Cable identification
6.1 j)		“IEC 60331” or “UL 2196” marking if “ULC S139” and the hourly rating where applicable (for halogen-free only);



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		<table border="1"> <thead> <tr> <th>Jacket material</th> <th>Polyvinyl chloride</th> <th>Thermoset chloro-sulfonated polyethylene</th> <th>Thermoset neoprene</th> <th>Thermoset chlorinated polyethylene</th> <th>Thermoset cross-linked polyolefin</th> <th>Thermoplastic elastomer</th> <th>Low smoke halogen-free thermoplastic polyolefin</th> <th>Low smoke halogen-free thermoset</th> </tr> </thead> <tbody> <tr> <td>Jacket type designation</td> <td>T</td> <td>CP</td> <td>N</td> <td>CPE-XL</td> <td>XP</td> <td>TPE</td> <td>TPO</td> <td>LSZH</td> </tr> <tr> <td>Temperature rating, °C</td> <td>60, 75 or 90</td> <td>75 or 90</td> <td>75 or 90</td> <td>90</td> <td>90</td> <td>60, 75 or 90</td> <td>75</td> <td>90</td> </tr> <tr> <td>Physical properties per CSA C22.2 No. 2556 unaged:</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Tensile strength, min, MPa (psi)</td> <td>10.3 (1500)</td> <td>12.4 (1800)</td> <td>12.4 (1800)</td> <td>12.4 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(1500)	9.65 (1400)	9.65 (1400)	Elongation at rupture, min, %	150	300	300	300	150	150	100	150	Set, max, %	—	30*	20	30*	—	—	—	—	Aging requirements — 60 °C rated jacket:									Air oven temperature, °C	100 ± 1	—	—	—	—	100 ± 1	—	—	Hours	168	—	—	—	—	168	—	—	Tensile strength, % retention of unaged, min	85	—	—	—	—	75	—	—	Elongation at rupture, % retention of unaged, min	60	—	—	—	—	75	—	—	Aging requirements — 75 °C rated jacket:									Air oven temperature, °C	100 ± 1	113 ± 1	100 ± 1	—	—	100 ± 1	100 ± 1	—	Hours	240	168	240	—	—	240	240	—	Tensile strength, % retention of unaged, min	70	85	—	—	—	75	75	—	Elongation at rupture, % retention of unaged, min	45	50	—	—	—	75	65	—	Tensile strength, min, MPa (psi)	—	—	6.2 (900)	—	—	—	—	—	Elongation at rupture, min	—	—	50	—	—	—	—	—	Aging requirements — 90 °C rated jacket:									Air oven temperature, °C	121 ± 1	121 ± 1	121 ± 1	121 ± 1	121 ± 1	121 ± 1	—	121 ± 1	Hours	168	168	240	168	168	168	—	168	Tensile strength, % retention of unaged, min	85	85	—	85	70	75	—	75	Elongation at rupture, % retention of unaged, min	60	50	—	60	70	75	—	75	Tensile strength, min, MPa (psi)	—	—	6.2 (900)	—	—	—	—	—	Elongation at rupture, min	—	—	50	—	—	—	—	—	Oil resistance per CSA C22.2 No. 2556 After oil immersion at °C	70 ± 1	121 ± 1	121 ± 1	121 ± 1	100 ± 1	70 ± 1	70 ± 1	121 ± 1
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Table 7



CLAUSE	VERDICT	COMMENT
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Jacket material	Polyvinyl chloride	Thermoset chloro-sulfonated polyethylene	Thermoset neoprene	Thermoset chlorinated polyethylene	Thermoset cross-linked polyolefin	Thermoplastic elastomer	Low smoke halogen-free thermoplastic polyolefin	Low smoke halogen-free thermoset
Jacket type designation	T	CP	N	CPE-XL	XP	TPE	TPO	LSZH
Temperature rating, °C	60, 75 or 90	75 or 90	75 or 90	90	90	60, 75 or 90	75	90
Hours	4	18	18	18	96	4	4	18
Tensile strength, % retention of unaged, min	80	60	80	60	50	80	75	60
Elongation at rupture, % retention of unaged, min	60	60	60	60	50	60	75	60
Heat deformation at 100°C ± 1 °C, per CSA C22.2 No. 2556 maximum, %	—	—	—	15	—	—	50%	—
Heat deformation at 121 °C ± 1 °C, per CSA C22.2 No. 2556 maximum, %	50	—	—	15	15	30	50%	—
Hot creep per CSA C22.2 No. 2556 15 min at 150 ± 1 °C	—	100*	—	100*	—	—	—	100
Hot creep elongation, max %	—	10*	—	10*	—	—	—	10
Hot creep set, max, %	—	—	—	—	—	—	—	—
Acid gas emission, pH value, minimum per CSA C22.2 No. 2556	—	—	—	—	—	—	3.56	3.56
Halogen content by weight, maximum, % per Clause 5.3.10	—	—	—	—	—	—	0.2	0.2

* Hot creep elongation and hot creep set may be used as alternative tests to the unaged set test.



CLAUSE	VERDICT	COMMENT
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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.
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