

## Standard Information

**Standard Number:** UL 83

**Standard Name:** Thermoplastic-Insulated Wires and Cables

**Standard Edition and Issue Date:** 15<sup>th</sup> Edition Dated March 28, 2014

**Date of Previous Revision to Standard:** 14<sup>th</sup> Edition Revised February 15, 2008

## Effective Date of New/Revised Requirements

Effective Date (see Schedule below): **December 31, 2015**

## Impact, Overview, Fees 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requests in writing that current requirements be used along with their understanding that their listings will be withdrawn on Effective Date noted above, unless the product is found to comply with new/revised requirements.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 changes with respect to the previous edition include editorial revisions, corrections and new/revised requirements. Specific details of new/revised requirements are found in table below.

**Schedule:** So that shipping of products with Listing Marks will not be interrupted, an **approximate** schedule has been established to ensure Listing Reports are found compliant by Effective Date:

- April 30, 2015 = 8 Month Report Review – Intertek will review all Reports. Update if compliance is verified or issue Findings Letter/Quote for any re-evaluations needed
- June 30, 2015 = 6 Month Quote Cut-off – Quotes returned for necessary re-evaluations
- November 30, 2015 = 30 Day Warning – Client advised of all non-compliant Reports to be Suspended
- **December 31, 2015** = Effective Date – ATM Suspended for all non-compliant Reports

**Fees:** An initial review of Listing Report (s) will be covered by a direct billing project and will be invoiced at not more than \$1000 per report.

### 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**Current Listings Not Active?** – *Please immediately identify any current Listing Reports or products that are no longer active and should be removed from our records.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.*

## Description of New/Revised Technical Requirements

Clause	Verdict	Comment	NC#
4.4	Info	For assemblies that include thermoplastic-insulated single conductors, the reference to a lead-base alloy for a bare copper conductor has been removed.	
5.2	Info	<b>Conductor resistance</b>	
5.2.1		<p><i>New clause added (Affects Class H, I and K types and types where resistance is not determined from tables in the past);</i></p> <p><i>Clause added to cover conductor resistance requirements for class H, I and K. The procedure for determining the maximum dc resistance for other constructions not found in the tables has also been added:</i></p> <p>The direct-current resistance of the conductor shall not be greater than shown in Tables 14 – 23 inclusive. For conductors for which the maximum resistance is not tabulated in Tables 14 – 23, the maximum resistance for a given size of the solid or stranded construction shall be determined by multiplying the maximum resistance tabulated in the tables for uncoated copper of the same size and construction by the ratio of 100 percent IACS (International Annealed Copper Standard) to the percent conductivity as shown in the applicable conductor standard.</p>	
5.2.2		<p><i>New clause added (Only needs to be considered if twisted conductors were allowed a higher resistance than tables showed);</i></p> <p><i>This new clause has been added to specify the conductor resistance requirements for twisted conductor assemblies:</i></p> <p>A twisted conductor assembly shall not exceed the value tabulated in Tables 14 – 23 as applicable, for a single conductor multiplied by whichever of the following factors is applicable:</p> <ul style="list-style-type: none"> <li>a) Cabled in one layer: 1.02;</li> <li>b) Cabled in more than one layer: 1.03; or</li> <li>c) Cabled as an assembly of other pre-cabled units: 1.04.</li> </ul>	
5.5	Info	<b>Long-term insulation resistance in water</b>	
5.5.2.1		<p>Revised to indicate the method used to calculate the maximum decrease in insulation resistance is determined from a curve derived from the best fit using the method of least squares.</p> <p>Clause changed from “(drawn to represent the average of actual values)” to “(derived from the best fit using the method of least squares representing the average of actual values)”</p>	
5.7		<p><b>Capacitance and relative permittivity of wet rated (“W” type) wires</b></p> <p>Revised to indicate that the specimens are immersed in water at the wet-rated temperature, 60°C, 75°C or 90°C.</p> <p>Clause changed from “Specimens of finished wire immersed in water at rated temperature” to “Specimens of finished wire immersed in water at the wet-rated temperature”</p>	

# Standards Update Notice (SUN)

Issued: April 20, 2015

Clause	Verdict	Comment	NC#
5.10	Info	<b>Cold bend and cold impact</b>	
5.10.1.1		Note: Although this clause currently states that conditioning at a temperature of -40°C is optional, in Canada, this requirement is mandatory as per the Canadian Electrical Code, Part I.	
5.12	Info	<b>Flame and Smoke</b>	
5.12.6.3 a)		The reference point for the FT4 vertical tray flame test has been changed from "the bottom of the cable tray" to "the lower edge of the burner face".	
5.13		<b>Weather resistance</b> ( <i>Optionally rated Type SR wire and cable with nylon only</i> )  The speed for testing nylon has been added, i.e., 0.85 mm/s (2 in/min).	
5.17	Info	<b>Crush resistance (nylon-covered types or insulations other than PVC)</b>  Revised to remove the reference to testing of 10 specimens. Ten points on only one specimen are subjected to the Crush resistance test.	
5.19	Info	<b>Durability of ink printing</b>	
5.19.1	Info	Revised to indicate that testing of finished nylon jacketed wire that has ink printing legible through the nylon jacket need not be tested.	
5.23	Info	<b>Dielectric voltage-withstand in water.</b>	
	Info	The minimum immersion time in water has been revised to from "6 h" to "1 h".	
7	Info	<b>Deep-well submersible pump cable</b>	
7.3.1 i)	Info	Revised to permit the maximum operating dry and wet temperature rating of the insulation to be marked on the product and package.	
7.4.2	Info	Revised to indicate that the immersion time for twisted assemblies is 1 h to be consistent with clause 4.4	
7.4.4		Revised such that the conductors of a cabled assembly are tested individually.	
8	Info	Since all of the test methods in section 8 have now been adopted into CSA C22.2 No. 2556/UL 2556, the entire Section 8 along with any referenced figures, graphs and tables have been deleted. Clauses that referenced requirements in section 8 have been revised to reference CSA C22.2 No. 2556/UL 2556.	
Table 21		Revised to include class H stranding	
Table 23 (new)		New table for maximum dc resistance at 20°C of class I and K stranded conductors	
Table 24 (formerly Table 23)	Info	The IR values for THW and TW75 were incorrect. The values were inconsistent with type TW and did not satisfy the formula for IR where $IR = k \log (D/d)$ . The values have been corrected, both GΩ·m and MΩ·1000ft (columns 6 and 11, respectively).	
Table C1	Info	Revised to exclude THHN and T90 Nylon from Gasoline and Oil Resistance.	
		<b>CUSTOMERS PLEASE NOTE:</b> 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.	