# Standards Update Notice (SUN)

**Issued: January 8, 2016**

## Standard Information

**Standard Number: UL 2595 2nd Ed. / CSA C22.2 No. 0.23 1st Ed.**

**Standard Name:** Standard for Safety for General Requirements for Battery-Powered Appliances
**Standard Edition and Issue Date:** 2nd Edition Dated September 9, 2015
**Date of Revisions:** 2nd Edition Dated September 9, 2015
**Date of Previous Revisions to Standard:** 1st Edition issued May 22, 2013

## Effective Date of New/Revised Requirements

**Effective Date (see Processing Schedule below): September 26, 2016**

## 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requests in writing that current requirements be used along with their understanding that their listings will be withdrawn on Effective Date of **September 26, 2016** unless the product is found to comply with new/revised requirements.

**Overview of Changes:** Revisions include changes to Markings, Instructions, and Construction Requirements. 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).**

**Processing Schedule:** So that production of products bearing Listing Marks will not be interrupted, the following schedule of ***approximate*** dates has been established to ensure Listing Reports are found compliant by Effective Date:

- January 25, 2016 = 8 Month Report Review – Intertek will review all Reports. Update if compliance is verified or issue Findings Letter/Quote for any re-evaluations needed
- March 25, 2016 = 6 Month Quote Cut-off – Quotes returned for necessary re-evaluations
- August 26, 2016 = 30 Day Warning – Client advised of all non-compliant Reports to be Suspended
- September 26, 2016 = 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 Intertek Engineer with review of your Certification Reports, please submit technical information in response to the new/revised paragraphs noted in the attached or explain why these new/revised requirements 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.***

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## Description of New/Revised Technical Requirements

| Clause | Verdict | Comment |
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| 6.3 | | Revised<br>Appliances shall be marked with "WARNING – To reduce the risk of injury, user must read instruction manual" or the equivalent. The warning marking shall not be on a detachable part of the appliance and shall be clearly discernible from the outside of the appliance with any detachable battery pack installed. |
| 6.7 | | Revised<br>A detachable battery pack, a separable battery pack, or a battery-operated appliance provided with an integral battery shall be marked ″For use only with ____ charger,″ or the equivalent. ~~The charger may be identified by a catalog number, series identification, or the equivalent.~~ where the underlined space is completed with the manufacturer's name or trademark, catalog number, series identification, or the equivalent of the charger. Alternatively, the statement "See Instruction Manual for Additional Chargers," or the equivalent may be employed in addition to at least one charger referenced by catalog number. |
| 6.8 (c) | | Revised<br>The date or other dating period of manufacture not exceeding any three consecutive months. A date-code repetition time cycle shall not be less than 10 years. The date of manufacture may be abbreviated or in an established accepted code, or a code affirmed by the manufacturer. The code shall not require reference to the manufacturer's records to determine when the appliance was produced.<br><br>~~Exception No. 1: The manufacturer's identification may be in a traceable code when the appliance is identified by the brand or trademark owned by a private labeler.~~<br><br>~~Exception No. 2: The date of manufacture may be abbreviated or in an established accepted code, or a code affirmed by the manufacturer. The code shall not require reference to the manufacturer's records to determine when the appliance was produced.~~ |

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| 6.9 | | Revised<br>Separable and detachable battery packs shall also be marked with additional information as follows:<br><br>a) The capacity assigned by the manufacturer in Ah or mAh , based on the rated capacity of the cells determined In accordance with General Purpose Lead-Acid Batteries (Valve-Regulated Types) – Part 1: General Requirements, Functional Characteristics – Methods of Test, IEC 61056-1; Secondary Cells and Batteries Containing Alkaline or Other Non-Acid Electrolytes – Secondary Lithium Cells and Batteries for Portable Applications, IEC 61960; Secondary Cells and Batteries Containing Alkaline or Other Non-Acid Electrolytes – Portable Sealed Rechargeable Single Cells – Part 1: Nickel-Cadmium, IEC 61951-1; or Secondary Cells and Batteries Containing Alkaline or Other Non-Acid Electrolytes – Portable Sealed Rechargeable Single Cells – Part 2: Nickel-Metal Hydride, IEC 61951-2, as applicable;<br><br>b) For alkaline or other non-acid electrolyte batteries, the type of battery such as Li-Ion, NiCd and NiMH. |
| 6.10 | | Added<br>Markings required by this standard for detachable or separable battery packs shall be legible and durable. Signs shall be in contrast such as color, texture, or relief, to their background such that the information or instructions provided by the signs are clearly legible when viewed with normal vision from a distance of (500 + 50) mm. Signs need not be in accordance with the blue color requirements of ISO 3864-2. |
| 6.11 | | Added<br>Compliance with Clause 6.10 shall be checked by inspection and by rubbing the marking by hand for 15 s with a piece of cloth soaked with water and again for 15 s with a piece of cloth soaked with petroleum spirit. After the tests, the marking shall be easily legible, and it shall not be easily possible to remove markings. The petroleum spirit to be used for the test shall be a reagent grade hexane with a minimum of 85% as n-hexane. The designation “n-hexane” is the chemical nomenclature for a “normal” or straight chain hydrocarbon. An example of this petroleum spirit is also known as a certified ACS (American Chemical Society) reagent grade hexane (CAS #110-54-3). |
| 6.12 | | Added<br>In considering the durability of the marking, the effect of normal use shall be taken into account. Thus, for example, marking by means of paint or enamel other than vitreous enamel on containers that are likely to be cleaned frequently is not considered to be durable. |
| 6.13 | | Added<br>If a marking required by this standard for detachable or separable battery packs has an adhesive backing, the adhesive backing shall be durable. |

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| 6.14 | | Added<br>Compliance with Clause 6.13 shall be checked by either meeting the requirements in the Standard for Marking and Labeling Systems, UL 969 under the conditions of occasional exposure to oil, humidity and water, and appropriate for the surface to which it is applied, or by the following tests, (a) – (c).<br>a) Three labels applied to the tools or a panel of the test surface material shall be placed in an oven for a minimum of 24 h with the oven is maintained at a temperature of 120 ±2°C (248±3.6°F), or alternatively for a minimum of 200 h at a temperature of 90 ± 2°C.<br>b) Six additional labels applied to the tool or a panel of the test surface material shall be placed in a controlled atmosphere maintained at 21°C to 30°C (69.8°F to 86°F) with a relative humidity of minimum 45% for at least 24 h. After this conditioning, immerse three labels in water and the other three labels in IRM 903 oil at a temperature of 21°C to 30°C (69.8°F to 86°F) for 48 h.<br>c) Three additional labels applied to the tool or a panel of the test surface material shall be placed in a controlled atmosphere maintained at 21°C to 30°C (69.8°F to 86°F) with a relative humidity of minimum 45% for 72 h. |
| 6.15 | | Added<br>After these conditionings in Clause 6.14 (a) – (c), it shall not be easy to remove the label by scraping across the label with a flat steel blade of 0.8 mm (0.03 in) thickness and any convenient width, held at right angles, and the label shall show no signs of curling. |
| 7.5 | | Revised<br>The instruction manual for all battery-operated appliances shall contain the following or equivalent warnings as applicable immediately following any other safety instructions required by the end-product standard. The term “appliance” may be substituted with the name of the actual type of product.<br><br>i) Follow all charging instructions and do not charge the battery pack or appliance outside of the temperature range specified in the instructions. Charging improperly or at temperatures outside of the specified range may damage the battery and increase the risk of fire.<br><br>k) Do not modify or attempt to repair the appliance or the battery pack (as applicable) except as indicated in the instructions for use and care. |
| 8.6 | | If an opening does not allow entry of the test probe specified in Clause 8.5, then the probe shall be unarticulated and applied to each opening with a force of 20 N (4.5 lbf). If the unarticulated probe can be made to widen the opening, then the test in Clause 8.5 shall be repeated with a separate probe inserted into the widened opening in accordance with Clause 8.5. |

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| 8.10 | | Protective impedance shall consist of at least two separate components. If any one of the components is short-circuited or open-circuited based upon the components anticipated failure modes, the values specified in Clause 8.9 shall not be exceeded. A single Y1 or Y2 capacitor complying with one of the following shall be considered to fulfill this requirement:<br><br>~~the Standard for Capacitors and Suppressors for Radio and Television Type Appliances, UL 1414 shall be considered to fulfill this requirement.~~<br><br>Resistors shall be operated at half of their voltage and power ratings. All components are anticipated to fail in the open mode but, thin film, thick film and wire-wound resistors as well as metalized capacitors complying with ~~UL 1414~~<br><br>a) Fixed Capacitors for Use in Electronic Equipment Part 14: Sectional Specification: Fixed Capacitors for Electromagnetic Interference Suppression and Connection to the Supply Mains, IEC 60384-14;<br><br>b) Fixed Capacitors for Use in Electronic Equipment – Part 14: Sectional Specification: Fixed Capacitors for Electromagnetic Interference Suppression and Connection to the Supply Mains, UL 60384-14; or<br><br>c) Fixed Capacitors for Use in Electronic Equipment Part 14: Sectional Specification: Fixed Capacitors for Electromagnetic Interference Suppression and Connection to the Supply Mains, CSA E60384-14. |
| Table 9.1 | TEST | Added<br>Other accessible external surfaces subject to casual contact to Maximum outside surface temperature rises. |
| 11.2.8 | | Fuses, thermal cut-outs, thermal links, temperature limiters, electronic devices or any component(s) or conductor(s) that interrupt the discharge current may operate during the above tests provided at least one of the following is fulfilled:<br>a) For all components that operate other than a user adjustable temperature limiter, the same test shall be repeated and passed two more times, using two additional samples;<br>b) For all user adjustable temperature limiters that operate, the test shall be repeated with the temperature limiter set to the most unfavorable setting and then repeated at this setting with two additional samples;<br>c) The appliance withstands the test with the fuse, thermal cut-out or thermal link or other portions of the electronic circuit bridged; or<br>d) If a certified fuse-link operated, the appliance withstands the test of Clause 11.4.1. |
| 11.6.3 | | Revised<br>In addition, these electronic circuits shall be evaluated using the fault conditions of Clause 11.3.1 (a) – (f) and shall not result in a loss of any safety critical function or shall place and maintain the appliance into a safe state (e.g. the appliance is inoperable) while the fault condition is present. A lithium-ion charging system need not comply with Clauses 11.6.3 – 11.6.8. |

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| 11.6.4 | | Added<br>If the circuit cannot comply with Clause 11.6.3 or if Clause 11.3.1 is not applicable to the electronic circuit by virtue of its design (e.g. single channel design), then the circuit's reliability shall be evaluated by the methods of the Standard for Safety of Machinery – Safety Related Parts of Control Systems – Part 1: General Principles for Design, ISO 13849-1, as required in Clauses 11.6.5 – 11.6.7. Required performance levels (PLr) for typical safety critical functions (SCF) are listed in Table 11.1. Software for this case shall be evaluated as required in Clause 11.6.8. |
| 11.6.7 | | Added<br>Any design that only alerts the user of the loss of the SCF shall not be considered sufficient to fulfill the required $PL_r$ level, except as evidenced in a manner as described in Annex C. |
| 11.6.8 | | Added<br>Software used in portions of the circuit comprised of a microcontroller or in other programmable devices shall comply with the requirement for software class B in accordance with the Standard for Automatic Electrical Controls for Household and Similar Use, Part 1: General Requirements, IEC 60730-1:2010, H.11.12.3 , if the failure of these circuits would create a loss of the safety critical function. In the case where software class B is realized by single channel with periodic self-test, an acceptable period is regarded as either after each activation of the power switch or a maximum of 5 minutes. H.11.12.3.4.1 is only applicable for SCF with a $PL_r$ = c or higher.<br>**Note: The allowance to use microcontrollers and other programmable logic, which are considered as "complex electronic circuits" for category 1 in Safety of Machinery – Safety Related Parts of Control Systems – Part 1: General Principles for Design, ISO 13849-1, is based upon their fulfillment of the requirements of Annex H.11.12.3 of IEC 60730-1:2010.** |
| 11.7.4 | | Revised<br>The tests of Clause 11.7.2 shall be considered passed if all of the following results comply:<br><br>d) There shall be no evidence of damage to the cell vent to impair compliance with Clause 16.2. |
| 15.7 | | Revised<br>After the impact testing of Clauses 15.2 and 15.3, the open circuit voltage of lithium-ion batteries, shall not be less than 90% of the voltage measured immediately prior to the test. In addition, the lithium-ion battery shall demonstrate normal discharging and recharging after the test. There shall be no damage to the cell vent that impairs compliance with Clause 16.2. There shall be no new openings that permit the test probe illustrated in Figure 8.1 applied with a force not exceeding 5 N (1.1 lbf) to access cells or uninsulated circuitry that were not accessible prior to the impact. |
| 16.6 | | Revised<br>Separable battery packs may be provided with a single shoulder harness, double shoulder harness or belt harness for supporting a separable battery pack(s) on the body of the operator. A single shoulder harness or belt harness shall not be permitted for a total mass of separable battery pack(s) of 7.5 kg or more. The harness shall be adjustable to the size of the operator and its operation shall be in accordance with Clause 7.6(d). The harness need not be reusable after the release system has been activated. It is understood that the fault conditions of Clause 11 that may result in fire of the battery pack also create preceding notification behavior (e.g. such as "no operation") of the appliance that is evident to the user. |

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| 16.7 | | Added<br>Shoulder harnesses shall be:<br>a) Designed in a way for easy removal; or<br>b) Equipped with a quick release mechanism that ensures that the separable battery pack(s) can be removed or released quickly from the operator. |
| 16.8 | | Added<br>The quick release mechanism shall be positioned either at the connection between the separable battery pack(s) and harness or between the harness and operator. The quick release mechanism shall only allow separation by deliberate action of the operator. The quick release mechanism shall be designed to open while under the weight of the separable battery pack(s). It shall require the use of only one hand and have no more than two release points. An example of a release point is a buckle that requires squeezing between a thumb and finger before releasing, e.g. side release buckles. |
| 16.9 | | Added<br>A double shoulder harness shall be considered to be designed in a way for easy removal, if the left and right shoulder straps are not connected to each other in front of the operator's body. If the straps to connect between the left and right shoulder straps are provided, it is also considered to be designed in a way for easy removal when the straps connecting between the left and right shoulder straps can be released under the load of the battery pack by using one hand and no more than two release points. The release mechanism shall only allow separation by deliberate action of the operator. |
| 16.10 | | Added<br>The requirements in Clauses 16.7 – 16.9 shall be evaluated using the heaviest separable battery pack(s) identified in Clause 7.6(b). |
| | | Revised<br>Lithium ion cells employed in battery operated appliances or lithium-ion cells employed in battery packs shall comply with the ~~following test requirements for technician replaceable secondary lithium cells as outlined in the Standard for Lithium Batteries, UL 1642:~~<br>Standard for Secondary Cells and Batteries Containing Alkaline or Other Non-acid Electrolytes – Safety Requirements for Portable Sealed Secondary Cells, and for Batteries Made from Them, for Use in Portable Applications, UL 62133 or CAN/CSA E62133. |
| 18.8 | | Revised<br>External chargers or power units shall comply with the following as applicable:<br>a) The Standard for Power Units Other Than Class 2, UL 1012, the Standard for Battery Chargers, CAN/CSA C22.2 No. 107.2, or the Standard for General Use Power Supplies, CSA C22.2 No. 107.1; or<br>b) The Standard for Class 2 Power Units, UL 1310, or the Standard for Power Supplies with Extra-low-voltage Class 2 Outputs, CAN/CSA-C22.2 No. 223; or<br>c) The Standard for Information Technology Equipment – Safety – Part 1: General Requirements, UL 60950-1 or CAN/CSA-C22.2 No. 60950-1. |

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| 18.10 | | Added<br>As identified in the end product standard, protection devices (e.g. overload or overtemperature protection devices) or circuits that switch off the appliance that are required to be of the non-self-resetting type shall be subject to the following allowances:<br>a) Resetting an overload protection device by switching the appliance off and on with the power switch is considered to be a non-self-resetting action; and<br>b) Electronic speed and load regulators are not considered to be overload protection devices if they do not switch off the appliance but reduce the speed of the appliance as a load is applied and increase the speed of the appliance when the load is removed. |
| 12.1.4 | | Revised<br>The glow-wire tests in Clause 21.1.3 shall not be carried out on parts of material classified as HB by the test method described in the Standard for ~~Flammability of Plastic Materials for Parts in Devices and Appliances, UL 94,~~ Fire Hazard Testing – Part 11-10: Test Flames – 50 W Horizontal and Vertical Flame Test Methods, IEC 60695-11-10:2013, provided that the test sample was no thicker than the relevant part. |
| 21.1.8 | | Revised<br>The integrity of the enclosure of a battery operated appliance excluding a detachable or separable battery pack, the deterioration of which might cause the battery operated appliance to fail to comply with this standard, shall be evaluated by the mold-stress test or ball pressure test in accordance with the test conditions and procedures of the end product standard based on the temperatures recorded in Clause 9.2. The acceptability of the result is determined by the relevant requirements of Protection Against Electric Shock, Clause 8; Mechanical Hazards, Clause 12; and Creepage Distances, Clearances and Distances Through Insulation, Clause 20. If no requirements exist in the end product standard, then the evaluation of Clause 21.2 shall be used instead on the enclosure material of the appliance. |
| 21.1.9 | | Revised<br>The integrity of the enclosure of a separable or detachable battery pack, the deterioration of which might cause the battery pack to fail to comply with this standard, shall be evaluated by the ball pressure test in accordance with Clause 21.2. The acceptability of the result shall be determined by the relevant requirements of Protection Against Electric Shock, Clause 8. |
| 22.3 | | Revised<br>If isolation is obtained by means of a safety isolating transformer, it shall comply with the Standard for Low Voltage Transformers – Part 1: General Requirements, UL 5085-1 or CSA C22.2 No. 66.1 and the Standard for Low Voltage Transformers – Part 2: General Purpose Transformers, UL 5085-2 or CSA C22.2 No. 66.2 or the Standard for Low Voltage Transformers – Part 3: Class 2 and Class 3 Transformers, UL 5085-3 or CSA C22.2 No. 66.3 as applicable or the requirements for such transformers within the Standard for Class 2 Power Units, UL 1310, the Standard for Power Supplies with Extra-low-voltage Class 2 Outputs, CAN/CSA-C22.2 No. 223, the Standard for Power Units Other Than Class 2, UL 1012, the Standard for General Use Power Supplies, CSA C22.2 No. 107.1, Standard for Battery Chargers, CSA C22.2 No. 107.2 or the Standard for Information Technology Equipment – Safety – Part 1: General Requirements, UL 60950-1 or CAN/CSA-C22.2 No. 60950-1. |

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| 22.7 | | Revised<br>Optical isolators (optocouplers), used as a means of achieving electrical isolation shall have an isolation voltage rating not less than the electric strength test potential required in the end-product standard and shall comply with the Standard for Optical Isolators, UL 1577 or the Standard for Component Acceptance Service for Optocouplers and Related Devices, CSA Component Acceptance Notice No. 5A. |
| 22.8 | | Revised<br>Electro-mechanical relays, used as a means of achieving electrical isolation shall have an isolation voltage rating not less than the working voltage employed in the end-product and shall comply with the isolation requirements for Standard for Industrial Control Equipment, UL 508 or CSA C22.2 No. 14. |
| 23.1(c)(2) | | Revised<br>2) The charger or power unit has been evaluated to the Standard for Power Units Other Than Class 2, UL 1012, or the Standard for Battery Chargers, CSA C22.2 No. 107.2, or the Standard for General Use Power Supplies, CSA C22.2 No. 107.1, with respect to electric shock. |
| 23.2 | | Added<br>With reference to Clause 23.1(h), a vehicle battery adapter shall comply with the following requirements from the Standard for Vehicle Battery Adapters, UL 2089 (2011 edition):<br>a) Flexible Cords;<br>b) Input Contacts;<br>c) Strain Relief test;<br>d) Abnormal, battery-supply cord short circuit test; and<br>e) Resistance to Crushing test. |
| 24.1 | | Revised<br>The charging system intended to be connected to a Universal Serial Bus (USB) power source(s) shall be considered as powered by a limited power source as described in the Standard for Information Technology Equipment – Safety – Part 1: General Requirements, UL 60950-1 or CAN/CSA-C22.2 No. 60950-1 or a Class 2 power source as described in the Standard for Class 2 Power Units, UL 1310 or the Standard for Power Supplies with Extra-low-voltage Class 2 Outputs, CAN/CSA-C22.2 No. 223 and shall comply with the following: |
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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 the new/revised requirements. |