# STANDARDS UPDATE NOTICE (SUN)
# ISSUED: March 29, 2018

## STANDARD INFORMATION

**Standard Number:** UL 858
**Standard Name:** Standard for Household Electric Ranges
**Standard Edition and Issue Date:** 16th Edition Dated November 7, 2014
**Date of Revision:** February 8, 2017 and November 1, 2017
**Date of Previous Revision of Standard:** April 6, 2016

## EFFECTIVE DATE OF NEW/REVISED REQUIREMENTS

**Effective Date:** **September 1, 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requests in writing that current requirements be used along with their understanding that their listings will be withdrawn on Effective Date noted above, unless the product is found to comply with new/revised requirements.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 following changes reflect the February 2, 2017 revision:**

- Addition and Revision of Requirements to Address Appliances with Induction Heating Functionality
- Addition of Method for Evaluating Protective Electronic Circuits and Controls Using Requirements Based on the Standard for Safety of Household and Similar Electrical Appliances, Part 1: General Requirements, UL 60335-1

**The following changes reflect the November 1, 2017 revision:**

- Nichrome Wire Test and Polymeric Materials Revisions
- New Test for Oven Rack Loading
- Smart Enabled Ranges

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 – Please immediately identify any current Listing Reports or products that are no longer active and should be removed from our records.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 <u>underlined</u> and deletions are shown ~~lined out~~ below.* |
| | | **THE FOLLOWING CHAGES REFLECT THE FEBRUARY 2, 2017 REVISION** |
| 25 | Info | **Switches and Controls** |
| 25.3 | Info | **<u>Electromechanical and</u> electronic controls** |
| 25.3.1 | | Electromechanical and ~~A solid-state control~~ solid-state controls shall comply with the applicable requirements of ~~Standard for Safety-Related Solid-State Controls for Household Electric Ranges, UL 858A~~ <u>Safety of Electromechanical and Electronic Controls, Supplement SB.</u><br><br>~~Exception: This requirement does not apply if the appliance complies with the requirements in Sections 1 – 115 while the solid-state control is totally inoperable and while it is partially inoperable. See also 100.7.~~ |
| 47 | Info | **Operation of Controls** |
| 47.7 | | ***New clause added;***<br><br>Induction heating appliances shall be constructed so that they can only be operated with the recommended vessel placed on the cooking zone and shall comply with Small Metal Object Heating Test – Induction Cooktop Surface Units, Section 59.6. |
| 47.8 | | ***New clause added;***<br><br>An automatic shutoff means shall be provided on an induction heating appliance that will de-energize the induction cooktop surface unit when a cooking vessel is removed for more than 30 seconds, even if the switch controlling the surface unit is in the ”on” position. A manual reset feature shall be required to reenergize the induction cooktop surface unit when the vessel is replaced. See 47.1. |
| 59 | Info | **Temperature Test** |
| 59.3 | Info | **Procedure** |
| 59.3.9 | | ***New section added;***<br><br>Induction Woks |

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| 59.3.9.1 | | A wok filled to its maximum capacity by a mixture of rice and water in accordance with the manufacturer's instructions, and is to be operated for two complete cycles of rice cooking. The cycle is considered as having ended when the thermostatic control automatically switches to the "low" or "off" position. The second cycle is to begin immediately after completion of the first cycle, as the control allows. The temperatures are to be measured throughout the two cycles, and also when the wok has subsequently operated on low heat until temperatures having become stabilized. |
| 59.3.9.2 | | A wok shall have an equivalent sphere diameter that does not differ from the sphere diameter of the induction wok cavity by more than 0/-1 %. This wok may be supplied by the manufacturer. The vessel shall be made of low carbon steel having a maximum carbon content of 0.08% with a thickness of 2 mm +/- 0.5 mm. The height of the wok shall not be less than twice the depth of the induction wok cavity or as recommended in the manufacturer's instructions. |
| 59.6 | | ***New section added;***<br><br>**Small metal object heating test – induction cooktop surface units** |
| 59.6.1 | | Induction cooktop surface units shall be constructed so that the induction coil can only be operated when a vessel is placed on the cooking zone. The appliance shall be operated at rated voltage with the controls adjusted to their highest setting. An iron bar, 5/64 in (2 mm) thick having dimensions approximately 4 in (100 mm) x ¾ in (20 mm), is to be placed in the most unfavorable position on each cooking zone, tested one at a time. The temperature rise of the bar shall not exceed 35 °C (95 °F). |
| 72 | Info | **Abnormal-Operation Test** |
| 72.1 | Info | **General** |
| 72.1.7.1 | | ***New clause added;***<br><br>For an appliance employing induction cooktops surface units, the test in 72.1.7 shall be conducted. It is not necessary to operate the surface unit uncovered during this testing. |
| 87 | | **User Instructions** |
| 87.3 h) | | The important instructions in the manual shall include the appropriate instructions in (a), or the equivalent; and the appropriate instructions in (b) – (h), as applicable, or the equivalent.<br><br><u>h) INDUCTION COOKTOP SURFACE UNITS:</u><br><br><u>1) Do not place metallic objects such as knives, forks, spoons and lids on the cooktop surface since they can get hot.</u> |

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| 87.16 | | ***New clause added;***<br><br>For smart enabled electric ranges, which do not disable remote operation functionality upon opening the door, in accordance with SA3.4, an additional statement shall be provided. ”Remote Operation – This appliance is configurable to allow remote operation at any time. Do not store any flammable materials or temperature sensitive items inside, on top or near surface units of the appliance.” |
| Supplement SA | Info | **SAFETY OF SMART ENABLED HOUSEHOLD ELECTRIC RANGES** |
| SA 2 | Info | **General** |
| SA2.1 | | Controls that respond to external communication signals or data shall comply with the construction and performance requirements of the Standard for Automatic Controls for Household and Similar Use, Part 1: General Requirements, UL 60730-1, and tested as an operating control. If the control also incorporates ~~protective functionalities~~ Class B safety functionalities, these control functions shall be evaluated to the requirements ~~for protective controls. Under~~ specified in Safety Of Electromechanical And Electronic Controls, Supplement SB. |
| SA2.1.2 | | ~~With respect to SA2.1.1, the requirement is not applicable to~~ Smart or smart-enabled controls ~~located in low voltage circuits where the maximum power available does not exceed 15 W. This does not exempt the control from investigation for compliance with~~ that affect the operation of the appliance shall comply with the requirements in Functional Safety, Section SA3.<br><br>Exception: A communication, display, router, monitor, etc. that does not have direct control over the operation of the appliance does not need to be investigated in accordance with the requirements in Section Functional Safety, SA3. |
| SA3 | Info | **Functional Safety** |
| SA3.2 | | With respect to SA3.1, the control shall not:<br><br>a) Render inoperative any ~~protective~~ Type 2, Class B or C functionality of any control within the appliance;<br>b) Alter the response or expected performance of any Type 2, Class B or C ~~protective~~ functionality of any control within the appliance.<br>c) Alter the response or expected performance of ~~user actuation of controls, movement~~ of doors, covers, ~~or contact with external and functional surfaces of the appliance resulting in exposure of hazardous electrical, moving, hot parts or radiation~~ lids, locking and/or interlocking mechanisms that function to limit user exposure to hazardous electrical parts, hazardous moving parts, hazardous hot parts, heated cavities or radiation;<br><br>Exception: If the response or performance is altered in a way that does not introduce a hazardous condition (e.g. a rotating part stops more quickly), this requirement is not applicable. |

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| | | d) Enable remote operation for operating modes normally considered ”attended”, such as cooktop operation<br>e) Alter the order of appliance control response in a manner that forces a protective control to operate where normally an operating control would respond.<br>f) Supersede the response of any protective control such as temperature limiting or door interlocking functions etc. |
| SA 3.6 | | With respect to SA3.4, the performance and reliability evaluation is not required if it is obvious from examination of circuit diagram(s) that the control operates wholly independent of the appliance<u>’s controls that have been investigated for functionality</u> ~~protective control(s)~~ and therefore is incapable of adversely affecting their operation. |
| | | **THE FOLLOWING CHANGES REFELCT THE NOVEMBER 1, 2017 REVISION** |
| 10 | Info | **Internal Wiring** |
| 10.24.1.1 | | ***New clause added;***<br><br>A risk of fire is considered to exist at any two points in a circuit where a power of more than 15 watts can be delivered into an external resistor connected between the two points within 5 seconds. To deliver 15 watts at a connector, the circuit must have a nominal load of 60 watts or more. This is based on the maximum power transfer theorem that shows an electrical connection can only dissipate 1/4 of the power of the load when the resistance of the connection is equal to the resistance of the load. |
| 10.24.1.2. | | ***New clause added;***<br><br>Electrical connections are not required to comply with 10.24.1 when all mating parts of the electrical connection are provided with a component (e.g. contacts within a switch or relay, connections within a motor, etc.) that complies with the relevant component standard. Electrical connections that are mated to the component from the appliance are required to comply with 10.24.1. |
| 10.24.2 | | The requirements in 10.24.1 shall not apply to welded <u>or soldered</u> ~~connections and connections within low voltage circuits~~. |
| 10.24.5 | | With reference to 10.24.1, all ~~polymeric~~ <u>non-metallic combustible</u> materials located within the envelope of a vertical flame cylinder having a diameter of 20 mm and a height of 50 mm, placed above the center of the connection zone and on top of the ~~polymeric~~ <u>non-metallic</u> parts that are supporting current-carrying electrical connections as shown in Figure 10.2 shall have a flammability classification as follows:<br><br>a) minimum of V-0, VTM-0, or HF-1, in accordance with the Standard for Tests for Flammability of Plastic Materials for Parts in Devices and Appliances, UL 94, and Fire Hazard Testing – Part 11-10: Test Flames – 50 W Horizontal and Vertical Flame Test methods, IEC 60695-11-10; |

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| | | b) A minimum of SC-0 or SCTC-0, in accordance with the Standard for Tests for Flammability of Small Polymeric Component Materials, UL 1694; or<br>c) A minimum VW-1 for wire, tubing, sleeving and tape in accordance with 10.24.3. |
| 10.24.6 | | With reference to 10.24.5 and Figure 10.2, the flame cylinder shall be placed above the center of each connection zone and on top of any polymeric parts that are supporting current-carrying connections as shown in Examples 1-3 of Figure 10.2. In the case of uninsulated connections, the flame cylinder shall be placed above the center of each connection zone and directly on top of current-carrying conductors as shown in Examples 4-6 of Figure 10.2. The flame cylinder shall project through all metallic and ~~polymeric~~ non–metallic material. If "C" is intended to act as a barrier to "D", or if the flame cylinder extends beyond the outer enclosure of the appliance, then the adequacy of the barrier shall be demonstrated by testing as described in Abnormal Operation – Nichrome Wire Test, Section 77A. |
| 33 | Info | **Oven Racks, Drawers, and Sliding Cooking Units** |
| 33.3 | | ***New clause added;***<br><br>An oven rack shall not fall from its supports and the test weight shall not slide off the rack when tested per 33.4 – 33.9. Testing shall be performed with the oven at room temperature except for 33.9. If a unit is provided with two or more different rack styles each rack style shall be tested through 33.4 – 33.9. |
| 33.4 | | ***New clause added;***<br><br>The test weight shall be 8.85 inches (225 mm) square and shall weigh the amount shown in Table 33.1. |
| Table 33.1 | | ***New table added;***<br><br>**Oven rack loading based on rack positions**<br><br>**Width of Rack** / **Load**<br>Up to 14 in (355.6 mm) / 20 lb (9.1 kg)<br>Greater than 14 and up to 18 in (greater than 255.6 and up to 457.2 mm) / 25 lb (11.3 kg)<br>Greater than 18 in (Greater than 457.2 mm) / 30 lb (13.6 kg) |
| 33.5 | | ***New clause added;***<br><br>With the oven rack in the lowest position, pull the rack out to the full extent of its travel and place the weight on the center of the rack. Slide the rack in as far as possible with the weight in place, then slide the rack back out to the full extent of its travel. |
| 33.6 | | ***New clause added;***<br><br>Repeat the test specified in 33.5 with the rack in the centermost position. |

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| 33.7 | | ***New clause added;***<br><br>Repeat the test specified in 33.5 with the rack in the uppermost position. If there is less than 1.8 inches of vertical space for the load, then the test shall be performed on the next lower rack position. |
| 33.8 | | ***New clause added;***<br><br>Perform thermal conditioning. On self-clean ovens, run the longest available self-clean cycle with racks in place unless instructions indicate to remove the rack. On non-self-clean ovens, run bake at 475°F (246 °C) for 3 hours with racks in place. Allow the oven to fully cool. |
| 33.9 | | ***New clause added;***<br><br>Repeat the tests specified in 33.5, 33.6 and 33.7. |
| 33.10 | | ***New clause added;***<br><br>Heat oven to 475°F (246 °C). After one-hour repeat 33.5. Allow oven temperature to recover to 475 °F (246 °C), then repeat 33.6 and 33.7. |
| 77A | Info | **Abnormal Operation – Nichrome Wire Test** |
| 77A.1 | | If required per 10.24.1(b), an electrical connection shall be tested as specified in ~~77A.6.2 - 77A.6.9~~ 77A.1.1 – 77A.11. ~~One Sample~~ Each connection shall be evaluated ~~per connection~~ using one connector sample. Multiple connections may be independently evaluated within the same appliance if they are located such that they do not influence the outcome or evaluation of the test. As a result of the test, there shall be no evidence of ignition of the cheesecloth referenced in 77A.3 as indicated by broken threads of the cheesecloth. Browning of the cheesecloth is acceptable provided that all individual threads are unbroken. Cheesecloth fibers may become brittle after exposed to heat. Care must be taken to prevent breakage of fibers during inspection. Fibers broken during inspection are not considered as a non-compliance. |
| 77A.1.1 | | ~~As a result of the test, there shall be no evidence of~~ The test shall be considered inconclusive and then repeated if there is evidence of:<br><br>a) Fracture or shorting of the nichrome wire prior to completion of the test, or<br>b) A shift in the position of the nichrome wire sufficient to alter the severity of the test. |

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| 77A.3 | | A floor-supported appliance shall be ~~placed on a surface of concrete, calcium silicate board, fiber cement board, or other material that is noncombustible~~ supported on a non-conductive surface. The top, sides, front and back of appliance shall be completely covered by single-layer cheesecloth panels. A mechanical means, such as small pieces of metal foil adhesive tape, shall be used to secure the cheesecloth panels so there are no gaps between the panels. A single layer of cheesecloth, slightly larger than the appliance bottom surface, shall cover the supporting surface. If agreeable to those concerned, cheesecloth may be placed only in the area of the anticipated breach. |
| 77A.10 | | In the application of the nichrome wire to the part under test, the nichrome wire may be inserted into the part, or the wire may be externally wrapped around the part under test. The intent is to achieve complete combustion of the part under test and/or adjacent materials.<br><br>a) When inserting the coil into the part under test, a single strand of nichrome wire with ~~an approximate~~ a minimum length of ~~2.0 –~~ 4.0 in (~~50 mm –~~ 100 mm) shall be formed into a coil with a diameter and length that approximates the connection under evaluation. The coil shall be inserted in place of the connection under evaluation. In the case of a multi-pin connector, a single terminal pin shall be removed from the connector such that the coil can be inserted in the worst case location (typically the lowest position). If worst case position is not obvious, then multiple positions must be evaluated.<br>b) When externally wrapping a connector or uninsulated terminal, use minimum 2.0 in (50 mm) of nichrome wire to achieve a minimum of three evenly spaced wraps along the length of the connector or uninsulated terminal.<br>c) Uninsulated terminals shall be wrapped with a non-flammable tape or sleeve prior to wrapping with nichrome wire to prevent shorting out portions of the nichrome wire.<br>d) In the case of switching devices, a coil of nichrome wire shall be placed inside the device in the position of the contacts and appropriately supported to prevent movement during the test. |
| Supplement SA | Info | **SAFETY OF SMART ENABLED HOUSEHOLD ELECTRIC RANGES** |
| SA3 | Info | **Functional Safety** |

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| SA3.4 | With respect to SA3.2(d), a remote operation is not permitted for operating modes normally considered "attended", such as the cooktop or open door broil functions. Remote operation is permitted for other operations, usually "unattended", such as baking, convection, closed door broil, steaming, etc, under the following conditions:<br><br>a) ~~User programs appliance remotely and initiates heating function by a "local" operation (actuation of a control) on the appliance: The user can remotely program the preheating function or an unattended cooking mode. The "Remote Operation Start" button on the physical appliance must be pressed within 10 minutes of programming in order to initiate the preheating function or cooking mode, otherwise the programmed sequence is cancelled. Remote programming may include remote activation and remote cancellation times for heating function modes.~~ The user manually sets the control at the appliance to enable remote operation. Examples for initiating this setting include, but are not limited to, pressing a button, pressing and holding a button, or activating a switch or latch Once remote operation is enabled, the user may repeatedly use remote functions regardless of door openings or local use of the appliance.<br>~~b) User enables remote function by a "local" operation (actuation of a control) at the appliance and programs / initiates heating function remotely: A control on the appliance shall be manually adjusted to the setting for remote operation before the appliance can be operated in this mode. Examples for initiating this setting include, but are not limited to, pressing a button, pressing and holding a button, activating a switch or latch, etc. The "remote mode" may only be set once the oven door is in the closed position. If the oven door is opened before the preheating/ cooking mode is initiated, the selected remote operation shall be cancelled. The remote preheating/cooking mode may be programmed at the physical appliance or remotely. Operation cycle may be modified, or cancelled and reinitiated, as long as the oven door has remained closed.~~<br>~~c) If the oven door is opened a "local" operation at the appliance from other than from closing the door is necessary for the user to reinitiate the delayed start or remote operation cycle, as described in item b.~~<br>~~d)~~ b) Self- clean can be activated remotely if both the self-clean mode is programmed (pressing the Self-clean button) and the "remote mode" are set at the physical appliance. The door shall immediately lock when the self-clean mode is selected before the user can activate this function remotely.<br>~~e)~~ c) Remote cancellation of any unattended cooking mode or changes to an on-going cooking mode by the user is allowed.<br>~~f)~~ d) Remote uploading of proprietary cooking algorithms by the user is allowed. However, reprogramming of any protective function is prohibited. |
| | 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. |