

STANDARD INFORMATION

Standard Number: UL 1447

Standard Name: Electric Lawn Mowers

Standard Edition and Issue Date: 6th Edition Date October 13, 2017

Date of Revision: October 13, 2017

Date of Previous Revision of Standard: 5th Edition Revised December 13, 2013

EFFECTIVE DATE OF NEW/REVISED REQUIREMENTS

Effective Date: **October 13, 2020**

IMPACT, OVERVIEW, AND ACTION REQUIRED

Impact Statement:

A review of all certified lithium-ion cordless products (i.e. the battery system and the battery charger) will be required to comply with the new requirements in the Standard For Electric Lawn Mowers, UL 1447, Supplement SA.

After October 13, 2020, all new product designs (corded and cordless) and revised constructions of currently certified products will be required to be evaluated in accordance with the new requirements of UL 1447.

Overview of Changes: Revision of requirements for lawn mowers powered by rechargeable batteries. 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 – Please immediately identify any current Listing Reports or products that are no longer active and should be removed from our records.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.



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CLAUSE	VERDICT	COMMENT
		<i>Additions to existing requirements are <u>underlined</u> and deletions are shown lined out below.</i>
		The requirements in Supplement SA of the 5 th edition of UL 1447 have been superseded by the requirements below:
Supplement SA		BATTERY-POWERED LAWN MOWERS
SA1		Scope
SA1.1		This Supplement applies to lawn mowers that are powered by rechargeable batteries either solely or as an alternative or in conjunction with other sources.
SA2		Construction and Performance
		A battery-powered lawn mower, shall comply with the requirements specified in UL 2595 as applicable, and with the conditions and specifications as specified in Indent A of Indent Instructions, Annex D of UL 2595, and as specified in (a) – (i). Items (a) – (i) are in reference to the requirements in the main body of the standard.
SA2.1		<p>a) The requirements in 5.3, 5.4, 5.9, 5.11, 5.12, 5.17, 5.19 – 5.22, 6.2, 6.3, 14.2, 45.1, 45.3, 45.4, and Sections 7, 12, 13, 15, 16, 19 – 28, 30 – 32, 34, 36 – 43, 46 – 49, 52, 60, 69 – 84, do not apply in their entirety.</p> <p>b) The requirements in 1.1, 4.3 – 4.6, 4.13, 4.23, 4.26, 4.27, 4.36, 4.39, 5.2.1, 5.5.2, 14.1.2, 5.15.1.1 – 5.15.3.3, 5.16.3, 17.1 – 17.3, 51.2, 51.3, 54.7, 55.2.1 (a), 55.2.1 (b), do not apply.</p> <p>c) For the requirements in 5.16.1, 5.16.2, 5.16.4, 5.16.5 and 5.16.6, the overcurrent protection devices are specified in those cases where a fuse is used to comply with the requirements for Circuit Current Conditions in UL 2595.</p> <p>d) The requirements in 18.4 and 18.5 as they relate to protective controls are applicable, unless a battery-powered lawn mower complies with the requirements for safety critical functions. See SA2.2(f).</p> <p>e) The Resistance Impact Tests, Section 29 and Section 45.2 apply to a battery-powered lawn mower, but the acceptance/compliance criteria of the Mechanical Strength Test in UL 2595 shall be applied. The criteria in 29.5 of this standard are still applicable with respect to a guard.</p> <p>f) With reference to the requirements in Blade Stopping Time After Long Term Cycling, Section 33.1 and 62.1 of this Standard, and with the Unbalance Test, Structural Integrity Test, Structural Integrity of Grass Catcher, and the Thrown Object Test of ANSI B71.1, the tests are to be conducted while the battery-powered lawn mower unit is connected to a constant supply source.</p> <p>g) For the Permanence of Marking Tests, Section 44, a required marking on a pressure sensitive label complying with UL 969, under the conditions of occasional</p>



exposure to oil, humidity, and water fulfills this requirement.

h) For the requirements in 51.1 (c), the electrical rating in volts may be applied. Also see 6.2 in UL 2595.

i) In the application of the requirements in 54.4, the marking only applies to products operating at hazardous voltages and shall be marked to indicate that such servicing or cleaning is to be done with the battery removed or disconnected, or the equivalent.

With respect to the instructions in Indent Instructions, Annex D of UL 2595 the following shall be applied to battery-operated lawn mowers:

a) Indent B – Users are not considered to be wet during the use of a battery-powered lawn mower.

b) Indent C – The LT or ELT specification is not required for batteries.

c) Indent D – No special considerations are required.

d) Indent E – The temperature limits specified in UL 2595 are considered suitable.

e) Indent F – The test is to be conducted with the deck set to (a) the lowest position and (b) the highest position.

f) Indent G – Additional or alternative safety Critical Functions (SCFs) are specified in Table SA2.1. If the safety of the electronic control circuit has been evaluated in accordance with the functional safety requirements in UL 2595, then the safety of the electronic circuit complies with the requirements of this Standard.

g) Indent H – The Impact Test shall be conducted on concrete.

h) Indent I – Battery-powered lawnmowers shall have the switching arrangement as specified in 18.5 of UL 2595. See 1.5 and Switches and Controls, Section 17 of this standard.

i) Indent J – A battery-powered lawn mower that may also be operated or charged by mains or a non-isolated source as described in UL 2595, shall also comply with the requirements of this Standard that apply to the risk of electric shock. For a battery-powered lawn mower, the exempted requirements in SA2.1 may be applicable.

SA2.2

Lawn mower – Required performance levels

Type and purpose of SCF	Minimum Performance Level (PL)
Prevent unwanted switch-on where unexpected operation exposes users or bystanders to a substantial risk of injury due to unenclosed moving parts such as blades	c
Provide desired switch-off of the appliance if continued operation exposes the user to a substantial risk of injury due to unenclosed moving parts such as blades	c
Provide desired direction of blade rotation	Not an SCF
Prevent exceeding thermal limits as specified in Section 9 of UL 2595	a
Prevent exceeding 150% of the cutting means stopping time as required in Blade Stopping Time After Long Term Cycling, Section 33.1	a
Prevent increase of peripheral speed of blade that would cause non-compliance with Peripheral Speed, Section 33.2	a
Provide desired direction of powered travel direction as required by Director, Section 33.3	b
Provide operation indication as required in Operation Indicator, Section 33.4	b
Prevent increase of peripheral speed of blade that would	a

Table SA2.1



cause non-compliance with Impact Test, Section 61	
Prevent increase of peripheral speed of blade that would cause non-compliance with Out-to_Balance Test, Section 62	a
Prevent increase of peripheral speed of blade that would cause non-compliance with Structural Integrity Test, Section 65	a
Any other speed limiting device	Not an SCF

A battery-powered lawn mower that contains an integral battery shall be constructed to withstand the Integral Battery Enclosure Test, Section SA3, and the applicable impact test(s) without the following occurring:

SA2.3 a) Externally caused mechanical damage to the jacket of an integral battery within the product if such damage results in user contact with battery electrolyte;
 b) Dislodging of the battery from its intended position if such dislodging results in short-circuiting of the battery terminals or exposure of parts that might result in a short-circuit; and
 c) Internal short circuiting of the battery.

SA2.4 An integral battery shall be completely enclosed in order to reduce the likelihood of accidental contact. The cover of the integral battery compartment shall be securely fastened so that it remains closed during intended use.

SA2.5 The integral battery of a battery-powered lawn mower shall be encased or enclosed to reduce the likelihood of breakage of the battery case and the risk of an explosion. See Integral Battery Enclosure Test, Section SA3.

SA3 Integral Battery Enclosure Test

SA3.1 The surface of an integral battery enclosure shall have such strength and rigidity that, in conjunction with an air spacing provided between it and the battery terminals, the battery terminals will not be short-circuited and no part will be exposed that might result in a short circuit when 250 pounds-force (112 N) is applied to the surface. In lieu of the spacing, insulation that reduces the likelihood of short-circuiting of the battery terminals may be used, provided the insulation is secured to the inner surface of a battery enclosure.

SA3.2 With reference to the requirements in SA3.1, three samples are to be tested. Each sample shall withstand for one minute a force of 250 pounds-force (112 N) which is to be applied through a 13-1/2 inch (343-mm) diameter rigid plate, regardless of the area of the cover.

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.