UL 1559

STANDARD FOR SAFETY

Insect-Control Equipment – Electrocution Type

UL Standard for Safety for Insect-Control Equipment – Electrocution Type, UL 1559

Fifth Edition, Dated March 21, 2011

Summary of Topics

This revision of ANSI/UL 1559 dated September 22, 2022 is being issued to update the title page to reflect the most recent designation as a Reaffirmed American National Standard (ANS). No technical changes have been made.

Text that has been changed in any manner or impacted by UL's electronic publishing system is marked with a vertical line in the margin.

The requirements are substantially in accordance with Proposal(s) on this subject dated September 22, 2017.

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UL 1559

Standard for Insect-Control Equipment – Electrocution Type

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Second Edition – July, 1987
Third Edition – July, 1995
Fourth Edition – March, 2002

Fifth Edition

March 21, 2011

This ANSI/UL Standard for Safety consists of the Fifth edition including revisions through September 22, 2022.

The most recent designation of ANSI/UL 1559 as a Reaffirmed American National Standard (ANS) occurred on September 22, 2022. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, and Title Page.

The Department of Defense (DoD) has adopted UL 1559 on February 25, 1989. The publication of revised pages or a new edition of this Standard will not invalidate the DoD adoption.

Comments or proposals for revisions on any part of the Standard may be submitted to UL at any time. Proposals should be submitted via a Proposal Request in UL's On-Line Collaborative Standards Development System (CSDS) at https://csds.ul.com.

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INTRODUCTION

1 Scope

1.1 These requirements cover insect-electrocution equipment of the household and commercial types with an input rating of 250 V or less and are intended for use in ordinary locations in accordance with the National Electrical Code.

1.2 These requirements cover products that employ electrocution as the primary means of exterminating insects.

1.3 These requirements assume the use of an isolating type transformer for electrocuting insects. Constructions without such isolation may be investigated in accordance with these requirements and supplemented and modified by other appropriate requirements.

1.4 These requirements do not cover insect exterminators of the type that utilize chemicals, ultrasonic or mechanical trapping devices.

1.5 *Deleted*

2 Units of Measurement

2.1 Values stated without parentheses are the requirement. Values in parentheses are explanatory or approximate information.

2.2 Unless indicated otherwise all voltage and current values mentioned in this standard are root-mean-square (rms).

3 References

3.1 Any undated reference to a code or standard appearing in the requirements of this standard shall be interpreted as referring to the latest edition of that code or standard.

4 Glossary

4.1 For the purpose of this standard the following definitions apply.

4.2 APPLIANCE COUPLER – A single-outlet, female contact device for attachment to a flexible cord as part of a detachable power-supply cord to be connected to an appliance inlet (motor attachment plug).

4.3 APPLIANCE INLET (Motor Attachment Plug) – A male contact device mounted on an end product appliance to provide an integral blade configuration for the connection of an appliance coupler or cord connector.

4.4 APPLIANCE (FLATIRON) PLUG – An appliance coupler type of device having a cord guard and a slot configuration specified for use with heating or cooking appliances.

4.5 COMMERCIAL EQUIPMENT – Equipment intended to be used on commercial, industrial or institutional premises, such as restaurants, motels, schools, public and commercial campsites, public swimming pools and beaches, golf courses, food processing plants, canneries, beverage bottling plants, farms and similar sites.

4.6 COMPONENT – A device or fabricated part of the appliance covered by the scope of a safety standard dedicated to the purpose. When incorporated in an appliance, equipment otherwise typically field installed (e.g. luminaire) is considered to be a component. Unless otherwise specified, materials that compose a device or fabricated part, such as thermoplastic or copper, are not considered components.

4.7 CONTROL, AUTOMATIC ACTION – A control in which at least one aspect is non-manual.

4.8 CONTROL, AUXILIARY – A device or assembly of devices that provides a functional utility, is not relied upon as an operational or protective control, and therefore is not relied upon for safety. For example, an efficiency control not relied upon to reduce the risk of electric shock, fire, or injury to persons during normal or abnormal operation of the end product is considered an auxiliary control.

4.9 CONTROL, MANUAL – A device that requires direct human interaction to activate or rest the control.

4.10 CONTROL, OPERATING – A device or assembly of devices, the operation of which starts or regulates the end product during normal operation. For example, a thermostat, the failure of which a thermal cutout/limiter or another layer of protection would mitigate the potential hazard, is considered an operating control. Operating controls are also referred to as “regulating controls”.

4.11 CONTROL, PROTECTIVE – A device or assembly of devices, the operation of which is intended to reduce the risk of electric shock, fire or injury to persons during normal and reasonably anticipated abnormal operation of the appliance. For example, a thermal cutout/limiter, or any other control/circuit relied upon for normal and abnormal conditions, is considered a protective control. Protective controls are also referred to as “limiting controls” and “safety controls”.

Note: During the evaluation of the protective control/circuit, the protective functions are verified under normal and single-fault conditions of the control.

4.12 CONTROL, TYPE 1 ACTION – The actuation of an automatic control for which the manufacturing deviation and the drift (tolerance before and after certain conditions) of its operating value, operating time, or operating sequence has not been declared and tested under this Standard.

4.13 CONTROL, TYPE 2 ACTION – The actuation of an automatic control for which the manufacturing deviation and the drift (tolerance before and after certain conditions) of its operating value, operating time, or operating sequence have been declared and tested under this Standard.

4.14 CORD CONNECTOR – A female contact device wired on flexible cord for use as an extension from an outlet to make a detachable electrical connection to an attachment plug or, as an appliance coupler, to an equipment inlet.

4.15 ELECTRODE TRANSFORMER – A transformer whose primary function is to supply the voltage and current necessary for electrocuting insects.

4.15.1 FIXED APPLIANCE – Appliance that is intended to be used while fastened to or hung from a support or while secured in a specific location.

4.16 HOUSEHOLD EQUIPMENT – Equipment intended for use in or around a residence. Portable cord-connected insect-electrocution equipment intended for personal use during camping or similar activities is also considered household equipment.

4.17 INDOOR-USE EQUIPMENT – Equipment intended for use in a sheltered area that is not normally subject to dampness or wetness and not exposed to weather.

4.18 OUTDOOR-USE EQUIPMENT – Equipment intended for use in locations exposed to weather including partially protected locations under canopies, roofed open porches, barns and similar locations that may be damp or wet.

4.18.1 PORTABLE EQUIPMENT – Appliance that is intended to be moved while in operation or an appliance, other than a FIXED APPLIANCE, having a mass less than 18 kg.

4.19 PRIMARY CIRCUIT – A circuit that is conductively connected to the branch circuit supply source.

4.20 SECONDARY CIRCUIT – A circuit that is conductively connected to a secondary winding of an isolating transformer.

4.21 STATIONARY APPLIANCE – Fixed appliance or an appliance which is not a portable appliance.

CONSTRUCTION

5 General

5.1 A component of a product covered by this Standard shall:

a) Comply with the requirements for that component as indicated in Sections 6 – 23;

b) Be used in accordance with its rating(s) established for the intended conditions of use;

c) Be used within its established use limitations or conditions of acceptability;

d) Additionally comply with the applicable requirements of this end product standard; and

e) Not contain mercury, with the exception of fluorescent tubes.

Note: Specific components are incomplete in construction features or restricted in performance capabilities. Such components are intended for use only under limited conditions, such as certain temperatures not exceeding specified limits, and shall be used only under those specific conditions.

Exception No. 1: A component of a product covered by this standard is not required to comply with a specific component requirement that:

a) Involves a feature or characteristic not required in the application of the component in the product, or

b) Is superseded by a requirement in this standard, or

c) Is separately investigated when forming part of another component, provided the component is used within its established ratings and limitations.

Exception No. 2: A component complying with a UL component standard other than those cited in Sections 6 – 23 is acceptable if:

a) The component also complies with the applicable component standard of Sections 6 – 23; or

b) The component standard:

1) Is compatible with the ampacity and overcurrent protection requirements NFPA 70, where appropriate;

2) Considers long-term thermal properties of polymeric insulating materials in accordance with the Standard for Polymeric Materials – Long Term Property Evaluations, UL 746B, and

3) Any use limitations of the other component standard is identified and appropriately accommodated in the end use application. For example, a component used in a household application, but intended for industrial use and complying with the relevant component standard may assume user expertise not common in household applications.

5.2 A component that is also intended to perform other functions, such as over current protection, ground-fault circuit-interruption, surge suppression, any other similar functions, or any combination thereof, shall comply additionally with the requirements of the applicable UL standard(s) that cover devices that provide those functions.

Exception: Where these other functions are not required for the application and not identified as part of markings, instructions, or packaging for the appliance, the additional component standard(s) need not be applied.

5.3 A component not anticipated by the requirements of this standard, not specifically covered by the component standards of Sections 6 – 23, and that involves a potential risk of electric shock, fire, or personal injury, shall be additionally investigated in accordance with the applicable UL standard, and shall comply with 5.1 (b) – (d).

5.4 With regard to a component being additionally investigated, reference to construction and performance requirements in another UL end product standard is appropriate where that standard anticipates normal and abnormal use conditions consistent with the application of UL 1559.

6 Attachment Plugs, Receptacles, Connectors, and Terminals

6.1 Attachment plugs, receptacles, appliance couplers, appliance inlets (motor attachment plugs), and appliance (flatiron) plugs, shall comply with the Standard for Attachment Plugs and Receptacles, UL 498. See 6.9.

Exception: Attachment plugs and appliance couplers integral to cord sets or power supply cords are covered under the requirements of UL 817 and need not comply with UL 498.

6.2 Quick-connect terminals, both connectors and tabs, for use with one or two 22 – 10 AWG copper conductors, having nominal widths of 2.8, 3.2, 4.8, 5.2, and 6.3 mm (0.110, 0.125, 0.187, 0.205, and 0.250 in), intended for internal wiring connections in appliances, or for the field termination of conductors to the appliance, shall comply with the Standard for Electrical Quick-Connect Terminals, UL 310.

Exception: Other sizes of quick-connect terminals shall be investigated with respect to crimp pull out, insertion-withdrawal, temperature rise, and all tests shall be conducted in accordance with UL 310.

6.3 Single and multipole connectors for use in data, signal, control and power applications within and between electrical equipment, and that are intended for factory assembly to copper or copper alloy conductors, or for factory assembly to printed wiring boards, shall comply with the Standard for Component Connectors for Data, Signal, Control and Power Applications, UL 1977. See 6.9.

6.4 Wire connectors shall comply with the Standard for Wire Connectors, UL 486A-486B.

6.5 Splicing wire connectors shall comply with the Standard for Splicing Wire Connectors, UL 486C.

6.6 Multi-pole splicing wire connectors that are intended to facilitate the connection of hard-wired utilization equipment to the branch-circuit conductors of buildings shall comply with the Standard for Insulated Multi-Pole Splicing Wire Connectors, UL 2459. See 6.9.