



UL 875

STANDARD FOR SAFETY

Electric Dry-Bath Heaters

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UL Standard for Safety for Electric Dry-Bath Heaters, UL 875

Tenth Edition, Dated July 8, 2024

Summary of Topics

This new Tenth edition of ANSI/UL 875 dated July 8, 2024 includes the following changes from the previous edition:

- Revisions based on the latest version of UL 4200A: Section [9](#) and [9.1](#);***
- Removal of the reference to UL 6059, Outline for Particular Requirements for Switches for Tools: [26.2](#);***
- Updates to Section [3](#) to add a list of Referenced Standards and update some references;***
- Editorial changes throughout***

The new and revised requirements are substantially in accordance with Proposal(s) on this subject dated May 3, 2024.

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UL 875

Standard for Electric Dry-Bath Heaters

Prior to the first edition, the requirements for the products covered by this standard were included in the Standard for Electric Heating Appliances, UL 499.

The First through Third editions were titled Electric Dry Bath Heaters. The Fourth Edition was titled Electric Sauna Heating Equipment.

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Tenth Edition

July 8, 2024

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The most recent designation of ANSI/UL 875 as an American National Standard (ANSI) occurred on July 8, 2024. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, and Title Page.

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

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INTRODUCTION

1 Scope

1.1 These requirements cover electric dry-bath heating equipment and other equipment rated 600 volts or less that is intended to produce a dry-heat environment to be installed in accordance with the National Electrical Code, NFPA 70. The relative humidity in the heated environment is in the region of 10 – 25 % and the purpose of the heated environment (for air temperatures, see Sections 37 and 38) is to promote perspiration in a short time by means of a relatively warm and dry atmosphere. The completed equipment is to be provided with an automatic temperature-regulating control that may be integral with the heater or wall-mounted, with an integral manual-reset limit control, a timer, and any other necessary associated equipment. Electric dry-bath heating equipment and other equipment intended to produce a dry-heat environment may consist of:

- a) A heater unit intended for fixed installation in a special room that is built or assembled in the field to comply to the manufacturer's size specifications;
- b) A combination of a heater unit and a prefabricated, factory-built rigid room in which the assembled combination may be specified for field installation, or that may be supplied with a power-supply cord and intended to be fastened in place or located in a dedicated space. The room may be arranged so that it can be taken apart for shipment; or
- c) A combination of a heater and a rigid cabinet that is constructed to enclose all but the user's head. The unit is provided with a power supply cord and is intended to be fastened in place or located in a dedicated space.

1.2 These requirements do not cover steam-bath heaters, or cable-type radiant-heating equipment, nor any other electric heating equipment or appliances that are covered in separate, individual requirements.

1.3 Throughout these requirements, the term "heater" is used broadly to refer to any heater unit, including its associated control assembly.

1.4 A heater shall employ materials and components throughout that are intended for the particular use and shall be made and finished with the degree of uniformity and grade of workmanship practicable in a well-equipped factory.

1.5 A product that contains features, characteristics, components, materials, or systems new or different from those covered by the requirements in this standard, and that involves a risk of fire or of electric shock or injury to persons shall be evaluated using appropriate additional component and end-product requirements to maintain the level of safety as originally anticipated by the intent of this standard. A product whose features, characteristics, components, materials, or systems conflict with specific requirements or provisions of this standard does not comply with this standard. Revision of requirements shall be proposed and adopted in conformance with the methods employed for development, revision, and implementation of this standard.

2 Units of Measurement

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

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

3 Referenced Publications

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.

3.2 The following publications are referenced in this Standard:

ANSI C73.11, *Dimensions of Plugs and Receptacles – General Purpose 125 Volts, 15 Amperes, 2 Poles, 3 Wire Grounding Type*

ANSI C73.12, *Dimensions of Plugs and Receptacles – General Purpose 125 Volts, 20 Amperes, 2 Pole, 3 Wire Grounding Type*

ASTM E28, *Standard Test Methods for Softening Point of Resins Derived from Pine Chemicals and Hydrocarbons, by Ring-and-Ball Apparatus*

ASTM E230/E230M, *Standard Specification for Temperature-Electromotive Force (emf) Tables for Standardized Thermocouples*

IEC 60127-1, *Miniature Fuses – Part 1: Definitions for Miniature Fuses and General Requirements for Miniature Fuse-Links*

IEC 60335-1, *Household and Similar Electrical Appliances – Safety – Part 1: General Requirements*

IEC 60738-1, *Thermistors – Directly heated positive temperature coefficient – Part 1: Generic specification*

IEC 61000-4-2, *Electromagnetic Compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic Discharge Immunity Test*

IEC 61000-4-3, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test*

IEC 61000-4-4, *Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test*

IEC 61000-4-5, *Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test*

IEC 61000-4-6, *Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields*

IEC 61000-4-11, *Electromagnetic compatibility (EMC) – Part 4-11: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity tests for equipment with input current up to 16 A per phase*

IEC 61000-4-13, *Electromagnetic compatibility (EMC) – Part 4-13: Testing and measurement techniques – Harmonics and interharmonics including mains signaling at a.c. power port, low frequency immunity tests*

IEC 61558-1, *Safety of transformers, reactors, power supply units and combinations thereof – Part 1: General requirements and tests*

NFPA 70, *National Electrical Code*

UL 20, *General-Use Snap Switches*

UL 44, *Thermoset-Insulated Wires and Cables*

UL 66, *Fixture Wire*

UL 83, *Thermoplastic-Insulated Wires and Cables*

UL 157, *Gaskets and Seals*

UL 224, *Extruded Insulating Tubing*

UL 244A, *Solid-State Controls for Appliances*

UL 248-1, *Low-Voltage Fuses – Part 1: General Requirements*

UL 248-2, *Low-Voltage Fuses – Part 2: Class C Fuses*

UL 248-4, *Low-Voltage Fuses – Part 4: Class CC Fuses*

UL 248-5, *Low-Voltage Fuses – Part 4: Class CC Fuses*

UL 310, *Electrical Quick-Connect Terminals*

UL 353, *Limit Controls*

UL 486A-486B, *Wire Connectors*

UL 486C, *Splicing Wire Connectors*

UL 486E, *Equipment Wiring Terminals for Use with Aluminum and/or Copper Conductors*

UL 489, *Molded-Case Circuit Breakers, Molded-Case Switches, and Circuit-Breaker Enclosures*

UL 489A, *Circuit Breakers for Use in Communications Equipment*

UL 496, *Lampholders*

UL 499, *Electric Heating Appliances*

UL 507, *Electric Fans*

UL 510, *Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape*

UL 514A, *Metallic Outlet Boxes*

UL 514C, *Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers*

UL 514D, *Cover Plates for Flush-Mounted Wiring Devices*

UL 723, *Test for Surface Burning Characteristics of Building Materials*

UL 746B, *Polymeric Materials – Long Term Property Evaluations*

UL 746C, *Polymeric Materials – Use in Electrical Equipment Evaluations*

UL 758, *Appliance Wiring Material*

UL 773A, *Nonindustrial Photoelectric Switches for Lighting Control*

UL 796, *Printed Wiring Boards*

UL 817, *Cord Sets and Power-Supply Cords*

UL 840, *Insulation Coordination Including Clearance and Creepage Distances for Electrical Equipment*

UL 873, *Temperature-Indicating and -Regulating Equipment*

UL 917, *Clock-Operated Switches*

UL 935, *Fluorescent-Lamp Ballasts*

UL 943, *Ground-Fault Circuit-Interrupters*

UL 943B, *Appliance Leakage-Current Interrupters*

UL 969, *Marking and Labeling Systems*

UL 1004-1, *Rotating Electrical Machines – General Requirements*

UL 1004-2, *Impedance Protected Motors*

UL 1004-3, *Thermally Protected Motors*

UL 1004-7, *Electronically Protected Motors*

UL 1029, *High-Intensity Discharge Lamp Ballasts*

UL 1030, *Sheathed Heating Elements*

UL 1053, *Ground-Fault Sensing and Relaying Equipment*

UL 1059, *Terminal Blocks*

UL 1097, *Double Insulation Systems for Use in Electrical Equipment*

UL 1411, *Transformers and Motor Transformers for Use in Audio-, Radio-, and Television-Type Appliances*

UL 1434, *Thermistor-Type Devices*

UL 1441, *Coated Electrical Sleeving*

UL 1446, *Systems of Insulating Materials – General*

- UL 1557, *Electrically Isolated Semiconductor Devices*
- UL 1565, *Positioning Devices*
- UL 1577, *Optical Isolators*
- UL 1699, *Arc-Fault Circuit-Interrupters*
- UL 1977, *Component Connectors for Data, Signal, Control and Power Applications*
- UL 2353, *Single- and Multi-Layer Insulated Winding Wire*
- UL 2459, *Insulated Multi-Pole Splicing Wire Connectors*
- UL 4200A, *Products Incorporating Button Batteries or Coin Cell*
- UL 4248-1, *Fuseholders – Part 1: General Requirements*
- UL 4248-4, *Fuseholders - Part 4: Class CC*
- UL 4248-6, *Fuseholders - Part 6: Class H*
- UL 4248-9, *Fuseholders - Part 9: Class K*
- UL 5085-1, *Low Voltage Transformers – Part 1: General Requirements*
- UL 5085-2, *Low Voltage Transformers – Part 2: General Purpose Transformers*
- UL 5085-3, *Low Voltage Transformers – Part 3: Class 2 and Class 3 Transformers*
- UL 8750, *Light Emitting Diode (LED) Equipment for Use in Lighting Products*
- UL 60335-1, *Safety of Household and Similar Electrical Appliances, Part 1: General Requirements*
- UL 60384-14, *Fixed Capacitors for Use in Electronic Equipment – Part 14: Sectional Specification: Fixed Capacitors for Electromagnetic Interference Suppression and Connection to the Supply Mains*
- UL 60730-1, *Automatic Electrical Controls – Part 1: General Requirements*
- UL 60730-2-7, *Automatic Electrical Controls for Household and Similar Use; Part 2: Particular Requirements for Timers and Time Switches*
- UL 60730-2-9, *Automatic Electrical Controls for Household and Similar Use; Part 2: Particular Requirements for Temperature Sensing Controls*
- UL 61058-1, *Switches for Appliances -- Part 1: General Requirements*
- UL 61800-5-1, *Adjustable Speed Electrical Power Drive Systems – Part 5-1: Safety Requirements – Electrical, Thermal, and Energy*
- U.S. Department of Commerce Voluntary Product Standards PS 1, *Construction and Industrial Plywood*

4 Glossary

- 4.1 For the purpose of this standard the following definitions apply.
- 4.2 CONTROL, AUTOMATIC ACTION – A device in which the transmission and operation of at least one function are produced by initiation which is not the result of manual actuation.
- 4.3 CONTROL, LIMIT – A protective control, see [4.6](#).
- 4.4 CONTROL, MANUAL – A device that requires direct human interaction to activate or rest the control.
- 4.5 CONTROL, OPERATING – A device where the operation of which starts or regulates the appliance during normal operation. A regulating control is an operating control.
- 4.6 CONTROL, PROTECTIVE – A device where the operation of which is intended to prevent the risk of electric shock, fire, or injury (including thermal burns and hypothermia) to persons during abnormal operation of the appliance. A limit thermostat is a protective control.
- 4.7 CONTROL, REGULATING – An operating control, see [4.5](#).
- 4.8 CONTROL, SINGLE OPERATION DEVICE – A Type 1.H manual control, see [4.4](#) and [4.10](#).
- 4.9 CONTROL, TYPE 1.D ACTION – The actuation of a manual control designed so that disconnection can neither be prevented nor inhibited, by any reset mechanism and so that after disconnection, it is not possible to re-close the circuit even momentarily while the excess or fault condition persists.
- 4.10 CONTROL, TYPE 1.H ACTION – The actuation of a manual control that shall be so designed that the contacts cannot be prevented from opening and which may automatically reset to the closed position if the reset means is held in the reset position. The control shall not reset automatically at any temperature above -35 °C (-31 °F) with the reset mechanism in the normal position.
- 4.11 CONTROL, TYPE 2 ACTION – The actuation of an automatic action control for which the manufacturing deviation and the drift of its operating value, operating time, or operating sequence have been declared and tested under this standard.
- 4.12 CONTROL, TYPE M2 – A manual control that cannot function as an automatically reset device if the reset means is held in the reset or on position.
- 4.13 SAFETY CRITICAL FUNCTION (SCF) – Control, protection and monitoring functions which are being relied upon to reduce the risk of fire, electric shock, or casualty hazards.

CONSTRUCTION

5 Component Specifications

- 5.1 A component of a product covered by this standard shall:
- Comply with the requirements for that component as specified in this standard;
 - Be used in accordance with its rating(s) established for the intended conditions of use;
 - Be used within its established use limitations or conditions of acceptability; and
 - Additionally comply with the applicable requirements of this end product standard.

5.2 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,*
- 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 component standard other than those cited in this standard is acceptable if:

- a) The component also complies with the applicable component standard indicated in this standard; or*
- b) The component standard:*
 - 1) Is compatible with the ampacity and overcurrent protection requirements in NFPA 70, where appropriate;*
 - 2) Considers long-term thermal properties of polymeric insulating materials in accordance with 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.*

5.3 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 standard(s) that cover devices that provide those functions.

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

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

6 Safety Critical Functions

6.1 Any function involved in the control, protection, and monitoring of safety-related attributes of a unit whereby a loss/malfunction of its functionality would represent an unacceptable risk of fire, electric shock, or casualty hazards would be considered a safety critical function.

6.2 Electronic circuits that manage a safety critical function (SCF) shall be:

- a) Reliable as defined as being able to maintain the SCF in the event of single defined component faults; and
- b) Not susceptible to electromagnetic environmental stresses encountered in the anticipated environments of the appliance.

6.3 Electronic circuits managing safety critical functions shall comply with:

- a) Annex [A](#), Requirements for the Evaluation of Electronic Circuits; or
- b) UL 60730-1 and its Part 2's as specified in this standard. The function shall be considered Class B.

6.4 Functions specified in [Table 6.1](#) represent the common safety critical circuit functions of units. It is not intended to represent all possible safety critical functions.

Table 6.1
Safety Critical Functions

Function (see 6.1)	Hazard	Location of parameters and tests
Motor running overload protection	Risk of fire or electric shock	Section 20 , Motor-Running Overcurrent Protection
Manual reset temperature limit control, Liquid level controls, Pressure controls	Risk of fire or electric shock	30.1.3
Liquid level controls	Risk of fire or electric shock	Section 31 , Liquid Level Controls
Pressure controls	Risk of fire or electric shock	Section 32 , Pressure Controls

7 Frame and Enclosure

7.1 The frame and enclosure of a heater shall have the strength and rigidity necessary to resist the abuses likely to be encountered during intended service. The degree of resistance inherent in the appliance shall preclude total or partial collapse with the attendant reduction of spacings, loosening or displacement of parts, and other defects that, alone or in combination, constitute an increase in the risk of fire, electric shock, or injury to persons.

7.2 Among the factors taken into consideration when an enclosure is being evaluated for compliance are its:

- a) Physical strength;
- b) Resistance to impact;
- c) Moisture-absorptive properties;
- d) Combustibility;
- e) Resistance to corrosion;
- f) Resistance to distortion at temperatures to which the enclosure may be subjected under conditions of use; and
- g) Resistance to ultraviolet light, where applicable.

For a nonmetallic enclosure or part of an enclosure, all these factors are considered with regard to thermal aging.