

STANDARD INFORMATION

Standard Number: UL 2743

Standard Name: Portable Power Packs

Standard Edition and Issue Date: 2nd Edition Dated July 3, 2018

Date of Revision: July 3, 2018

Date of Previous Revision of Standard: 1st Edition Dated October 14, 2016

EFFECTIVE DATE OF NEW/REVISED REQUIREMENTS

Effective Date: **July 3, 2020**

IMPACT, OVERVIEW, AND ACTION REQUIRED

Impact Statement: A review of all Listing Reports is necessary to determine which products comply with new/revise 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requests in writing that current requirements be used along with their understanding that their listings will be withdrawn on Effective Date noted above, unless the product is found to comply with new/revise requirements.

Overview of Changes: This Second edition of the Standard for Portable Power Packs, UL 2743, has been issued to incorporate updates to the Standard for use in Canada. 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:

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 – Please immediately identify any current Listing Reports or products that are no longer active and should be removed from our records.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.



STANDARD INFORMATION

CLAUSE	VERDICT	COMMENT
		<i>Additions to existing requirements are <u>underlined</u> and deletions are shown lined out below.</i>
7	Info	Frame and Enclosure
7.3	Info	Nonmetallic enclosures
7.3.4		A conductive coating applied to a nonmetallic surface such as the inside surface of an enclosure, shall be evaluated in accordance with the Standard for Polymeric Materials – Use in Electrical Equipment Evaluations, UL 746C, <u>and Evaluation of Properties of Polymeric Materials, CAN/CSA C22.2 No. 0.17</u> , unless it can be determined that flaking or peeling of the coating does not result in a reduction of spacings or the bridging of live parts that may result in a risk of fire, electric shock, or injury to persons.
7.3.5		An adhesive used to secure parts of an enclosure shall comply with the requirements in the Standard for Polymeric Materials – Use in Electrical Equipment Evaluations, UL 746C, <u>and Evaluation of Properties of Polymeric Materials, CAN/CSA C22.2 No. 0.17</u> .
7.5	Info	Environmental considerations
7.5.4		A nonmetallic enclosure for an outdoor use power pack shall be judged on the basis of the effect of exposure to ultraviolet light and water in accordance with the applicable tests in the Standard for Polymeric Materials – Use in Electrical Equipment Evaluations, UL 746C, <u>Evaluation of Properties of Polymeric Materials, CAN/CSA C22.2 No. 0.17</u> . Temporary outdoor use power packs need not comply with this requirement.
8	Info	Flammability of Materials
8.1		Nonmetallic materials used for enclosures shall have a minimum flammability rating of V-1 in accordance with the requirements in the Standard for Tests for Flammability of Plastic Materials for Parts in Devices and Appliances, UL 94, <u>and Evaluation of Properties of Polymeric Materials, CAN/CSA C22.2 No. 0.17</u> . As an alternative, finished enclosures may be tested in accordance with the 20 mm end-product flame test in the Standard for Polymeric Materials - Use in Electrical Equipment Evaluations, UL 746C, <u>and Evaluation of Properties of Polymeric Materials, CAN/CSA C22.2 No. 0.17</u> . Metallic materials used for enclosures are considered to comply without further evaluation, except magnesium shall not be used for enclosure materials.
8.5		For the requirements outlined in 8.2 – 8.4, the flammability rating of the material shall be provided as part of the material rating or the flammability rating may be determined in accordance with the Standard for Tests for Flammability of Plastic Materials for Parts in Devices and Appliances, UL 94, <u>and Evaluation of Properties of Polymeric Materials, CAN/CSA C22.2 No. 0.17</u> .



CLAUSE	VERDICT	COMMENT
11	Info	Supply Connections
11.3	Info	External power supplies
11.3.2		The output rating of the external power supply shall be equal to or greater than the input rating of the power pack; and the output of the external power supply shall be a power source in accordance with the Standard for Information Technology Equipment – Safety – Part 1: General Requirements, UL 60950-1 and CAN/CSA C22.2 No. 60950-1, a Class 2 power source in accordance with the Standard for Class 2 Power Units, UL 1310, <u>and Power Supplies With Extra Low Voltage Class 2 Outputs – General Instruction No. 1, CAN/CSA C22.2 No. 223, or a power source other than Class 2 in accordance with the Standard for Power Units Other Than Class 2, UL 1012, and CSA-C22.2 No. 107.2-01.</u>
11.4	Info	Vehicle adapters
11.4.1		A power pack intended for connection to an automobile cigar lighter receptacle shall be provided with a vehicle adapter that complies with the enclosure and input contacts requirements in the Standard for Vehicle Battery Adapters, UL 2089, <u>and Power Supplies, CAN/CSA C22.2 No. 107.1.</u> The connector plug shall incorporate a fuse or other protective device having a current rating not greater than 15 A. Exception: The protective device may be provided in the output cord of the vehicle adapter not more than 127 mm (5 inches) from the vehicle adapter enclosure.
12	Info	Output Connections
12.2	Info	Booster cable assemblies
12.2.1	Info	General
12.2.1.2		For detachable booster cable assemblies, the connector shall be in accordance with the Standard for Component Connectors for Use in Data, Signal, Control and Power Applications, UL 1977, and <u>Special Use Attachment Plugs, Receptacles and Connectors, CAN/CSA C22.2 No. 182.3, or the connector shall be in accordance with the Standard for Automotive Battery Booster Cables, UL 1839 (middle connectors).</u> The connector shall have a voltage and current rating that is the same as or higher than the output rating of the booster cable assembly.
12.2.2	Info	Cables
		The conductors used within the cables shall:
12.2.2.3		a) Comply with the requirements in the Standard for Appliance Wiring Material, UL 758, <u>and either Equipment and Lead Wires, CAN/CSA C22.2 No. 127, or Appliance Wiring Material Products, CAN/CSA C22.2 No. 210;</u> and b) Be suitably sized based on the rating of the output current associated with the booster function.
12.2.3	Info	Clamps



CLAUSE	VERDICT	COMMENT
12.2.3.4		The clamps shall be subjected to the Cold Drop Test using a conditioning temperature as indicated for its rated lower ambient in accordance with 69.1(d). This temperature shall be either minus 40°C ± 2°C (minus 40°F ± 4°F) or minus 25°C ± 2°C (minus 13°F ± 4°F) <u>equal to the manufacturer's lower ambient temperature rating.</u> See 68.2.
12.3	Info	Receptacles
12.3.1		Receptacles provided as an output on power packs shall be rated 120 Vac, 20 A maximum, and shall consist of a double blade, ungrounded configuration, and shall be of a NEMA type receptacle that is in accordance with the Standard for Attachment Plugs and Receptacles, UL 498, and <u>General Use Receptacles, Attachment Plugs and Similar Wiring Devices, CAN/CSA C22.2 No. 42.</u>
12.4	Info	DC output connectors and USB connectors
12.4.1		Power packs provided with USB connections as an output shall incorporate connectors that are in accordance with the Standard for Component Connectors for Use in Data, Signal, Control, and Power Applications, UL 1977, and <u>Special Use Attachment Plugs, Receptacles and Connectors, CAN/CSA C22.2 No. 182.3.</u>
12.4.2		DC output connectors provided as an output shall incorporate connectors that are in accordance with the Standard for Component Connectors for Use in Data, Signal, Control, and Power Applications, UL 1977, and <u>Special Use Attachment Plugs, Receptacles and Connectors, CAN/CSA C22.2 No. 182.3.</u>
12.5	Info	Vehicle adapter sockets
12.5.2		The cable, if provided, shall be suitable for the voltage and ampacity of the output rating. The cable shall be in accordance with the Standard for Appliance Wiring Materials, UL 758, and either Equipment and Lead wires, <u>CAN/CSA C22.2 No. 127,</u> or Appliance Wiring Material Products, <u>CAN/CSA C22.2 No. 210.</u>
16	Info	Internal Wiring
16.3	Info	Splices and connections
16.3.2		Equipment subjected to vibration shall be provided with lock washers or other means to mechanically secure wire binding screws and nuts. A twist on type connector shall be additionally secured to the wires by means of at least two layers of tape. Tape used for this means shall be evaluated for its intended application and comply with the Standard for Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape, UL 510, and PVC Insulating Tape, <u>CAN/CSA C22.2 No. 197.</u>
18	Info	Insulating Materials
18.1		Insulating materials, used in circuits other than low-voltage, limited-energy circuits, shall be porcelain, phenolic composition, or other similar material, and shall be evaluated in accordance with the Standard for Polymeric Materials – Use in Electrical Equipment Evaluations, UL 746C, and <u>Evaluation of Properties of Polymeric Materials, CAN/CSA C22.2 No. 0.17.</u>
19	Info	Compressors
19.1	Info	General



CLAUSE	VERDICT	COMMENT
19.1.1		Air compressor assemblies provided with power packs, and housed within the overall power pack enclosure, shall comply with the requirements in 19.2 and 19.3. Air compressors supplied with the power pack, but as a separate unit shall be evaluated in accordance with the Standard for Motor-Operated Air Compressors, Vacuum Pumps, and Painting Equipment, UL 1450, <u>and Motor Operated Appliances (Household and Commercial), CAN/CSA C22.2 No. 68.</u>
19.2	Info	Motors and thermal protection
19.2.4		With reference to 19.2.3, thermal protection shall be evaluated in accordance with the Standard for Overheating Protection for Motors, UL 2111, or the standard for Thermally Protected Motors, UL 1004-3, and Motors With Inherent Overheating Protection, CAN/CSA C22.2 No. 77. Exception No. 1: A thermally protected motor which drives a fully enclosed oil-less and tankless air compressor, or inflator, evaluated in accordance with the Standard for Motor-Operated Air Compressors, Vacuum Pumps, and Painting Equipment, UL 1450, <u>and Motor Operated Appliances (Household and Commercial), CAN/CSA C22.2 No. 68.</u>
23	Info	Transformers
23.1		Transformers provided as part of a power pack, shall comply with one of the following: a) Standard for Specialty Transformers, UL 506; b) Standard for Dry-Type General Purpose and Power Transformers, UL 1561; or c) Standard for Low Voltage Transformers – Part 1: General Requirements, UL 5085-1 <u>and CAN/CSA C22.2 No. 66.1, and one of the following:</u> 1) Standard for Low Voltage Transformers – Part 2: General Purpose Transformers, UL 5085-2 <u>and CAN/CSA C22.2 No. 66.2;</u> or 2) Standard for Low Voltage Transformers – Part 3: Class 2 and Class 3 Transformers, UL 5085-3 <u>and CAN/CSA C22.2 No. 66.3.</u>
28	Info	Internal Battery
28.3	Info	Lithium-ion batteries
28.3.1		A lithium-ion battery cell shall comply with the requirements in the Standard for Lithium Batteries, UL 1642, or the 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 <u>and CAN/CSA E62133.</u>
31	Info	Charging Functions
31.1		Specialized packs that provide a charging function while connected to the source of supply that is intended to charge the external battery through the pack’s booster cable assembly, or other output connection, shall have the charging circuits evaluated in accordance with the applicable requirements in the Standard for Battery Chargers for Charging Engine-Starter Batteries, UL 1236, <u>and Battery Chargers, CAN/CSA C22.2 No. 107.2.</u>



CLAUSE	VERDICT	COMMENT		
40	Info	Safety Circuits and Control Circuits		
40.1		Circuits that are provided to limit outputs, switch outputs, control operational functions and the like, are considered safety circuits or control circuits, if their failure to provide their intended function will result in a hazardous condition or a risk of fire, shock, or injury to the user. Circuits that are classified as safety circuits or control circuits shall be evaluated to the applicable requirements in the Standard for Automatic Electrical Controls – Part 1: General Requirements, UL 60730-1 and <u>CAN/CSA C22.2 E60730-1</u> .		
47	Info	Normal Temperature Test		
Maximum temperature rises				
Table 47.1	Material and components		°C	(°F)
	A. COMPONENTS			
	5. Transformers			
	(a) Class 105(A) insulation systems:			
	<u>Thermocouple method</u>		55	(99)
	<u>Resistance method</u>		60	(108)
	(b) Class 120(E) insulation systems:			
	<u>Thermocouple method</u>		70	(126)
	<u>Resistance method</u>		75	(135)
	(c) Class 130(B) insulation systems:			
<u>Thermocouple method</u>		80	(176)	
<u>Resistance method</u>		85	(185)	
(d) Class 155(F) insulation systems:				
Thermocouple method		110	(198)	
Resistance method		115	(207)	
(e) Class 180(H) insulation systems:				
Thermocouple method		125	(225)	
Resistance method		135	(243)	
50	Info	Abnormal Operation Tests		
50.2	Info	Output short test		
		<i>New clause added;</i>		
50.2.4		If the power pack is provided with an on/off switch which is used to control an output, the test shall be conducted with that switch opened and closed.		
50.3	Info	Reverse polarity of booster cables		
		<i>New clause added;</i>		
50.3.3		If the power pack is provided with a switch that controls the booster cable output function, the test shall be conducted with that switch opened and closed.		
67	Info	Cold Bend Test		



CLAUSE	VERDICT	COMMENT
67.2		The specimens and the appropriate mandrel, as specified in Table 67.1, are to be cooled for a period of 4 hours at minus 40°C ±2°C (minus 40°F ±4°F) <u>the manufacturer's recommended lower ambient temperature</u> . After this cooling period, the specimens are to be wound onto the mandrel for six complete turns. The winding is to be done at a rate of about 3 seconds per turn, and successive turns are to be in contact with one another. The test is to be performed in the cold chamber where space and mounting means are available in the chamber. Where this is not practical, it is appropriate to remove a specimen and a mandrel from the test chamber and perform the test outside the chamber. In either case, the winding is to be completed within 30 seconds of the time that the cold chamber is opened.
	Info	MARKINGS
69	Info	General
		A product shall be legibly and permanently marked with:
69.1		<ul style="list-style-type: none"> a) The manufacturer's name, trade name, trademark, or other descriptive marking by which the organization responsible for the product may be identified; b) A distinctive model number or the equivalent; c) The electrical rating; d) The operating temperature range with the maximum operating ambient being 40°C (104°F), and the lower ambient rating marked as minus 40°C (minus 40°F) or minus 25°C (minus 13°F) <u>as specified by the manufacturer</u>; and e) The date or other dating period of manufacture not exceeding any three consecutive months
		With reference to 69.1 and the Cautionary Markings, Section 70, the markings shall be legible and permanent. These markings shall be:
69.3		<ul style="list-style-type: none"> a) Molded, die-stamped, paint stenciled, stamped or etched metal that is permanently secured; b) Pressure sensitive label complying with the applicable requirements for indoor and outdoor use labels in the Standard for Marking and Labeling Systems, UL 969, and Adhesive Labels, <u>CAN/CSA C22.2 No. 0.15</u>, at the indicated temperature rating, up to 70°C (158°F) on the specified surface; or c) A hang tag applied to a hose or cord, provided the hang tag complies with the requirements in the Permanency of Wrapped Hang Tag Marking Test, Section 64.
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.		