

STANDARD INFORMATION

Standard: UL 2202

Standard ID: Electric Vehicle (EV) Charging System Equipment [UL 2202:2022 Ed.3]

Previous Standard ID: Electric Vehicle (EV) Charging System Equipment [UL 2202:2009 Ed.2+R:09Feb2018]

EFFECTIVE DATE OF NEW/REVISED REQUIREMENTS

Effective Date: **December 15, 2024**

IMPACT, OVERVIEW, AND ACTION REQUIRED

Impact Statement: Per our accreditation, Intertek is required to review reports against the standard revisions to confirm compliance. Once compliance is confirmed, the standard reference in the report is updated to show continued compliance to the technical requirements of the standard. Reports not updated to this version by the effective date above will be withdrawn.

Overview of Changes:

- Non-locking receptacle types
- EV Cable Securement Test
- Revision to Ventilation Markings
- Revision of Overcurrent Protection Requirements
- Rating marking revisions
- Liquid cooled charger systems
- Removal of cadmium
- Output cable to the electric vehicle
- New Power Verification Test
- Strength of Terminal Insulating Base and Support Test
- Protection of Service Personnel

Specific details of new/ revised requirements are found in table below.

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 – Please immediately identify any current Listing Reports or products that are no longer active and should be removed from our records.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>
6	Info	Ratings A unit shall have the following ratings:
6.1		a) Input rating in volts, number of phases, frequency, and amperes; and b) <u>Output rating in volts dc and amperes.</u>
11	Info	Corrosion Protection An enclosure of cast iron or malleable iron at least 3.2 mm (1/8 inch) thick shall be protected against corrosion by:
11.5		a) A 0.0038 mm (0.00015 inch) thick coating of zinc, cadmium or the equivalent, on the outside surface and a visible coating of such metal on the inside surface, or b) One coat of an organic finish of the epoxy or alkyd-resin type or other outdoor paint on each surface. Whether the paint meets the intent for which it is required, shall be determined by evaluation of its composition or, where required, by corrosion tests.
11.6		An enclosure of sheet steel having a thickness less than 0.126 inch (3.2 mm) when zinc-coated or 0.123 inch (3.12 mm) thick when uncoated shall be protected against corrosion by one of the following means or by other metallic or nonmetallic coatings that have been found to give equivalent protection as described in 79.12. a) Hot-dipped mill-galvanized sheet steel conforming with the coating Designation G90 in the Specification for Steel Sheet, Zinc-Coated (Galvannealed), or Zinc – Iron Alloy – Coated (Galvannealed) by the Hot-Dip Process, ASTM A653/A653m-94 with not less than 40 percent of the zinc on any side, based on the minimum single-spot-test requirement in this ASTM designation. The weight of zinc coating shall be determined by any applicable method; however, in case of question, the weight of coating shall be established in accordance with the Test Method for Weight of Coating on Zinc-Coated (Galvanized) Iron or Steel Articles, ASTM Designation A90-81. b) A zinc coating, other than that provided on hot-dipped mill-galvanized sheet steel, uniformly applied to an average thickness of not less than 0.00061 inch (0.0155 mm) on each surface with minimum thickness of 0.00054 inch (0.0137 mm). The thickness of the coating shall be established by the metallic-coating thickness test described in 80.3.1 – 80.3.9. An annealed coating shall also comply with 79.14. c) A zinc coating conforming with 79.11 (a) or (b) with one coat of an organic finish of the epoxy or alkyd-resin type or other outdoor paint on each surface. Whether



CLAUSE	VERDICT	COMMENT
		<p>the paint meets the intent for which it is required shall be determined by evaluation of its composition or, where required by corrosion tests.</p> <p>d) A cadmium coating not less than 0.001 inch (0.03 mm) thick on both surfaces. The thickness of coating shall be established in accordance with the metallic-coating thickness test described in 80.3.1 – 80.3.9.</p> <p>e) A cadmium coating not less than 0.00075 inch (0.0191 mm) thick on both surfaces with one coat of outdoor paint on both surfaces, or not less than 0.0005 inch (0.013 mm) thick on both surfaces with two coats of outdoor paint on both surfaces. The thickness of the cadmium coating shall be established in accordance with the metallic-coating thickness test described in 80.3.1 – 80.3.9 and the paint shall be as specified in (c).</p>
14	Info	Supply Connections
14.4	Info	Cord-connected units
14.4.2	Info	Cords and plugs
		<p>The cord shall be Type G, SEOW, SOW, SOOW, STOW, STOOW, SJEOW, SJOW, SJTOW, W, or a cord that is equally serviceable in accordance with Annex A, Ref. No. 27. The length of the cord used for the supply circuit is measured from the face of the attachment plug to the point where the cord emerges from the unit. The length of the power supply cord shall be as follows:</p> <p>a) For all units in which the interrupting device of the personnel protection system as described in 9.1 is located within 0.3 meters (12 inches) of the receptacle, the power supply cord shall be not more than 4.6 meters (15 feet).</p> <p>b) For portable units, where the interrupting device of the personnel protection system as described in 9.1 is located within the product enclosure, the power supply cord shall be not more than:</p> <p><u>1) For Canada, 1.8 m (6 feet); and</u> <u>2) For Mexico and the US, 300 mm (12 inches).</u></p>
		<i>New clause added;</i>
14.4.2.5		<p>In Canada, the attachment plug shall be of the grounding type.</p> <p>In Mexico and the US, the attachment plug shall be of the non-locking, grounding type.</p>
16	Info	External Connections and Wiring
16.1	Info	Output Cable to the electric vehicle
		<p>In the US and Mexico, and in dry locations in Canada, the overall length of the cable intended for connection to an EV shall not exceed 7.63 m (25 feet) unless the charger is equipped with a cable management system that is suitable for the purpose.</p> <p><u>In Canada, the overall length shall not exceed 5 m (16.5 feet) unless the charger is equipped with a cable management system that is suitable for the purpose.</u></p>



CLAUSE	VERDICT	COMMENT
21	Info	Current-Carrying Parts
21.2	Info	Bus bars
21.2.1		<p>Each bus bar shall be plated at each joint with tin, silver, or nickel, or cadmium except that:</p> <p>a) Welded or brazed joints are not required to be plated;</p> <p>b) Copper bus bars are not required to be plated when the current at the joint is 600 amperes or less;</p> <p>c) Other coatings used for aluminum bus bars are allowed when investigated for the application in accordance with the requirements for current-carrying parts described in Section 66; and</p> <p>d) A bus bar provided with an oxide inhibiting compound over the joint surfaces is not required to be plated when the compound is in accordance with 21.3.2.</p>
48		<p><i>New section added;</i></p> <p>Power Verification Test</p> <p>The input and output parameters of units shall be verified by measuring the input current at rated input voltage under conditions of maximum output current, and the maximum output current shall also be verified during this operation. The measured input current shall not be more than 110 % of its rated value and the maximum output current at its corresponding output voltage shall not exceed the manufacturer's output rating.</p> <p>See standard for details.</p>
56		<p><i>New section added;</i></p> <p>Cable Secureness Test</p> <p>EV cables shall be subjected to the test outlined in 56.2 – 56.4. After this test, there shall be no axial displacement of the supply conductors, conductor insulation, or outer jacket of the EV cable from the assembled condition exceeding the maximum allowed displacement as specified in Table 56.1. In addition, there shall be no evidence of damage to the EV cable, the enclosure of live parts, the strain relief means, or the grounding path integrity.</p> <p>See standard for details.</p>
59	Info	Strength of Terminal Insulating Base and Support Test
59.1		<p>In accordance with the requirement in 14.1.2.8, an insulating base or support and the bus or strap upon which pressure wire connectors for field wiring are mounted shall be subjected to the force created when the connectors, securing short lengths of conductors sized as described in 14.1.1.4, are torqued to 110% <u>125 %</u> of the value marked on the unit. The results meet the intent of the requirement when the base is not damaged as defined in 59.2. The test is not required for wire connectors that are part of a component such as a terminal block, circuit breaker, switch, or similar device.</p>



CLAUSE	VERDICT	COMMENT
	Info	MARKING
76	Info	Details
76.3	Info	Cautionary markings
		<i>New clause added;</i>
76.3.9		A removable panel covering a capacitor in accordance with 30.8 (a) shall be marked "CAUTION – Risk of electric shock" and the following or equivalent wording: "Capacitor stores hazardous energy. Do not remove cover until ___ minutes after disconnecting all sources of supply." The time indicated in the marking is to be whatever time needed to discharge the capacitor to within the limitations specified in 30.7, and not greater than 5 minutes.
		<i>New clause added;</i>
76.3.17		Any unit not provided with external connections for ventilating means shall be marked with the word "WARNING" and the following or the equivalent: "This equipment is intended only for charging vehicles not requiring ventilation during charging. See Vehicle Owner's Manual." This marking may alternatively appear as an instruction on the charger's user interface display if one is provided.
		<i>New annex added;</i>
		LIQUID COOLED CHARGER SYSTEMS
Annex C		This Annex covers charging equipment systems that utilize liquid cooling to cool the output cable to the electric vehicle and the vehicle connector in order to deliver higher power to an electric vehicle. The liquid cooling system encompasses the entire charging system from charger to vehicle connector in one continuous closed loop. The charging equipment is intended to comply with the requirements in this Annex.
		See standard for details.