TABLE A: Electricity (Safety) Regulations 2010 – Proposed New Standards

These tables below detail the proposed new standards to the Electricity (Safety) Regulations (2010).

Contents

Schedule 4

Clause 1: Household Appliances and similar

Type	Applicable standard	Latest Edition	Proposed change and rationale
Commercial microwave appliances with insertion or contacting applicators	New standard	IEC 60335-2-110 Ed 1.0 (2013) *Household and similar electrical appliances - Safety - Part 2-110: Particular requirements for commercial microwave appliances with insertion or contacting applicators*	**Immediate adoption of new standard – this standard only came into existence in 2013 & is included to broaden the scope of this schedule in line with new technological developments.**
Electric ondal mattress with a non-flexible heated part	New standard	IEC 60335-2-111 Ed 1.0 (2015) *Household and similar electrical appliances - Safety - Part 2-111: Particular requirements for electric ondol mattress with a non-flexible heated part*	**Immediate adoption of new standard – standard only came into existence in 2015**
Electrical heat pumps, air conditioners, and dehumidifiers using flammable refrigerants	New standard	IEC 60335-2-40 Ed 6.0 (2018) *Household and similar electrical appliances - Safety - Part 2-40: Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers*	**Immediate adoption of new standard – latest edition only with immediate effect to address issues of flammable refrigerants**
Refrigerating appliances, ice-cream appliances, and ice-makers using flammable refrigerants	New standard	IEC 60335-2-24 Ed 7.2 (2017) Household and similar electrical appliances - Safety - Part 2-24: Particular requirements for refrigerating appliances, ice-cream appliances and ice makers	**Immediate adoption of new standard as modified by Annex ZZ of As/NZS 60335.2.24:2010 including Amendments 1 and 2 – latest edition only to address issues of flammable refrigerants**
Robotic battery powered electrical lawnmowers	New standard	IEC 60335-2-107 Ed 2.0 (2017) *Household and similar electrical appliances - Safety - Part 2-107: Particular requirements for robotic battery powered electrical lawnmowers*	**Immediate adoption of new standard – standard only came into existence in 2012 and broadens the scope of this schedule in line with technological developments**
Self-balancing personal transport devices for use with batteries containing alkaline or other non-acid electrolytes	New standard	IEC 60335-2-114 Ed 1.0 (2018) *Household and similar electrical appliances - Safety - Part 2-114: Particular requirements for self-balancing personal transport devices for use with batteries containing alkaline or other non-acid electrolytes*	**Immediate adoption of new standard – this standard only came into existence in 2018 and broadens the scope of this schedule in line with technological developments**

Clause 5: Switches for circuits, installation protective devices, and connection devices

Type	Applicable standard	Latest Edition	Proposed change and rationale
Arc fault detection devices	New standard	IEC 62606 Ed 1.1 (2017) *General requirements for arc fault detection devices*	**Immediate adoption of new standard – only came into existence in 2013**
DC isolators	New Standard	IEC 60947-3 Ed 3.2 (2015) *Low-voltage switchgear and controlgear - Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units*	**New standard – this is included as its own standard due to technical developments concerning DC isolators**
Low-voltage switchgear and controlgear assemblies - General rules	New Standard	IEC 61439-1 Ed 2.0 (2011) *Low-voltage switchgear and control gear assemblies - Part 1: General rules*	**Immediate adoption of new standard – provides greater breadth and ensures subsequent parts compliance with this part 1.** **Standard is already 8 years old, no transition needed.**
Low-voltage switchgear and controlgear assemblies - Power switchgear and controlgear assemblies	New standard	IEC 61439-2 Ed. 2.0 (2011) *Low-voltage switchgear and control gear assemblies - Power switchgear and controlgear assemblies*	**Immediate adoption of new standard - provides greater breadth ensures subsequent parts compliance with this part 2.** **Standard is already 8 years old, no transition needed.**

Clause 6: Hand-held Motor-operated Electric tools

Type	Applicable standard	Latest Edition	Proposed change and rationale
Die grinders and small rotary tools	New standard	IEC 60745-2-23 Ed 1.0 (2012) Hand-held motor-operated electric tools - Safety - Part 2-23: Particular requirements for die grinders and small rotary tools	**Immediate adoption of new standard – standard only came into existence in 2012 & broadens scope of this schedule in line with technological developments**
Mixers	New Standard	IEC 62841-2-10 Ed 1.0 (2017) *Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery - Safety - Part 2.10: Particular requirements for hand-held mixers*	Immediate adoption of new standard
Transportable bench grinders	New standard	IEC 62841-3-4 Ed 1.0 (2016) *Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery - Safety - Part 3.4: Particular requirements for transportable bench grinders*	**Immediate adoption of new standard – broadens the scope of this clause for new equipment.**
Transportable diamond drills with liquid system	New standard	IEC 62841-3-6 Ed 1.0 (2014) *Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery - Safety - Part 3.6: Particular requirements for transportable diamond drills with liquid system*	**Immediate adoption of new standard – broadens the scope of this clause for new equipment.**
Transportable drills	New standard	IEC 62841-3-13 Ed 1.0 (2017) *Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery - Safety - Part 3.13: Particular requirements for transportable drills*	**Immediate adoption of new standard – broadens the scope of this clause for new equipment.** **Though IEC recommends adopting from 2020, there is no prior applicable standard.**
Transportable mitre saws	New standard	IEC 62841-3-9 Ed 1.0 (2014) *Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery - Safety - Part 3.9: Particular requirements for transportable mitre saws*	**Immediate adoption of new standard – broadens the scope of this clause for new equipment.**
Transportable table saws	New standard	IEC 62841-3-1 Ed 1.0 (2014) *Electric motor-operated hand-held tools, transportable tools and lawn and garden*	**Immediate adoption of new standard – broadens the scope of this clause for new equipment.**

		machinery - Safety - Part 3.1: Particular requirements for	
Transportable threading machines	New standard	IEC 62841-3-12 Ed 1.0 (2017) *Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery - Safety - Part 3.12: Particular requirements for transportable threading machines*	**Immediate adoption of new standard – broadens the scope of this clause for new equipment.** **Though IEC recommends adopting from 2020, there is no prior applicable standard.**

Clause 8: Audio and video products

Audio & video products	**Applicable standard**	**Latest edition**	**Suggested change and rationale**
Safety aspects for DC power transfer through communication cables and ports	**NEW STANDARD**	IEC 62368-3 Ed1.0 (2017) *Audio/video, information and communication technology equipment - Part 3: Safety aspects for DC power transfer through communication cables and ports*	**Immediate adoption of new standard – standard only came into existence in 2017 and broadens the scope of this schedule in line with technological developments**

Clause 10: Electrical medical devices

Type	Applicable standard	Latest edition	Suggested change and rationale
Critical care ventilators	Standard G in conjunction with IEC 60601-2-12 Ed 1.0	Cited standard has been withdrawn and replaced by: ISO 80601-2-12 Ed 1.0 (2011) *Medical electrical equipment – Part 2.12: Particular requirements for basic safety and essential performance of critical care ventilators*	Immediate transition to most recent ISO standard.
Electrocardiographs	NEW STANDARD	Cited standard is current IEC 60601-2-25 Ed 2.0 (2011) *Medical electrical equipment - Part 2-25: Particular requirements for the basic safety and essential performance of electrocardiographs*	**This standard was in the previous regulations, but was included in the row below (Electrocardiographic monitoring equipment).** This standard has been introduced on its own as a clarification of the standard below. The purpose is to separate the standards for Electrocardiographs and the equipment that monitors electrocardiographs.
Multifunction patient monitoring equipment	Standard G in conjunction with IEC 60601-2-49 Ed 2.0	Cited Standard has been withdrawn and replaced. See standard below. IEC 80601-2-49 Ed 1.0 (2018) *Medical electrical equipment - Part 2-49: Particular requirements for the basic safety and essential performance of multifunction patient monitors*	Immediate transition to latest relevant IEC standard

Clause 16: Beauty Therapy appliances

Type	Applicable standard	Latest Edition	Suggested change and rationale
Cosmetic and beauty care appliances incorporating lasers and intense light sources	New standard	IEC 60335-2-113 Ed 1.0 2016 *Household and similar electrical appliances - Safety - Part 2-113: Particular requirements for cosmetic and beauty care appliances incorporating lasers and intense light sources*	**Immediate adoption of new standard – standard only came into existence in 2016 and addresses rising prominence of such equipment.**

Clause 17: Electric Vehicles

Type	Applicable standard	Latest Edition	Suggested change and rationale
Charging System Equipment	UL 2202 Ed 2 (2009) *Standard for Electric Vehicle (EV) Charging System Equipment* UL2202 In conjunction with UL 2231-1 and UL 2231-2 with the alterations that the device is certified to 230 V to earth, at 50 Hz on an MEN system of supply. *UL 2231-1 Ed 2 (2012)* *Standard for Safety for Personnel Protection Systems for Electric Vehicle (EV) Supply Circuits: General Requirements* *UL 2231-2 Ed 2 (2012)* *Standard for Safety for Personnel Protection Systems for Electric Vehicle (EV) Supply Circuits: Particular Requirements for Protection Devices for Use in Charging Systems*	1.1 These requirements cover conductive charging system equipment intended to be supplied by a branch circuit of 600 volts or less for recharging the storage batteries in over-the-road electric vehicles (EV). The equipment includes off board and on board chargers. Off-board equipment may be considered for indoor use only or indoor/outdoor use. On board equipment is always considered outdoor use. Off board equipment is intended to be installed in accordance with the National Electrical Code, NFPA 70. 1.1 revised October 5, 2012 1.2 For the purposes of this standard, the term “electric vehicle”, designated throughout by the initials “EV”, is considered to cover electric vehicles, hybrid electric vehicles, and plug-in versions of these vehicles. 1.3 Electric vehicle charging system equipment that is not a complete assembly and depends upon installation in an end product for compliance with the requirements in this standard is investigated	Please see attached summary document

		under the requirements of this standard and the standard for the end product. On board chargers that rely upon specific installation requirements within an EV for compliance with the requirements in this standard, are to be evaluated based on those installation requirements and equipment. 1.3 revised October 5, 2012 1.4 These requirements do not cover battery chargers covered by the Standard for Battery Chargers for Charging Engine-Starter Batteries, UL 1236, or the Standard for Industrial Battery Chargers, UL 1564. 1.5 The requirements for devices or systems intended to reduce the risk of electric shock to the user in grounded or isolated circuits for charging electric vehicles are covered in the Standard for Personnel Protection Systems for Electric Vehicle (EV) Supply Circuits; Part 1: General Requirements, UL 2231-1, and the Standard for Personnel Protection Systems for Electric Vehicle (EV) Supply Circuits; Part 2: Particular Requirements for Protective Devices for Use in Charging Systems, UL 2231-2. 1.6 The requirements in clauses 2 – 84 apply directly to off board charging equipment. Supplement SA applies directly to on board charging equipment. 1.6 added April 22, 2011	
Conductive charging system -	IEC 61851-1 Ed 3.0 (2017) *Electric vehicle conductive charging system - Part 1: General requirements*	Applies to EV supply equipment for charging electric road vehicles, with a rated supply voltage up to 1 000 V AC or up to 1 500 V DC and a rated output voltage up to 1 000 V AC or up to 1 500 V DC. Electric road vehicles (EV) cover all road vehicles, including plug-in hybrid road vehicles (PHEV), that derive all or part of their energy from on-board rechargeable energy storage systems (RESS). The aspects covered in this standard include: - the characteristics and operating	

		conditions of the EV supply equipment; - the specification of the connection between the EV supply equipment and the EV; - the requirements for electrical safety for the EV supply equipment. This third edition cancels and replaces the second edition published in 2010. It constitutes a technical revision. This edition includes the following significant technical changes with respect to the previous edition: a) The contents of IEC 61851-1:2010 have been re-ordered. Numbering of clauses has changed as new clauses were introduced and some contents moved for easy reading. The following lines give an insight to the new ordering in addition to the main technical changes. b) All requirements from IEC 61851-22 have been moved to this standard, as work on IEC 61851-22 has ceased. c) Any requirements that concern EMC have been removed from the text and are expected to be part of the future version of 61851-21-2. d) Clause 4 contains the original text from IEC 61851-1:2010 and all general requirements from Clause 6 of IEC 61851-1:2010. e) Clause 5 has been introduced to provide classifications for EV supply equipment. f) Previous general requirements of Clause 6 have been integrated into Clause 4. Clause 6 contains all Mode descriptions and control requirements. Specific requirements for the combined use of AC and DC on the same contacts are included. g) Clause 9 is derived from previous Clause 8. Adaptation of the description of DC	

		accessories to allow for the DC charging modes that have only recently been proposed by industry and based on the standards IEC 61851-23, IEC 61851-24 as well as IEC 62196-1, IEC 62196-2 and IEC 62196-3. Information and tables contained in the IEC 62196 series standards have been removed from this standard. h) Clause 10 specifically concerns the requirements for adaptors, initially in Clause 6. i) Clause 11 includes new requirements for the protection of the cable. j) Specific requirements for equipment that is not covered in the IEC 62752 remain in the present document. k) Previous Clause 11 is now treated in Clauses 12 to 13. The requirements in 61851-1 cover the EV supply equipment of both mode 2 and mode 3 types, with the exception in-cable control and protection devices for mode 2 charging of electric road vehicles (IC-CPD) which are covered by IEC 62752. l) Clause 14 gives requirements on automatic reclosing of protection equipment. m) Clause 16 gives requirements for the marking of equipment and the contents of the installation and user manual. This makes specific mention of the need to maintain coherence with the standards for the fixed installation. It also contains an important text on the markings for temperature ratings. n) Annex A has been reviewed to introduce complete sequences and tests and to make the exact cycles explicit. Annex A in this edition supersedes IEC TS 62763 (Edition 1). o) Annex B is normative and has requirements for proximity circuits with and without current coding.	

		p) Previous Annex C has been removed and informative descriptions of pilot function and proximity function implementations initially in Annex B are moved to Annex C. q) New informative Annex D describing an alternative pilot function system has been introduced. r) Dimensional requirements for free space to be left around socket-outlets used for EV energy supply are given in the informative Annex E. s) The inclusion of protection devices within the EV supply equipment could, in some cases, contribute to the protection against electric shock as required by the installation. This is covered by the information required for the installation of EV supply equipment in Clause 16 (Marking).	
Connection to an external electric power supply – Safety requirements	ISO 17409:2015 *Electrically propelled road vehicles – connection to an external electric power supply – Safety requirements*	Specifies electric safety requirements for conductive connections of electrically propelled road vehicles to an external electric power supply using a plug or vehicle inlet. It applies to electrically propelled road vehicles with voltage class B electric circuits. In general, it may apply to motorcycles and mopeds if no dedicated standards for these vehicles exist. It applies only to vehicle power supply circuits. It applies also to dedicated power supply control functions used for the connection of the vehicle to an external electric power supply. It does not provide requirements regarding the connection to a non-isolated d.c. charging station. It does not provide comprehensive safety	

		information for manufacturing, maintenance, and repair personnel. The requirements when the vehicle is not connected to the external electric power supply are specified in ISO 6469‑3. NOTE 1 This International Standard does not contain requirements for vehicle power supply circuits using protection by class II or double/reinforced insulation but it is not the intention to exclude such vehicle applications. NOTE 2 Requirements for EV supply equipment are specified in IEC 61851. A revised edition is currently being voted on.	
DC electric vehicle charging station	IEC 61851-23 Ed 1.0 (2014) *Electric vehicle conductive charging system - Part 23: DC electric vehicle charging station*	Gives the requirements for d.c. electric vehicle (EV) charging stations, herein also referred to as "DC charger", for conductive connection to the vehicle, with an a.c. or d.c. input voltage up to 1 000 V a.c. and up to 1 500 V d.c. according to IEC 60038. It provides the general requirements for the control communication between a d.c. EV charging station and an EV. The requirements for digital communication between d.c. EV charging station and electric vehicle for control of d.c. charging are defined in IEC 61851-24. Due to further technical developments in the field of electric vehicles charging, the requirements in IEC 61851-23:2014 to fulfil the safety objective "protection against electric shock" under single fault condition by limiting the capacitance energy, may not cover all possible combinations of charging stations and vehicles. Since the charging process links the charging infrastructure with the electric vehicle, the requirements laid	

		down in **ISO 17409:2015** are also relevant for the electrical safety of the charging process. The approach of limiting the capacitance energy will not be sufficient for the safety objective "protection against electric shock" under single fault condition in all relevant cases. Therefore, this warning is issued for both standards. It is as always strongly recommended that users of standards additionally perform a risk assessment. Specifically in this case, standards users shall select proper means to fulfil safety requirements in the system of charging station and electric vehicle. This publication is to be read in conjunction with IEC 61851-1:2010. The contents of the corrigendum of May 2016 have been included in this copy.	
Electric vehicle wireless power transfer (WPT) systems - Part 1: General requirements	IEC 61980-1 Ed 1.0 (2015) *Electric vehicle wireless power transfer (WPT) systems - Part 1: General requirements*	Applies to the equipment for the wireless transfer of electric power from the supply network to electric road vehicles for purposes of supplying electric energy to the RESS (Rechargeable energy storage system) and/or other on-board electrical systems in an operational state when connected to the supply network, at standard supply voltages ratings per IEC 60038 up to 1 000 V a.c. and up to 1 500 V d.c. This standard also applies to Wireless Power Transfer (WPT) equipment supplied from on-site storage systems (e.g. buffer batteries, etc.). This publication is to be read in conjunction with the IEC 61980 series. The contents of the corrigendum of January 2017 have been included in this copy.	
In-cable control and protection device for mode 2 charging of electric road vehicles (IC-CPD)	IEC 62752 Ed 1.1 (2018) In-cable control and protection device for mode 2 charging of electric road vehicles (IC-CPD)	Applies to in-cable control and protection devices (IC-CPDs) for mode 2 charging of electric road vehicles, hereafter referred to as IC-CPD including control and safety functions. This standard applies to portable devices performing simultaneously the	

		functions of detection of the residual current, of comparison of the value of this current with the residual operating value and of opening of the protected circuit when the residual current exceeds this value. This consolidated version consists of the first edition (2016) and its amendment 1 (2018). Therefore, no need to order amendment in addition to this publication.	
Plugs, Receptacles, and Couplers for Electric Vehicles	UL 2251 ED 4 (2017) *Standard for Plugs, Receptacles, and Couplers for Electric Vehicles*	1.1 These requirements cover EV plugs, EV receptacles, vehicle inlets, vehicle connectors, and EV breakaway couplings, rated up to 800 amperes and up to 600 volts ac or dc. These devices are intended for use with conductive electric vehicle supply equipment (EVSE), and are intended to facilitate the conductive connection from the EVSE to the vehicle. These devices are for use in either indoor or outdoor non-hazardous locations in accordance with Annex A, Ref. No. 1. 1.2 This Standard does not directly apply to any device that is not intended for use as described in 1.1. 1.3 In the text of this Standard, the term "device" refers to any product covered by this Standard. The letters "EV" refer to an electric vehicle, including plug-in hybrid vehicles, hybrid vehicles, electric vehicles, battery electric vehicles, and similar vehicles.	
Plugs, socket-outlets, vehicle connectors and vehicle inlets - Conductive charging of electric vehicles - Part 1: General requirements	IEC 62196-1 Ed 3.0 (2014) *Plugs, socket-outlets, vehicle connectors and vehicle inlets - Conductive charging of electric vehicles - Part 1: General requirements*	Applicable to plugs, socket-outlets, vehicle connectors, vehicle inlets and cable assemblies for electric vehicles, herein referred to as "accessories", intended for use in conductive charging systems which incorporate control means, with a rated operating voltage not exceeding: - 690 V a.c. 50 Hz to 60 Hz, at a rated current not exceeding 250 A; - 1 500 V d.c. at a rated current not exceeding 400 A.	This standard was previously in the low-voltage equipment section.

		This third edition cancels and replaces the second edition published in 2011 and constitutes a technical revision. This edition includes the following significant technical changes with respect to the previous edition: a) addition of a preferred operating voltage of 1 000 V d.c.; b) addition of a preferred rated current of 80 A d.c.; c) addition of a provision for a combined interface a.c./d.c.; d) description of d.c. configurations (previously under consideration); e) addition of requirements pertaining to the locking mechanism, the interlock and the latching device; f) addition of a test for accessories not suitable for making and breaking an electrical circuit under load; g) Addition of requirements and tests for insulated end caps. Note: ed2.0 is already cited in schedule 4	
Plugs, socket-outlets, vehicle connectors and vehicle inlets - Conductive charging of electric vehicles - Part 2: Dimensional compatibility and interchangeability requirements for a.c. pin and contact-tube accessories	IEC 62196-2 Ed 2.0 (2016) *Plugs, socket-outlets, vehicle connectors and vehicle inlets - Conductive charging of electric vehicles - Part 2: Dimensional compatibility and interchangeability requirements for a.c. pin and contact-tube accessories*	Applies to plugs, socket-outlets, vehicle connectors and vehicle inlets with pins and contact-tubes of standardized configurations, herein referred to as accessories. They have a nominal rated operating voltage not exceeding 480 V a.c., 50 Hz to 60 Hz, and a rated current not exceeding 63 A three-phase or 70 A single phase, for use in conductive charging of electric vehicles. This second edition cancels and replaces the first edition published in 2011 and constitutes a technical revision. This second edition includes the following significant technical changes with respect to the previous edition. a) Standard sheets for configurations type 2 and type 3 have been updated. b) Configuration type 2 is now available with optional shutter. This publication is to be read in conjunction with IEC 62196-1:2014.	

Plugs, socket-outlets, vehicle connectors and vehicle inlets - Conductive charging of electric vehicles - Part 3: Dimensional compatibility and interchangeability requirements for d.c. and a.c./d.c. pin and contact-tube vehicle couplers	IEC 62196-3 Ed 1.0 (2014) *Plugs, socket-outlets, vehicle connectors and vehicle inlets - Conductive charging of electric vehicles - Part 3: Dimensional compatibility and interchangeability requirements for d.c. and a.c./d.c. pin and contact-tube vehicle couplers*	Applicable to vehicle couplers with pins and contact-tubes of standardized configuration, herein also referred to as "accessories", intended for use in electric vehicle conductive charging systems which incorporate control means, with rated operating voltage up to 1 500 V d.c. and rated current up to 250 A, and 1 000 V a.c. and rated current up to 250 A. This part of IEC 62196 applies to high power d.c. interfaces and combined a.c./d.c. interfaces of vehicle couplers specified in IEC 62196-1:2014, and intended for use in conductive charging systems for circuits specified in IEC 61851-1:2010, and IEC 61851-23:2014. This publication is to be read in conjunction with IEC 62196-1:2014.	
Residual Direct current detecting devices	*IEC 62955 Ed 1.0 (2018)* Residual direct current detecting device (RDC-DD) to be used for mode 3 charging of electrical vehicles	Applies to residual direct current detecting devices (RDC-DD) for permanently connected AC electric vehicle charging stations (mode 3 charging of electric vehicles, according to IEC 61851-1 and IEC 60364-7-722), hereafter referred to as RDC-MD (residual direct current monitoring device) or RDC-PD (residual direct current protective device), for rated voltages not exceeding 440 V AC with rated frequencies of 50 Hz, 60 Hz or 50/60 Hz and rated currents not exceeding 125 A.	
Safety for Personnel Protection Systems for Electric Vehicle (EV) Supply Circuits: General Requirements	*UL 2231-1 Ed 2 (2012)* *Standard for Safety for Personnel Protection Systems for Electric Vehicle (EV) Supply Circuits: General Requirements* UL2594 In conjunction with UL 2231-1 and UL 2231-2 with the alterations that the device is certified to 230 V to earth, at 50 Hz on an MEN system of supply.	1.1 These requirements cover devices and systems intended for use in accordance with Annex a, Ref. No. 1, to reduce the risk of electric shock to the user from accessible parts, in grounded or isolated circuits for charging electric vehicles. These circuits are external to or on board the vehicle. 1.2 The devices and systems covered by these requirements are compatible with the designs of charging systems and vehicles where use is intended and are rated	

	UL 2594 ED 2 (2016) *Standard for Electric Vehicle Supply Equipment* *UL 2231-2 Ed 2 (2012)* *Standard for Safety for Personnel Protection Systems for Electric Vehicle (EV) Supply Circuits: Particular Requirements for Protection Devices for Use in Charging Systems*	accordingly. To assure compatibility, the charging system, the vehicle, or both, are in accordance with the features contained in 1.3 – 1.5. 1.3 The type of vehicle covered by these requirements, including all accessible conductive parts on the vehicle, has one or more of the following: a) Provision for the connection of an equipment grounding conductor during battery charging, unless the vehicle has a system of reinforced or double insulation or all of the circuitry on the vehicle is electrically isolated from the supply circuit, b) Provision for the connection of ground-monitoring conductors, where required, c) Reinforced insulation, or is double-insulated from the supply circuit, or d) No direct connection between current-carrying conductors and the vehicle chassis. 1.4 These requirements cover devices and systems where the grounding path impedance of the charging system to the vehicle is less than or equal to the impedance of the ungrounded conductor or conductors. 1.5 These requirements cover devices and systems where a continuous current less than 70 mA RMS is available from any accessible part of the charging system. 1.6 Devices covered by these requirements are intended to interrupt the electric circuit to the load when: a) A fault current to ground exceeds some predetermined value that is less than that required to operate the overcurrent protective device of the supply circuit, b) The grounding path becomes open-circuited or becomes an excessively high impedance, or c) A path to ground is detected on an	

		isolated (ungrounded) system. 1.7 These devices and systems are intended to be applied on electrical systems or include derived systems that are: a) Either end-grounded or centrally grounded when the operating voltage is 150 Vrms or less, b) Centrally grounded when the operating voltage is greater than 150 Vrms, or c) Isolated (ungrounded). 1.8 Charging circuit-interrupting devices covered by these requirements are investigated for their ability to provide protection based on: a) The type of current (60 Hz AC, DC, a combination of AC and DC, or AC at frequencies greater than 60 Hz) present in the circuit to be protected, and b) Voltage. 1.9 In Mexico and the US, these requirements do not cover ground-fault circuit-interrupters (GFCIs) intended for use as personnel protection in accordance with the national electrical codes on grounded 120 Vrms or 127 Vrms to ground, 60 Hz circuits. Such devices are covered under Annex a, Ref. No. 2. In Canada, these requirements do not cover ground-fault circuit-interrupters (GFCIs) in accordance with the national electrical code on grounded 120 Vrms or 127 Vrms to ground, 60 Hz circuits. Such devices are covered under Annex a, Ref. No. 2. 1.10 This Standard includes the Scope, Definitions, and Description of Requirements, including the required features of protection systems. The standards in Annex a, Ref. No. 3 contain the Performance and Construction requirements for protective devices that would become a part of a charging system.	

Safety for Personnel Protection Systems for Electric Vehicle (EV) Supply Circuits: Particular Requirements for Protection Devices for Use in Charging Systems	*UL 2231-2 Ed 2 (2012)* *Standard for Safety for Personnel Protection Systems for Electric Vehicle (EV) Supply Circuits: Particular Requirements for Protection Devices for Use in Charging Systems*	This Standard is intended to be used in conjunction with the general requirements of Annex a, Ref. No. 1. The requirements of Annex a, Ref. No. 1 apply unless modified by this Standard.	
Supply Equipment	UL 2594 ED 2 (2016) *Standard for Electric Vehicle Supply Equipment* UL2594 In conjunction with UL 2231-1 and UL 2231-2 with the alterations that the device is certified to 230 V to earth, at 50 Hz on an MEN system of supply. *UL 2231-1 Ed 2 (2012)* *Standard for Safety for Personnel Protection Systems for Electric Vehicle (EV) Supply Circuits: General Requirements* *UL 2231-2 Ed 2 (2012)* *Standard for Safety for Personnel Protection Systems for Electric Vehicle (EV) Supply Circuits: Particular Requirements for Protection Devices for Use in Charging Systems*	1.1 This Standard covers conductive electric vehicle (EV) supply equipment with a primary source voltage of 600 V ac or less, with a frequency of 50 or 60 Hz, and intended to provide ac power to an electric vehicle with an on-board charging unit. This Standard covers electric vehicle supply equipment intended for use where ventilation is not required. 1.2 With reference to 1.1, the following list of examples of electric vehicle supply equipment are included in this Standard: a) EV Cord Sets – Rated 125 Vac maximum, 16 A maximum, intended for indoor and outdoor use; b) Fastened in place EV Charging Stations – Rated 250 Vac maximum, 40 A maximum, intended for indoor or outdoor use; c) Fixed in place EV Charging Stations – Rated 600 Vac maximum, intended for indoor or indoor/outdoor use; and d) Fixed in place EV Power Outlet – Rated 600 Vac maximum, intended for indoor or indoor/outdoor use. For Mexico, use 127 Vac where 120 or 125 Vac is referenced in this Standard. In Canada and the United States, this does not apply. 1.3 The products covered by this Standard are intended for use in accordance with the Installation Codes in Annex A, Ref. No.1. 1.4 This Standard does not cover cord sets or power supply cords for applications other than EV charging cord sets. For cord sets and power supply cords not covered by this Standard, refer to Annex A, Ref. No. 2 and	

		No. 3. 1.5 With reference to 1.2, this Standard does not cover electric vehicle charging equipment. For EV charging equipment not covered by this Standard, refer to Annex A, Ref. No. 4. 1.6 This Standard does not cover electric vehicle connectors. For electric vehicle connectors not covered by this Standard, refer to Annex A, Ref. No. 5 1.7 This Standard does not cover regular-use power outlets. For regular-use power outlets not covered by this Standard, refer to Annex A, Ref. No. 6. 1.8 This Standard does not cover equipment intended for wireless power transfer, which may also be designated as wireless charging, inductive charging, magnetic resonance charging, or any other similar designation indicating the transfer of power from the EVSE to the vehicle through other than a conductive connection.	