

Vehicle Construction Approval Requirements for Electric Vehicles (applicable to pure electric vehicles and plug-in hybrid electric vehicles)

I. Regulations and Standards

1. All electric vehicles applying for vehicle approval in Hong Kong shall comply with the Road Traffic Ordinance (Cap. 374) and its subsidiary regulations, including the Road Traffic (Construction & Maintenance of Vehicles) Regulations related to vehicle construction, and the Road Traffic (Safety Equipment) Regulations related to safety equipment.
2. All electric vehicles are classified according to the class of vehicle as given in Schedule 1 of the Road Traffic Ordinance, Cap. 374.
3. The applicant is required to provide the following information for the specific vehicle type:
 - (a) Functional safety and protection against electric shock
 - Technical details and documentary proof to demonstrate the functional safety and protection against electric shock of the electric vehicle complies with any one of the standards and regulations listed in Annex 1.
 - (b) Battery safety
 - Technical details and documentary proof to show the construction, safety and reliability of the battery is suitable for automotive use and traceable to a relevant standard listed in Annex 2. Transport Department may accept alternative standards with contents and requirements equivalent or superior to the standards and regulations listed in Annex 2.
 - (c) Charging system
 - Technical details and documentary proof to show the charging system, including on-board equipment and dedicated chargers (where specified or supplied by the manufacturer), are designed and constructed in compliance with relevant international, national or industrial standards, and relevant statutory safety requirements. The charging system shall be designed to operate properly and safely when connected to the local electricity supply system (single phase, 220V, 50 Hz or three phase, 380V, 50Hz).
 - (d) Fact Sheet
 - Applicants are required to complete the Fact Sheet in Annex 3.

- (e) Photos
 - Photos (JPEG format) of different views of the EV, vehicle inlet(s), name plate of the in-cable control box (if any).
4. The documentary proof as referred to in paragraph 3 may either be –
 - (a) a certificate issued by an independent certification body (subject to having suitable testing protocols);
 - (b) a test report prepared by an independent testing body (subject to having suitable testing protocols); or
 - (c) the vehicle manufacturer’s declaration, if the vehicle model is certified to an international standard and the manufacturer operates an internationally recognized quality management system.

Special remarks for electric motorcycles:

5. The standards listed in Annex 1 may not be directly applicable to some low power electric vehicles (such as electric motor cycles/tricycles or category L vehicles (according to United Nations Economic Commission for Europe (UN/ECE) classification). The applicant is required to submit documentary proof to demonstrate the electrical safety of the concerned vehicle, with reference to similar requirements as outlined in those standards.

Special remarks for electric buses and light buses:

6. A manually operated isolation switch capable of disconnecting the power circuits from the electric power supply (traction battery or equivalent) shall be provided, and shall be located in a position readily accessible to a person outside the vehicle. The position of the isolation switch shall be clearly indicated to users by labels in English and Chinese.

Special remarks for individual electric vehicle importer:

7. This set of requirements applies to all electric vehicles including those imported by individuals. The vehicle manufacturer will generally design an electric vehicle to be suitable for specific markets, and even if the commercial names are the same, an individually imported electric vehicle may not have the same specifications as electric vehicles already registered in Hong Kong. Individual importers should provide information specified in Section 3 to demonstrate compliance with the safety requirements. (Individual electric vehicle importers are strongly advised to check with relevant authorities before they import an electric vehicle to Hong Kong.)
8. As an alternative to the submission in Section 7 above, applicants may provide a test report containing the following information to demonstrate compliance with the safety requirements:
 - 8.1 Visual inspection results on high-voltage* electrical components of the vehicle, including Rechargeable Energy Storage System (RESS), On-board charger, Vehicle inlets, High voltage cables, terminals and connectors, Energy conversion system assembly and traction system, to check for any damages, wear and tear, burnt mark, poor workmanship and connections.

* Please refer to UNECE-R100 for definition of “High-voltage”.

- 8.2 Technical specifications of the high-voltage electrical components specified in para. 8.1 (including RESS, onboard charger, motor and vehicle inlet) shall be recorded, e.g. Manufacturer’s plate / sticker on the component, photos containing such information are required.
- 8.3 The Isolation resistance test according to measurement method stipulated in UNECE-R100.
- 8.4 Photos showing the EV in different views, EV charging cables, vehicle inlet(s) and name plate of the In Cable Control Box (ICCB).
- 8.5 Declaration of the EV charging system including the RESS is suitable for safe and reliable operation under the local electricity supply system, i.e. 1 phase 220V, 50Hz or 3 phase 380V, 50Hz.
- 8.6 Documentary proof for the vehicle movement by its own propulsion system shall be impossible as long as the connector of the external electric power supply is physically connected to the vehicle charging inlet. Physical testing supported with declaration of test result is acceptable. For details, please refer to UNECE-R100.
- 8.7 Fact sheet. (Refer to Annex 3)
- 8.8 Photos (JPEG format) of different views of the EV, vehicle inlet(s), name plate of the in-cable control box (if any).

The test report(s) shall be issued by a laboratory accredited under the Hong Kong Laboratory Accreditation Scheme “HOKLAS” or laboratories accredited by those bodies that have Mutual Recognition Arrangements (MRA) with HOKLAS, in relevant testing category, i.e. Electrical and Electronic Products; or issued by a Registered Professional Engineer (R.P.E.) in relevant engineering discipline, i.e. Electrical (ELL) / Mechanical (MCL), or any tertiary institutions accredited by the Hong Kong Institution of Engineers

9. No after-market alterations will be allowed, and no non-original charging equipment such as on-board charger, charging cable, electric vehicle supply equipment (EVSE), adapters, and power batteries will be accepted, unless certified by the original electric vehicle manufacturer, or are proven to meet relevant international technical standards.

Annex 1

Safety Standards on Functional safety and Occupant protection against electric shock

Applicability: Passenger vehicle (M) and goods vehicles (N), except motor cycles (L).

	Standard	Description
(a)	UN/ECE R100 (02 series)	Approval of Battery Electric Vehicles with regard to specific requirements for the construction, functional safety and hydrogen emission
(b)	Japan – Attachment 110 & TRIAS 67-2-2008	Technical standard and Test Procedure for protection of occupants against high voltage in electric vehicles and hybrid electric vehicles
	Attachment 111 & TRIAS 67-3-2008	Technical standard and Test Procedure for protection of occupants against high voltage in electric vehicles and hybrid electric vehicles after collision
(c)		Electrically propelled road vehicles – Safety specifications
	ISO 6469-1: 2010	Part 1: Rechargeable energy storage system (RESS)
	ISO 6469-2: 2018	Part 2: Vehicle operational safety
	ISO 6469-3: 2018	Part 3: Electrical safety
(d)	GB/T 18384-2015	電動汽車安全要求 第 1 部份：車載可充電儲能系統(REESS) 第 2 部份：操作安全和故障防護 第 3 部份：人員觸電防護
(e)	FMVSS 305	Electric Powered Vehicles, Electrolyte Spillage and Electrical Shock Protection
(f)	QC/T 838-2010	(For super-capacitor vehicle only) 超級電容電動城市客車

Annex 2

Safety Standards on Traction Battery Pack (or Module) for Electric Vehicles

(I) Lithium battery

Standards	Descriptions
(a) ISO 12405	Electrically propelled road vehicles - Test specification for Lithium-Ion traction battery packs and systems - Part 3: Safety performance requirements
(b) IEC 62660	Secondary lithium-ion cells for the propulsion of electric road vehicles - Part 1: Performance testing Part 2: Reliability and abuse testing Part 3: Safety requirements
(c) SAE J2464 (2009) or SAE J2929-2011	Electric and Hybrid Electric Vehicle Rechargeable Energy Storage System (RESS) Safety and Abuse Testing Electric and Hybrid Vehicle Propulsion Battery Safety Standard
(d) UN/ECE R100 (02 series)	Approval of Battery Electric Vehicles with regard to specific requirements for the construction, functional safety and hydrogen emission
(e) UL 1642 (2012)	Standard for Lithium Batteries
(f) QC/T 743-2006	電動汽車用鋰離子蓄電池
(g) QC/T 741-2014	(For super-capacitor vehicle only) 車用超級電容器
(h) GB/T 31467-3 (2015)	電動汽車用鋰離子動力蓄電池包和系統 第3部分：安全性要求與測試方法

(II) Non-lithium Battery

Standards	Descriptions
(a) QC/T 744-2006	電動汽車用金屬氫化物鎳蓄電池
(b) IEC 61982-4 2015	Secondary batteries (except lithium) for the propulsion of electric road vehicles –Part 4: Safety requirements of nickel-metal hydride cells and modules
(c) QC/T742-2006	電動汽車用鉛酸蓄電池

Annex 3

Fact Sheet for Electric Vehicle (EV)

Vehicle Classification	
Make and Model	
Battery Capacity (kWh) and Type (e.g. Li Fe SO4)	
Battery Warranty	
Driving Range (km) (NEDC / WLTP / for other standards, please specify)	
Charging Standard (e.g. IEC, SAE, GB, CHAdeMO)	
Charging Current (A) (AC / DC)	
Charging Time (hour)	
Capacity of on-board charger (kW and A) (1 phase / 3 phase)	
Motor Rating and maximum torque (kW, max. torque in N-m)	
Charging Mode Option (e.g. IEC Mode 1/ Mode 2/ Mode 3/ Mode 4)	
Standard of Vehicle Inlet (e.g. IEC 62196 type 2)	
Supply Voltage (e.g. 220V, 1 phase / 380V, 3 phase)	
Seating Capacity	
* Name of Supplier (Both Chinese and English)	
Contact Person	
* Telephone	
* Website's hyperlink for the concerned EV (Both Chinese and English)	
* E-mail	
EV manufactory economy	

*Information will be posted at EPD webpage