

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 specified in Schedule 1 of the Road Traffic Ordinance (Cap. 374).
3. The applicant is required to provide the relevant supporting document for the specific vehicle type. Supporting document including, but not limited to, supplementary information, clarification, certificates, test reports, etc. that can prove that alternative standards with equivalent or more stringent safety requirements complying with the standards and regulations listed in Annex 1 & 2 would also be considered:
 - (a) Functional safety and protection against electric shock
 - Technical details and documentary proof to demonstrate that 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 that the construction, safety and reliability of the battery is suitable for automotive use and traceable to a relevant standard listed in Annex 2.
 - (c) Charging system
 - Technical details and documentary proof to show that 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 (1-phase, 220V, 50 Hz or 3-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).

Special remarks for electric buses and light buses:

5. 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:

6. 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.)
7. As an alternative to the submission in Section 6 above, applicants may provide test report(s) containing the following information to demonstrate compliance with the safety requirements:
- 7.1 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 or UNECE-R136 (if applicable) for definition of “High-voltage”.
- 7.2 Technical specifications of the high-voltage electrical components specified in para. 7.1 (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.
- 7.3 The Isolation resistance test according to measurement method stipulated in UNECE-R100 or UNECE-R136 (if applicable).



- 7.4 Photos showing the EV in different views, EV charging cables, vehicle inlet(s) and name plate of the In Cable Control Box (ICCB).
- 7.5 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.
- 7.6 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 or UNECE-R136 (if applicable).
- 7.7 Fact sheet. (Refer to Annex 3)

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.) who were entered in the register under the Engineers Registration Ordinance (Cap. 409) in relevant disciplines, namely Electrical (ELL) or Mechanical (MCL) disciplines, or any tertiary institute accredited by the Hong Kong Institution of Engineers

8. 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).

	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)	ISO 6469-1: 2010 ISO 6469-2: 2018 ISO 6469-3: 2018	Electrically propelled road vehicles – Safety specifications Part 1: Rechargeable energy storage system (RESS) Part 2: Vehicle operational safety Part 3: Electrical safety
(d)	GB/T 18384-2015	電動汽車安全要求 Electrically propelled road vehicles – Safety specifications 第 1 部份：車載可充電儲能系統(REESS) Part 1: On-board rechargeable energy storage system (REESS) 第 2 部份：操作安全和故障防護 Part 2: Vehicle operational safety means and protection against failures 第 3 部份：人員觸電防護 Part 3: Protection of persons against electric shock
	GB 18384-2020	電動汽車安全要求 Electric vehicles safety requirements
	GB 38032-2020	電動客車安全要求 Electric buses safety requirements
(e)	FMVSS 305	Electric Powered Vehicles, Electrolyte Spillage and Electrical Shock Protection



(f)

QC/T 838-2010

超級電容電動城市客車

Ultracapacitor electric city bus

(For super-capacitor vehicle only)

Applicability: Motor cycles and motor tricycles (L)

	Standard	Description
(a)	UN/ECE R136	Approval of vehicles of category L with regard to specific requirements for the electric power train
(b)	GB 24155-2020	電動摩托車和電動輕便摩托車安全要求 Safety specifications for electric motorcycles and electric mopeds

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 (2020)	Standard for Lithium Batteries
(f) QC/T 743-2006	電動汽車用鋰離子蓄電池 Lithium-ion batteries for electric vehicles
(g) QC/T 741-2014	車用超級電容器 Ultra-capacitor for electric vehicles (For super-capacitor vehicle only)
(h) GB 38031-2020	電動汽車用動力蓄電池安全要求 Electric Vehicles Traction Battery Safety requirements
(i) GB/T 36672-2018	電動摩托車和電動輕便摩托車用鋰離子電池 Lithium-ion battery for electric mopeds and motorcycles
(j) UN/ECE R136	Approval of vehicles of category L with regard to specific requirements for the electric power train

Annex 2

(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 Nickel-metal hydride batteries for electric vehicles
(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/T 742-2006	電動汽車用鉛酸蓄電池 Lead-acid batteries for electric vehicles

附件 3 Annex 3

電動汽車資料便覽 Fact Sheet for Electric Vehicle (EV)

車輛類別 Vehicle Classification										
廠名及型號 <u>備註: 廠名及型號應與TA001表格一致(以上備註只適用於車輛類型評定申請)</u> Vehicle Make and Model <u>Note: Make and Model names should tally with that provided in TA001 (this note is only applicable to type approval submission.)</u>	<table border="1"> <tr> <td>廠名 Make</td> <td>:</td> <td></td> </tr> <tr> <td>型號及版本 Type & Variant / Version</td> <td>:</td> <td></td> </tr> <tr> <td>市售名稱 Commercial Name</td> <td>:</td> <td></td> </tr> </table>	廠名 Make	:		型號及版本 Type & Variant / Version	:		市售名稱 Commercial Name	:	
廠名 Make	:									
型號及版本 Type & Variant / Version	:									
市售名稱 Commercial Name	:									
電池容量(千瓦時) 及 種類 (例如: Li Fe SO ₄) Battery Capacity (kWh) and Type (e.g. Li Fe SO ₄)	kWh 電池種類 Battery type:									
電池電壓 (伏特) Battery Voltage (V)	V									
電池保養期(年) / (公里) Battery Warranty (year) / (km)	year(s) / 公里 km									
續航里程 (公里) (NEDC / WLTP / 其他: 請註明) Driving Range (km) (NEDC / WLTP / For other standards, please specify)	公里 km 標準 Standard:									
充電標準 (例如 IEC, SAE, GB, CHAdeMO) Charging Standard (e.g. IEC, SAE, GB, CHAdeMO)	交流電 AC - 直流電 DC -									
車輛充電輸入電流 (安培)及功率(千瓦) <u>備註: 如空間不足, 請另外加紙書寫。</u> Charging Input Current (A) & Power (kW) to Vehicle Inlet <u>Note: Please use separate sheet if space is insufficient.</u>	<table> <tr> <td>A</td> <td>kW</td> </tr> <tr> <td>A</td> <td>kW</td> </tr> <tr> <td>A</td> <td>kW</td> </tr> <tr> <td>A</td> <td>kW</td> </tr> </table>	A	kW	A	kW	A	kW	A	kW	
A	kW									
A	kW									
A	kW									
A	kW									
充電時間 (小時) <u>備註: 充電時間應與各自的充電電流相對應。</u> Charging Time (hour) <u>Note: The figure of charging time should correspond to the respective charging current.</u>	hrs. hrs. hrs. hrs.									

附件 3 Annex 3

<p>內置充電器輸入電流(安培)(單相/三相)及功率額定值(千瓦)</p> <p>Input Current (A) (1-phase / 3-phase) and Power Rating (kW) of On-board Charger</p>	<p>A kW</p> <p>A kW</p>																
<p>電動機額定值(千瓦)及最大扭矩(牛頓米)</p> <p>Motor Rating (KWh) and Maximum Torque (Nm)</p>	<table border="1"> <thead> <tr> <th></th> <th><u>最大功率</u> Maximum Power</th> <th><u>額定功率</u> Rated Power</th> <th><u>最大扭矩</u> Maximum Net Torque</th> </tr> </thead> <tbody> <tr> <td>Front 前:</td> <td>kW</td> <td>kW</td> <td>Nm</td> </tr> <tr> <td>Rear 後:</td> <td>kW</td> <td>kW</td> <td>Nm</td> </tr> <tr> <td>Combined 合併:</td> <td>kW</td> <td>kW</td> <td>Nm</td> </tr> </tbody> </table>		<u>最大功率</u> Maximum Power	<u>額定功率</u> Rated Power	<u>最大扭矩</u> Maximum Net Torque	Front 前:	kW	kW	Nm	Rear 後:	kW	kW	Nm	Combined 合併:	kW	kW	Nm
	<u>最大功率</u> Maximum Power	<u>額定功率</u> Rated Power	<u>最大扭矩</u> Maximum Net Torque														
Front 前:	kW	kW	Nm														
Rear 後:	kW	kW	Nm														
Combined 合併:	kW	kW	Nm														
<p>充電模式選項 (例如: 模式 1/ 模式 2/ 模式 3/ 模式 4)</p> <p>Charging Mode Option (e.g. Mode 1/ Mode 2/ Mode 3/ Mode 4)</p>																	
<p>汽車插座標準 (例如: IEC 62196 type 2)</p> <p>備註: 連接器和汽車插座的配置應包含於「廠方標準」選項內(例如: 廠方標準 )</p> <p>Standard of Vehicle Inlet (e.g. IEC 62196 type 2)</p> <p>Note: Pin Layouts of the vehicle connector and inlet shall be included in "Factory Standard" option. (e.g. Factory Standard )</p>	<p>交流電 / 插座 1 AC / Inlet 1</p> <p>直流電 / 插座 2 DC / Inlet 2</p>																
<p>座位數目(包括司機座位)</p> <p>Seating Capacity (Including Driver)</p>																	
<p>本港汽車供應商資料 Details of Supplier of the Vehicle in Hong Kong</p>																	
<p>本港汽車供應商名稱(中文及英文名稱)* Name of suppliers of the vehicle in Hong Kong (Both Chinese and English)*</p>																	
<p>聯絡人員 Contact Person</p>																	
<p>電話 Telephone*</p>																	
<p>該電動車的網址(中文及英文版本)* Website's hyperlink for the concerned EV (Both Chinese and English)*</p>																	
<p>電郵 E-mail*</p>																	
<p>電動汽車生產地 EV manufactory economy</p>																	

*資料將被刊登於環境保護署網頁。 Information will be posted at EPD webpage.