



## Material Safety Data Sheet: Lithium Ion Battery Pack Applicable:

- 1 E-bike battery S – PBM059, PBM068, PBM069, PBM091
- 2 E-bike battery M – PBM060, PBM081, PBM092. PBM096
- 3 E-bike battery L – PBM061, PBM070, PBM071, PBM072, PBM079, PBM082, PBM093
- 4 E-bike battery XL – PBM094, PBM095

## SECTION I PRODUCT/COMPANY IDENTIFICATION

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### Legal Summary USA

Material Safety Data Sheets (MSDS) are a sub-requirement of the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard 29CFR Subpart 1910.1200. This Hazard Communication Standard does not apply to various subcategories including anything defined by OSHA as an article.

*Because all of our batteries are defined as “articles”, they are exempt from the requirements of the Hazard Communication Standard.*

### Legal Summary (EU)

Regulation EC # 1907/2006 EC defines these batteries as “no substances” or “preparation” and the batteries are to be regarded as “articles”. No substances are intended to be released during handling. Therefore, pursuant to regulation (EC) 1907/2006, Article 31, there is no obligation to provide MSDS/SDS

### Manufacturer

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## Product Identification

### ETC Lithium-Ion Battery Pack

Product	Part number	Nominal voltage	Capacity (+/-5%)	Wh (+/-5%)
E-bike S	PBM059, PBM068, PBM069, PBM091	36V	12Ah	440Wh36
E-bike M	PBM060, PBM081, PBM092, PBM096	36V	24Ah	876Wh
E-bike L	PBM061, PBM070, PBM071, PBM072, PBM079, PBM082, PBM093	36V	45Ah	1.6kWh
E-bike XL	PBM094, PBM095	36V	60Ah	2.2kWh

## SECTION II - HAZARD IDENTIFICATION

The lithium ion batteries described within this documents are sealed units and when used according to our recommendations are not hazardous under normal conditions of use and are non-reactive provided battery integrity is maintained and seals remain intact. Risk of exposure is only the result of abuse (mechanical, thermal, or electrical), and can lead to potential exposure to electrolyte through leakage, electrode materials reaction with moisture/water, or battery vent/fire/explosion depending on circumstances and abuse.

### **WARNING**

**This is an electrical energy storage device. The device may cause electrical shock, fire or injury if used for other purposes than intended / designed.**

### PRIMARY ROUTES OF ENTRY

Skin contact, Skin absorption, Eye contact, Inhalation, and Ingestion:

### SYMPTOMS OF EXPOSURE

Skin irritation, irritant to ocular tissue, ingestion of electrolyte may cause tissue damage to throat and gastro/respiratory tract, and contents of a leaking or ruptured battery may cause respiratory tract, mucus, membrane irritation and edema.

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## SECTION III: COMPOSITION/INFORMATION ON INGREDIENTS

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### Hazardous Components

Compound	EC-NO	CAS-No	Chemical Name	Wt%	GHS
Anode Material	480-390-0	182442-95-1	Lithium Nickel Cobalt Manganese Oxide	30	H373, H412
Cathode Material	231-955-3	7782-442-5	Graphite	20	-
Electrolyte	202-510-0	96-49-1	Ethylene Carbonate (EC)	5-20	H225
	210-478-4	616-38-6	Dimethyl Carbonate (DMC)	5-20	H226
	433-480-9	623-53-0	Ethyl Methyl Carbonate (EMC)	5-20	H314
	244-334-7	21324-40-3	LiPF6	<4	H302, H312, H332
Separator	Polymer	24937-79-9	PVdF	<10	-
Plastic Parts	Polymer	9002-88-4	PE	<10	-
	Polymer	68608-59-3	PP	<10	-
Metal Parts	231-072-3	7429-90-5	Al	<10	-
	231-159-6	7440-50-8	Cu	<10	-

## SECTION IV: FIRST AID MEASURES

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INHALATION, EYE CONTACT, and SKIN CONTACT: Not a health hazard.

INGESTION: not applicable.

**If exposure to internal materials within cell due to damaged outer casing, the following actions are recommended:**

**INHALATION - Leave area immediately and seek medical attention.**

**EYE CONTACT - Rinse eyes with water for 15 minutes and seek medical attention.**

**SKIN CONTACT - Wash area thoroughly with soap and water and seek medical attention.**

**INGESTION - Drink milk/water and induce vomiting; seek medical attention.**

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## SECTION: FIRE FIGHTING MEASURES

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### GENERAL HAZARD

Batteries and cells are not flammable but internal organic material will burn if the cell is incinerated. Burning batteries may emit acrid smoke irritating fumes, combustion products include, but are not limited to hydrogen fluoride, carbon monoxide and carbon dioxide.

**Extinguishing Media:** Carbon dioxide (CO<sub>2</sub>) or dry chemical fire extinguisher, 10-B: C.

### Fire Fighting Instructions:

**Personnel:** Fight the fire in a defensive mode, while exiting the area. When using a CO<sub>2</sub> fire extinguisher, DO NOT re-enter the area until it has been thoroughly ventilated (i.e., purged) of the CO<sub>2</sub> extinguishing agent.

**Firefighters:** Use a self-contained breathing apparatus (SCBA).

## SECTION VI: ACCIDENTAL RELEASE MEASURES

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### ON LAND

Place material into suitable containers and call local fire/police department.

### IN WATER

If possible, remove from water and call local fire/police department.

## SECTION VII: HANDLING AND STORAGE

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### HANDLING

No special protective clothing required for handling individual batteries.

### STORAGE

Store battery pack unit in a cool, dry place.

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# SECTION VIII: EXPOSURE CONTROL/PERSONAL PROTECTION

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## EXPOSURE CONTROLS

Keep away from heat and open flame. Store battery pack in a cool dry place.

PERSONAL PROTECTION (respirator, Eye/Face, Gloves, Foot protection): NOT REQUIRED during normal operation.

## PHYSICAL PROPERTIES

State: Solid      Vapor pressure: N/A      Solubility in water: Insoluble

Odor: N/A      Vapor density: N/A      Specific gravity: N/A

PH: N/A      Boiling point: N/A      Density: N/A

# SECTION X: STABILITY AND REACTIVITY

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REACTIVITY – None

INCOMPATIBILITIES - None (during normal operation). Avoid exposure to heat, open flame, and corrosives.

HAZARDOUS DECOMPOSITION PRODUCTS - None (during normal operating conditions). If battery damaged and cells are opened, hydrogen fluoride and carbon monoxide may be released.

CONDITIONS TO AVOID - Avoid exposure to heat and open flame. Do not puncture, crush or incinerate.

# SECTION XI: TOXICOLOGY INFORMATION

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This product does not elicit toxicological properties during routine handling and use.

This product **does not contain** any kinds of the following substances and halogen-type flame retardants including Chlorine and Bromide type harmful flame retardants which are listed in Appendix of TCO documents and relevant international ECO requirements:

- Polybromated Biphenyls - NO
- Polybromated Biphenyl Ethers - NO
- Polybromated Biphenyl Oxides- NO
- Polybromated Diphenylethers - NO
- Polychlorinated Biphenyl - NO
- Polychlorinated Diphenylethers - NO
- Tetrabromophenol - NO
- Asbestos- NO

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None of the following substances will be exposed, leaked, or emitted during transportation, storage or any operation and any temperature condition:

Chlorinated Fluorohydrocarbon - NO

Acrylonitrile- NO

Styrol Phenol Benzol- NO

Mercury of greater than 0.0001 wt% for alkaline battery- NO

Mercury of greater than 0.0005 wt% for other battery - NO

Lithium content of greater than 0.5g/cell, 1.5g/battery - NO

Cadmium, lead, and other harmful heavy metal- NO

**This product does not contain mercury, cadmium and lithium-metal.**

## SECTION XII: ECOLOGICAL INFORMATION

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Some materials within the cell are bio-accumulative. Under normal conditions, these materials are contained and pose no risk to persons or the surrounding environment.

## SECTION XIII: DISPOSAL CONSIDERATIONS

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CALIFORNIA REGULATED DEBRIS

RCRA Waste Code: Non-regulated

Dispose of according to all federal, state, and local regulations.

## SECTION XIV: TRANSPORTATION INFORMATION

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The rechargeable Lithium-Ion battery pack as stated in Appendix is made in compliance to the requirements stated in THE UN MANUAL OF TESTS SECTION 38.3 and the latest- edition of the IATA Dangerous Goods Regulations. It is the responsibility of the shipper to ensure that the consignment is packed in compliance to the latest edition of the IATA Dangerous Goods Regulations for Air transport or 49CFR for Hi-way.

With regard to transport of the product, the following regulations are cited and considered:

- The International Civil Aviation Organization (ICAO) Technical Instructions
- The International Air Transport Association (IATA) Dangerous Goods Regulations
- The International Maritime Dangerous Goods (IMDG)
- US Hazardous Materials Regulations 49 CFR (Federal Regulations) Sections 173-185 Lithium batteries

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**US DOT 49 CFR 172.101**

Proper shipping name: Lithium-ion batteries

UN/ID Number: UN3480

Hazard Class or Division: 9

Packing group: II



Label:

**Marine transport**

Proper shipping name: Lithium-ion batteries

UN/ID number: UN3480

IMDG code/Hazard Class: 9

Marine pollutant: No

Hazard label: 9

Packing group: II



**Air transport-Cargo Aircraft Only**

Proper shipping name: Lithium-ion batteries

UN/ID number: UN3480

ICAO/IATA-DGR: 9

Hazard label: 9

Packing group: II

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## SECTION XIV: OTHER INFORMATION

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H225 Highly flammable liquid and vapor  
H226 Flammable liquid and vapor  
H314 Causes severe skin burns and eye damage  
H317 May cause an allergic skin reaction  
H318 Causes serious eye damage  
H332 Harmful, if inhaled  
H330 Fatal, if inhaled  
H350 May cause cancer  
H372 Causes damage to organs through prolonged and repeated exposure  
H373 May cause damage to organs through prolonged and repeated exposure  
H410 Very toxic to aquatic life with long lasting effects  
H412 Harmful to aquatic life with long lasting effects

The data in this Material Safety Data Sheet relate to only specific material designated herein and do not relate to use in combination with any other material or in any process. The information set forth herein is based on technical data that manufacturer believes are reliable.

It is intended for use by persons having technical skill and at their own discretion and risk.

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