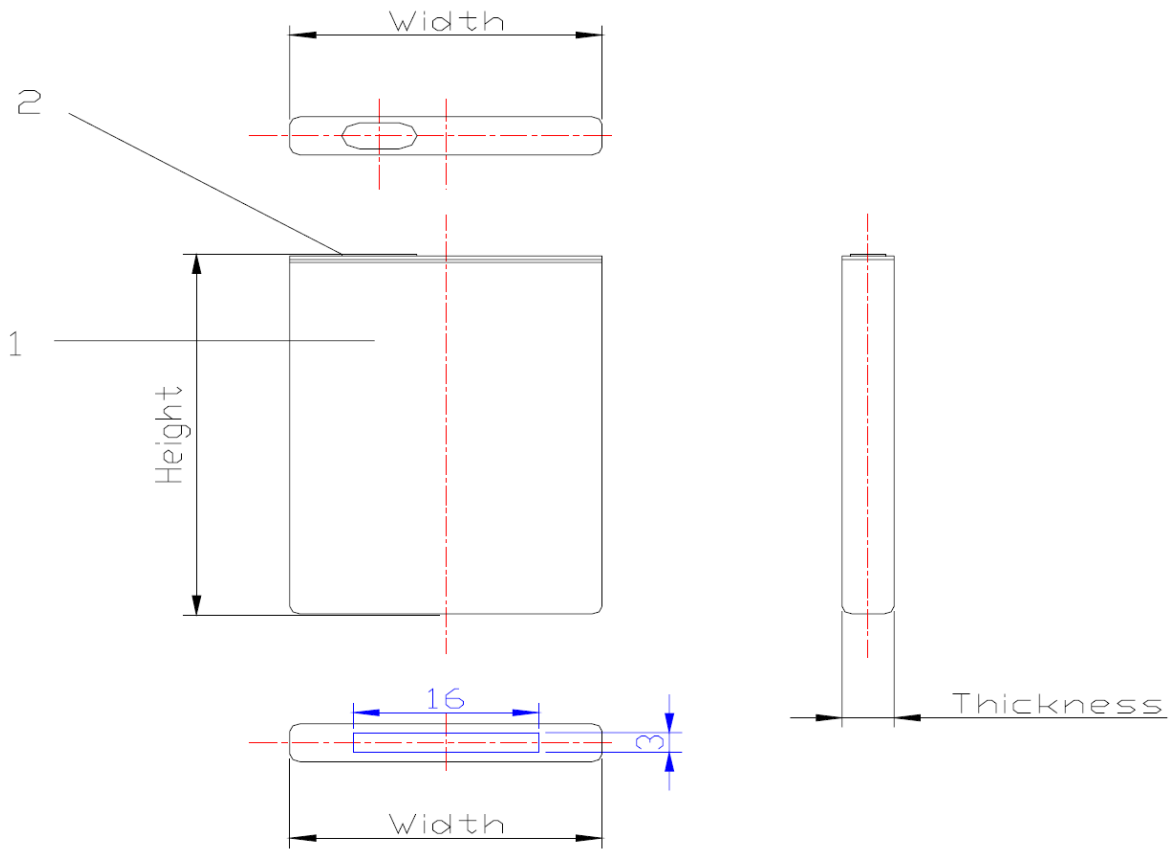


## Data Sheet

### Lithium-ion rechargeable battery for Eppendorf Multipipette® E3/E3x and Repeater® E3/E3x

International Order No. ....	4986 602.009
Order No. North America .....	022462407
Type Designation .....	QW LI PB-603450 Li-ion
System .....	Li-Ion
Nominal Voltage [V] .....	3.7 (average)
Nominal Capacity C [mAh] .....	1200
Dimensions [mm]:	
Width (W) .....	34.0
Height (H) .....	50.0
Thickness (T) .....	6.4
Weight, approx. [g] .....	25.0
Charging Method .....	Constant Current + Constant Voltage
Discharge Cut-Off voltage [V] .....	3.0
Overcharge protection voltage [V] .....	4.2
Max. Continuous Charge Current .....	1C
Max. Continuous Discharge Current .....	1.5C
Operating Temperature [°C] .....	Charge: 0 to 45 Discharge: -20 to 55
Storage Temperature [°C] .....	-5 to 35 Suggested 25±5
Storage Humidity [%] .....	≤ 75
Impedance Initial (at 25°C) [mΩ] .....	≤ 60
Case Material .....	Aluminium
RoHS compliance .....	The material of the product and packaging accords with RoHS standard

Dimensions of battery pack:



## Use Attentions:

- To ensure proper use of the battery please read the manual carefully before using it

## Warnings:

- Do not expose to or dispose of the battery in fire
- Do not put the battery in a charger or equipment with wrong terminals connected
- Avoid shorting the battery
- Avoid excessive physical shock or vibration
- Do not disassemble or deform the battery
- Do not immerse in water
- Do not use the battery mixed with other different types or models of batteries
- Keep out of reach of children
- Do not solder directly to the cells/batteries
- Swallowing a battery can be harmful. Contents of an open battery can cause serious chemical burns of mouth, esophagus, and gastrointestinal tract.

## Charge:

- Battery must be charged in an appropriate charger only
- Never use a modified or damaged charger
- Charge current: Must not surpass the maximum charge current specified in this sheet
- Charge voltage: Must not surpass the maximum voltage current specified in this sheet
- Charge temperature: Make sure that the charging temperature does not surpass the limits of operating temperatures specified in this sheet
- Use constant current and constant voltage to charge. Please connect the positive and negative terminals in the right way. Otherwise the battery may be damaged.

## Discharge:

- The discharge current must not surpass the maximum discharge current specified in this sheet
- Large discharge current can cause heat and lower capacity
- Discharge temperature: Make sure that the discharging temperature does not surpass the limits of operating temperatures specified in this sheet

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- Over-discharge: A short-time over-discharge won't damage the battery. But the battery will be damaged for being long time over-discharged.

### Storage

- The Li-ion battery pack should be stored in a cool, dry and well-ventilated area, and should stay far away from fire and high temperature
- The best storage temp. is  $25 \pm 5$  °C. The best humidity is  $\leq 75$  %
- The battery should be charged to about of its capacity (3.7...3.9V)
- In order to avoid over-discharge, we suggest to charge and discharge the batteries every three months. Then charge to 40% ~ 60% of its nominal capacity
- During long-term storage, the battery may achieve over-discharge condition through self-discharge. To prevent over-discharge during storage, the battery should maintain certain capacity

### Transport Information:

- This Li-ion battery complies with the UN recommendations of "Transport of Dangerous Goods", IATA dangerous goods regulations. It applies the U.S. DOT regulations for safe transport of Li-ion batteries. It is classified as "non-dangerous good".
- **UN Number:** UN3481
- **Mode of transport:** Road transport ADR/RID, sea transport IMDG, air transport ICAO-TI and IATA-DGR
- Li-ion battery according to packing instruction 965-967 of IATA DGR 54th edition for transportation
- The consignment complies with the current edition-54rd 2012 of the IATA regulation
- 1. Section II of packing instruction 966(for lithium-ion cells/batteries packed with equipment, shipped as "Not Restricted" cargo).
- 2. Meets all requirements under UN manual of tests and criteria part III, subsection 38.3.
- 3. With content of less than 20Wh per cell or 100Wh per battery, the consignment can be shipped as "Non-Dangerous-Good", so long as:
  - a) the consignment does not contain any recalled and/or defective batteries.
  - b) the consignment have been packed in compliance with Section II of PI966.
  - c) the consignment is handled with care: flammable hazard could pass out if the packaging is damaged.
  - d) if the packaging is damaged, batteries must be protected to prevent short circuit

### Transportation

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- Do not immerse the battery in water and protect it against splashing liquids
- Do not stack more than 7 layers
- The highest temperature in transportation should be less or equal than 55°C

**Composition/ Information on Ingredients**

- Components of Li-ion battery:

Component	Chemical Name	CAS Number	Concentration Range [%]
Lithium Cobalt Oxide	LiCoO <sub>2</sub>	7782-82-5	30-37
Graphite	C	7782-82-5	15-20
Acetylene Black	C(SP)	1333-86-4	0-1.0
PVDF	-[-CH <sub>2</sub> -CF <sub>2</sub> ]- <sub>n</sub>	24937-79-9	0-1.0
Lithium Hexafluorophosphate	LiPF <sub>6</sub>	21324-40-3	12-16
Diaphragm Paper	PE	9002-88-4	6-10
	PP	9003-07-0	
Aluminum Foil	Al	7429-90-5	2-5.0
Copper	Cu	7440-50-8	5-10
Aluminum Shell	Al	7429-90-5	10-15

# MSDS Report

<b>Applicant's name</b>	QUAWIN ELECTRONICS CO., LTD
<b>Applicant's Address</b>	6/F, Bldg.16, Wangtang Industrial Zone, XinWei Village, Xili Town of Nanshan District, Shenzhen
<b>Name of Sample</b>	Rechargeable Li-ion Battery
<b>Model</b>	QW LI PB 653550
<b>Nominal Voltage</b>	3.7V
<b>Rated Capacity</b>	1200mAh, 4.44Wh
<b>Weight</b>	26.1g
<b>Size (L×W×T)</b>	(53.4×34.2×6.5)mm
<b>Prepared By</b>	Shenzhen TCT Testing Technology Co., Ltd. 1B/F., Building 1, Yibaolai Industrial Park, Qiaotou, Fuyong, Baoan District, Shenzhen, Guangdong, China.
<b>Report No.</b>	TCT190904M010

Written by: Summer YangApproved by: Allen QinInspected by: Amy ZengDate: 2019.09.24

**Material Safety Data Sheet****Section 1- Chemical Product & Company Identification**

<i>Name of Sample</i>	Rechargeable Li-ion Battery
<i>Manufacturer's name</i>	QUAWIN ELECTRONICS CO., LTD
<i>Manufacturer's Address</i>	6/F, Bldg.16, Wangtang Industrial Zone, XinWei Village, Xili Town of Nanshan District, Shenzhen
<i>Contact Person</i>	Jim Fan
<i>Tel</i>	+86-755-86277191
<i>Fax</i>	+86-755-86277151
<i>Emergency Tel</i>	+86-755-86277191
<i>E-mail</i>	Jim@quawin.com

**Section 2- Hazards Identification**

<i>Classification of Danger</i>	See section 14.
<i>Primary Route(s) of Exposure</i>	Eye, skin contact, ingestion.
<i>Health Hazard</i>	The batteries are not hazardous when used according to the instructions of manufacturer under normal conditions. In case of abuse, there's Hazard of rupture, fire, heat, leakage of internal components, which could cause casualty loss. Abuses including but not limited to the following cases: charged for long time, short circuited, put into fire, whacked with hard object, punctured with acute object, crushed, and broken.

### Section 3- Composition/Information on Ingredients

<i>Chemical Name</i>	<i>Concentration or concentration ranges (%)</i>	<i>CAS Number</i>
Lithium Cobalt Oxide	15-40	12190-79-3
Graphite	10-30	7782-42-5
Phosphate(1-), hexafluoro-, lithium	10-30	21324-40-3
Copper	7-13	7440-50-8
Aluminum foil	5-10	7429-90-5
Nickel	1-5	7440-02-0

Labeling according to EC directives.

No symbol and Hazard phrase are required.

Note: CAS number is Chemical Abstract Service Registry Number.

N/A=Not apply.

### Section 4- First Aid Measures

<i>Eye</i>	Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
<i>Skin</i>	Remove contaminated clothes and rinse skin with plenty of water or shower for 15 minutes. Get medical aid.
<i>Inhalation</i>	Remove from exposure and move to fresh air immediately. Use oxygen if available.
<i>Ingestion</i>	Give at least 2 glasses of milk or water. Induce vomiting unless patient is unconscious. Call a physician.

### Section 5- Fire Fighting Measures

<i>Characteristics of Hazard</i>	Dusts at sufficient concentrations can form explosive mixtures with air. Combustion generates toxic fumes.
<i>Hazardous Combustion Products</i>	Carbon dioxide.
<i>Fire-extinguishing Methods and Extinguishing Media</i>	For small fires, use water spray, dry chemical, carbon dioxide or chemical foam.

<b>Attention in Fire-extinguishing</b>	Wear self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.
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**Section 6- Accidental Release Measures**

<b>Personal Precautions, protective equipment, and emergency procedures</b>	In case of rupture. Attention! Corrosive material. Avoid contact with skin, eyes and clothing. Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Refer to protective measures listed in Sections 7 and 8.
<b>Environmental Precautions</b>	Prevent product from contaminating soil and from entering sewers or waterways.
<b>Methods and materials for Containment</b>	Stop the leak if safe to do so. Contain the spilled liquid with dry sand or earth. Clean up spills immediately.
<b>Methods and materials for cleaning up</b>	Absorb spilled material with an inert absorbent (dry sand or earth). Scoop contaminated absorbent into an acceptable waste container. Collect all contaminated absorbent and dispose of according to directions in Section 13. Scrub the area with detergent and water; collect all contaminated wash water for proper disposal.

**Section 7- Handling and Storage**

<b>Handling</b>	The battery may explode or cause burns, if disassembled, crushed or exposed to fire or high temperatures. Do not short or install with incorrect polarity.
<b>Storage</b>	Store in a cool, dry, well-ventilated area away from incompatible substances. Store locked up. Keep out of the reach of children.
<b>Other Precautions</b>	In case of rupture. Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Use personal protection equipment.

**Section 8 - Exposure Controls/Personal Protection**

<b>Engineering Controls</b>	Use adequate ventilation to keep airborne concentrations low. If used under conditions that generate particulates, the ACGIH TLV-TWA of 3mg/m <sup>3</sup> respirable fraction (10mg/m <sup>3</sup> total) should be observed.
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<i>Personal Protective Equipment</i>	<p>Eye and Face Protection: None required for consumer use. If there is a Hazard of contact: Tight sealing safety goggles. Face protection shield.</p> <p>Skin and Body Protection: None required for consumer use. If there is a Hazard of contact: Wear protective gloves and protective clothing.</p> <p>Respiratory Protection: No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.</p>
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**Section 9- Physical and Chemical Properties**

<i>Physical State</i>	Appearance: Prismatic
	Color: Blue
	Odour: If leaking, smells of medical ether.
<i>Change in condition</i>	
pH	Not applicable as supplied.
Flash Point	Not applicable unless individual components exposed.
Flammability	Not applicable unless individual components exposed.
Relative density:	Not applicable unless individual components exposed.
Solubility (water)	Not applicable unless individual components exposed.
Solubility (other)	Not applicable unless individual components exposed.

**Section 10 – Stability and Reactivity**

<i>Chemical Stability</i>	Stable under recommended storage conditions.
<i>Possibility of Hazardous Reactions</i>	None under normal processing.
<i>Conditions to Avoid</i>	Exposure to air or moisture over prolonged periods.
<i>Incompatible materials</i>	Acids, Oxidizing agents, Bases.
<i>Hazardous Decomposition Products</i>	Carbon oxides.

**Section 11 – Toxicological Information**

<i>Irritation</i>	In the event of exposure to internal contents, vapour fumes may be very irritating to the eyes and skin.
<i>Sensitization</i>	Not Available.
<i>Reproductive Toxicity</i>	Not Available.
<i>Toxicologically Synergistic Materials</i>	Not Available.


**Section 12-Ecological Information**

<i>General note:</i>	Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
<i>Anticipated behavior of a chemical product in environment/possible environmental impact/ ecotoxicity</i>	Not Available.

**Section 13 – Disposal Considerations**

<i>Waste Treatment</i>	Recycle or dispose of in accordance with government, state & local regulations.
<i>Attention for Waste Treatment</i>	Deserted batteries shouldn't be treated as ordinary trash. Shouldn't be thrown into fire or placed in high temperature. Shouldn't be dissected, pierced, crushed or treated similarly. Best disposal method is recycling.

**Section 14 – Transport Information**

<i>UN number</i>	3480
<i>Proper shipping name</i>	Lithium ion batteries (limited to a maximum of 30% SoC)
<i>Class or division</i>	9
<i>Label(s) / Placard Required</i>	Miscellaneous Lithium batt 

*Special precautions which a user needs to be aware of, or needs to comply with, in connection with transport or conveyance either within or outside their premises.*

ICAO / IATA:	Can be shipped by air in accordance with International Civil Aviation Organization (ICAO), TI or International Air Transport Association (IATA), DGR Packing Instructions (PI) 965 Section IB appropriate of IATA DGR 60th (2019 Edition) for transportation.
IMDG CODE:	The batteries are not restricted to IMDG Code 2018 Edition (Amdt 39-18) according to special provision 188.
DOT:	Other requirements for the US Department of Transportation (DOT) Subchapter C, Hazardous Materials Regulations if shipped in compliance with 49 CFR 173.185.
ADR/ ADN:	The batteries are not subject to the provisions of United Nations Economic Commission for Europe (UNECE) ADR/ADN if they meet the requirements of special provision 188 of Chapter 3.3. Applicable as from 1 January 2019.

In addition, to be permitted in transport each lithium cell and battery types must have passed the applicable tests set out in Subsection 38.3 of the UN Manual of Tests and Criteria.

## Section 15 – Regulatory Information

Dangerous Goods Regulations

Recommendations on the Transport of Dangerous Goods-Model Regulations (20th revised edition)

Recommendations on the Transport of Dangerous Goods-Manual of Tests and Criteria

International Air Transport Association (IATA)

International Maritime Dangerous Goods (IMDG Code 2018 Edition Amdt 39-18)

Technical Instructions for the Safe Transport of Dangerous Goods

Classification and code of dangerous goods (GB 6944-2012)

2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Toxic Substance Control Act (TSCA)

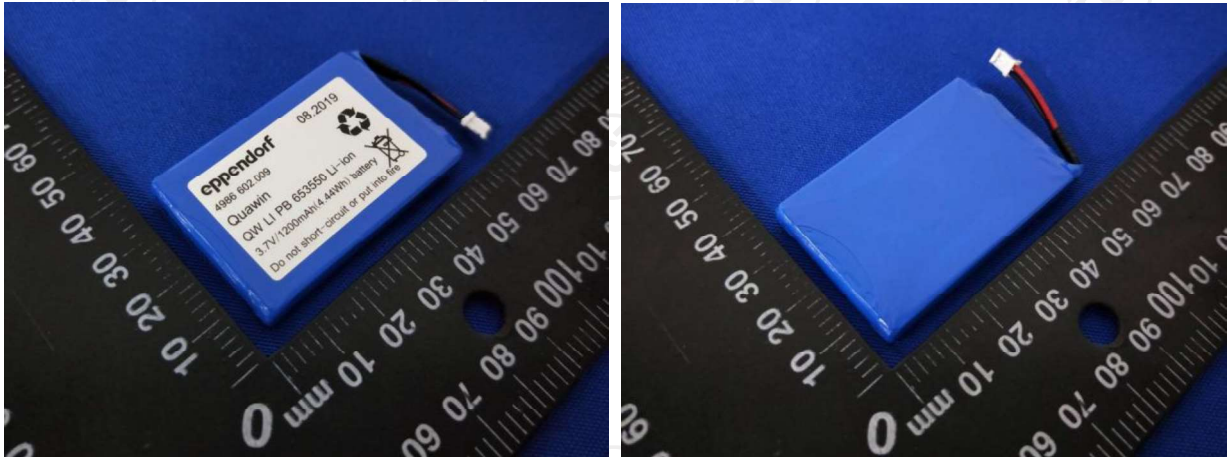
Code of Federal Regulations

In accordance with all Federal, State and local laws

Section 16 – Additional Information

MSDS creation date: 2019 Version: 2.0

Sample photo:



To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

The data/information contained herein has been reviewed and approved for general release on the basis that this document contains no export controlled information.

\*\*\*\*\*End of report\*\*\*\*\*