

MATERIAL SAFETY DATA SHEET

File S/N: TWS-IMS-QE-20180027

Issue Date: 2017-12-20

We would like to inform our customers that these batteries are exempt articles and are not subject to the 29 CFR 1910.1200 OSHA requirements, or to the Canadian WHMIS requirements and the sheets are supplied as a service to you.

1. PRODUCT AND COMPANY IDENTIFICATION

Product name	Rechargeable Li-ion Battery
Model	82-166537-01
Rating	3.6V 3150mAh 11.34Wh(Typ.)/ 3100mAh 11.16Wh(Min.)
Company:	TWS Technology (Guangzhou) Limited
Address:	No.39 Nanyunsan Road, Science Park, Hi-Tech Industrial Development Zone Guangzhou,P.R.China,510663
Manufacturer:	TWS Technology (Guangzhou) Limited
Address:	No.39 Nanyunsan Road, Science Park, Hi-Tech Industrial Development Zone Guangzhou, P.R. China. 510663
Telephone no.	+ 86-20-22215111
Fax no.	+86-20-22213268

2. COMPOSITION/INFORMATION ON INGREDIENTS

Battery Cell

MATERIAL OR INGREDIENTS	Content (wt %)	CAS #
Lithium Transition Metal Oxide (Li[M]m[O]n*)	20 wt%~60wt%	12190-79-3,12057-17-9,182442-95-1
Organic Electrolyte Principally Involves Ester Carbonate	5 wt%~25wt%	N/A
Carbon(C)	10 wt%~30wt%	7782-42-5,7440-44-0
Aluminum(Al)	1 wt%~10wt%	7429-90-5
Copper(Cu)	1 wt%~15wt%	7440-50-8
Iron	1 wt%~30wt%	7439-89-6

*The letter M means transition metals and candidates of M are Co, Mn, Ni and Al. One compound includes one or more of these metals and one product include one or more of the compounds. The letter m and n means the number of atoms.

Circuit Module

HAZARDOUS INGREDIENTS	%/wt	CAS #
Lead	<0.1	7439-92-1
Mercury	0	7439-97-6
Chromium	0	7440-47-3
Cadmium	0	7440-43-9
Plastic case and SiO ₂	0	N/A

Plastic Parts and Paints

HAZARDOUS INGREDIENTS	%/wt	CAS #
Polycarbonate	More than 81 wt%	103598-77-2
Flame Retardant	Less than 12 wt%	N/A
Elastomer	Less than 7 wt%	N/A

3. HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS

PRIMARY ROUTES OF ENTRY

Skin contact, Skin absorption, Eye contact, Inhalation, and Ingestion : NO

SYMPTOMS OF EXPOSURE

Skin contact

No effect under routine handling and use.

Skin absorption

No effect under routine handling and use.

Eye contact

No effect under routine handling and use.

Inhalation

No effect under routine handling and use.

4. FIRST AID MEASURES

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

INGESTION

If swallowed, obtain medical attention immediately.

If exposure to internal materials within cell(pack) 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.

5. FIRE FIGHTING MEASURES

5.1 GENERAL HAZARD

Cell is not flammable but internal organic material will burn if the cell is incinerated.

Combustion products include, but are not limited to hydrogen fluoride, carbon monoxide and carbon dioxide.

5.2 EXTINGUISHING MEDIA

Use extinguishing media suitable for the materials that are burning.

5.3 SPECIAL FIREFIGHTING INSTRUCTIONS

If possible, remove cell(s) from fire fighting area. If heated above 125°C, cell(s) can explode/vent.

5.4 FIREFIGHTING EQUIPMENT

Use NIOSH/MSHA approved full-face self-contained breathing apparatus (SCBA) with full protective gear.

6. ACCIDENTAL RELEASE MEASURES

6.1 ON LAND

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

6.2 IN WATER

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

7. HANDLING AND STORAGE

7.1 HANDLING

No special protective clothing required for handling individual cells.

7.2 STORAGE

Store in a cool dry place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 ENGINEERING CONTROLS

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

8.2 PERSONAL PROTECTION

Respirator: Not required during normal operations. SCBA required in the event of a fire.

Eye/face protection: Not required beyond safety practices of employer.

Gloves: Not required for handling of cells.

Foot protection: Steel toed shoes recommended for large container handling.

9. PHYSICAL AND CHEMICAL PROPERTIES

State	Solid
Odor	N/A
PH	N/A
Vapor pressure	N/A
Vapor density	N/A
Boiling point	N/A
Solubility in water	Insoluble
Specific gravity	N/A
Density	N/A

10. STABILITY AND REACTIVITY

10.1 REACTIVITY

None

10.2 INCOMPATIBILITIES

None during normal operation. Avoid exposure to heat, open flame, and corrosives.

10.3 HAZARDOUS DECOMPOSITION PRODUCTS

None during normal operating conditions. If cells are opened, hydrogen fluoride and carbon monoxide may be released.

10.4 CONDITIONS TO AVOID

Avoid exposure to heat and open flame. Do not puncture, crush or incinerate.

11. TOXICOLOGICAL INFORMATION

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

Sensitization: NO Teratogenicity: NO Reproductive toxicity: NO Acute toxicity: NO

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:

Polybrominated Biphenyl (PBB)
Polybrominated Diphenyl Ethers (PBDE)
Polychlorinated Biphenyls (PCBs)
Polychlorinated Triphenyls(PCTs)
Polychlorinated Naphthalene (PCN)
Short Chain Chlorinated Paraffins (C10-C13)
Chlorofluorocarbons(CFCs)
Polyvinyl Chloride(PVC)
Carbon Tetrachloride

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

12. ECOLOGICAL INFORMATION

The batteries do not contain mercury, cadmium or other heavy metals.

13. DISPOSAL CONSIDERATIONS

Dispose by incineration or burial at permitted waste treatment and/or disposal sites.

Batteries do not contain hazardous materials according to EC directives 2013/56/EU and 93/86/EEC.

For large quantities a disposal service is offered upon request.

14. TRANSPORT INFORMATION

With regard to transport, the following regulations are cited and considered.

- The International Civil Aviation Organization (ICAO) *Technical Instructions* (2017~2018 Edition)
- The International Air Transport Association (IATA) *Dangerous Goods Regulations* (59th edition, Packing Instruction 965,966 or 967 Section II or IB is applied as appropriate.
Each package is capable of withstanding a 1.2m drop test in any orientation without damage to cells or batteries contained therein, without shifting of the contents so as to allow battery to battery contact and without release of contents.
There is no hazard in accordance with the UN recommendation tests (UN *Manual of Tests and Criteria*, Part III, sub-section 38.3)
- International Maritime Organization, the *International Maritime Dangerous Goods(IMDG) Code*(Edition 2016, Amendment 38-16,Special Provisions 188,230,348&957 for UN3480/3481 Lithium-Ion Battery , Packing Instruction P903,P910 for Lithium-ion batteries)
- US Department of Transportation (DOT) 49 Code of Federal Regulations

15. REGULATORY INFORMATION:

Local hazardous waste disposal laws.

This product is made from materials with no detectable mercury.

16. OTHER INFORMATION:

The information contained in this Safety data sheet is based on the present state of knowledge and current legislation. This safety data sheet provides guidance on health, safety and environmental aspects of the product and should not be construed as any guarantee of technical performance or suitability for particular applications.

End of Safety Data Sheet