



TCL HYPERPOWER BATTERIES INC.

No.,3,Hechangdongliu Rd.,Huitai Industrial Zone,
 Huicheng District, Huizhou, Guangdong,P.R.China,516006
 TEL: +86 752 5790228 FAX: +86 752 5790052
 Website: www.tclbattery.com E-mail: xuemin@tcl.com

TCL LITHIUM ION POLYMER BATTERY SAFETY DATA SHEET

Section1-Chemical Product and Company Identification (化学品及企业标识)

IDENTITY (As Used on Label and List) Cell Model No: PR-451563 Product Name: Secondary (Rechargeable) 3.7V Li-ion Battery 900mAh, 3.33Wh	Note: Blank spaces are not permitted if any item is not applicable or no information is available, the space must be marked to indicate that
Manufacturer' s Name: TCL Hyperpower Batteries Inc	Emergency Telephone Number +86 752-5790052
Address (Number, Street, City State, and ZIP Code) No.,3,Hechangdongliu Rd., Huitai Industrial Zone, Huicheng District, Huizhou, Guangdong,P.R.China,516006	Telephone Number for information +86 752-5790052
	Date of prepared and revision , Jan.23th.2017

Section2-Hazards Identification (危险性概述)

Emergency overview: NIA
 Classification according to GHS
 Not a dangerous substance according to GHS.
 Label elements
 Hazard pictogram(s): No available
 Signal word: No available
 Hazard statement(s): No available
 Precautionary statement(s):
 Prevention: No available
 ~es~onse: No available
 Disposal: No available
 Environmental hazards: no relevant information.
 Important symptoms: See Section 11 for more information.

Section 3-Composition Information on Ingredients (成分/组成信息)

Chemical Composition	CAS No.	Weight (%)
Cobalt lithium dioxide	12190-79-3	~35.5
Graphite	7782-42-5	~16.3
aluminium	7429-90-5	~15.66
polypropylene	9003-07-0	~7.35
Lithium hexafluorophosphate(1-)	21324-40-3	~9.77
copper	7440-50-8	~10.97
PCM		~1.26
Carbon black	1333-86-4	~0.76
Benzene,ethenyl-,polymer with1,3- butadiene	9003-55-8	~0.75
Poly(vinylidene fluoride)	24937-79-9	~0.58



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Nickel	7440-02-0	~0.72
Sodium carboxymethyl cellulose	9004-32-4	~0.27
1,4-Benzenedicarboxylic acid polymer with [1,1'-biphenyl]-4,4'-diol, 1,2-ethanediol and 4-hydroxy benzoic acid	124417-30-7	~0.054
Polyethylene	9002-88-4	~0.056

Remark:The battery cell does not contain the lead, mercury, cadmium.

Section4 –First Aid Measures (急救措施)

Description of first aid measures

General information No special measures required.

After eye contact

Flush eyes with plenty of water for several minutes while holding eyelids open. Get medical attention if irritation persists.

After skin contact

Remove contaminated clothing and shoes. Immediately wash with water and soap and rinse thoroughly. Wash clothing and shoes before reuse. If irritation occurs, get medical attention.

After inhalation

Remove victim to fresh area. Administer artificial respiration if breathing is difficult. Seek medical attention.

After swallowing

Do not induce vomiting. Get medical attention.

Personal protective equipment for first-aid responders: Not available.

Most important symptoms/effects, acute and delayed: Not available.

Indication of immediate medical attention and special treatment needed: Not available.

Section5-Fire Fighting Measures (消防措施)



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Suitable extinguishing media:

Use extinguishing agent suitable for local conditions and the surrounding environment .

Such as dry powder, CO₂.

Unsuitable extinguishing media:

No further relevant information available,

Specific Hazards arising from the chemical:

Special hazards arising from the substance or mixture

Battery may burst and release hazardous decomposition products when exposed to a fire situation. Lithium ion batteries contain flammable electrolyte that may vent, ignite and produce sparks when subjected to high temperature { > 150°C(302F) }, when damaged or abused (e.g. mechanical damage or electrical overcharging); may burn rapidly with flare-burning effect; may ignite other batteries in clothes proximity.

Specific protective actions for fire-fighters:

Protective equipment: Wear self-contained respirator. Wear fully protective impervious suit.

Section 6 –Accidental Release Measures (泄漏应急处理)

Personal precautions:

Wear protective equipment. Keep unprotected persons away. Ensure adequate ventilation

Protective equipment:

No further relevant information available.

Emergency procedures:

Remove ignition sources, evacuate area. Sweep up using a method that does not generate dust. Collect as much of the spilled material as possible, placed the spilled material into a suitable disposal container. Keep spilled material out of sewers, ditches and bodies of water.

Environmental precautions:

Do not allow material to be released to the environment without proper governmental permits.

Methods and materials for containment and cleaning up:

All waste must refer to the United Nations, the national and local regulations for disposal.

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

Section 7 –Handling and Storage (操作处置与储存)



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Precautions for safe handling:

Consumption of food and beverage should be avoided in work areas.

Wash hands with soap and water before eating, drinking.

Ground containers when transferring liquid to prevent static accumulation and discharge.

Information about fire and explosion protection

Batteries may explode or cause burns, if disassembled, crushed or exposed to fire or high temperatures. Do not short or install with incorrect polarity.

Conditions for safe storage, including any incompatibilities:

Requirements to be met by storerooms and receptacles

Store in a cool, dry, well-ventilated place.

Information about storage in one common storage facility

Keep away from heat, avoiding the long time of sunlight.

Further information about storage conditions

Keep container tightly sealed.

Specific and use

No further relevant information available.

Section8 –Exposure Controls, Personal Protection (接触控制 / 个人防护)

Engineering control :

The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed.

Remove all soiled and contaminated clothing immediately.

Wash hands before breaks and at the end of work.

Personal Protective Equipment

Respiratory protection: Wear suitable protective mask in order to reduce the respiratory system. A large number of leakage, wear chemical protective clothing, including self-contained breathing apparatus.

Hand Protection: Wear appropriate protective gloves to reduce skin contact.

Eyes Protection: Wear safety goggles or eye protection combined with respiratory protection.

Skin and Body Protection: Working environment required, wear suitable protective clothing to minimize contact with skin. The type of protective equipment must be according to the concentration and the content of certain hazardous substances in the workplace.

Section9 –Physical and Chemical Properties (理化特性)



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Information on basic physical and chemical properties

Colour: Silvery.

Physical State: Prismatic.

Odour: Not available.

Odour threshold: Not available.

pH: Not available.

Melting point/freezing point: Not available.

Initial boiling point and boiling range: Not available.

Flash Point: Not available.

Evaporation rate: Not available.

Flammability (solid, gas): Not available.

Explosion Limits (vol% in air): Not available.

Vapour pressure, kPa at 20°C: Not available.

Vapor density: Not available.

Density/Relative density (water = 1): Not available.

Solubility(ies): Not available.

Partition coefficient: n-octanol/water: Not available.

Auto-ignition temperature: Not available.

Decomposition temperature: Not available.

Viscosity: Not available.

Section 10 – Stability and Reactivity (稳定性和反应性)

Reactivity: Data not available.

Chemical stability: Stable.

Possibility of hazardous reactions: Data not available.

Conditions to Avoid: Flames, sparks, and other sources of ignition, incompatible materials.

Incompatibilities materials: Oxidizing agents, acid, base.

Hazardous decomposition products: Carbon monoxide, carbon dioxide, lithium oxide fumes.

Section 11 – Toxicological Information (毒理学信息)



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Skin corroslon / irritation: Not available.
Serious eye damagelirritation: Not available.
Respiratory or Skin sensitization: Not available.
Germ Cell mutagenicity: Not available.
Carcinogenicity: Not available.
Reproductive toxicity: Not available.
Specific target organ toxicity-Single exposure: Not available.
Specific target organ toxicity-Repeated exposure: Not available.
Aspiration hazard: Not available.
Information on the likely routes of exposure: Not available.
Eye: Not available.
Skin: Not available.
Ingestion: Not available.
Inhalation: Not available.

Section12 –Ecological Information (生态学信息)

Ecological Toxicity: No further relevant information available.
Persistence and degradability: No further relevant information available.
Bioaccumutathre Potential: No further relevant information available.
Mobility In Soil: No further relevant information available.,
Other adverse effects: No further relevant information available.

Section13 –Disposal Considerations (废弃处置)

Disposal methods:
Recommendation:
Consult state, local or national regulations to ensure proper disposal.
Uncleaned packaging
Recommendation: Disposal must be made according to official regulations.

Section14 – Transpor Information (运输信息)



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(A) For Lithium Ion Cells and Batteries

Separate lithium ion battery in transit to prevent short circuit. They should be packed in strong packaging for support during transport, and air transport capacity should be controlled under 30 percent

The products meet all the requirements of the IATA DGR 58th edition, under special provisions A99 including UN 38.3 test and 1.2m drop test. They can be shipped as "Danger" cargo in accordance with IATA Dangerous Good Regulations Section 1B of Packing Instruction 965 of IATA DGR item UN3480.

(B) For Lithium Ion Cells and Batteries Contained in Equipment

The products meet all the requirements of the IATA DGR 58th edition, under special provisions A164 including UN 38.3 test. They can be shipped as "Not Restricted" cargo in accordance with IATA Dangerous Good Regulations Section II of Packing Instruction 967 of IATA DGR item UN3481, with total battery weight less than 5kg in one package.

(C) For Lithium Ion Cells and Batteries Packed with Equipment.

The products meet all the requirements of the IATA DGR 58th edition, under special provisions A164 including UN 38.3 test and 1.2m drop test. They can be shipped as "Not Restricted" cargo in accordance with IATA Dangerous Good Regulations Section II of Packing Instruction 966 of IATA DGR item UN3481 with total battery weight less than 5kg in one package, and less than 2pcs in one small package..

(D) The international maritime dangerous goods code.

1) Inspection method and procedure : IMO International maritime Dangerous Goods Code (2014 Edition)

2) The product and battery meets the requirements in IMDG CODE (Amdt.37-14) Special provision 188; it can be transported by sea under this Special provision

Transport condition is not restricted according to "special provision 188 of IMO-IMDG Code"

Section15 – Regulatory Information (法规信息)

Note: This regulatory information included here should not necessarily all inclusive. None of the ingredients in this product are subjected to be reporting requirements of the CERCLA, the Clean Air Act and Clean Water Act (US). This product is not formulated with, nor do the manufacturing or formulation processes utilize an Class I or II Ozone depleting substances

Section16– Other Information (其它信息)

The recommendations and information contained in this MSDS have been compiled from Sources believed to represent the most current information available when the MSDS was Prepared. However, the manufacturer/distributor of this product provides any warranty. Guaranty or representation as to the correctness or sufficiency of this information. If this product is to be used in large amounts and /or an unusual manner, the user is obliged to determine what safety measures are appropriate, including the applicable and relevant workplace and environmental regulations pertaining to handling, use and disposal.

DISCLAIMER OF LIABILITY

The information in this SDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage, use or disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in anyway connected with the handling, storage, use or disposal of the product. This SDS was prepared and is to be used only for this product. If the product is used as a component in another product, this SDS information may not be applicable.

SYNERGY SCIENTECH CORP. -- Advanced Hybrid Batteries

SAFETY DATA SHEET

Manufacturer's CAGE: SYNERGY

Part No. Indicator: A

Part Number/Trade Name: [AHB Series- Lithium ion Polymer batteries.](#)

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1. General Information

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Company's Name: SYNERGY SCIENTECH CORP.

Company's Street: 7F, No. 9, Park Ave. II, Hsinchu Science Park, Hsinchu, Taiwan 30075 R.O.C.

Company's City: HSIN-CHU, TAIWAN

Company's Emerge Ph #: 886-3-564-3700

Company's Info Ph #: 886-3-564-3700

Record No. For Safety Entry: 001

Tot Safety Entries This Sty #: 001

Status: SMJ

Date MSDS Prepared: January 1, 2017 (10th Edition)

Safety Data Review Date: January 1, 2017

MSDS Preparer's Name: Dr. Brian Shen

Preparer's Company: SAME

MSDS Serial Number: LIASN

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2. Hazards Identification

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Signal word



Route of Entry - Inhalation: YES

Route of Entry - Skin: YES

Route of Entry - Ingestion: YES

Health overexposure Acute and Chronic: UNDER NORM CNDTNS OF USE, THESE CHEMICALS ARE CONTAINED IN SEALED CAN. RISK OF EXPOS OCCURS ONLY IF BATTERY IS MECHANICALLY ABUSED. ACUTE: INHAL: CONTENTS OF OPENED BATTERY CAN CAUSE CONTENTS OF OPENED BATTERY CAN CAUSE IRRIT.

Carcinogenicity - NTP: NO

Carcinogenicity - IARC: NO

Carcinogenicity - OSHA: NO

3. Composition/information on ingredients

Material Name. (e.g. Sn alloy)	Substance Name (e.g. Copper (Cu))	CAS No.	Percentage (%)
active material	LiCoO ₂	12190-79-3	32.62
Binder-PVDF	Polyvinylidene difluoride	24937-79-9	1.04
Conductive material	Carbon	1333-86-4	0.78
Conductive material	Carbon	1333-86-4	0.26
Foil	Aluminum	7429-90-5	4.61
active material	Carbon	1333-86-4	15.92
Binder-PVDF	Polyvinylidene difluoride	24937-79-9	1.3
conductive material	Carbon	7440-44-0	0.09
additive	Oxalic acid	144-62-7	0.05
foil	Copper	7440-50-8	7.87
electrolyte-solvent	Ethylene carbonate	96-49-1	5.06
electrolyte-solvent	Diethyl carbonate	105-58-8	3.72
electrolyte-solvent	Ethyl methyl carbonate	623-53-0	3.74
electrolyte-additive	Lithium hexafluorophosphate	21324-40-3	1.82
electrolyte-additive	1,3-propanesultone	1120-71-4	0.09
separator	Polyethylene	9002-88-4	3.62
tape-film	Polyimide	75-55-8	0.1
tape-adhesive	Acrylic	9011-14-7	0.03
tape-film	Polyester	25038-59-9	0.14
tape-adhesive	Acrylic	9011-14-7	0.03
Al bag	Nylon	32131-17-2	3.85
Al bag	Aluminum	7429-90-5	9.75
Al bag	Polypropylene	9003-07-0	2.57
tab lead	Nickel	7440-02-0	0.38
tab lead	polypropylene	9003-07-0	0.05
tab lead	Aluminum	7429-90-5	0.24
tab lead	polypropylene	9003-07-0	0.05

4. First Aid Measures

Explanation Carcinogenicity: NOT RELEVANT.

Signs/Symptoms of Overexposure: SEE HEALTH HAZARDS.

Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.

WASH WITH SOAP AND WATER. EYES: IMMEDIATELY FLUSH THOROUGHLY WITH COPIOUS AMOUNTS OF WATER FOR AT LEAST 15 MINUTES. SEEK MEDICAL ATTENTION.

INGESTION: CALL MD IMMEDIATELY (FP N).

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5. Fire Fighting Measures
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Extinguishing Media: IN CASE OF FIRE, USE CARBON DIOXIDE OR DRY CHEMICAL EXTINGUISHERS.

Special Fire Fighting Proc: WEAR NIOSH APPROVED SCBA & FULL PROTECTIVE EQUIPMENT (FPN).

Unusual Fire And Expel Hazards: NONE SPECIFIED BY MANUFACTURER.
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6. Accidental Release Measures
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Wear appropriate personal protective equipment. Isolate hazard area. Keep unnecessary and unprotected personnel from entering.
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7. Handling and Storage
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Wear suitable chemical resistant gloves, safety glasses and filtered cartridge respirator. Goggles, full face protection and other protective clothing is required if potential exists for direct exposure to liquid battery electrolyte.

In case Material is released or spilled: Carefully recover spillages with appropriate ladle and transfer to a suitably labeled, sealable container for safe disposal. Wash the spillage area neutralized with calcium hydroxide.

Wear suitable personal protection during removal of spillages.

Be stored in clearly labeled, tightly closed exclusive containers in a cool, dry area.
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8. Exposure Controls/Personal Protection
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Ventilation: Use local exhaust.

Protective Gloves: Wear rubber or plastic gloves.

Eye/Face Protection: Wear safety glasses, goggles or full face protections.

Respiratory Protection: Wear filtered cartridge respirator or a respirator of greater protection.
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9. Physical and Chemical Properties
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Product Type: Solid

Appearance: Prismatic

Odor: Odorless

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10. Stability and Reactivity
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Stability: YES

Cond To Avoid (Stability): NONE SPECIFIED BY MANUFACTURER.

Materials To Avoid: NONE SPECIFIED BY MANUFACTURER.

Hazardous Decamp Products: NONE SPECIFIED BY MANUFACTURER.

Hazardous Poly Occur: NO

Conditions To Avoid (Poly): NOT RELEVANT.
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11. Toxicological Information
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In case electrolyte is spilled and explored with air, the HF could be released.

May include hydrogen fluoride and carbon oxides gas.

May cause skin and eye irritation when contacted.
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12. Ecological Information
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If the battery scrapped, it should be selected and disposed by professional company.
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13. Disposal Consideration
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Disposal should be in accordance with local, state or national legislation.
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14. Transport Information
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Limit per package

* Shipment Requirements 30%SOC

*Equal to or less than 2.7Wh=2.5kg ; or Greater than 2.7Wh but equal to or less than 20Wh=8 cells , or Greater than 2.7 but equal to less than 100Wh=2 batteries.

*Limit of 8 Cells/ 2 batteries per package or overpack.

*Only 1 package containing Section II batteries Of UN 3480 may be included in any overpack or consignment.

UN 38.3 Lithium Battery		Test results	Remarks
NO	Test item	OK	Test 1 to 5 must be conducted in sequence on the same cell or battery
T1	Altitude simulation	OK	
T2	Thermal test	OK	
T3	Vibration	OK	
T4	Shock	OK	
T5	External short circuit	OK	
T6	Impact	OK	Only battery do need this test item
T7	Overcharge	OK	
T8	Forced discharge	OK	

The product is not classified as dangerous under the current edition of the 58th Edition IATA dangerous goods regulations. The products are safe for air transportation and not regulated by IATA DGR. Also they comply with the PI-965 to PI-967 Section II accordingly.

15. Regulatory Information

See ACGIH exposure limits information as noted in Section 3.

US: This MSDS meets/exceeds OSHA requirements

International: this MSDS conforms to European Union (UN), the International Standards Organization (ISO) and the International Labor Organization (ILO) and as documental in ANSI (American National Standards Institute) Standard Z400.1-1993.

16. Other Information

Reference:

Chemical substances information: Japan Advanced Information center of Safety and Health

International Chemical Safety Cards (ICSCs): International Occupational Safety and Health Information Centre (CIS)

2002 TLVs and BELs: American Conference of Governmental Industrial Hygienists (ACGIH)

Dangerous Goods Regulations-58th Edition : International Air Transport Association (IATA)

IMDG Code-2014 Edition: International Maritime Organization (IMO)

The European Agreement concerning the International Carriage of Dangerous Goods by Road-2016:

The United Nations Economic Commission for Europe (UNECE)

MSDS of raw materials prepared by the manufactures