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SB52294-299

Issuing date: January01,2017

Material Safety Data Sheet

The content and format of this MSDS is accordant with GB/T 16483-2008 and GB/T 17519-2013

1. Identification of the substance/preparation and of the company/undertaking

.Product name: LITHIUM ION BATTERIES

.Product code:

.Recommended use of the chemical and restrictions on use: Providing power. Restrictions on use: Do NOT use it in an application which may contaminate food or do harm to human health.

.Manufacturer/Supplier:SHEN ZHEN ICAS ELECTRIONICS CO LTD

.Address: No180,zhonghe Industrial zone, Baishixia ,Fuyong, Baoan District, Shenzhen City, Guangdong Province, China

Tel: + 86-755-27307512

Fax: + 86-755-33923046

.Further information obtainable from: SHEN ZHEN ICAS ELECTRONICS CO LTD

.Information in case of emergency: SHEN ZHEN ICAS ELECTRONICS CO., LTD.

Contact: JERRY Tel: 150-1947-1883

2. Hazards identification

.Emergency overview:

This product is generally not hazardous under normal conditions. But like any sealed container, battery may rupture when exposed to excessive heat and this could result in the release of flammable or corrosive materials which may cause irritation to respiratory tract, skin and eyes. The information below is given to minimize any possible hazard during handling, storage and disposal.

.GHS hazard classification per GB 30000. 2-2013～GB 30000. 29-2013:

Physical hazards	Health hazards	Environmental hazards
Explosives-not classified Flammable gases-not classified Flammable aerosols-not classified Gases under pressure- not classified Flammable liquids- not classified Flammable solids-not classified Self-reactive substances and mixtures-not classified Pyrophoric liquids-not classified Pyrophoric solids-not classified Self-heating substances and mixtures-not classified Substances and mixtures, which in contact with water, emit flammable gases-not classified Oxidizing liquids-not classified Oxidizing solids-not classified Organic peroxides-not classified Corrosive to metals-not classified	Acute toxicity (oral)- not classified Acute toxicity (dermal)-not classified Acute toxicity (inhalation)- not classified Skin corrosion/irritation- not classified Serious eye damage/eye irritation-2B Respiratory sensitizer-not classified Skin sensitizer-1 Germ cell mutagenicity- not classified Carcinogenicity-1A Toxic to reproduction- not classified Effects on or via lactation-not classified STOT SE-1 (nervous system), 3 (respiratory tract irritation). STOT RE- 1 (lung), 2 (nervous system) Aspiration hazard- not classified	Acute hazards to the aqua environment- not classified Chronic hazards to the aqua environment-not classified Hazard to the ozone layer-not classified

.Signal word: Danger

.Symbol-:

.Hazard Statement*(for contact with leakage from rupture)*:

H317: May cause an allergic skin reaction.

H320: Causes eye irritation.

H335: May cause respiratory irritation.

H350: May cause cancer.

H370: Causes damage to organs (nervous system).

H372: Causes damage to organs (lung) through prolonged or repeated exposure.

H373: May causes damage to organs (nervous system) through prolonged or repeated exposure.

.Prevention Precautionary Statements*(for contact with leakage from rupture)*:

P201: Obtain special instructions before use.

P202: Do not handle until all safety precautions have been read and understood.

P260: Do not breathe fume/gas/mist/vapours/spray.

P264 : Wash hands thoroughly after handling.

P270: Do not eat, drink or smoke when using this product.

P271: Use only outdoors or in a well-ventilated area.

P272: Contaminated work clothing should not be allowed out of the workplace.

P280 : Wear protective gloves/protective clothing/eye protection/face protection.

.Response Precautionary Statements*(for contact with leakage from rupture)*:

P302+P352: IF ON SKIN: Wash with plenty of water.

P333+P313: If skin irritation or rash occurs: Get medical advice/attention.

P362+P364: Take off contaminated clothing and wash it before reuse.

P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337+P313: If eye irritation persists: Get medical advice/attention.

P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P312: Call a POISON CENTER/doctor if you feel unwell.

P308+P311: IF exposed or concerned: Call a POISON CENTER/doctor

P314: Get medical advice/attention if you feel unwell.

.Storage precautionary statements :

P403+P233: Store in a well-ventilated place. Keep container tightly closed.

P405: Store locked up.

.Disposal precautionary statements :

P501: Dispose of contents/container to relevant local and national regulations.

Physical and chemical hazards: This product is generally not hazardous under normal conditions. But like any sealed container, battery may rupture when exposed to excessive heat and this could result in the release of flammable or corrosive materials which may cause irritation to respiratory tract, skin and eyes.

Health hazards*(for contact with leakage from rupture)*: May cause an allergic skin reaction. Causes eye irritation. May cause respiratory irritation. May cause cancer. Causes damage to organs (nervous system). Causes damage to organs (lung) through

prolonged or repeated exposure. May causes damage to organs (nervous system) through prolonged or repeated

Environmental hazards*(for contact with leakage from rupture)*: No relevant classification for this product.

Other hazards: No information available.

3. Composition/information on ingredients

Product description: substance (); preparation/mixture (√)

Ingredient (s)	CAS #	EC#	% by weight
Polycarbonate Shell	25037-45-0	--	15%-30%
Lithium Cobalt Nickel Dioxide	12031-55-1 12031-65-1	--	<25%
Copper Foil	7440-50-8	231-159-6	5%-15%
Aluminum Foil	7429-90-5	231-072-3	2%-8%
Lithium Hexafluorophosphate	21324-40-3	244-334-7	1%-5%
Ethylene Carbonate	96-49-1	202-510-0	<15%
Methyl Ethyl Carbonate	623-53-0	--	<15%
Dimethyl Carbonate	616-38-6	210-478-4	<15%
Diethyl Carbonate	105-58-8	203-311-1	<15%
Methyl Acetata	79-20-9	201-185-2	<15%
Plastic, Ceramic, Other	--	--	<5%

4 First aid measures

Persons using this product should consult a physician or other medical professional if an accident involving this product results in injury. Specific first-aid measures are as follows (*for contact with leakage from rupture*):

.Eyes Contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

.Skin Contact: Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

.Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.

.Ingestion: Rinse mouth. Do not induce vomiting without professional instruction. Get medical attention immediately.

.Acute effect and delayed effect: Acute effect: May cause an allergic skin reaction. Causes eye irritation. May cause respiratory irritation. Causes damage to organs (nervous system). Delayed effect: The electrolyte is suspected of causing cancer. It causes damage to organs (lung) through prolonged or repeated exposure. May causes damage to organs (nervous system) through prolonged or repeated exposure.

.Personal protective equipment: Wear protective gloves/protective clothing/eye protection/face protection.

.Advice to the rescuer's: Treat according to symptoms.

5. Fire-fighting measures

.Extinguishing Media: This product is not flammable. As for surrounding fire, use dry chemical powder for small fire; Water spray, or alcohol resistant foam for large fire. Don't use water jet.

.Special Fire Fighting Procedures: Structural firefighters must wear self-contained breathing Apparatus and full protective equipment.

.Unusual Fire and Explosion Hazards: If involved in a fire, these products may ignite or decompose. Products of thermal decomposition can include produce toxic gases (e.g .carbon oxides, hydrogen sulfide, sulfuric dioxide).

.Special Fire-Fighting Method:

For initial fire, use dry powder, carbon dioxide, etc.

For large fire, it is effective to use fire foam, etc. to shut off air supply.

Firefighters must wear self-contained breathing apparatus and full protective equipment (e.g. fire-retardant clothing).

Deny unnecessary entry to the place around the fire.

Remove containers from fire area if it can be done without risk.

Cool surrounding facilities, etc. with water spray.

Extinguish fire from upwind, and the fire extinguishing method should be appropriate to the situation in the surroundings.

6. Accidental release measures

.Personal precautions: Use proper personal protective equipment as indicated in Section 8.

.Measures for Cleaning/Collection:

If this battery ruptures, do not touch the battery directly.

Wear protective gloves and sweep up leakage carefully.

Label the waste containers and dispose it in a proper way.

.Environmental Precautions: Keep collected waste out of municipal sewers and open bodies of water. Comply with local and national laws and regulations.

.Additional Information:

As for safe handling and storage, see Section 7.

As for personal protection, see section 8.

As for waste disposal, see section 13.

7. Handling and storage

The regulations relating to storage remises apply to workshop where the product is handled :

.Handling:

Do not breathe vapors or fumes that may be evolved during processing.

Do not disassemble or burn batteries.

Do not squeeze or pierce batteries.

Do not put batteries into water.

Workers must wear proper protective equipment and must operate strictly according to relative rules.

.Information about fire- and explosion protection:

Keep ignition sources away-Do not smoke.

.Storage:

.Requirements to be met by storerooms and receptacles:

Do not store near flame or incompatible materials.

Keep battery terminals insulated when in storage or transportation. The temperature in the storeroom must be controlled in a proper range.

Avoid long-time direct contact of sunlight.

.Information about storage in one common storage facility: Not required.

.Further information about storage condition: None.

8. Exposure controls/personal protection

.Control parameter:

Ingredients	OELs (mg/m^3) (GBZ 2.1-2007)				ACGIH TLV-TWA	
	MAC	PC-TWA	PC-STEL	Remark	TLV-TWA	Remark
Copper Foil (CAS: 7440-50-8)	No data available	1mg/m^3 (dust) 0.2mg/m^3 (fume)	No data available	--	1mg/m^3 (dust) 0.2mg/m^3 (fume)	--
Aluminum Shell (CAS: 7429-90-5)	Not data available	Aluminum dust: Metal & alloys dust: 3mg/m^3 Aluminium oxide dust: 4mg/m^3	Not data available	--	1mg/m^3	A4
Methyl acetate (CAS: 79-20-9)	--	200mg/m^3	500mg/m^3	--	200ppm	--

Note: The classification mark of chemicals is accordant with IARC rules and this information listed above is for reference purpose.

G1---- Carcinogenic to humans.

G2A---- Probably carcinogenic to humans.

G2B---- Possibly carcinogenic to humans.

Carcinogenecity classification by ACGIH:

A2----Suspected human carcinogen.

A3----Confirmed animal carcinogen with unknown relevance to human.

A4----Not classifiable as a human carcinogen.

(M): The classification of inorganic acid fume is taken reference.

.Monitoring Method: The hazardous substances should be monitored per GBZ 159 "*Sampling code for monitoring of hazardous substances in workplace air* ". The well-accepted monitoring methods of other countries are also can be adopted .

.Engineering Controls:

Handle the product only under conditions where sufficient ventilation is provided.

Use explosion-proof ventilation to control airborne levels of the product.

If ventilation is inadequate, wear suitable respiratory protective equipment.

Install eye washer and safety shower near handling and storage area.

Indicate the location of this facility with clear and prominent.

.Personal Protective Equipment:

.Protection of Hands:

Recommend wearing protective gloves made of anti-corrosion materials.

.Protection of Eyes:

No special requirements under normal conditions. Wear safety glasses when working in a dusty environment or liquid may splash.

.Respiratory Protection: No special requirements under normal conditions. Wear appropriate respirators when vapour or fume is generated from processing.

.Protection of Body:

Recommend wearing working clothing made of anti-corrosion materials.

.General protective and hygienic measures:

Wash hands before breaks and at the end of work.

Do not eat, drink or smoke when using this product.

Prevent vapour or fume from processing entering eyes.

9. Physical and chemical properties

General Information	
Form	Solid
Colour	See samples
Odour	Odourless
pH Value	Not applicable
Boiling range	Not available
Melting point/Melting range	Not applicable
Flash point	Not applicable
Flammable/Explosive Limits-Lower Vol %	Not applicable
Flammable/Explosive Limits-Upper Vol %	Not applicable
Density	Not applicable
Relative vapour density	Not available
Vapour pressure	Not available
Solubility in water	Insoluble in water
n-octanol/Water Partition Coefficient	Not available
Ignition temperature	Not available
Decomposition temperature	Not available
Odor threshold value	Not available
Evaporation rate	Not applicable
Flammability (solid, gas, etc.)	This product is not classified as flammable solid

10. Stability and reactivity

.Chemical Stability: Stable under normal temperatures and pressures.

.Possibility of hazardous reactions: The electrolyte may react violently with strong oxidizing agents, strong base and halogens.

.Hazardous Decomposition Products: Products of thermal decomposition can include produce toxic gases (e.g .carbon oxides, hydrogen sulfide, sulfuric dioxide).

.Materials with which substance is incompatible: Avoid contact of strong oxidizing agent, acids, alkalis and halogens if

batteries rupture.

.Conditions to Avoid: Avoid exposure or contact to extreme temperatures and combustible materials.

11. Toxicological information

.Product Toxicity Data: The toxicity data of this product has not been determined, but to our best knowledge, this product is minimally toxic. Shown below is the toxicity data of some ingredients.

Component	CAS #	LD 50 /LC 50 (Median lethal dose)
Dimethyl Carbonate	616-38-6	Acute toxicity (Oral) LD_{50}: 6,400mg/kg (rat) Data sources: PATTY (5th, 2001) Acute toxicity (dermal) LD_{50}>2,500mg/kg (rabbit) Data sources: IUCLID(2000) Acute toxicity (inhalation)LC_{50}: 140 mg/L/4h Data sources: IUCLID(2000)
Diethyl Carbonate	105-58-8	Acute toxicity (Oral) = 15g/kg (rat) Data sources: HSDB (2003)
Methyl Acetate	79-20-9	Acute toxicity (Oral) LD_{50}: 6,482mg/kg (rat) Data sources: (EV-RAR (2003)) Acute toxicity (dermal) LD_{50}>5,000mg/kg (rabbit) Data sources: DFGOT (2002)(2003) Acute toxicity (inhalation)LC_{50}>16170ppm/4H Data sources: (EV-RAR (2003))

.Serious eye damage/eye irritation: The electrolyte of this battery is classified into category 2B. This product contains methyl acetata (79-20-9) which is classified as Category 2B (EV-RAR (2003)). Considering the percentage of this ingredient exceeds the classification criteria, the whole product is classified as Category 2B.

.Skin corrosion/irritation: No classification for this product.

.Respiratory sensitizer: No classification for this product.

.Skin sensitizer: The electrolyte of this battery is classified into category 1. This product contains lithium cobalt nickel dioxide (CAS: 12031-65-1) which is classified as Category 1 (CLP Classification (Table 3.1)). Considering the percentage of this ingredient exceeds the classification criteria, the whole product is classified as Category 1.

.Germ cell mutagenicity: No classification for this product.

.Carcinogenicity: The ingredient Lithium Cobalt Nickel Dioxide (CAS: 12031-65-1) is classified as Category 1A (IARC (nickel compounds) Group 1 (2012)). As the percentage of this ingredient exceeds the classification criteria of this hazard, the whole product is classified as Category 1A.

.Reproductive Toxicity: No classification for this product.

.STOT-single exposure: The electrolyte of this battery is classified into category 1 (nervous system) and category 3 (respiratory tract irritation).

This product contains Methyl Acetate (CAS: 79-20-9) which is classified as Category 1 (nervous system) (EV-RAR (2003)). Considering the percentage of this ingredient exceeds the classification criteria, the whole product is classified as Category 1 (nervous system).

This product contains methyl acetate (CAS: 79-20-9) which is classified as Category 3 (respiratory tract irritation) (EV-RAR (2003)) and Diethyl Carbonate (CAS: 105-58-8) which is classified as Category 3 (respiratory tract irritation) (PATTY (5th, 2001), HSDB (2003)). Considering the total percentage of these ingredients exceeds the classification criteria, the whole product is classified as Category 3 (respiratory tract irritation).

.STOT-repeated exposure: The electrolyte of this battery is classified into category 1 (lung), 2 (nervous system).

This product contains Lithium Cobalt Nickel Dioxide (CAS: 12031-65-1) which is classified as Category 1 (CLP Classification (Table 3.1)). Considering the percentage of this ingredient exceeds the classification criteria, the whole product is classified as Category 1(respiratory organs).

This product contains aluminum shell (CAS: 7429-90-5) which is classified as Category 1 (PATTY (4th, 1994), EHC 194 (1997), ATSDR (1999)). Considering the percentage of this ingredient exceeds the classification criteria, the whole product is classified as Category 1(lung).

This product contains Aluminum Shell (CAS: 7429-90-5) which is classified as Category 2 (nervous system) (ICSC (J) (2000)). Considering the percentage of this ingredient exceeds the classification criteria, the whole product is classified as Category 2 (nervous system).

.Aspiration hazard: No classification for this product.

.Effects on or via lactation: No classification for this product.

12. Ecological information

.Ecotoxicity: No data available for the whole product. The data shown below is of the main ingredient.

Aluminum Shell (CAS: 7429-90-5):

$L(E)C_{50} \leqq 100mg/L$

Methyl Acetate (79-20-9):

72-hour $EC_{50} > 120mg/L$ of alga (Bluegill) (EV-RAR (2003)).

.Persistence and Degradability: No data available.

.Bioaccumulative Potential: No data available.

.Mobility in Soil: As for the sealed batteries, it can hardly move in soil. The electrolyte can move in soil due to its liquid nature.

Results of PBT and vPvB Assessment: No information available.

General Notes:

Do not throw used product into ground water, water course or sewage system.

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

13. Disposal considerations

Do not allow product to reach sewage system.

Do not throw it into any open bodies of water.

Dispose of waste in accordance with applicable local, regional and international regulations and standards.

When disposing, consult to a certificated waste trader or local offices if they deal with the waste.

14. Transport Information

DOT/ Air-Transportation- IATA/ICAO/Sea-Transportation-IMO/IMDG.:

Area	Method	Organization	Special Provision
International	**Air**	**IATA, ICAO**	**Packing Instruction 967-Section Ⅱ (regulated under the current 2017 Edition of the ICAO Technical Instruction for the Safe Transport of Dangerous Goods by Air and the 58th Edition of IATA DGR)** **IMP: ELI** **Limit per Package:**

			Pax A/C = 5kg **CAO = 5kg** **A181**
Europe	**Road and Rail**	**ADR/RID**	**SP 188**
International	**Marine**	**IMDG**	**SP 188**
U.S.A	**Rail, Road, Marine**	**DOT**	**DOT 49 CFR 172.102**

.Proper Shipping Name: Lithium Ion Batteries Contained in Equipment (including Lithium ion polymer batteries)
.UN Number: UN3481
.Hazard Classification: Class 9

We further hereby certify that the consignment have already carried on UN38.3 Test in accordance to IATA-DGR.
Note: We further hereby certify that the consignment is not classified as dangerous under the current 58th (2017) Edition of the IATA-DGR and the packing is in accordance with Section II packing requirements (PI 967).

Special precautions for user:
Check whether the package is completed or sealed before transporting; make sure no damage of packages and prevent goods from falling down during transporting; the transport vehicle should be equipped with facilities for fire-fighting and accidental release handling; do NOT transport this product together with incompatible substances; stay away from fire and areas of high temperature during stopovers.

15. Regulatory information

.Laws and Regulations of China:
.General rule for classification and hazard communication of chemicals(GB 13690-2009) *(for contact with leakage from rupture):*
Serious eye damage/eye irritation-2B, Skin sensitizer-1, Carcinogenicity-1A, STOT SE-1 (nervous system), 3 (respiratory tract irritation), STOT RE- 1 (lung), 2 (nervous system).
.The Principle of Classification of Transport Packaging Groups of Dangerous Goods (GB/T 15098-2008):
Not applicable
.Dangerous Chemicals List (GB 12268-2012): Not applicable
.Dangerous chemicals directory (2015): Aluminum Shell (CAS: 7429-90-5), Dimethyl Carbonate (CAS: 616-38-6), Diethyl Carbonate (CAS:105-58-8), Methyl Acetate (79-20-9) is listed.
.Other laws and regulations:
.TSCA (Toxic Substance Control Act): Ingredients with specific CAS numbers are listed in the U.S. Toxic Substances Control Act Chemicals Substance Inventory List.
.(EC)1272/2008 Annex VI Table 3.1 & 3.2 (67/548/EEC Annex I):

Ingredient(s)	**EC No. 1272/2008 Classification**		**67/548/EEC Classification**
	CLASS. CODE	**HAZARD CODE**	
Lithium Cobalt Nickel Dioxide (CAS: 12031-65-1)	Carc. 1A STOT RE 1 Skin Sens. 1	H350i H372** H317	R: 49-43-48/23 S: 53-45
Aluminum Foil (CAS: 7429-90-5)	Water-react. 2 Pyr. Sol. 1	H261 H250	R: 15-17 S: (2-)7/8-43
Dimethyl Carbonate (CAS: 616-38-6)	Flam. Liq. 2	H225	R: 11 S: (2-)9-16

Methyl Acetata (CAS:79-20-9)	Flam. Liq. 2 Eye Irrit. 2 STOT SE 3	H225 H319 H336	R: 11-36-66-67 S: (2-)16-26-29-33

.Carcinogenicity categories:

Lithium Cobalt Nickel Dioxide (CAS: 12031-65-1) is classified as Group 1 (nickel compounds) by IARC (2012))

.Candidate List of Substances of very high concern (SVHC) according to ECHA: Not listed.

.REACH Regulation Annex XVII Regulation List: Not listed.

.REACH Regulation Annex XIV Authorization List: Not listed.

16. Other information

DISCLAIMER: This information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other material. It is the user's responsibility to satisfy oneself as to the suitability and completeness of this information for the user's own particular use.

References: GB/T 16483-2008, GB 13690-2009, GB/T 15098-2008, GB12268-2012, GB/T 17519-2013, GB 30000.2-2103～30000.29-2103, GHS Technical Documents, etc.

Full description of some acronyms:

GHS-Globally Harmonized System of Classification and Labelling of Chemicals
CAS-Chemical Abstracts Service
EINECS-European Inventory of Existing Commercial Chemical Substances
IMO-International Maritime Organization
IMDG-International Maritime Dangerous Goods
IATA-International Air Transport Association
ICAO-International Civil Aviation Organization
TSCA-Toxic Substance Control Act
OSHA-Occupational Safety and Health Administration
ACGIH- American Conference of Governmental Industrial Hygienists
EHC- Environmental Health Criteria
ATSDR- ATSDR: Toxicological Profile
SIDS- SIDS Initial Assessment Report
IARC- International Agency for Research on Cancer

The issuing date of the latest version: January 01, 2017
SDS Version: 1

********** The End **********