

Date: Jan. 04th, 2017

Material Safety Data Sheet for LIBA Lithium coin cell (Lithium Metal Battery)

IDENTITY (As Used on Label and List)

Lithium Metal batteries

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.

1. Identification

(a) Product name :

Primary Coin Lithium Manganese Dioxide Battery

Product code:

CR927 CR1220 CR1225 CR1620 CR2016 CR2025 CR2032 CR2450

(b) Other means of identification:

Product description:

Nominal Voltage:3.0V

Ampere-hour:0.028~0.6Ah

(d) Name, address, and telephone

Manufacturer: Changzhou Lithium Batteries ,Ltd.

number of the chemical

Address: NO.35, Taihu West Rd, New-north district, Changzhou, Jiangsu, PRC.

manufacturer, importer, or

Tel: +86-519-85100885

other responsible party:

Fax: +86-519-85111088

(e) Emergency phone number:

Tel: +86-519-85100885

2. Hazard(s) identification

Classification :

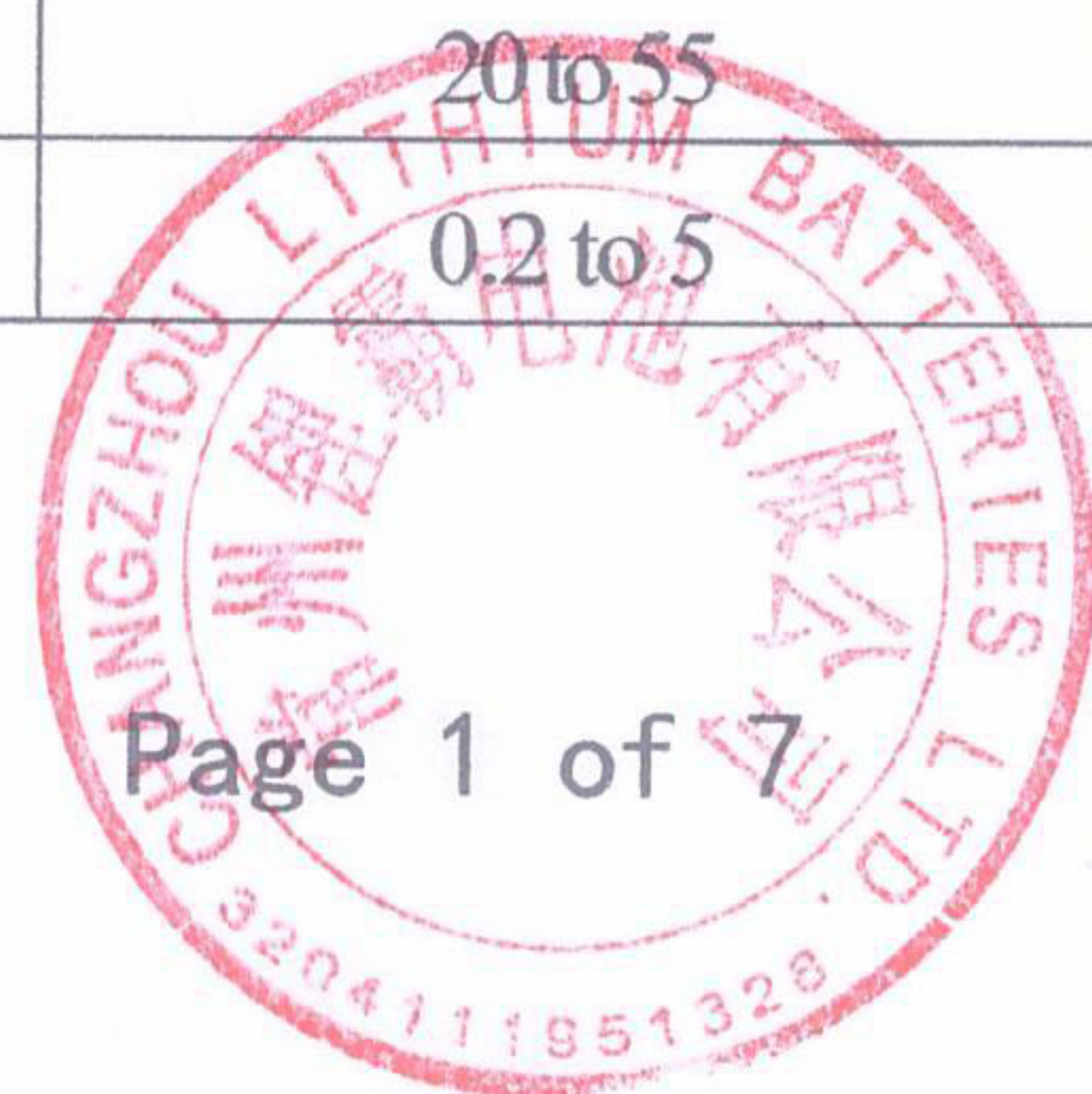
N/A

3. Composition/information on ingredients

Chemical Name	Common Name and Synonyms	CAS#	Content(Wt%)
Lead	Pb	7439-92-1	0
Mercury	Hg	7439-97-6	0
Cadmium	Cd	7740-43-9	0
Manganese Dioxide	MnO ₂	1313-13-9	25 to 40
Propylene	C ₄ H ₆ O ₃	108-32-7	2 to 6
1,2-Dimethoxyethane	C ₄ H ₁₀ O ₂	110-71-4	1 to 5
Lithium Perchlorate	LiClO ₄	7791-03-9	0.1 to 2
Lithium or Lithium Alloy	Li	7439-93-2	1 to 4
Graphite	C	7782-42-5	1 to 4
Stainless steel	/	12597-68-1	20 to 55
Polypropylene	(C ₃ H ₆) _n	9003-07-0	0.2 to 5

NA=Not Applicable

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Lithium content for each cell

Model	Li content(g)	Model	Li content(g)
CR927	0.009	CR2016	0.026
CR1220	0.012	CR2025	0.046
CR1225	0.014	CR2032	0.068
CR1620	0.022	CR2450	0.173

4. First-aid measures

(a) Description of necessary measures, subdivided according to the different routes of exposure, i.e., inhalation, skin and eye contact, and ingestion

Inhalation Fumes can cause respiratory irritation. Remove to fresh air and consult a physician.

Skin Contact Immediately flush skin with plenty of water. If itch or irritation by chemical burn persists, consult a physician.

Eye Contact Immediately flush eye with plenty of water for at least 15 minutes.
Consult a physician immediately.

Ingestion If swallowing a battery, consult a physician immediately.
If content come into mouth, immediately rinse by plenty of water and consult a physician.

(b) Most important symptoms/ effects, acute and delayed

N/A

(c) Indication of immediate medical attention and special treatment needed, if necessary
Wash with clean water immediately.

5. Fire-fighting measures

(a) Suitable (and unsuitable) extinguishing media.

Extinguisher of alkaline metal fire is effective. Plenty of cold water is also effective to cool the surrounding area and control the spread fire.

(b) Specific hazards arising from the chemical (e.g., nature of any hazardous combustion products).

Hydrogen gas may be evolved by the reaction of water and lithium and it can form an explosive mixture.

Therefore when lots of lithium batteries are burning in a confined space, use a smothering agent (ex. Carbon dioxide or dry sand).

(c) Special protective equipment and precautions for fire-fighters.

Use self-contained breathing apparatus and full protective gear not to inhale harmful gas.

6. Accidental release measures

(a) Personal precautions, protective equipment, and emergency procedures.

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Wear protective clothing. Keep unprotected persons away.

(b) Methods and materials for containment and cleaning up.

When the liquid leaks out of the battery, absorb and wipe it with dry cloth.

Keep the battery away from fire or heat.

7. Handling and storage

(a) Precautions for safe handling.

- Never swallow.

If swallowed, see Section 4-First Aid Measures.

- Never charge .

The battery is not designed to be charged by any other electrical source. Charging could generate gas and internal short-circuiting, leading to distortion, leakage, overheating, explosion or fire.

- Never heat.

Heating the battery to more than 100 degree centigrade could increase the internal pressure, causing distortion, leakage, overheating, explosion or fire.

- Never expose to open flames.

Exposing to flames could cause the lithium metal to melt, causing the battery to catch on fire and explosion.

- Never disassemble the battery.

Do not disassemble the battery, because the separator or gasket could be damaged, leading to distortion, leakage, overheating, explosion or fire.

- Never reverse the positive and negative terminal when mounting.

Improper mounting of the battery could lead to short-circuiting, charging or forced-discharging. This could cause distortion, leakage, overheating, explosion, or fire..

- Never short-circuit the battery.

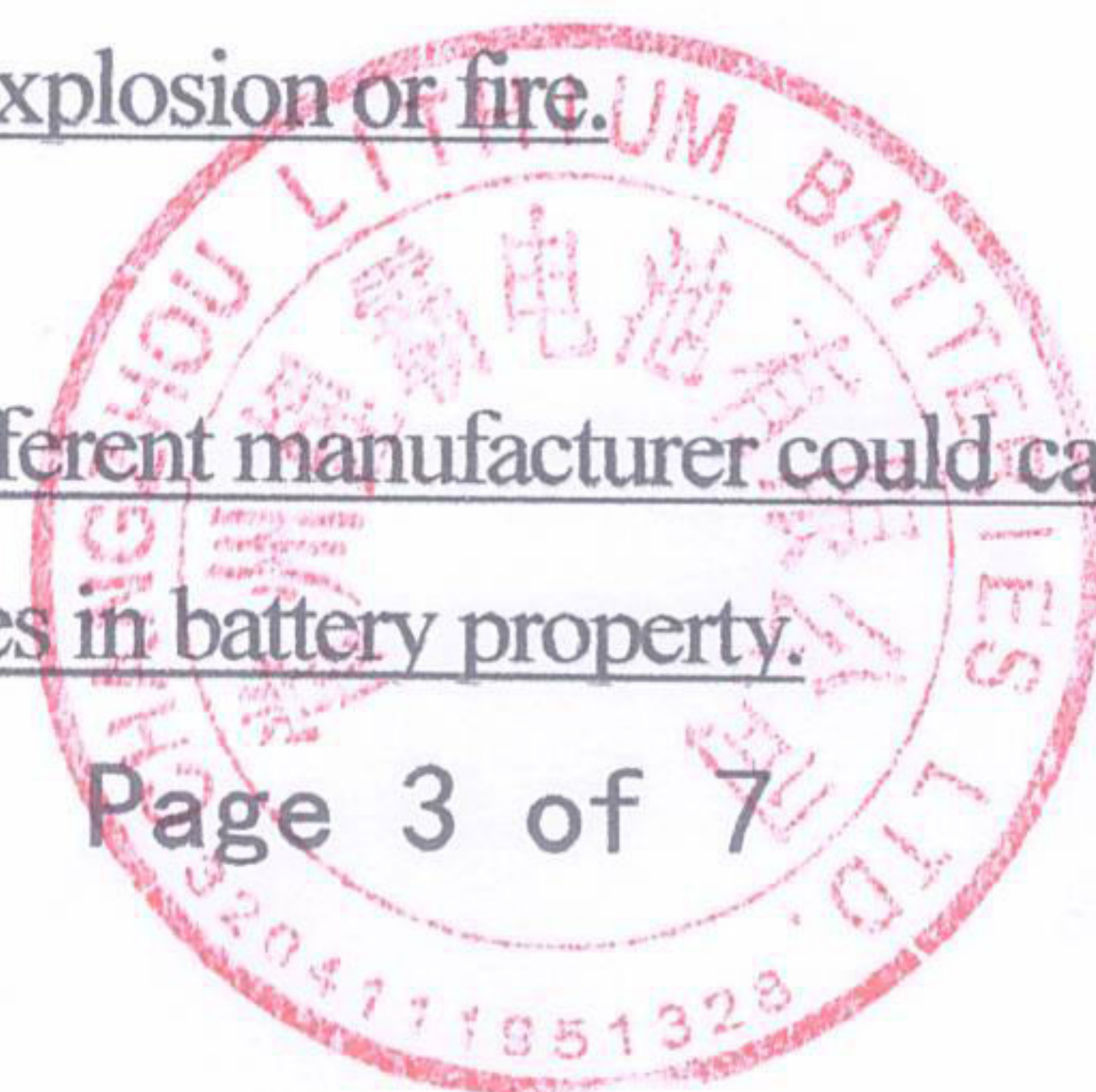
Do not allow the positive and negative terminals to short-circuit. Never carry or store the battery with metal objects such as a necklace or a hairpin. Do not take multiple batteries out of the package and pile or mix them when storing. Otherwise, this could lead to distortion, leakage, overheating, explosion or fire.

- Never weld the terminals or weld a wire to the body of the battery directly.

The heat of welding or soldering could cause the lithium to melt, or cause damage to the insulating material in the battery. This could cause distortion, leakage, overheating, explosion or fire.

- Never use different batteries together.

Using different batteries together, i.e. different type or used and new or different manufacturer could cause distortion, leakage, overheating, explosion or fire because of the differences in battery property.



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- Never allow liquid leaking from the battery to get in your eyes mouth..

If the liquid comes into eyes, or mouth, see Section 4-First Aid Measures.

- Never leaking batteries away from fire.

If leakage is suspected or you detect a strong odor, keep the battery away from fire, because the leaked liquid could catch on fire.

- Never touch the battery electrodes.

Do not allow the battery electrodes to come in contact with your skin or fingers. Otherwise, the moisture from your skin could cause a discharge of the battery, which could produce certain chemical substances causing you to receive a chemical burns.

(b) Conditions for safe storage, including any incompatibilities.

Never let the battery contact with water. Never store the battery in hot and high humid place.

8. Exposure controls/personal protection

Occupational Exposure Limits: LTEP		STEP	
N/A		N/A	
Respiratory Protection (Specify Type)		N/A	
Ventilation	Local Exhausts	N/A	Special N/A.
	Mechanical (General)	N/A	Other N/A.
Protective Gloves		N/A	Eye Protection N/A.
Other Protective Clothing or Equipment		N/A	
Work / Hygienic Practices		N/A	

9. Physical and chemical properties

Boiling Point	N/A	Specific Gravity (H ₂ O=1)	N/A
Vapor Pressure (mm Hg)	N/A	Melting Point	N/A
Vapor Density (AIR=1)	N/A	Evaporation Rate (Butyl Acetate)	N/A
Solubility in Water		N/A	
Appearance and Odor		Coin Shape, odorless	

10. Stability and reactivity

(a) Reactivity

N/A

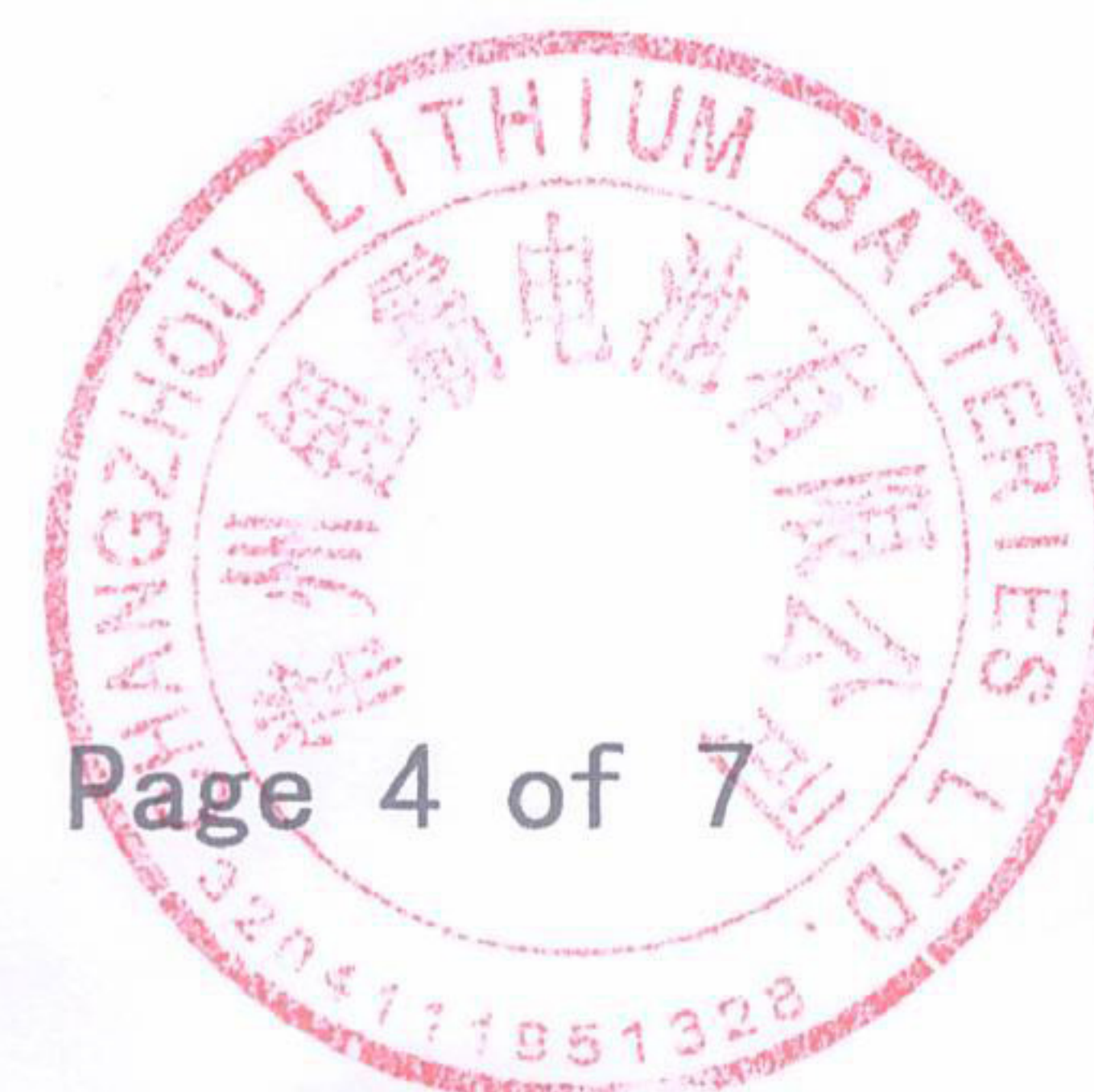
(b) Chemical stability

Stable (performance deterioration depends on circumstance.)

(c) Possibility of hazardous reactions

No.

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(d) Conditions to avoid (e.g., static discharge, shock, or vibration)

See 7.Handling and storage

(e) Incompatible materials

Water

(f) Hazardous decomposition products

Hydrogen (By moisture).

11. Toxicological information

Description of the various toxicological(health) effects and the available data used to identify those effect, including

(a) Information on the likely routes of exposure (inhalation, ingestion, skin, and eye contact)

As the contents are sealed in the battery case, there is no toxicity.

(b) Symptoms related to the physical, chemical and toxicological characteristics

People might feel itching, if the inner liquid splashes onto skin.

(c) Delayed and immediate effects and also chronic effects from short and long term exposure

N/A

(d) Numerical measures of toxicity (such as acute toxicity estimates)

N/A

(e) Whether the hazardous chemical is listed in the National Toxicology Program (NTP) Report on Carcinogens (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest edition), or by OSHA

No.

12. Ecological information (Non-mandatory)

(a) Ecotoxicity (aquatic and terrestrial, where available): N/A

(b) Persistence and degradability: N/A

(c) Bio-accumulative potential: N/A

(d) Mobility in soil: N/A

(e) Other adverse effects (such as hazardous to the ozone layer): If the battery is disposed in land or water, battery case may be corroded and the liquid may leak out of the battery. Information regarding ecological concerns has not been reported.

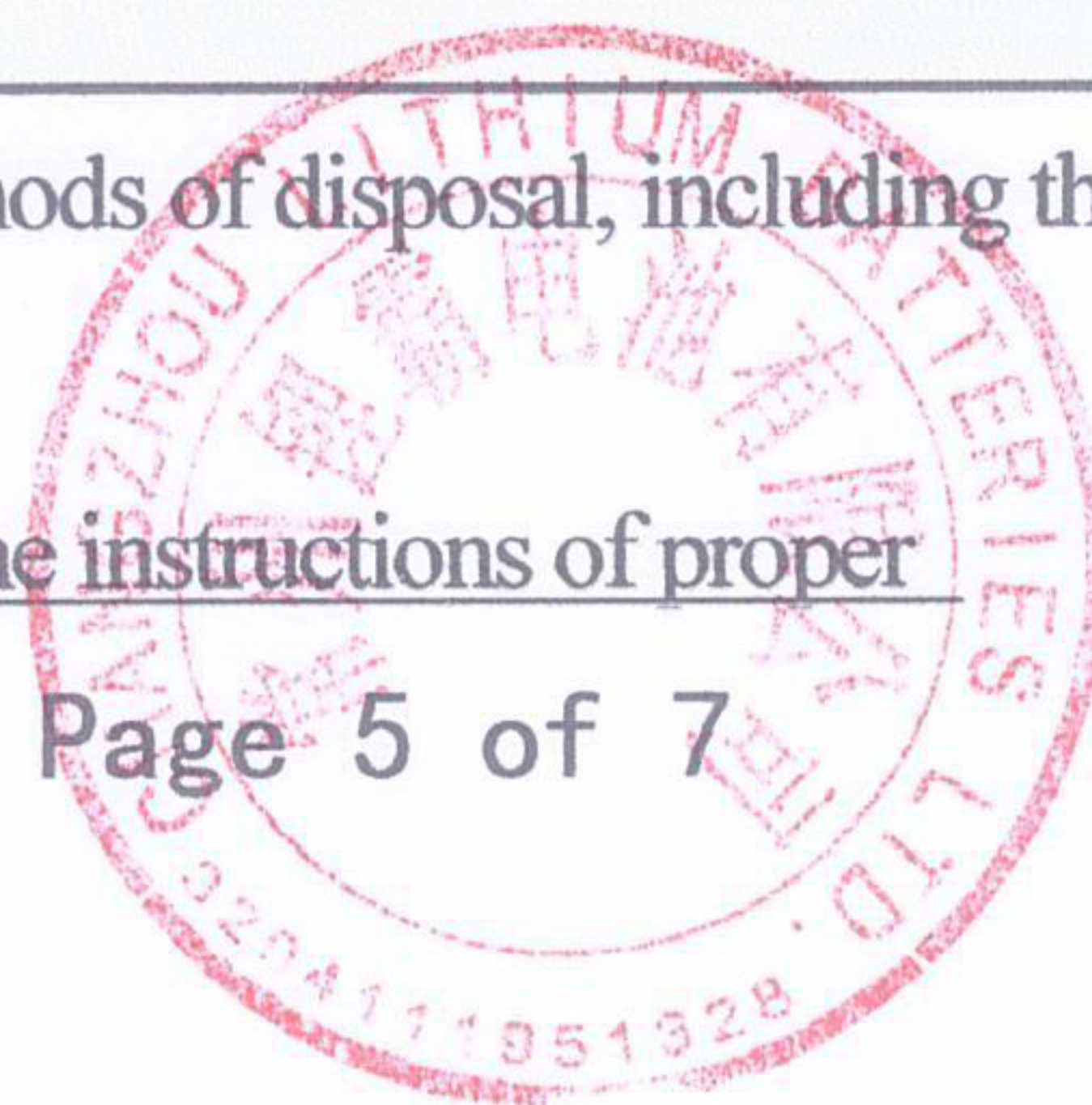
13. Disposal considerations (Non-mandatory)

Description of waste residues and information on their safe handling and methods of disposal, including the disposal of any contaminated packaging.

The battery may be regulated by national or local regulation. Please follow the instructions of proper

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regulation. As electric capacity is left in a discarded battery and it comes into contact with other metals, it could lead to distortion, leakage, overheating, or explosion, so make sure to cover the (+) and (-) terminals with friction tape or some other insulator before disposal.

14. Transport information (Non-mandatory)

1) Shipping Name (UN Number): Lithium metal batteries (UN3090)

Lithium metal batteries packed with equipment (UN3091)

Lithium metal batteries contained in equipment (UN3091)

2) Hazard Classification : Class 9 (Miscellaneous)

3) Method of transportation : As the cells are manufactured under a quality management programme in the ISO9001 certified factory and the cells meet all the requirements in UN manual of tests and criteria, Part III, sub-section 38.3, the applicable packing instruction (PI) or special provisions (SP) are as per the following table. The cells or batteries classified in Section II of any Packing Instruction or SP188 may be exempted from Class 9 Dangerous Goods if complying with all requirements of applicable Section II or SP188. But Lithium metal cells and batteries transported as cargo are restricted to Cargo Aircraft Only Since January 1st 2015.

Note. The prohibition does not apply to lithium metal batteries packed with equipment (PI969) or contained in equipment (PI970)

Li content per cell	Product name	Air *See Section 15.4			Sea *See Section 15.5)
		Cell only	Cell packed with equipment	Cell contained in equipment	
Not more than 0.3g	CR927,CR1220,CR1225 CR1620 ,CR2016 CR2025,CR2032 CR2450	PI 968 Section II	PI 969 Section II	PI 970 Section II	SP 188

As the related district , country or airline may establish their special requirements, the shipper shall confirm them with the forwarder in advance.

Please confirm the aggregate lithium content when transport the battery.

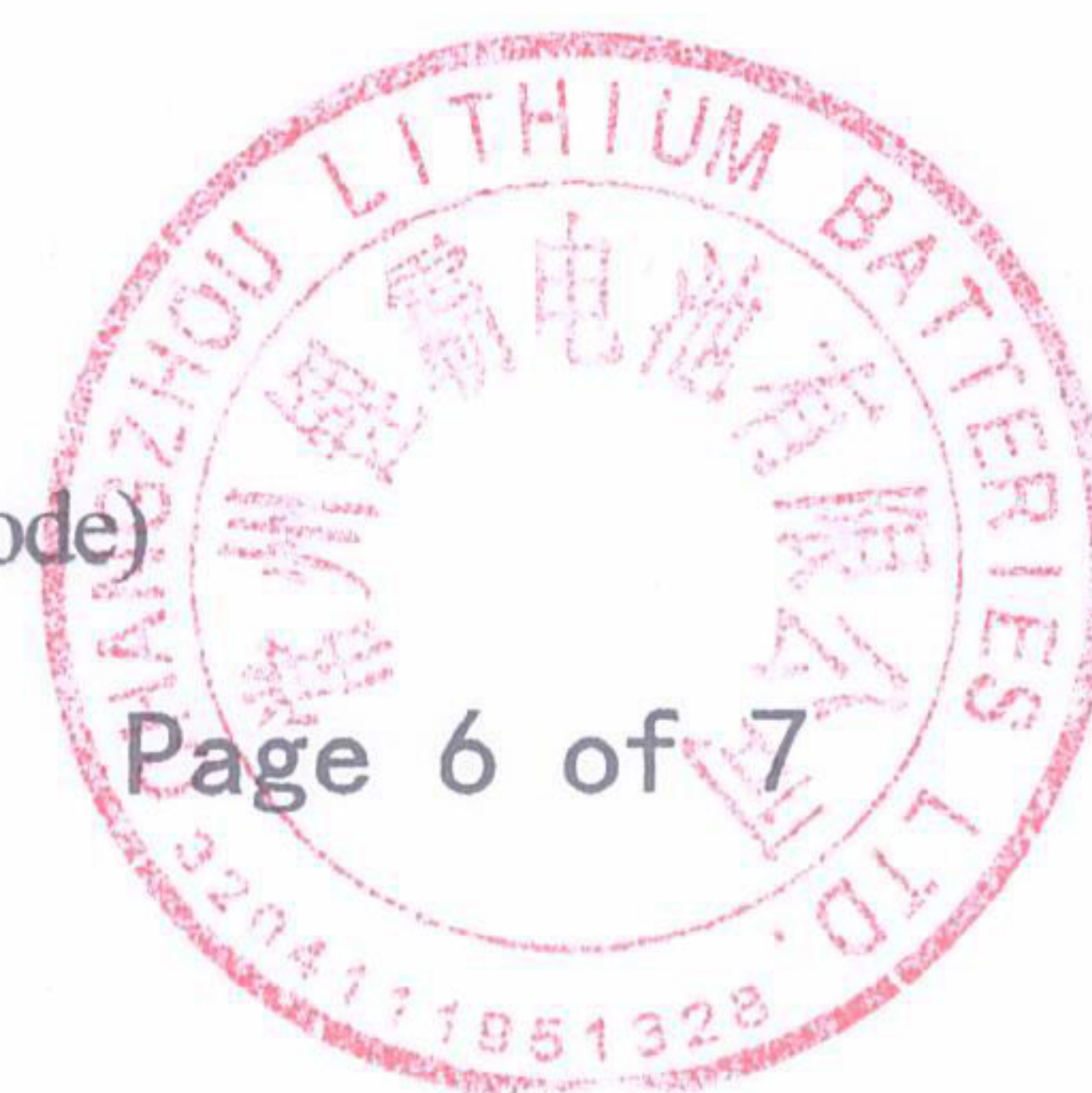
(a) UN proper shipping name: Lithium metal batteries

(b) Packing group, if applicable: as table mentioned above

(c) Environmental hazards (e.g., Marine pollutant (YES/NO) NO

(d) Transport in bulk (according to Annex II of MAPPOL 73/78 and the IBC Code)

NA=Not Applicable





N/A for Annex II of MAPPPOL 73/78 and the IBC Code.

The products can be transported if complying with ICAO Technical Instructions or IMDG-Code

(e)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

Avoid high-temperature, high-humidity condition.

15.Regulatory information

Major applicable regulation of lithium metal cells and batteries are as follows:

- 1) UN (United Nations) Recommendations on the Transport of Dangerous Goods: Model Regulations 19th revised edition
- 2) UN (United Nations) Recommendations on the Transport of Dangerous Goods: Model of Test and Criteria 6th revised edition
- 3) International Civil Aviation Organization (ICAO): Technical Instructions for Safety Transport of Dangerous Goods by Air,2017Edition
- 4) International Air Transport Association (IATA): Dangerous Goods Regulations, 58th Edition
- 5) International Maritime Organization (IMO) : International Maritime Dangerous Goods(IMDG) Code, 2014 Edition

Major environmental regulations are as follows:

- 1) EU BATTERY DIRECTIVE 2006/66/EC and its Article 4 amendment of Directive 2013/56/EU.
- 2) California Code of regulations. Title 22, Division4.5, Chapter33: Best Management Practices for Perchlorate Materials

16. Other information, including date of preparation or last revision

- 1) The contents and format of this MSDS is in according with 29 CFR 1910.1200(g)
- 2) DISCLAIMER OF LIABILITY

The information in this MSDS was obtained from source 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 any way connected with the handling, storage, use or disposal of the product. The MSDS was prepared and is to be used only for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

END OF MSDS

NA=Not Applicable

