Safety Data Sheet for LSE cells

The Lithium ion Cells referenced herein are defined as exempt manufactured "articles" and are not subject to the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard 29 CFR subpart 1910.1200. The manufactured article does not expose the user to hazardous chemicals when used in accordance with GS Yuasa's specifications.
This information is provided as a service to the end user.

GS Yuasa Technology Ltd.

1. Identification

1.1 Product identification

Common Name	Lithium-ion Cell					
Model	LSE55	LSE102	LSE110	LSE134	LSE145	LSE190
Rated Capacity	55 Ah	102 Ah	110 Ah	134 Ah	145 Ah	190 Ah
Nominal Voltage	3.7 V	3.7 V	3.7 V	3.7 V	3.7 V	3.7 V
Watt Hour Rating	204 Wh	377 Wh	407 Wh	496 Wh	537 Wh	703 Wh
Chemical System	Lithium Cobalt Dioxide / Organic Electrolyte / Carbon					

1.2 Company identification

Company	GS Yuasa Technology Ltd.
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2. Hazards Identification

2.1 Lithium-ion ion Cell

GHS classification Not applicable (as this product is used in a sealed state)

2.2 Reference (Electrolyte for lithium-ion Cell)

Electrolyte in the Cell will not leak under normal use as this product is sealed. However, if the Cell is mechanically abused, the electrolyte could leak. For reference, information on hazardous materials is described below.

GHS classification

Flammable liquid	Category 3
Chronic toxicity	Category 1
Specific target organ systemic toxicity - repeated exposure	Category 1 (teeth, bone)

Label elements

Hazard pictograms	
Signal word	Danger
Hazardous material information	Flammable liquids and vapors May damage fertility or the unborn child Causes damage to teeth and bone through prolonged or repeated exposure
Caution	See sections 6, 7, and 8.
First – aid measures	See section 4.
Disposal	See sections 6, 8, and 13.

3. Composition / information on ingredients

Compositions

Name	Mass proportion (%)	CAS No.
Lithium cobalt oxide	30-40	12190-79-3
Graphite	10-20	7782-42-5
Organic electrolyte	10-20	-

4. First-aid measures

In case of electrolyte leakage from the Cell, take the following measures.

Inhalation	Move the affected person to fresh air. Keep the person at rest so that the person can easily breathe. If the person feels ill, seek medical attention.
Skin contact	Wash thoroughly with soap and water immediately. Seek medical attention immediately.
Eye contact	Flush the eye carefully with water for a few minutes. If the affected person wears contact lens and can easily take it out, do so. Then, continue to flush the eye. Seek medical attention immediately.
Swallowed	Seek medical attention immediately.

If symptoms persist, ask your doctor.

5. Fire-fighting measures

Extinguishing media	A large amount of water or a fire extinguisher is effective to put out fire.
Special hazards arising from products	Put out fire from the windward side with protective equipment worn if necessary, as gases generated during fire may irritate your eyes, nose, and throat.

6. Accidental release measures

Electrolyte in the Cell will not leak under normal use as this product is sealed. However, if the Cell is mechanically abused, the electrolyte could leak.

Personal precautions	Wear suitable protective equipment and take the following measures. For further information on protective equipment, see section 8. ● Avoid any contact with the skin and eyes ● Remove all sources of ignition ● Avoid inhaling the vapors
Environmental precautions	See section 13.
Cleaning methods	Collect spilled liquid into a sealable disposal container as much as possible. Wipe off the remaining liquid and wash with a large amount of water. For further information on protective equipment, see section 8.

7. Handling and storage

The Cell could be in a dangerous state if abused. Observe the following precautions on handling and storage. If a large number of the Cells are stored, Fire Service Act may apply.

Storage	Store in cool, well-ventilated area. Do not expose to high temperatures (60^{o}C*).
Handling	Do not short between positive and negative terminals with a metal. Since short circuit could cause fire or safety vent to open, leading to a dangerous state, the Cell shall be kept away from electrically conductive articles such as metal plates and metal bars. Do not disassemble, crush, or penetrate the Cell. This could cause fire. Keep the Cell away from fire and heat sources.
Charging	Do not charge the Cell at temperatures exceeding 60ºC*. Use a dedicated cell charger.
Discharging	Do not discharge the Cell at temperatures exceeding 60ºC*.
Disposal	Do not incinerate or dispose of the Cell in fire.

* As the storage/usage temperature increases, the rate of irreversible capacity loss increases. Our recommended temperature range is shown in User's Manual.

8. Exposure controls / personal protection

Electrolyte in the Cell will not leak under normal use as this product is sealed. However, if the Cell is mechanically abused, the electrolyte could leak. In case of electrolyte leakage from the Cell, take the measure described in section 6 with the following protective equipment worn.

Exposure limit	ACGIH-TLV: 2.5 mg/m^3 (TWA) as F	
Occupational exposure control	Install ventilation system, shower, wash stand, and eye washer as necessary near the work area.	
Protective equipment	Respiratory protection	Gas mask (against organic solvents)
	Hand protection	Rubber gloves
	Eye protection	Protective glasses
	Skin protection	Disposal work jacket
Environmental exposure control	No information	

9. Physical and chemical properties

9.1 Lithium-ion Cell

Physical state	Solid
Shape	Elliptic cylindrical
Flash point (ºC)	No information
Vapor pressure (mmHg)	No information
Vapor density	No information
Boiling point (ºC)	No information
Freezing point (ºC)	No information
pH	No information

9.2 Reference (Electrolyte)

Physical state	Liquid
Flash point (ºC)	29.3
Vapor pressure (mmHg)	No information
Vapor density	No information
Boiling point (ºC)	118
Freezing point (ºC)	-30 or less
pH	No information

10. Stability and reactivity

Reactivity	No information
Chemical stability	This product is stable under storage conditions described in section 7.
Possibility of hazardous reactions	Exposure to temperatures of 80ºC or greater could cause rupture.
Conditions to avoid	Pouring water, heating, crushing, disassembling, shorting, storing at high temperatures

11. Toxicological information

11.1 Lithium-ion Cell

No information

11.2 Reference (Electrolyte)

Electrolyte in the Cell will not leak under normal use as this product is sealed. However, if the Cell is mechanically abused, the electrolyte could leak. For reference, information on hazardous materials is described below.

Chronic toxicity	$LiPF_6$	According to GHS classification criteria, mixture (>= 0.3%) is categorized as No. 1.
Specific target organ systemic toxicity - repeated exposure	$LiPF_6$	According to ACGIH-TLV(2005), it is categorized as No. 1.

12. Ecological information

Reproductive toxicity	No information
Persistency/degradability	No information
Bioaccumulation	No information
Soil contamination	No information
Hazard to ozone layer	No information

13. Disposal consideration

Dispose of the Cell according to laws and local regulations.

14. Transport information

LSE102* is confirmed to meet the all safety criteria required for Class 9 on the basis of tests performed in accordance with the United Nations Recommendations on the Transportation of Dangerous Goods: Manual of Tests and Criteria (UN Document ST/SG/AC.10/11).

Water, IMO	Hazard Class	: 9
	Packing Group	: II
Air, IATA	Hazard Class	: 9
	Packing Group	: II

* The Cells are assigned to UN. No. 3480, class 9.

15. Regulatory Information

Japanese regulations

Storage regulations	Fire Service Act	Electrolyte in the Cell is classified as Dangerous substance Class 4 Type 2 Petroleum (non-aqueous)
Transport regulations	Civil Aeronautics Law	See section 14
	Ship Safety Act	
	Act on Port Regulations	
	Road Act	
Other regulations	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc.	Not applicable
	Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof	Applicable

International regulations

- Regulations on cell disposal
  Each state in U.S. and other countries also have similar regulations.

- Regulations on cell transport
  See section 14.

16. Other information

Information on the electrolyte in this product was created with reference to the SDS obtained from our supplier.

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