

Design Report of Safety Data Sheet

正本/ORIGINAL

*Product Name:	Li-ion Rechargeable Battery Pack LSV-V201B-WUS
*Applicant:	Suzhou Lishen Energy Science & Technology Co.,Ltd.
Supplier:	Suzhou Lishen Energy Science & Technology Co.,Ltd.
*Composition of the product:	Nickel cobalt manganese lithium oxide(CAS: 182442-95-1): 41%; Graphite(CAS: 7782-42-5): 22%; Electrolyte (Lithium hexafluorophosphate)(CAS: 21324-40-3): 16%; Copper(CAS: 7440-50-8): 11%; Details on the next page
Warranty of Design:	Globally Harmonized System of Classification and Labelling of Chemicals (GHS) Tenth revised edition
*Information materials:	HGBZ2404JGF-R1 《Application》、P114632 《Declaration of consistency of components of the sample submitted for inspection》、P114632 《UN 38.3》、P114632-Product Picture
Design Result of SDS please see next page.	
Designer: 叶江我	Auditor: 江帆
Approver: 戎霄	
常州合规思远产品安全技术有限公司 Changzhou Hegui Siyuan Products Safety Technology Service Co., Ltd.	

Notes: This SDS is valid before the implementation of the eleventh revised edition GHS.Original report HGBZ2404JGF1 is void.



Contd. of Prev. page: Complete sample component information.

*Composition of the product:	Nickel cobalt manganese lithium oxide(CAS: 182442-95-1): 41%; Graphite(CAS: 7782-42-5): 22%; Electrolyte (Lithium hexafluorophosphate)(CAS: 21324-40-3): 16%; Copper(CAS: 7440-50-8): 11%; Aluminium(CAS: 7429-90-5): 5%; Dissepiment (polyethylene)(CAS: 9002-88-4): 1%; Binder (PVDF)(CAS: 24987-79-9): 1%; Binder (Carboxymethyl cellulose)(CAS: 9004-32-4): 1%; Binder (Styrene-butadiene rubber 1500)(CAS: 9003-55-8): 1%; Conductive agent (Carbon Black)(CAS: 1333-86-4): 1%
-------------------------------------	---



Terms of the Using of the Report

1. According to the needs of the report, the company requires the commissioner to provide real and complete samples and information (see the report belt ★). The company does not assume any consequences caused by false, misleading, concealment, and major omissions due to the entrusted party. For example, when the chemical information submitted by the commissioner, the changes in authoritative databases and related policies affect the conclusion of this report, this report automatically fails. In this report, the data is only responsible for the commissioner's inspection samples. It is not applicable to products of the same batch, the same specifications or the same brand other than the test sample. , Correction and rationality of the process or process. The accuracy of the information of the sample component information shall be responsible for the commissioner.
2. The data source of this report is based on the relevant materials and information submitted by the client, the test results of international authoritative databases, laboratories and the current relevant knowledge of the company. We try our best to ensure the correctness of all information during the audit. However, due to the diversity of information sources and the limitations of the Company's knowledge, users of this report should make further judgments on the reasonableness of relevant information based on the purpose of use.
3. This report will be effective only after it is signed by the inspector, approver and stamped by our company.
4. Our company guarantees the objectivity and fairness of this report, and carries out confidentiality obligations on business secrets such as business information, technical documents and so on.
5. This report does not consider the differences between countries and operators.
6. The partly duplicating of this report is prohibited without the written approver.
7. The report is invalid when anything of the following happens-illegal transfer, embezzlement, imposture, modification or tampering in any media form. The inspection report is limited to the use of the commissioner. The client transfer the inspection report to any loss caused by any third party use. The company will not bear any responsibility.
8. If the entrusting party has objections to the inspection report, it shall submit a written objection to the company within 15 days from the date of receiving the report. If there is no written objection if the overdue does not propose a written objection, it shall be deemed to have no objection.
9. Due to force majeure, national legal policies, administrative mandatory behavior or judicial compulsory behavior, the inspection samples provided by the commissioner are damaged and lost, resulting in inspection reports that cannot be issued, or caused any losses and costs of the client, the company will not be liable for compensation.



Safety Data Sheet

Li-ion Rechargeable Battery Pack

LSV-V201B-WUS

Version : V2.0.0.2
Report No. : HGBZ2404JGF1-R1
Creation Date : 2024/04/22
Revision Date : 2024/04/23

*According to GHS (Tenth Revised Edition)

1 Identification

Product identifier

Product Name	Li-ion Rechargeable Battery Pack LSV-V201B-WUS
Product Model	LSV-V201B-WUS
CAS No.	Not applicable
EC No.	Not applicable
Molecular Formula	Not applicable
Product Picture	

Recommended use of the product and restrictions on use

Relevant identified uses	Please consult manufacturer.
Uses advised against	Please consult manufacturer.

Details of the supplier

Applicant Name	Suzhou Lishen Energy Science & Technology Co.,Ltd.
Applicant Address	Room 301-1, No. 4 plant , No. 588 Wutaishan Road, SND, Suzhou, China
Applicant Post Code	215000
Applicant Telephone	0512-67540093
Applicant Fax	0512-67540093
Applicant E-mail	xwh@lishenny.com
Supplier Name	Suzhou Lishen Energy Science & Technology Co.,Ltd.
Supplier Address	Room 301-1, No. 4 plant , No. 588 Wutaishan Road, SND, Suzhou, China
Supplier Post Code	215000
Supplier Telephone	0512-67540093
Supplier Fax	0512-67540093
Supplier E-mail	xwh@lishenny.com

Emergency phone number

Emergency phone number	0512-67540093
------------------------	---------------

2 Hazard(s) identification

Hazard classification according to GHS

The product meets the definition of "article". In the Globally Harmonized Chemical Classification and Labeling System (GHS), the "articles" defined by the US Occupational Safety and Health Administration "Hazard Communication Standard" (29 CFR 1910.1200) or similar definitions do not fall within the scope of this system. [Rev.10 (2023) Part 1.3.2.1.1].According to GHS system (10th revised edition), not classified as a hazardous chemical.

GHS Label elements

Hazard pictograms	Not applicable
Signal word	Not applicable

Hazard statements

Hazard statements	Not applicable
-------------------	----------------

Precautionary statements

◆ Prevention

Prevention	Not applicable
------------	----------------

◆ Response

Response	Not applicable
----------	----------------

◆ Storage

Storage	Not applicable
---------	----------------

◆ Disposal

Disposal	Not applicable
----------	----------------

Hazard description

◆ Physical and chemical hazards

	When the outer enclosure and safety circuits have been compromised or have been significantly damaged, it is likely to contain substantial electrical charge and can cause injury or death if mishandled. Mechanical damage can lead to danger. Battery products exposed to high temperature conditions, may produce heat out of control, causing fire.
--	---

◆ Health hazards

Inhaled	According to the material form, it is not the normal way of contacting.
Ingestion	Accidental ingestion of the product may be harmful to the health of the individual.
Skin Contact	No harm in general situation.
Eye	This product may cause temporary discomfort following direct contact with the eye.

◆ Environmental hazards

	Please refer to 12th chapter of SDS.
--	--------------------------------------

3 Composition/information on ingredients

Substance/mixture

	Mixture
--	---------

Component	CAS No.	EC No.	Concentration (Volume or weight percent, %)
-----------	---------	--------	---

Nickel cobalt manganese lithium oxide	182442-95-1	695-690-9	41
Graphite	7782-42-5	231-955-3	22
Electrolyte (Lithium hexafluorophosphate)	21324-40-3	244-334-7	16
Copper	7440-50-8	231-159-6	11
Aluminium	7429-90-5	231-072-3	5
Dissepiment (polyethylene)	9002-88-4	618-339-3	1
Binder (PVDF)	24937-79-9	607-458-6	1
Binder (Carboxymethyl cellulose)	9004-32-4	618-378-6	1
Binder (Styrene-butadiene rubber 1500)	9003-55-8	618-370-2	1
Conductive agent (Carbon Black)	1333-86-4	215-609-9	1

4 First-aid measures

Description of first aid measures

General advice	Immediate medical attention is required. Show this safety data sheet (SDS) to the doctor in attendance.
Eye contact	Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician if feel uncomfortable.
Skin contact	No harm in general situation. First aid is not needed.
Ingestion	Never give anything by mouth to an unconscious person. Call a physician immediately.
Inhalation	Move victim into fresh air. If breathing is difficult, give oxygen and consult a physician immediately.
Protecting of first-aiders	Ensure that medical personnel are aware of the substance involved. Take precautions to protect themselves and prevent spread of contamination.

Most important symptoms/effects, acute and delayed

1	Please see section 11.
---	------------------------

Indication of any immediate medical attention and special treatment needed

1	Treat symptomatically.
2	Symptoms may be delayed.

5 Fire-fighting measures

Extinguishing media

Suitable extinguishing media	Please use lithium battery fire extinguisher.
Unsuitable extinguishing media	No information available.

Specific hazards arising from the substance or mixture

1	Development of hazardous combustion gases or vapor possible in the event of fire.
2	May expansion or decompose explosively when heated or involved in fire.

Special protective equipment and precautions for fire-fighters

1	As in any fire, wear self-contained breathing apparatus (MSHA/NIOSH approved or equivalent) and full
---	---

	protective gear.
2	Fight fire from a safe distance, with adequate cover.
3	Prevent fire extinguishing water from contaminating surface water or the ground water system.

6 Accidental release measures

Personal precautions, protective equipment and emergency procedures

1	Ensure adequate ventilation. Remove all sources of ignition. Take precautionary measures against static discharges.
2	Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.
3	Use personal protective equipment, do not breathe dust/fume.

Environmental precautions

1	Prevent further leakage or spillage if safe to do so.
2	Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up

1	Cut off the source of the leak as much as possible.
2	Keep leaks in a ventilated place.
3	Isolation of contaminated areas and restrictions on access.
4	It is recommended that emergency personnel wear dust masks.
5	Collect the spill with a clean shovel and place it in a clean, dry, loosely closed container and move the container away from the leak.
6	Adhered or collected material should be promptly disposed of, in accordance with appropriate laws and regulations.

7 Handling and storage

Precautions for safe handling

1	Handling is performed in a well ventilated place.
2	Wear suitable protective equipment.
3	Avoid contact with skin and eyes.
4	Keep away from heat/sparks/open flames/ hot surfaces.

Conditions for safe storage, including any incompatibilities

1	Keep containers tightly closed.
2	Keep containers in a dry, cool and well-ventilated place.
3	Keep away from heat/sparks/open flames/hot surfaces.
4	Store away from incompatible materials and foodstuff containers.

8 Exposure controls/personal protection

Control parameters

Component	Country/Region	Limit value - Eight hours		Limit value - Short term	
		ppm	mg/m ³	ppm	mg/m ³
Graphite	USA - OSHA	-	15	-	-
	South Korea	-	2	-	-

	Ireland	-	10	-	-
	Germany (DFG)	-	4	-	-
	Denmark	-	2.5	-	5
	Australia	-	3 (4)	-	-
	USA-ACGIH	-	2	-	-
Copper	The Netherlands	-	0.1	-	-
	Poland	-	0.2	-	-
	Latvia	-	0.5	-	1
	Germany (DFG)	-	0.01	-	0.02
Aluminium	USA - OSHA	-	15	-	-
	South Korea	-	10	-	-
	Ireland	-	1	-	-
	Germany (DFG)	-	4	-	-
	Denmark	-	5	-	10
	Australia	-	10	-	-
	USA-ACGIH	-	1	-	-
Conductive agent (Carbon Black)	USA - OSHA	-	3.5	-	-
	South Korea	-	3.5	-	-
	Ireland	-	3.5	-	7
	France	-	3.5	-	-
	Denmark	-	3.5	-	7
	Australia	-	3	-	-
	USA-ACGIH	-	3	-	-

◆ Biological limit values

Component	Standard	Biological monitoring index	Biological limits value	Sampling time	Remark
Electrolyte (Lithium hexafluorophosphate)	SCOEL(EU)	Fluorine/urine	8mg/L	end of shift	

◆ Monitoring methods

1	EN 14042 Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents.
2	GBZ/T 300 series standard Determination of toxic substances in workplace air.

| Engineering controls

1	Ensure adequate ventilation, especially in confined areas.
2	Ensure that eyewash stations and safety showers are close to the workstation location.
3	Set up emergency exit and necessary risk-elimination area.
4	Handle in accordance with good industrial hygiene and safety practice.

| Personal protection equipment

General requirement	No special requirements, please see the description below.
Eye protection	In general situation, eye protection is not needed. In the production process, when contacting with vapour or dust, tightly fitting safety goggles.
Hand protection	In general situation, hand protection is not needed.
Respiratory protection	In general situation, respiratory protection is not needed. If exposure limits are exceeded or if irritation or other symptoms are experienced, wear dust proof mask or gas defence mask.
Skin and body protection	In general situation, skin and body protection are not needed.

9 Physical and chemical properties

Physical and chemical properties

Physical state	Solid (see picture for details)
Colour	No information available
Odor	No special odor
Odor threshold	No information available
pH	No information available
Melting point/freezing point(°C)	No information available
Initial boiling point and boiling range(°C)	No information available
Flash point(Closed cup,°C)	Not applicable
Evaporation rate	Not applicable
Flammability	Not flammable
Upper/lower explosive limits[%(v/v)]	Upper limit : No information available ; Lower limit : No information available
Vapor pressure	Not applicable
Relative vapour density(Air = 1)	Not applicable
Relative density(Water=1)	No information available
Solubility	Insoluble in water
n-octanol/water partition coefficient	No information available
Auto-ignition temperature(°C)	No information available
Decomposition temperature(°C)	No information available
Kinematic viscosity	Not applicable
Particle characteristics	No information available

10 Stability and reactivity

Stability and reactivity

Reactivity	Contact with incompatible substances can cause decomposition or other chemical reactions.
Chemical stability	Stable under proper operation and storage conditions.
Possibility of hazardous reactions	No information available.
Conditions to avoid	Incompatible materials, heat, flame and spark.

Incompatible materials	Oxidants, halogen, interhalogen and mercury.
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11

Toxicological information

|

Acute toxicity

Component	LD ₅₀ (oral)	LD ₅₀ (dermal)	LC ₅₀ (inhalation,4h)
Binder (Carboxymethyl cellulose)	27000mg/kg(Rat)	> 2000mg/kg(Rabbit)	> 5.8mg/L(Rat)
Conductive agent (Carbon Black)	> 15400mg/kg(Rat)	> 3000mg/kg(Rabbit)	No information available

|

Carcinogenicity

Component	List of carcinogens by the IARC Monographs	Report on Carcinogens by NTP
Nickel cobalt manganese lithium oxide	Category 1	Category K
Graphite	Not Listed	Not Listed
Electrolyte (Lithium hexafluorophosphate)	Not Listed	Not Listed
Copper	Not Listed	Not Listed
Aluminium	Not Listed	Not Listed
Dissepiment (polyethylene)	Category 3	Not Listed
Binder (PVDF)	Not Listed	Not Listed
Binder (Carboxymethyl cellulose)	Not Listed	Not Listed
Binder (Styrene-butadiene rubber 1500)	Category 3	Not Listed
Conductive agent (Carbon Black)	Category 2B	Not Listed

|

Others

Li-ion Rechargeable Battery Pack LSV-V201B-WUS	
Skin corrosion/irritation	Based on available data, the classification criteria are not met
Serious eye damage/irritation	Based on available data, the classification criteria are not met
Skin sensitization	Based on available data, the classification criteria are not met
Respiratory sensitization	Based on available data, the classification criteria are not met
Reproductive toxicity	Based on available data, the classification criteria are not met
STOT-single exposure	Based on available data, the classification criteria are not met
STOT-repeated exposure	Based on available data, the classification criteria are not met
Aspiration hazard	Based on available data, the classification criteria are not met
Germ cell mutagenicity	Based on available data, the classification criteria are not met

12

Ecological information

|

Acute aquatic toxicity

Component	Fish	Crustaceans	Algae
Graphite	LC ₅₀ : 100mg/L (96h)(Fresh water fish)	No information available	No information available
Copper	LC ₅₀ : 0.665mg/L (96h)(Fish)	EC ₅₀ : 0.02mg/L (48h)(Daphnia magna)	ErC ₅₀ : 7.9mg/L (96h)(Freshwater algae)
Binder (Carboxymethyl cellulose)	No information available	EC ₅₀ : 87.3mg/L (48h)(Daphnia magna)	No information available
Aluminium	LC ₅₀ : 1.55mg/L (96h)(Fish)	No information available	No information available
Conductive agent (Carbon Black)	LC ₅₀ : > 1000mg/L (96h)(Fish)	No information available	ErC ₅₀ : > 10000mg/L (72h)(Algae)
Electrolyte (Lithium hexafluorophosphate)	LC ₅₀ : 68mg/L (96h)(Fresh water fish)	No information available	No information available

Chronic aquatic toxicity

Component	Fish	Crustaceans	Algae
Electrolyte (Lithium hexafluorophosphate)	NOEC : 3.1mg/L(Fish)	No information available	No information available

Persistence and degradability

Component	Persistence (water/soil)	Persistence (air)
Graphite	Low	Low
Dissepiment (polyethylene)	Low	Low

Bioaccumulative potential

Component	Bioaccumulative potential	Comments
Graphite	Low	Log Kow=0.5294
Dissepiment (polyethylene)	Low	Log Kow=1.2658

Mobility in soil

Component	Mobility in soil	Soil Organic Carbon-Water Partitioning Coefficient (Koc)
Graphite	Low	23.74
Dissepiment (polyethylene)	Low	14.3

Results of PBT and vPvB assessment

Component	Results of PBT and vPvB assessment [according to (EC) No 1907/2006]
Nickel cobalt manganese lithium oxide	No information available
Graphite	Not applicable
Electrolyte (Lithium hexafluorophosphate)	Not applicable
Copper	Not applicable

Aluminium	Not applicable
Dissepiment (polyethylene)	No information available
Binder (PVDF)	No information available
Binder (Carboxymethyl cellulose)	No information available
Binder (Styrene-butadiene rubber 1500)	No information available
Conductive agent (Carbon Black)	Not PBT/vPvB

13 Disposal considerations

Disposal considerations

Waste chemicals	Before disposal should refer to the relevant national and local laws and regulation. Recommend the use of incineration disposal.
Contaminated packaging	Containers may still present chemical hazard when empty. Keep away from hot and ignition source of fire. Return to supplier for recycling if possible.
Disposal recommendations	Refer to section waste chemicals and contaminated packaging.

14 Transport information

Label

Transporting Label	Not applicable
--------------------	----------------

IMDG-CODE

IMDG-CODE	Lithium batteries comply with the technical requirements of Section 3.3.1 SP188
-----------	---

ICAO/IATA-DGR

IATA-DGR	Lithium batteries comply with Packing Instruction 965 Part IB.
----------	--

UN-ADR

UN-ADR	Lithium batteries comply with the technical requirements of Section 3.3.1 SP188
--------	---

15 Regulatory information

International chemical inventory

Component	EC inventory	TSCA	DSL	IECSC	NZIoC	PICCS	KECI	AIICS	ENCS
Nickel cobalt manganese lithium oxide	×	✓	✓	✓	×	×	✓	×	×
Graphite	✓	✓	✓	✓	✓	✓	✓	✓	×
Electrolyte (Lithium hexafluorophosphate)	✓	✓	×	✓	×	✓	✓	✓	✓
Copper	✓	✓	✓	✓	✓	✓	✓	✓	✓
Aluminium	✓	✓	✓	✓	✓	✓	✓	✓	✓
Dissepiment (polyethylene)	×	✓	✓	✓	✓	✓	✓	✓	✓

Binder (PVDF)	×	✓	✓	✓	✓	✓	✓	✓	✓
Binder (Carboxymethyl cellulose)	×	✓	✓	✓	✓	✓	✓	✓	✓
Binder (Styrene-butadiene rubber 1500)	×	✓	✓	✓	✓	✓	✓	✓	✓
Conductive agent (Carbon Black)	✓	✓	✓	✓	✓	✓	✓	✓	×

[EC inventory] European Inventory of Existing Commercial Chemical Substances

[TSCA] United States Toxic Substances Control Act Inventory

[DSL] Canadian Domestic Substances List

[IECSC] China Inventory of Existing Chemical Substances

[NZIoC] New Zealand Inventory of Chemicals

[PICCS] Philippines Inventory of Chemicals and Chemical Substances

[KECI] Korea Existing Chemicals Inventory

[AIICS] Australian. Inventory of Industrial Chemical (AIICS)

[ENCS] Japan Inventory of Existing & New Chemical Substances

Note:

“✓” Indicates that the substance included in the regulations.

“×” No data or not included in the regulations.

16 Other information

Information on revision

Creation Date	2024/04/22
Revision Date	2024/04/23
Reason for revision	-

Reference

- [1] IPCS: The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>.
- [2] IARC, website: <http://www.iarc.fr/>.
- [3] OECD: The Global Portal to Information on Chemical Substances, website: <https://www.echemportal.org/echemportal/>.
- [4] CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>.
- [5] NLM: ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>.
- [6] EPA: Integrated Risk Information System, website: <http://cfpub.epa.gov/iris/>.
- [7] U.S. Department of Transportation: ERG, website: <http://www.phmsa.dot.gov/hazmat/library/erg>.
- [8] Germany GESTIS-database on hazard substance, website: <http://gestis-en.itrust.de/>.

Abbreviations and acronyms

CAS	Chemical Abstracts Service	UN	The United Nations
PC-STEL	Short term exposure limit	OECD	Organization for Economic Co-operation and Development
PC-TWA	Time Weighted Average	IMDG-CODE	International Maritime Dangerous Goods CODE
MAC	Maximum Allowable Concentration	IARC	International Agency for Research on Cancer
DNEL	Derived No Effect Level	ICAO	International Civil Aviation Organization
PNEC	Predicted No Effect Concentration	IATA	International Air Transportation Association
NOEC	No Observed Effect Concentration	ACGIH	American Conference of Governmental Industrial Hygienists
LC ₅₀	Lethal Concentration 50%	NFPA	National Fire Protection Association
LD ₅₀	Lethal Dose 50%	NTP	National Toxicology Program
EC ₅₀	Effective Concentration 50%	PBT	Persistent, Bioaccumulative, Toxic
EC _x	Effective Concentration X%	vPvB	very Persistent, very Bioaccumulative
P _{OW}	Partition coefficient Octanol: Water	CMR	Carcinogens, mutagens or substances toxic to reproduction
BCF	Bioconcentration factor	RPE	Respiratory Protective Equipment
ED	Endocrine disruptor		

Disclaimer

This Safety Data Sheet (SDS) was prepared according to UN GHS (the 10th revised edition). The data included was derived from international authoritative database and provided by the enterprise. Other information was based on the present state of our knowledge. We try to ensure the correctness of all information. However, due to the diversity of information sources and the limitations of our knowledge, this document is only for user's reference. Users should make their independent judgment of suitability of this information for their particular purposes. We do not assume responsibility for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.