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Add: SAJ Innovation Park, No.9, Lizhishan Road, Science City, Guangzhou High-tech Zone, Guangdong, P.R.China.

Battery Safety Data Sheet

1 Product and Company Identification

1.1 Product identifier

B2-X-HVa-S series:

Product name: HIGH-VOLTAGE BATTERY

System Model:

B2-12.8-HV1-S, B2-12.8-HV2-S, B2-12.8-HV3-S, B2-12.8-HV4-S, B2-12.8-HV6-S

B2-19.2-HV1-S, B2-19.2-HV2-S, B2-19.2-HV3-S, B2-19.2-HV4-S, B2-19.2-HV6-S

B2-25.6-HV1-S, B2-25.6-HV2-S, B2-25.6-HV3-S, B2-25.6-HV4-S, B2-25.6-HV6-S

B2-32.0-HV1-S, B2-32.0-HV2-S, B2-32.0-HV3-S, B2-32.0-HV4-S, B2-32.0-HV6-S

B2-38.4-HV1-S, B2-38.4-HV2-S, B2-38.4-HV3-S, B2-38.4-HV4-S, B2-38.4-HV6-S

B2-44.8-HV1-S, B2-44.8-HV2-S, B2-44.8-HV3-S, B2-44.8-HV4-S, B2-44.8-HV6-S

B2-51.2-HV1-S, B2-51.2-HV2-S, B2-51.2-HV3-S, B2-51.2-HV4-S, B2-51.2-HV6-S

Battery module model

Module model ***BU-6.4-HV1-S*** use for battery system B2-X-HV1-S(X=12.8, 19.2, 25.6, 32.0, 38.4, 44.8 or 51.2)

Module model ***BU-6.4-HV2-S*** use for battery system B2-X-HV2-S(X=12.8, 19.2, 25.6, 32.0, 38.4, 44.8 or 51.2)

Module model ***BU-6.4-HV3-S*** use for battery system B2-X-HV3-S(X=12.8, 19.2, 25.6, 32.0, 38.4, 44.8 or 51.2)

Module model ***BU-6.4-HV4-S*** use for battery system B2-X-HV4-S(X=12.8, 19.2, 25.6, 32.0, 38.4, 44.8 or 51.2)

Module model ***BU-6.4-HV6-S*** use for battery system B2-X-HV6-S(X=12.8, 19.2, 25.6, 32.0, 38.4, 44.8 or 51.2)

Battery cell model:

Cell Model ***GSP50160119F*** use for BU-6.4-HV1-S,

Cell Model ***LF100LA*** use for BU-6.4-HV2-S,

Cell Model ***IFP50160116A-102Ah*** use for BU-6.4-HV3-S,

Cell Model ***DLP50160118*** use for BU-6.4-HV4-S,

Cell Model ***PF160-100A*** use for BU-6.4-HV6-S

1.2 Relevant identified uses of the substance or mixture and uses advised Against

1.2.1 Relevant identified uses

Lithium-Ion battery

1.2.2 Uses advised against

Not available

1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier: Guangzhou Sanjing Electric Co., Ltd.

Address: No.9, Lizhishan Road, Science City, Guangzhou High-tech Zone, Guangdong, P.R.China

Telephone: 03 8353 1112 (AU)

Email: info@.saj-electric.com.au

Further Information

High Voltage Battery: Lithium-Ion (Li-ion)

Voltage:

Rated Voltage 3.2V for Cell Model ***GSP50160119F***

Rated Voltage 3.2V for Cell Model ***LF100LA*** use for BU-6.4-HV2-S,

Rated Voltage 3.2V for Cell Model ***IFP50160116A-102Ah*** use for BU-6.4-HV3-S,

Rated Voltage 3.2V for Cell Model ***DLP50160118*** use for BU-6.4-HV4-S,

Rated Voltage 3.2V for Cell Model ***PF160-100A*** use for BU-6.4-HV6-S

Rated Voltage 64V for battery module model ***BU-6.4-HV1-S,***

Rated Voltage 64V for battery module model ***BU-6.4-HV2-S,***

Rated Voltage 64V for battery module model ***BU-6.4-HV3-S,***

Rated Voltage 64V for battery module model ***BU-6.4-HV4-S,***

Rated Voltage 64V for battery module model ***BU-6.4-HV6-S***

Rated Voltage *128V for battery system* ***B2-12.8-HV1-S, B2-12.8-HV2-S, B2-12.8-HV3-S, B2-12.8-HV4-S, B2-12.8-HV6-S***

Rated Voltage *192V for battery system* ***B2-19.2-HV1-S, B2-19.2-HV2-S, B2-19.2-HV3-S, B2-19.2-HV4-S, B2-19.2-HV6-S***

Rated Voltage *256V for battery system* ***B2-25.6-HV1-S, B2-25.6-HV2-S, B2-25.6-HV3-S, B2-25.6-HV4-S, B2-25.6-HV6-S***

Rated Voltage *320V for battery system* ***B2-32.0-HV1-S, B2-32.0-HV2-S, B2-32.0-HV3-S, B2-32.0-HV4-S, B2-32.0-HV6-S***

Rated Voltage *384V for battery system* ***B2-38.4-HV1-S, B2-38.4-HV2-S, B2-38.4-HV3-S, B2-38.4-HV4-S, B2-38.4-HV6-S***

Rated Voltage 448V for battery system ***B2-44.8-HV1-S, B2-44.8-HV2-S, B2-44.8-HV3-S, B2-44.8-HV4-S, B2-44.8-HV6-S***

Rated Voltage *512V for battery system* ***B2-51.2-HV1-S, B2-51.2-HV2-S, B2-51.2-HV3-S, B2-51.2-HV4-S, B2-51.2-HV6-S***

Anode (negative electrode): based on intercalation graphite

Cathode (positive electrode): based on lithiated metal oxide (LFP)

1.4 Emergency telephone number

Company: SAJ DIGITAL ENERGY AUSTRALIA PTY LTD

Add: L18 727 COLLINS ST TOWER 4 DOCKLANDS VIC 3008

Contact Person Name: Alan Li

Contact Person Number: 03 8353 1112 M: 1800888725

AU-wide emergency number: 400-9600112

Here is a link to more contact information, which includes for other offices around the world:

https://au.saj-electric.com

General remark

- This Safety Data Sheet is provided as a service to our customers. This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only.
- It should not therefore be construed as guaranteeing any specific property of the product.
- The information and recommendations set forth are made in good faith and believed to be accurate as of the date of preparation. Guangzhou Sanjing Electric Co., Ltd. makes no warranty, expressed or implied, with respect to this information and disclaims all liabilities from reliance on it.

2 Hazards Identification

2.1 Hazards Identification

Route(s) of Entry

There is no hazard when the measures for handling and storage are followed.

Signs and Symptoms of Exposure

In case of cell damage, possible release of dangerous substances and a flammable gas mixture.

Carcinogenicity (NTP): Not listed

Carcinogenicity (IARC): Not listed

Carcinogenicity (OSHA): Not listed

Special hazards for human health and environment

There is no hazard when the measures for handling and storage are followed.

In case of cell damage, possible release of dangerous substances and a flammable gas mixture.

2.2 Hazards Identification

Explication of special hazards for human health and environment

Not classified as dangerous according to directive 1999/45/EEC

There is no hazard when the measures for handling and storage are followed.

In case of cell damage, possible release of dangerous substances and a flammable gas mixture.

3 Composition/Information on Ingredients

3.1 Substances

Not applicable

3.2 Mixtures

Not applicable

* No classification is presented since the product is legally an article which is subject to EU CLP and/or to 67/548/EEC

3.3 Hazardous components

Chemical Composition	Molecular formula	CAS NO.	Content %
Battery module: BU2-6.4-HV1-S			
Lithium Iron Phosphate	LiFePO4	15365-14-7	48%
Graphite	C24X12	7782-42-5	21.2%
Ethylene Carbonate	C3H4O3	96-49-1	4.71%
Ethyl Methyl Carbonate	C4H8O3	623-53-0	0.785%
Diethyl Carbonate	C5H10O3	105-58-8	6.28%
Propylene Carbonate	C4H6O3	108-32-7	2.355%
Lithium Hexafluorophosphate	LiPF6	21324-40-3	1.57%
Polypropylene	(C3H6)n	9003-07-0	0.8%
Copper	Cu	7440-50-8	8.7%
Aluminium	Al	7429-90-5	5.6%
Chemical Composition	Molecular formula	CAS NO.	Content %
Battery module: BU2-6.4-HV2-S			
Lithium Iron Phosphate	LiFePO4	15365-14-7	49%
Lithium Hexafluorophosphate	LiPF6	21324-40-3	3%
Graphite	C	7782-42-5	24%
Aluminum	Al	7429-90-5	6%
Copper	Cu	7440-50-8	13%
Polyethylene	(C2H4)n	9002-88-4	5%
Chemical Composition	Molecular formula	CAS NO.	Content %
Battery module: BU2-6.4-HV3-S			
Lithium iron phosphate	LiFePO4	15365-14-7	36-39
Carbon black	C		0.2-0.4
Copper	Cu		6-7
Graphite	C		16-19

Aluminum	Al		13-14
Ethylene carbonate	C3H4O3		8-10
EthylMethyl Carbonate	C4H8O3		10-12
Lithium-hexafluorophosphate	LiPF6		2-3
polyvinylidene fluoride	(C2H2F2)n		0.7-1.1
Polyethylene	(C2H4)n		2-3
Lead	Pb	7439-92-1	Not Detected
Cadmium	Cd	7440-43-9	Not Detected
Mercury	Hg	7439-97-6	Not Detected
Chemical Composition	Molecular formula	CAS NO.	Content %
Battery module: BU2-6.4-HV4-S			
Lithium iron phosphate	LiFePO4	15365-14-7	35-40
Carbon black	C	7782-42-5	17-22
Lithium-hexafluorophosphate	LiPF6	21324-40-3	18-25
Copper	Cu	7440-50-8	5-8
Aluminum	Al	7429-90-5	4-6
Chemical Composition	Molecular formula	CAS NO.	Content %
Battery module: BU2-6.4-HV6-S			
Lithium Iron Phosphate	LiFePO4	15365-14-7	24
Graphite	C	7782-42-5	10 - 30
Lithium hexafluorophosphate	LiPF6	21324-40-3	23
Copper	Cu	7440-50-8	7-13
Aluminium	Al	7429-90-5	5-10
Nickel	Ni	7440-02-0	1-5

Full text of each relevant R phrase can be found in “16.4 Other Information EU”.

Further Information

For information purposes:

(*) Main ingredients: Lithium hexafluorophosphate, organic carbonates

Because of the cell structure the dangerous ingredients will not be available if used properly.

During charge process a lithium graphite intercalation phase is formed.

Mercury content: Hg < 0.1mg/kg

Cadmium content: Cd < 1mg/kg

Lead content: Pb: < 10mg/kg

4 First Aid Measures

4.1 Description of first aid measures

General

Not a health hazard.

Inhalation

Not a health hazard.

Skin contact

Not a health hazard.

Eye contact

Not a health hazard.

Ingestion

Get immediate medical advice/attention.

IF EXPOSURE TO INTERNAL MATERIALS WITHIN CELL DUE TO DAMAGED OUTER CASING, THE FOLLOWING ACTIONS ARE RECOMMENDED;

General information

- The following first aid measures are required only in case of exposure to interior battery components after damage of the external battery casing.
- Undamaged, closed cells do not represent a danger to the health.

After inhalation

Ensure of fresh air. Consult a physician.

After contact with skin

In case of contact with skin wash off immediately with plenty of water. Consult a physician.

After contact with eyes

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Seek medical treatment by eye specialist.

After ingestion

- Drink plenty of water.
- Call a physician immediately.

4.2 Most important symptoms and effects, both acute and delayed

– Not available

4.3 Indication of any immediate medical attention and special treatment needed

– Notify medical personnel of contaminated situations and have them take appropriate protective measures.

– If exposed or concerned, get medical attention/advice.

5 Fire Fighting Measures

5.1 Suitable extinguishing media

Cold water and dry powder in large amount are applicable.

Use metal fire extinction powder or dry sand if only few cells are involved.

5.2 Special hazards arising from the chemical

May form hydrofluoric acid if electrolyte comes into contact with water.

In case of fire, the formation of the following flue gases cannot be excluded: Hydrogen fluoride (HF), Carbon monoxide and carbon dioxide.

5.3 Protective equipment and precautions for firefighters

Wear self-contained breathing apparatus and protective suit.

Additional information:

If possible, remove cell(s) from fire fighting area. If heated above 125°C, cell(s) can explode/vent. Cell is not flammable but internal organic material will burn if the cell is incinerated.

6 Accidental Release Measures

6.1 Personal precautions

Use personal protective clothing.

Avoid contact with skin, eyes and clothing. Avoid breathing fume and gas.

6.2 Environmental precautions

Do not discharge into the drains/surface waters/groundwater.

Methods for cleaning up/taking up

Take up mechanically and send for disposal.

7 Handling and Storage

7.1 Handling

Advice on safe handling:

- Avoid short circuiting the cell.

- Avoid mechanical damage of the cell. Do not open or disassemble.

Advice on protection against fire and explosion:

- Keep away from open flames, hot surfaces and sources of ignition.

7.2 Storage

Requirements for storage rooms and vessels

Storage at room temperature at 15°C~25°C，approx. 20-30% of the nominal capacity.

Keep in closed original container.

8 Exposure Controls/Personal Protection Exposure limit values Exposure limits

Additional advice on limit values

During normal charging and discharging there is no release of product.

Occupational exposure controls

No specific precautions necessary.

Protective and hygiene measures

When using do not eat, drink or smoke. Wash hands before breaks and after work.

Respiratory protection

No specific precautions necessary.

Hand protection

No specific precautions necessary.

Eye protection

No specific precautions necessary.

Skin protection

No specific precautions necessary.

9 Physical and Chemical Properties

Appearance

Form: Solid

Color: Various

Odor: Odorless

Important health, safety and environmental information

Test method

pHValue: n.a.

Flash point: n.a

Lower explosion limits: n.a.

Vapour pressure: n.a.

Density: n.a.

Water solubility: Insoluble

Ignition temperature: n.a.

10 Stability and Reactivity

10.1 Reactivity

None

10.2 Stability

Stable

10.3 Possibility of hazardous reactions

None during normal operating conditions.

10.4 Conditions to avoid

Keep away from open flames, hot surfaces and sources of ignition. Do not puncture, crush or incinerate.

10.5 Materials to avoid

No materials to be especially mentioned.

10.6 Hazardous decomposition products

In case of open cells, there is the possibility of hydrofluoric acid and carbon monoxide release.

10.7 Possibility of Hazardous Reactions

Will not occur.

10.8 Additional information

No decomposition if stored and applied as directed.

11 Toxicological Information

11.1 Acute toxicity

- Oral

– This product does not elicit toxicological properties during routine handling and use.

- - Dermal

– This product does not elicit toxicological properties during routine handling and use.

- - Inhalation

– This product does not elicit toxicological properties during routine handling and use.

11.2 Skin corrosion/irritation

No irritation.

- If the cells are opened through misuse or damage, discard immediately. Internal components of cell are irritants and sensitizers.

11.3 Serious eye damage/irritation

Not available

11.4 Respiratory sensitization

Not available

11.5 Skin sensitization

No sensitization.

- If the cells are opened through misuse or damage, discard immediately. Internal components of cell are irritants and sensitizers.

11.6 Germ cell mutagenicity

Not available

11.7 Carcinogenicity

Not available

11.8 Reproductive toxicity

This product does not elicit toxicological properties during routine handling and use.

11.9 Specific target organ toxicity (single exposure):

Not available

11.10 Specific target organ toxicity (repeated exposure):

Not available

11.11 Aspiration hazard

Not available

11.12 Other Information

Not available

11.13 Empirical data on effects on humans

If appropriately handled and if in accordance with the general hygienic rules, no damages to health have become known.

12 Ecological Information

12.1 Toxicity

12.1.1 Fish

Not available

12.1.2 Invertebrate

Not available

12.1.3 Algae

Not available

12.2 Persistence and degradability

12.2.1 Persistence

Not available

12.2.2 Degradability

Not available

12.3 Bioaccumulative potential

12.3.1 Bioaccumulation

Some materials within the cell are bioaccumulative. Under normal conditions, these materials are contained and pose no risk to persons or the surrounding environment.

12.3.2 Biodegradability

Not available

12.4 Mobility in soil

Not available

12.5 Results of PBT and vPvB assessment

Not available

12.6 Other adverse effects

Not available

12.7 Further information

Ecological injuries are not known or expected under normal use. Do not flush into surface water or sanitary sewer system.

13 Disposal Considerations

13.1 Advice on disposal

For recycling consult manufacturer.

13.2 Contaminated packaging

Disposal in accordance with local regulations.

14 Transport Information

14.1 US DOT 49 CFR 172.101

Proper shipping name

Lithium-ion batteries

ID Number: UN3480

Hazard Class or Division: 9

Packing group: II

Label: 9

14.2 Land transport (ADR/RID)

UN number: 3480

ADR/RID class: 9

Classification code: M4

Warning plate

Hazard label: 9

ADR/RID packing group: II

Limited quantity: LQ 0

Tunnel restriction code: E

Description of the goods Lithium-ion batteries

14.3 Other applicable information (land)

- LQ 0: No exemption under the conditions of 3.4.2.
- Transport category: 2
- Marine transport

UN number: 3480

IMDG code: 9

Marine pollutant: No

Hazard label: 9

IMDG packing group: II

EmS: F-A, S-I

Limited quantity: None

Description of the goods Lithium-ion batteries

15 Regulatory Information

Regulatory information

Labeling

Hazardous components which must be listed on the label

As an article the product does not need to be labeled in accordance with EC directives or respective national laws.

EU regulatory information

1999/13/EC (VOC): 0 %

16 Other Information

16.1 Indication of changes

None

16.2 Training advice

Not available

16.3 Other Information

Hazardous Materials Information Label (HMIS)

- Health: 0
- Flammability: 0
- Physical Hazard: 0

NFPA Hazard Ratings

- Health: 0
- Flammability: 0
- Reactivity: 0 Unique Hazard

16.4 Other Information

- Full text of R-phrases referred to under sections 2 and 3
- R10 Flammable.
- R20/22 Harmful by inhalation and if swallowed.
- R22 Harmful if swallowed.
- R34 Causes burns.
- R40 Limited evidence of a carcinogenic effect.
- R43 May cause sensitization by skin contact.
- R48/23 Toxic: danger of serious damage to health by prolonged exposure through inhalation.
- R49 May cause cancer by inhalation.
- R50 Very toxic to aquatic organisms.
- R53 May cause long-term adverse effects in the aquatic environment.

16.5 Further Information

- Data of sections 4 to 8, as well as 10 to 12, do not necessarily refer to the use and the regular handling of the product (in this sense consult package leaflet and expert information), but to release of major amounts in case of accidents and irregularities. The information describes exclusively the safety requirements for the product(s) and is based on the present level of our knowledge. This data does not constitute a guarantee for the characteristics of the product(s) as defined by the legal warranty regulations. "(n.a. = not applicable; n.d. = not determined)"
- The data for the hazardous ingredients were taken respectively from the last version of the subcontractor’s safety data sheet.