Safety Data Sheet

Issue Date: 16-Dec-2021 **Revision Date:** 20-Dec-2021 **Version** 1

Section 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product Identifier

SDS # JIR-001-EU
Product Code DVA001
Product Name Lithium Ion Battery

1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Electrochemical energy storage device: battery cell/module/pack/system

1.3. Details of the Supplier of the Safety Data Sheet

Supplier
Jireh Industries, Ltd.
53158 Range Road 224
Ardrossan, Alberta
Canada
T8E2k4

For further information, please contact
Contact Point Jireh Industries, Ltd. 780-922-4534
Email Address PTorstensen@jireh.com

1.4. Emergency telephone number

Emergency Telephone (24 hr) INFOTRAC 1-352-323-3500 (International)
1-800-535-5053 (North America)

Section 2: HAZARDS IDENTIFICATION

2.1. Classification of the Substance or Mixture

Regulation (EC) No 1272/2008

2.2. Label Elements

Product Identifier

This mixture is classified as not hazardous according to regulation (EC) 1272/2008 [GHS]

Signal Word
None

EUH210 - Safety data sheet available on request

2.3. Other Hazards

No information available

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2 MIXTURES

Chemical name	EC No	CAS No	Weight-%	Classification according to Regulation (EC) No. 1272/2008 [CLP]	REACH Registration Number
Lithium Manganese Oxide	Present	12057-17-9	Proprietary	Not determined	Not determined
Graphite	Present	7782-42-5	Proprietary	Not determined	Not determined
Lithium Hexafluorophosphate	Present	21324-40-3	Proprietary	Not determined	Not determined

Full text of H- and EUH-phrases: see section 16

This product does not contain candidate substances of very high concern at a concentration >=0.1% (Regulation (EC) No. 1907/2006 (REACH), Article 59)

Section 4: FIRST AID MEASURES

4.1. Description of First Aid Measures

General Advice The following information applies if the battery is mechanically, thermally, or electrically abused.

Eye Contact Flush with water for 30 minutes. Get immediate medical attention. Immediately flush eyes with water for 30 minutes while lifting the upper and lower lids. Get medical attention.

Skin Contact Flush affected area with lukewarm water for at least 30 minutes. If skin irritation persists, call a doctor.

Inhalation If symptoms are experienced, remove source of contamination or move victim to fresh air. Get medical attention.

Ingestion Do NOT induce vomiting. Call a physician or Poison Control Center.

4.2. Most Important Symptoms and Effects, Both Acute and Delayed

Symptoms A shorted lithium battery can cause thermal and chemical burns upon contact with the skin.

4.3. Indication of any Immediate Medical Attention and Special Treatment Needed

Notes to Physician Treat symptomatically.

Section 5: FIREFIGHTING MEASURES

5.1. Extinguishing Media

Suitable Extinguishing Media

Water. Dry chemical. Carbon dioxide (CO2). Foam.

Unsuitable Extinguishing Media

Not determined.

5.2. Special Hazards Arising from the Substance or Mixture

Battery may vent when subjected to excessive heat-exposing, fire, or over voltage condition.

Hazardous combustion products Carbon monoxide. Carbon dioxide (CO2). Decomposition products can include and are not limited to: Aldehydes, hydrogen sulfide, methyl mercaptan, dimethyl sulfide, and oxides of carbon, sulfur and phosphorus.

5.3. Advice for Firefighters

Wear self-contained breathing apparatus and protective suit. Use personal protective equipment as required.

Section 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal Precautions, Protective Equipment and Emergency Procedures

Personal Precautions

Use personal protective equipment as required. Ventilate affected area.

The material contained within the batteries is only expelled under abusive conditions.

For Emergency Responders

If the battery material is released, remove personnel from the area until fumes dissipate.

6.2. Environmental Precautions

See Section 12 for additional Ecological Information.

6.3. Methods and Material for Containment and Cleaning Up

Methods for Containment	Prevent further leakage or spillage if safe to do so.
Methods for Clean-Up	Use a shovel and cover battery with sand or vermiculite, place in an approved container, and dispose in accordance with section 13.

6.4. Reference to Other Sections

See Section 13: DISPOSAL CONSIDERATIONS.

Section 7: HANDLING AND STORAGE

7.1. Precautions for Safe Handling

Advice on Safe Handling

Do not expose battery or cell to extreme temperatures or fire. Do not disassemble, crush or puncture battery. Avoid mechanical or electrical abuse.

General Hygiene Considerations

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for Safe Storage, Including any Incompatibilities

Storage Conditions

Insulate positive and negative terminals to avoid short circuit. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat. Protect from direct sunlight.

7.3. Specific End Use(s)

Risk Management Methods (RMM)

The information required is contained in this Safety Data Sheet.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control Parameters

Chemical name	European Union	United Kingdom	France	Spain	Germany
Lithium Manganese Oxide 12057-17-9	-	TWA: 0.2 mg/m^3 TWA: 0.05 mg/m^3	-	TWA: 0.2 mg/m^3 TWA: 0.05 mg/m^3	TWA: 0.2 mg/m^3 TWA: 0.02 mg/m^3
Graphite 7782-42-5	-	STEL: 30 mg/m^3 STEL: 12 mg/m^3 TWA: 10 mg/m^3 TWA: 4 mg/m^3	TWA: 2 mg/m^3	TWA: 2 mg/m^3	TWA: 1.25 mg/m^3 TWA: 10 mg/m^3
Lithium Hexafluorophosphate 21324-40-3	-	-	-	-	TWA: 1 mg/m^3
Chemical name	**Italy**	**Portugal**	**Netherlands**	**Finland**	**Denmark**
Lithium Manganese Oxide 12057-17-9	TWA: 0.05 mg/m^3	TWA: 0.2 mg/m^3 TWA: 0.05 mg/m^3	TWA: 0.2 mg/m^3 TWA: 0.05 mg/m^3	TWA: 0.2 mg/m^3 TWA: 0.02 mg/m^3	TWA: 0.2 mg/m^3 TWA: 0.05 mg/m^3
Graphite 7782-42-5	-	TWA: 2 mg/m^3	-	TWA: 2 mg/m^3	TWA: 2.5 mg/m^3
Lithium Hexafluorophosphate 21324-40-3	-	TWA: 2.5 mg/m^3	-	-	TWA: 2.5 mg/m^3
Chemical name	**Austria**	**Switzerland**	**Poland**	**Norway**	**Ireland**
Lithium Manganese Oxide 12057-17-9	STEL 1.6 mg/m^3 TWA: 0.2 mg/m^3	TWA: 0.5 mg/m^3	TWA: 0.2 mg/m^3 TWA: 0.05 mg/m^3	TWA: 0.2 mg/m^3 TWA: 0.05 mg/m^3 STEL: 0.6 ppm STEL: 0.15 mg/m^3	TWA: 0.2 mg/m^3 TWA: 0.05 mg/m^3 STEL: 0.6 mg/m^3 STEL: 0.15 mg/m^3
Graphite 7782-42-5	STEL 10 mg/m^3 TWA: 5 mg/m^3	TWA: 2.5 mg/m^3 TWA: 5 mg/m^3	TWA: 4.0 mg/m^3 TWA: 1.0 mg/m^3	TWA: 5 mg/m^3 TWA: 2 mg/m^3 TWA: 10 mg/m^3 TWA: 4 mg/m^3 STEL: 10 mg/m^3 STEL: 4 mg/m^3 STEL: 20 mg/m^3 STEL: 8 mg/m^3	TWA: 2 mg/m^3 STEL: 6 mg/m^3
Lithium Hexafluorophosphate 21324-40-3	-	-	TWA: 2 mg/m^3	-	TWA: 2.5 mg/m^3 STEL: 7.5 mg/m^3

8.2. Exposure Controls

Engineering Controls Apply technical measures to comply with the occupational exposure limits.

Personal Protective Equipment

Eye/Face Protection Not necessary under conditions of normal use. In case of battery rupture or leakage, use safety goggles.

Hand Protection Not usually necessary under conditions of normal use.

Skin and Body Protection Not necessary under conditions of normal use. In case of battery rupture or leakage, wear rubber apron.

Respiratory Protection Not necessary under conditions of normal use. In case of battery venting or rupture, use a self contained full face respiratory mask.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on Basic Physical and Chemical Properties

Physical state Solid
Appearance Battery
Colour Not determined
Odour Odourless
Odour Threshold Not applicable

Property	Values	Remarks • Method
pH	Not applicable	
Melting point / freezing point	Not applicable	

Boiling point / boiling range	Not applicable
Flash point	Not applicable
Evaporation Rate	Not applicable
Flammability (Solid, Gas)	Not determined
Flammability Limit in Air	
Upper flammability or explosive limits	Not applicable
Lower flammability or explosive limits	Not applicable
Vapour Pressure	Not applicable
Vapour Density	Not applicable
Relative Density	Not applicable
Water Solubility	Insoluble in water
Solubility(ies)	Not determined
Partition Coefficient	Not applicable
Autoignition temperature	Not applicable
Decomposition temperature	Not determined
Kinematic viscosity	Not applicable
Dynamic Viscosity	Not applicable
Explosive Properties	Not determined
Oxidising Properties	Not applicable

Section 10: STABILITY AND REACTIVITY

10.1. Reactivity
Not reactive under normal conditions.

10.2. Chemical stability
Stable under normal conditions.

10.3. Possibility of Hazardous Reactions

Hazardous Polymerisation
Hazardous polymerisation does not occur.

Possibility of Hazardous Reactions
None under normal processing.

10.4. Conditions to Avoid
Heating, mechanical and electrical abuse.

10.5. Incompatible Materials
If leaked, forbidden to contact with strong oxidizers, mineral acids, strong alkalis, halogenated hydrocarbons.

10.6. Hazardous Decomposition Products
Under normal conditions, none known based on information supplied.

Section 11: TOXICOLOGICAL INFORMATION

11.1. Information on Toxicological Effects
Acute toxicity

Product Information
Inhalation, skin contact and eye contact are possible when the battery is opened. The following is based on exposure to internal contents.

Inhalation	Corrosive fumes will be very irritating to mucous membranes.
Eye Contact	Corrosive fumes will be very irritating to eyes.
Skin Contact	Corrosive fumes will be very irritating to skin.
Ingestion	Do not ingest.

Unknown Acute Toxicity

100 % of the mixture consists of ingredient(s) of unknown toxicity.

100 % of the mixture consists of ingredient(s) of unknown acute oral toxicity.
100 % of the mixture consists of ingredient(s) of unknown acute dermal toxicity.
100 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (gas).
100 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapour).
100 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (dust/mist).

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Graphite			> 2000 mg/m^3 (Rat) 4 h

Skin corrosion/irritation Not classified.

Serious eye damage/eye irritation Not classified.

Sensitisation Not classified.

Germ cell mutagenicity Not classified.

Carcinogenicity Not classified.

Reproductive toxicity Not classified.

STOT - single exposure Not classified.

STOT - repeated exposure Not classified.

Aspiration hazard Not classified.

Section 12: ECOLOGICAL INFORMATION

12.1. Toxicity

This article is expected to present a low environmental risk either because use and disposal are unlikely to result in a significant release of components to the environment or because those components that may be released are expected to have insignificant environmental impact.

Chemical name	Algae/aquatic plants	Fish	Crustacea
Graphite		100: 96 h Danio rerio mg/L LC50 semi-static	

12.2. Persistence and Degradability

Not determined.

12.3. Bioaccumulative Potential

There is no data for this product.

12.4. Mobility in Soil

Mobility

Not determined.

12.5. Results of PBT and vPvB Assessment

Not determined.

12.6. Other Adverse Effects

No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected.

Section 13: DISPOSAL CONSIDERATIONS

13.1. Waste Treatment Methods

Waste from residues/unused products Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated Packaging Improper disposal or reuse of this container may be dangerous and illegal.

Section 14: TRANSPORT INFORMATION

Note Please see current shipping documents for most up to date shipping information, including exemptions and special circumstances PLEASE NOTE: For transportation, one DVA001 battery is considered to be two 18V batteries each having a rating of 90Wh.

IMDG

14.1 UN number UN3480
14.2 Proper Shipping Name LITHIUM ION BATTERIES
14.3 Transport hazard class(es) 9

RID

14.1 UN/ID No UN3480
14.2 Proper Shipping Name LITHIUM ION BATTERIES
14.3 Transport hazard class(es) 9

ADR

14.1 UN number UN3480
14.2 Proper Shipping Name LITHIUM ION BATTERIES
14.3 Transport hazard class(es) 9

IATA

14.1 UN number UN3480
14.2 Proper Shipping Name LITHIUM ION BATTERIES
14.3 Transport hazard class(es) 9

Section 15: REGULATORY INFORMATION

15.1. Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture

France

Occupational Illnesses (R-463-3, France)

Chemical name	French RG number	Title
Graphite 7782-42-5	RG 16 RG 25	

European Union

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work **.**

Authorisations and/or restrictions on use:

This product does not contain substances subject to authorisation (Regulation (EC) No. 1907/2006 (REACH), Annex XIV) This product does not contain substances subject to restriction (Regulation (EC) No. 1907/2006 (REACH), Annex XVII)

Persistent Organic Pollutants

Not applicable

Ozone-depleting substances (ODS) regulation (EC) 1005/2009

International Inventories

Chemical name	TSCA	DSL/NDSL	EINECS/ELINCS	PICCS	ENCS	IECSC	AICS	KECL
Lithium Manganese Oxide 12057-17-9 (Proprietary)	X	-	X	-	-	-	-	-
Graphite 7782-42-5 (Proprietary)	X	X	X	X	-	X	X	X
Lithium Hexafluorophosphate 21324-40-3 (Proprietary)	X	X	X	X	X	X	X	X

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
PICCS - Philippines Inventory of Chemicals and Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
AICS - Australian Inventory of Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances

15.2. Chemical Safety Assessment

No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

Section 16: OTHER INFORMATION

Full text of H-Statements referred to under section 3

Not applicable

Legend

SVHC: Substances of Very High Concern for Authorisation:

Legend **Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	*	Skin designation

Classification Procedure

Calculation method

Issue Date: 16-Dec-2021

Revision Date: Not determined

Revision Note: New product.

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006, as amended by Commission Regulation (EU) 2015/830

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet