Safety Data Sheet

Issue Date: 16-Dec-2021

Revision Date: 16-Dec-2021

Version 1

1. IDENTIFICATION

Product identifier	
Product Name	Lithium Ion Battery
Other means of identification	
SDS #	JIR-001
Product Code	DVA001
UN/ID No	UN3480
Recommended use of the che	mical and restrictions on use
Recommended Use	Electrochemical energy storage device: battery cell/module/pack/system
Details of the supplier of the s	afety data sheet
Supplier Address	
Jireh Industries, Ltd.	
53158 Range Road 224	

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

Emergency telephone number

Company Phone Number Emergency Telephone 780-922-4534 INFOTRAC 1-352-323-3500 (International) 1-800-535-5053 (North America)

2. HAZARDS IDENTIFICATION

Safety Data Sheets (SDS) are a sub-requirement of the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard, 29 CFR Subpart 1910.1200. This Hazard Communication Standard does not apply to various subcategories including anything defined by OSHA as an "article". OSHA has defined "article" as a manufactured item other than a fluid or particle; (i) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities, e.g. minute or trace amounts of a hazardous chemical, and does not pose a physical hazard or health risk to employees. Because all of our batteries are defined as "articles", they are exempt from the requirements of the Hazard Communication Standard, hence an SDS is not required. However, this Safety Data Sheet (SDS) contains valuable information critical to the safe handling and proper use of this product. This SDS should be retained and available for employees and other users of this product.

Appearance Battery

Physical state Solid

Odor Odorless

Classification

The chemicals listed in section 3 are contained in a sealed container. Risk of exposure only occurs if battery is mechanically, thermally, or electrically abused.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name	CAS No	Weight-%
Positive Electrode Lithium Blend	Proprietary	Proprietary
Negative Electrode	Proprietary	Proprietary
Electrolyte Blend	Proprietary	Proprietary

If Chemical Name/CAS No is "proprietary" and/or Weight-% is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

Description of first aid measures	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 physician.	
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.	
Most important symptoms and effe	cts, both acute and delayed	
Symptoms	A shorted lithium battery can cause thermal and chemical burns upon contact with the skin.	
Indication of any immediate medical attention and special treatment needed		
Notes to Physician	Treat symptomatically.	
5. FIRE-FIGHTING MEASURES		

<u>Suitable Extinguishing Media</u> Water. Dry chemical. Carbon dioxide (CO2). Foam.

Unsuitable Extinguishing Media Not determined.

Specific Hazards Arising from the Chemical

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.

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions	Use personal protective equipment as required. Ventilate affected area.
Other Information	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.

Environmental precautions

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.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling	Do not expose battery or cell to extreme temperatures or fire. Do not disassemble, crush o puncture battery. Avoid mechanical or electrical abuse.	
Conditions for safe storage, incl	uding 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.	
Incompatible Materials	If leaked, forbidden to contact with strong oxidizers, mineral acids, strong alkalis, halogenated hydrocarbons.	

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Chemical name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Positive Electrode Lithium Blend	TWA: 0.02 mg/m ³ Mn respirable	(vacated) Ceiling: 5 mg/m ³	IDLH: 500 mg/m ³ Mn
	particulate matter	Ceiling: 5 mg/m ³ Mn	TWA: 1 mg/m ³ Mn
	TWA: 0.1 mg/m ³ Mn inhalable		STEL: 3 mg/m ³ Mn
	particulate matter		
Negative Electrode	TWA: 2 mg/m ³ respirable	TWA: 15 mg/m ³ total dust	IDLH: 1250 mg/m ³
	particulate matter all forms except	synthetic	TWA: 2.5 mg/m ³ natural
	graphite fibers	TWA: 5 mg/m ³ respirable fraction	respirable dust
		synthetic	
		(vacated) TWA: 2.5 mg/m ³	
		respirable dust natural	
		(vacated) TWA: 10 mg/m ³ total	
		dust synthetic	
		(vacated) TWA: 5 mg/m ³	
		respirable fraction synthetic	
		TWA: 15 mppcf natural	
Electrolyte Blend	TWA: 2.5 mg/m ³ F	TWA: 2.5 mg/m ³ F	IDLH: 250 mg/m ³ F
		(vacated) TWA: 2.5 mg/m ³	-

Appropriate engineering controls

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

Individual protection measures, such as personal protective equipment

Eye/Face Protection	Not necessary under conditions of normal use. In case of battery rupture or leakage, use safety goggles.
Skin and Body Protection	Not necessary under conditions of normal use. In case of battery rupture or leakage, wear rubber apron and Viton rubber gloves.
Respiratory Protection	Not necessary under conditions of normal use. In case of battery venting or rupture, use a self contained full face respiratory mask.

General Hygiene Considerations Handle in accordance with good industrial hygiene and safety practice.

determined

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	Solid
Appearance	Battery
Color	Not det

Odor Odor Threshold Odorless Not applicable

Remarks • Method

Property_	Values	
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	Not applicable	
limits		
Lower flammability or explosive	Not applicable	
limits		
Vapor Pressure	Not applicable	
Vapor Density	Not applicable	
Relative Density	Not applicable	
Water Solubility	Insoluble in water	
Solubility in other solvents	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	
Oxidizing Properties	Not applicable	

10. STABILITY AND REACTIVITY

Reactivity

Not reactive under normal conditions.

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

None under normal processing.

Hazardous Polymerization

Hazardous polymerization does not occur.

Conditions to Avoid

Heating, mechanical and electrical abuse.

Incompatible materials

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

Hazardous decomposition products

Under normal conditions, none known based on information supplied.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Inhalation, skin contact and eye contact are possible when the battery is opened. The following is based on exposure to internal contents	
Corrosive fumes will be very irritating to eyes.	
Corrosive fumes will be very irritating to skin.	
Corrosive fumes will be very irritating to mucous membranes.	
Do not ingest.	

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Negative Electrode	-	-	> 2000 mg/m ³ (Rat) 4 h

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms Please see section 4 of this SDS for symptoms.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Carcinogenicity Based on the information provided, this product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.

Numerical measures of toxicity

Not available

12. ECOLOGICAL INFORMATION

Ecotoxicity

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.

Component Information

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

Persistence/Degradability

Not determined.

Bioaccumulation

There is no data for this product.

Mobility

Not determined

Other Adverse Effects

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

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes	Disposal should be in accordance with applicable regional, national and local laws and regulations.
Contaminated Packaging	Disposal should be in accordance with applicable regional, national and local laws and regulations.

14. TRANSPORT INFORMATION

<u>Note</u>	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.
<u>DOT</u> UN/ID No Proper Shipping Name Hazard class	UN3480 LITHIUM ION BATTERIES 9
IATA UN number Proper Shipping Name Transport hazard class(es)	UN3480 LITHIUM ION BATTERIES 9
<u>IMDG</u> UN number Proper Shipping Name Transport hazard class(es)	UN3480 LITHIUM ION BATTERIES 9

15. REGULATORY INFORMATION

International Inventories

Chemical name	TSCA	TSCA Inventory	DSL/NDSL	EINECS/ELI	ENCS	IECSC	KECL	PICCS	AICS
		Status		NCS					
Positive Electrode Lithium Blend	Х	ACTIVE		Х					
Negative Electrode	Х	ACTIVE	Х	Х		Х	Х	Х	Х
Electrolyte Blend	Х	ACTIVE	Х	Х	Х	Х	Х	Х	Х

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

ENCS - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

AICS - Australian Inventory of Chemical Substances

US Federal Regulations

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355).

<u>SARA 313</u>

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

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Chemical name	CAS No	Weight-%	SARA 313 - Threshold Values %
Positive Electrode Lithium Blend -		Proprietary	1.0

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Special Hazards Not determined Personal Protection

Not determined

US State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

Chemical name	New Jersey	Massachusetts	Pennsylvania
Positive Electrode Lithium Blend	Х		Х
Negative Electrode	Х	Х	Х
Electrolyte Blend	Х		

16. OTHER INFORMATION

NFPA	Health Hazards	Flammability	Instability		
HMIS_	Not determined Health Hazards Not determined	Not determined Flammability Not determined	Not determined Physical hazards Not determined		
Issue Date:	16-Dec-2021				
Revision Date:	16-Dec-2021				
Revision Note:	New product				

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