

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations
Issue date: 5/14/2021 Revision date: 5/14/2021 Version: 1.0

SECTION 1: Identification**1.1. Identification**

Product form : Article
Product name : Alliance I24-3.0 Lithium-Ion Battery, 24 V, 3.0 kWh

1.2. Recommended use and restrictions on use

Recommended use : General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
Restrictions on use : None known

1.3. Supplier

American Battery Solutions, Inc.
3768 South Lapeer Rd.
Lake Orion, MI 48359
T (248) 703-6146

1.4. Emergency telephone number

Emergency number : 1-800-424-9300 within USA and Canada; 1-703-741-5970 outside USA and Canada (Collect calls accepted)

SECTION 2: Hazard(s) identification**2.1. Classification of the substance or mixture****GHS US classification**

Not classified.

2.2. GHS Label elements, including precautionary statements**GHS US labeling**

No labeling applicable

2.3. Other hazards which do not result in classification

Other hazards which do not result in classification : This product is considered a sealed article. It is not considered hazardous in its intended form. Under recommended use conditions, the electrode materials and liquid electrolyte are non-reactive provided that the cell or battery integrity remains and the seals remain intact. The potential for exposure should not exist unless the cell or battery leaks, is exposed to high temperatures or is mechanically, electrically or physically abused/damaged. If the cell or battery is compromised and starts to leak, based upon the battery ingredients, the contents are classified as hazardous. Exposure to the contents of the battery may release flammable gases, may cause an allergic skin reaction or damage to organs, and is suspected of causing cancer. The contents of this SDS describe personal protective measures and first aid in the event of exposure to sealed battery contents. If the product is damaged and the user is exposed to product contents, contact local poison control for additional instructions.

2.4. Unknown acute toxicity (GHS US)

Not applicable

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SECTION 3: Composition/Information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	GHS US classification
Methyl propionate	CAS-No.: 554-12-1	1 – 5	Flam. Liq. 2, H225 Acute Tox. 4 (Inhalation:dust,mist), H332
Aluminum	CAS-No.: 7429-90-5	1 – 5	Flam. Sol. 1, H228 Water-react. 2, H261
Dimethyl carbonate	CAS-No.: 616-38-6	1 – 3	Flam. Liq. 2, H225
Nickel	CAS-No.: 7440-02-0	0.1 – 1	Skin Sens. 1, H317 Carc. 2, H351 STOT RE 1, H372
Ethylbenzene	CAS-No.: 100-41-4	0.1 – 1	Flam. Liq. 2, H225 Acute Tox. 4 (Inhalation:dust,mist), H332 STOT RE 2, H373 Asp. Tox. 1, H304

Full text of hazard classes and H-statements : see section 16

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general	: IF exposed or concerned: Get medical advice/attention.
First-aid measures after inhalation	: Remove person to fresh air and keep comfortable for breathing.
First-aid measures after skin contact	: In case of exposure to battery contents: . Gently wash with plenty of soap and water. Take off contaminated clothing. If skin irritation or rash occurs: Get medical advice/attention.
First-aid measures after eye contact	: Rinse eyes with water as a precaution.
First-aid measures after ingestion	: Call a poison center/doctor/physician if you feel unwell.

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects	: Not expected to present a significant hazard under anticipated conditions of normal use.
Symptoms/effects after skin contact	: In case of exposure to battery contents: . May cause an allergic skin reaction. Irritation.

4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media	: dry chemical powder, alcohol-resistant foam, carbon dioxide (CO2). Water spray.
Unsuitable extinguishing media	: Not determined.

5.2. Specific hazards arising from the chemical

Fire hazard	: In case of exposure to battery contents: . Flammable liquid and vapor.
Hazardous decomposition products in case of fire	: Toxic fumes may be released.

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5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions	: Fight fire with normal precautions from a reasonable distance.
Protection during firefighting	: Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures	: Ventilate spillage area. No open flames, no sparks, and no smoking. Do not breathe dust/fume/gas/mist/vapors/spray. Avoid contact with skin and eyes.
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6.1.2. For emergency responders

Protective equipment	: Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".
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6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up	: Mechanically recover the product. Notify authorities if product enters sewers or public waters.
Other information	: Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Wear personal protective equipment. Do not handle until all safety precautions have been read and understood. Avoid mechanical damage.
Hygiene measures	: Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures	: Keep in a cool, well-ventilated place away from heat.
Storage conditions	: Keep cool. Protect from sunlight. Keep away from ignition sources.

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SECTION 8: Exposure controls/personal protection

8.1. Control parameters

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No additional information available.

Methyl propionate (554-12-1)

No additional information available.

Aluminum (7429-90-5)

USA - ACGIH - Occupational Exposure Limits

ACGIH OEL TWA	1 mg/m ³ (respirable particulate matter)
ACGIH chemical category	Not Classifiable as a Human Carcinogen

USA - OSHA - Occupational Exposure Limits

OSHA PEL (TWA) [1]	15 mg/m ³ (total dust) 5 mg/m ³ (respirable fraction)
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Dimethyl carbonate (616-38-6)

No additional information available.

Nickel (7440-02-0)

USA - ACGIH - Occupational Exposure Limits

ACGIH OEL TWA	1.5 mg/m ³ (inhalable particulate matter)
ACGIH chemical category	Not Suspected as a Human Carcinogen

USA - OSHA - Occupational Exposure Limits

OSHA PEL (TWA) [1]	1 mg/m ³
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Ethylbenzene (100-41-4)

USA - ACGIH - Occupational Exposure Limits

ACGIH OEL TWA [ppm]	20 ppm
ACGIH chemical category	Confirmed Animal Carcinogen with Unknown Relevance to Humans

USA - ACGIH - Biological Exposure Indices

BEI (BLV)	0.15 g/g Kreatinin Parameter: Sum of mandelic acid and phenylglyoxylic acid - Medium: urine - Sampling time: end of shift (nonspecific)
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USA - OSHA - Occupational Exposure Limits

OSHA PEL (TWA) [1]	435 mg/m ³
OSHA PEL (TWA) [2]	100 ppm

8.2. Appropriate engineering controls

Appropriate engineering controls	: Ensure good ventilation of the work station. Avoid mechanical damage.
Environmental exposure controls	: Avoid release to the environment.

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8.3. Individual protection measures/Personal protective equipment

Hand protection:

Protective gloves

Eye protection:

Chemical goggles or safety glasses

Respiratory protection:

No respiratory protection needed under normal use conditions

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Solid
Appearance	: Battery.
Color	: Black Yellow
Odor	: No data available.
Odor threshold	: No data available.
pH	: No data available.
Melting point	: No data available.
Freezing point	: Not applicable
Boiling point	: No data available.
Flash point	: Not applicable
Relative evaporation rate (butyl acetate=1)	: No data available.
Flammability (solid, gas)	: No data available.
Vapor pressure	: No data available.
Relative vapor density at 20 °C	: No data available.
Relative density	: No data available.
Solubility	: No data available.
Partition coefficient n-octanol/water (Log Pow)	: No data available.
Auto-ignition temperature	: Not applicable
Decomposition temperature	: No data available.
Viscosity, kinematic	: Not applicable
Viscosity, dynamic	: No data available.
Explosion limits	: Not applicable
Explosive properties	: No data available.
Oxidizing properties	: No data available.

9.2. Other information

No additional information available.

SECTION 10: Stability and reactivity

10.1. Reactivity

In case of exposure to battery contents: . Flammable liquid and vapor.

10.2. Chemical stability

Stable under normal conditions.

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10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

Avoid contact with hot surfaces. Heat. No flames, no sparks. Eliminate all sources of ignition. Avoid mechanical damage.

10.5. Incompatible materials

Strong acids. Strong oxidizing agents. Strong reducing agents.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified.
Acute toxicity (dermal) : Not classified.
Acute toxicity (inhalation) : Not classified.

Methyl propionate (554-12-1)

LD50 oral rat	5 g/kg
LC50 Inhalation - Rat	> 22.7 mg/l/4h
ATE US (dust, mist)	1.5 mg/l/4h

Dimethyl carbonate (616-38-6)

LD50 oral rat	13 g/kg
LD50 dermal rabbit	> 5 g/kg
LC50 Inhalation - Rat	> 5.36 mg/l/4h
ATE US (oral)	13000 mg/kg body weight

Nickel (7440-02-0)

LD50 oral rat	> 9000 mg/kg
LC50 Inhalation - Rat	> 10.2 mg/l (Exposure time: 1 h)

Ethylbenzene (100-41-4)

LD50 oral rat	3500 mg/kg
LD50 dermal rabbit	15400 mg/kg
LC50 Inhalation - Rat	17.4 mg/l/4h
ATE US (oral)	3500 mg/kg body weight
ATE US (dermal)	15400 mg/kg body weight
ATE US (vapors)	17.4 mg/l/4h
ATE US (dust, mist)	1.5 mg/l/4h

Skin corrosion/irritation : Not classified.
Serious eye damage/irritation : Not classified.
Respiratory or skin sensitization : Not classified.
Germ cell mutagenicity : Not classified.
Carcinogenicity : Not classified.

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Nickel (7440-02-0)	
IARC group	2B - Possibly carcinogenic to humans
National Toxicity Program (NTP) Status	Reasonably anticipated to be Human Carcinogen
In OSHA Hazard Communication Carcinogen list	Yes

Ethylbenzene (100-41-4)	
IARC group	2B - Possibly carcinogenic to humans
National Toxicity Program (NTP) Status	Evidence of Carcinogenicity
In OSHA Hazard Communication Carcinogen list	Yes

Reproductive toxicity : Not classified.

STOT-single exposure : Not classified.

STOT-repeated exposure : Not classified.

Nickel (7440-02-0)	
STOT-repeated exposure	Causes damage to organs through prolonged or repeated exposure.

Ethylbenzene (100-41-4)	
STOT-repeated exposure	May cause damage to organs through prolonged or repeated exposure.

Aspiration hazard : Not classified.

Viscosity, kinematic : Not applicable

Symptoms/effects : Not expected to present a significant hazard under anticipated conditions of normal use.

Symptoms/effects after skin contact : In case of exposure to battery contents: . May cause an allergic skin reaction. Irritation.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

Dimethyl carbonate (616-38-6)	
LC50 - Fish [1]	≥ 100 mg/l (Exposure time: 96 h - Species: Danio rerio [flow-through])

Nickel (7440-02-0)	
LC50 - Fish [1]	> 100 mg/l (Exposure time: 96 h - Species: Brachydanio rerio)
EC50 - Crustacea [1]	> 100 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC50 - Fish [2]	1.3 mg/l (Exposure time: 96 h - Species: Cyprinus carpio [semi-static])
EC50 - Crustacea [2]	1 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])

Ethylbenzene (100-41-4)	
LC50 - Fish [1]	11 – 18 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [static])
EC50 - Crustacea [1]	1.8 – 2.4 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC50 - Fish [2]	4.2 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [semi-static])

12.2. Persistence and degradability

No additional information available.

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12.3. Bioaccumulative potential

Ethylbenzene (100-41-4)

BCF - Fish [1]	15
Partition coefficient n-octanol/water (Log Pow)	3.2

12.4. Mobility in soil

No additional information available.

12.5. Other adverse effects

No additional information available.

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.

SECTION 14: Transport information

In accordance with Department of Transport / IMDG / IATA

14.1. UN number

DOT NA No : UN3480
UN-No. (IMDG) : 3480
UN-No. (IATA) : 3480

14.2. UN proper shipping name

Proper Shipping Name (DOT) : Lithium ion batteries including lithium ion polymer batteries
Proper Shipping Name (TDG) : LITHIUM ION BATTERIES
Proper Shipping Name (IMDG) : LITHIUM ION BATTERIES
Proper Shipping Name (IATA) : Lithium ion batteries

14.3. Transport hazard class(es)

DOT

Transport hazard class(es) (DOT) : 9
Hazard labels (DOT) : 9



IMDG

Transport hazard class(es) (IMDG) : 9
Hazard labels (IMDG) : 9



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IATA

Transport hazard class(es) (IATA) : 9A
Hazard labels (IATA) : 9A



14.4. Packing group

Packing group (DOT) : Not applicable
Packing group (IMDG) : Not applicable
Packing group (IATA) : Not applicable

14.5. Environmental hazards

Other information : No supplementary information available.

14.6. Special precautions for user

DOT

UN-No.(DOT) : UN3480
DOT Special Provisions (49 CFR 172.102) : 422 - When labelling is required, the label to be used must be the label shown in §172.447. Labels conforming to requirements in place on December 31, 2016 may continue to be used until December 31, 2018. When a placard is displayed, the placard must be the placard shown in §172.560.
A51 - When transported by cargo-only aircraft, an oxygen generator must conform to the provisions of an approval issued under Special Provision 60 and be contained in a packaging prepared and originally offered for transportation by the approval holder.
A54 - Lithium batteries or lithium batteries contained or packed with equipment that exceed the maximum gross weight allowed by Column (9B) of the 172.101 Table may only be transported on cargo aircraft if approved by the Associate Administrator.
DOT Packaging Exceptions (49 CFR 173.xxx) : 185
DOT Packaging Non Bulk (49 CFR 173.xxx) : 185
DOT Packaging Bulk (49 CFR 173.xxx) : 185
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 5 kg
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 35 kg
DOT Vessel Stowage Location : A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel.

IMDG

Special provision (IMDG) : 188, 230, 310, 348, 376, 377, 384, 387
Limited quantities (IMDG) : 0
Excepted quantities (IMDG) : E0
Packing instructions (IMDG) : P903, P908, P909, P910, P911, LP903, LP904, LP905, LP906
EmS-No. (Fire) : F-A - FIRE SCHEDULE Alfa - GENERAL FIRE SCHEDULE
EmS-No. (Spillage) : S-I - SPILLAGE SCHEDULE India - FLAMMABLE SOLIDS (REPACKING POSSIBLE)
Stowage category (IMDG) : A
Properties and observations (IMDG) : Electrical batteries containing lithium ion encased in a rigid metallic body. Lithium ion batteries may also be shipped in, or packed with, equipment. Electrical lithium batteries may cause fire due to an explosive rupture of the body caused by improper construction or reaction with contaminants.

IATA

PCA Excepted quantities (IATA) : E0
PCA Limited quantities (IATA) : Forbidden
PCA limited quantity max net quantity (IATA) : Forbidden

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PCA packing instructions (IATA)	: Forbidden
PCA max net quantity (IATA)	: Forbidden
CAO packing instructions (IATA)	: See 965
CAO max net quantity (IATA)	: See 965
Special provision (IATA)	: A88, A99, A154, A164, A183, A201, A206, A213, A331, A334, A802
ERG code (IATA)	: 12FZ

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. US Federal regulations

Alliance I24-3.0 Lithium-Ion Battery, 24 V, 3.0 kWh

SARA Section 311/312 Hazard Classes	None
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All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

Chemical(s) subject to the reporting requirements of Section 313 or Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372.

Aluminum	CAS-No. 7429-90-5	1 – 5%
Nickel	CAS-No. 7440-02-0	0.1 – 1%
Ethylbenzene	CAS-No. 100-41-4	0.1 – 1%

Nickel (7440-02-0)

CERCLA RQ	100 lb no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm
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Ethylbenzene (100-41-4)

Listed on EPA Hazardous Air Pollutant (HAPS)

CERCLA RQ	1000 lb
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15.2. International regulations

Methyl propionate (554-12-1)

Listed on the NCI (National Chemicals Inventory)

Dimethyl carbonate (616-38-6)

Listed on the NCI (National Chemicals Inventory)

15.3. US State regulations

WARNING:

This product can expose you to Nickel, which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

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Component	State or local regulations
Methyl propionate(554-12-1)	U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) List; U.S. - Massachusetts - Right To Know List
Aluminum(7429-90-5)	U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) List; U.S. - Massachusetts - Right To Know List; U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
Dimethyl carbonate(616-38-6)	U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) List; U.S. - Massachusetts - Right To Know List
Nickel(7440-02-0)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List; U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances; U.S. - Pennsylvania - RTK (Right to Know) List
Ethylbenzene(100-41-4)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List; U.S. - Pennsylvania - RTK (Right to Know) List

SECTION 16: Other information

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Full text of H-phrases	
H225	Highly flammable liquid and vapor
H228	Flammable solid
H261	In contact with water releases flammable gas
H304	May be fatal if swallowed and enters airways
H317	May cause an allergic skin reaction
H332	Harmful if inhaled
H351	Suspected of causing cancer
H372	Causes damage to organs through prolonged or repeated exposure
H373	May cause damage to organs through prolonged or repeated exposure

Safety Data Sheet (SDS), USA

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