Li-ion Battery Pack

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulation s (According to HCS-2012 APPENDIX D TO §1910.1200)

Issue date: 05/10/2024 Revision date: 05/10/2024 Version: 1.0

SECTION 1: Identification

1.1. Identification

Product form	:	Article
Trade name	:	Li-ion Battery Pack
Model No.	:	B000012
Nominal Voltage	:	3.6V/10Ah, 36Wh

1.2. Recommended use and restrictions on use

Recommended use	:	Used for a laser measurement device
Restrictions on use	:	No information available

1.3. Supplier

Supplier
Ningbo Demass International Trading Co., Ltd.

Importer
Klein Tools, Inc.

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 labelling

No labelling applicable

2.3. Other hazards which do not result in classification

No additional information available

2.4. Unknown acute toxicity (GHS US)

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable.

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3.2. Mixtures

Name	Product identifier	%
Cobalt lithium manganese nickel oxide	CAS-No.: 182442-95-1	34.8 – 35.8
Other	CAS-No.: /	20.05 – 23.01
Graphite	CAS-No.: 7782-42-5	19.9 – 20.5
Copper	CAS-No.: 7440-50-8	6.8 – 7.2
Dimethyl carbonate	CAS-No.: 616-38-6	6.2 – 6.5
Aluminum	CAS-No.: 7429-90-5	3.5 – 3.6
Separator	CAS-No.: /	1.8 – 1.9
Phosphate(1-), hexafluoro-, lithium	CAS-No.: 21324-40-3	1.1 – 1.3
1,3-Dioxolan-2-one	CAS-No.: 96-49-1	1 – 1.1
Carbonate, methyl ethyl	CAS-No.: 623-53-0	1 – 1.1
Silicon monoxide	CAS-No.: 10097-28-6	0.89 – 0.95

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 after inhalation : Not an expected route of exposure. Remove person to fresh air and keep comfortable for breathing. If experiencing respiratory symptoms: Call a poison center or a doctor.

First-aid measures after skin contact : Not an expected route of exposure. Wash skin with plenty of water. If skin irritation or rash occurs: Get medical advice/attention.

First-aid measures after eye contact : Not an expected route of exposure. Rinse eyes with water as a precaution. If eye irritation persists: Get medical advice/attention.

First-aid measures after ingestion : Not an expected route of exposure. Call a poison center/doctor/physician if you feel unwell.

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

Symptoms/effects after inhalation : No additional information available

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 : Water spray. Dry powder. Foam. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media : No information available.

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5.2. Specific hazards arising from the chemical

Fire hazard	:	No fire hazard.
Explosion hazard	:	No direct explosion hazard.
Hazardous decomposition products in case of fire	:	Toxic fumes may be released.

5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions	:	Fight fire from safe distance and protected location. Do not enter fire area without proper protective equipment, including respiratory protection.
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

Protective equipment	:	Wear recommended personal protective equipment.
Emergency procedures	:	Ventilate spillage area. Wear proper protective equipment. Evacuate personnel to a safe area. Ensure adequate ventilation, especially in confined areas. Remove all sources of ignition. Avoid contact with skin, eyes and clothing. No open flames, no sparks, and no smoking. Do not breathe dust/fume/gas/mist/vapours/spray. Avoid contact with skin and eyes.

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".
Emergency procedures	:	Evacuate unnecessary personnel.

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

For containment	:	Collect spillage.
Methods for cleaning up	:	Mechanically recover the product. Spilled or leaking material is to be soaked up with non-flammable absorbent materials (sand, soil, diatomaceous earth) and put in containers.
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	:	Ensure good ventilation of the work station. Wear personal protective equipment. Do not open, destroy, or incinerate batteries because the battery may explode, break, or vent during these processes. Do not short-circuit the battery, overcharge, forced discharge or thrown into the fire. Do not squeeze the battery or immerse the

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battery in the solution.

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 : Avoid high temperatures. Store in a dry place. Keep container tightly closed. Store in a well-ventilated place. Keep cool.

Incompatible materials : No information available.

Packaging materials : Store always product in container of same material as original container.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Graphite (7782-42-5)	
USA - ACGIH - Occupational Exposure Limits	
ACGIH OEL TWA	2 mg/m³ (all forms except graphite fibers-respirable particulate matter)
USA - OSHA - Occupational Exposure Limits	
OSHA PEL TWA	15 mg/m³ (synthetic-total dust) 5 mg/m³ (synthetic-respirable fraction) 15 mppcf (natural-respirable dust)
USA - IDLH - Occupational Exposure Limits	
IDLH	1250 mg/m³ (Graphite (natural))
USA - NIOSH - Occupational Exposure Limits	
NIOSH REL TWA	2.5 mg/m³ (natural-respirable dust)

Copper (7440-50-8)	
USA - ACGIH - Occupational Exposure Limits	
ACGIH OEL TWA	0.2 mg/m³ (fume)
USA - OSHA - Occupational Exposure Limits	
OSHA PEL TWA	0.1 mg/m³ (fume) 1 mg/m³ (dust and mist)
USA - IDLH - Occupational Exposure Limits	
IDLH	100 mg/m³ (dust, fume and mist)
USA - NIOSH - Occupational Exposure Limits	
NIOSH REL TWA	1 mg/m³ (dust and mist) 0.1 mg/m³ (fume)

Aluminum (7429-90-5)	
USA - ACGIH - Occupational Exposure Limits	
ACGIH OEL TWA	1 mg/m³ (respirable particulate matter)
ACGIH chemical category	Not Classifiable as a Human Carcinogen

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Aluminum (7429-90-5)	
USA - OSHA - Occupational Exposure Limits	
OSHA PEL TWA	15 mg/m³ (total dust) 5 mg/m³ (respirable fraction)
USA - NIOSH - Occupational Exposure Limits	
NIOSH REL TWA	10 mg/m³ (total dust) 5 mg/m³ (respirable dust)

8.2. Appropriate engineering controls

Appropriate engineering controls : Ensure good ventilation of the work station.

Environmental exposure controls : Avoid release to the environment.

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment:

Wear recommended personal protective equipment.

Hand protection:
Protective gloves

Eye protection:
Safety glasses

Skin and body protection:
Wear suitable protective clothing

Respiratory protection:
In case of insufficient ventilation, wear suitable respiratory equipment

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	:	Solid
Color	:	No data available
Odor	:	No data available
Odor threshold	:	No data available
pH	:	No data available
Melting point	:	No data available
Freezing point	:	No data available
Boiling point	:	No data available
Flash point	:	No data available
Relative evaporation rate (butyl acetate=1)	:	No data available
Flammability	:	Non flammable.
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

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Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity, kinematic	:	No data available
Viscosity, dynamic	:	No data available
Explosion limits	:	No data available
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

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

No additional information available

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

1,3-Dioxolan-2-one (96-49-1)	
LD50 oral rat	10 g/kg (Source: NLM_CIP)
LD50 dermal rat	> 2000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 402 (Acute Dermal Toxicity), Guideline: EU Method B.3 (Acute Toxicity (Dermal))
LD50 dermal rabbit	> 26420 mg/kg (Source: ECHA_API)
LC50 Inhalation - Rat	> 730 mg/m³ (Exposure time: 8 h Source: ECHA)

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Carbonate, methyl ethyl (623-53-0)	
LD50 oral rat	> 5000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 401 (Acute Oral Toxicity)

Dimethyl carbonate (616-38-6)	
LD50 oral rat	> 5000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 401 (Acute Oral Toxicity)
LD50 dermal rabbit	> 2000 mg/kg bodyweight Animal: rabbit

Skin corrosion/irritation : Not classified

Serious eye damage/irritation : Not classified

Respiratory or skin 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

Viscosity, kinematic : Not applicable

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms nor to cause long-term adverse effects in the environment.

Graphite (7782-42-5)	
LC50 - Fish [1]	> 100 mg/l Test organisms (species): Danio rerio (previous name: Brachydanio rerio)
EC50 - Crustacea [1]	> 100 mg/l Test organisms (species): Daphnia magna
NOEC (chronic)	47 mg/l Test organisms (species): Daphnia magna Duration: '21 d'

1,3-Dioxolan-2-one (96-49-1)	
LC50 - Fish [1]	> 100 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss Source: ECHA)

Carbonate, methyl ethyl (623-53-0)	
LC50 - Fish [1]	> 100 mg/l Test organisms (species): Oncorhynchus mykiss (previous name: Salmo gairdneri)
EC50 - Crustacea [1]	> 100 mg/l Test organisms (species): Daphnia magna
EC50 72h - Algae [1]	> 62 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)

Dimethyl carbonate (616-38-6)	
LC50 - Fish [1]	≥ 100 mg/l Test organisms (species): Danio rerio (previous name: Brachydanio rerio)
EC50 - Crustacea [1]	> 100 mg/l Test organisms (species): Daphnia magna

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Dimethyl carbonate (616-38-6)	
EC50 72h - Algae [1]	> 100 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
NOEC (chronic)	25 mg/l Test organisms (species): Daphnia magna Duration: '21 d'

Phosphate(1-), hexafluoro-, lithium (21324-40-3)	
EC50 96h - Algae [1]	> 100 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

1,3-Dioxolan-2-one (96-49-1)	
Partition coefficient n-octanol/water (Log Pow)	0.11 (at 20 °C (at pH >5.33-<5.79)

Carbonate, methyl ethyl (623-53-0)	
Partition coefficient n-octanol/water (Log Pow)	0.972 (at 40 °C (at pH 6.8)

Dimethyl carbonate (616-38-6)	
Partition coefficient n-octanol/water (Log Pow)	0.354 (at 20 °C (at pH >6.5-<7.5)

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.

Contaminated packaging : Dispose of contents/container in accordance with licensed collector's sorting instructions.

SECTION 14: Transport information

In accordance with DOT / TDG / IMDG / IATA

14.1. UN number

DOT NA No : UN3481

UN-No. (TDG) : UN3481

UN-No. (IMDG) : UN3481

UN-No. (IATA) : UN3481

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14.2. UN proper shipping name

Proper Shipping Name (DOT) : Lithium ion batteries contained in equipment

Proper Shipping Name (TDG) : LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT

Proper Shipping Name (IMDG) : LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT

Proper Shipping Name (IATA) : Lithium ion batteries contained in equipment

14.3. Transport hazard class(es)

DOT

Transport hazard class(es) (DOT) : 9

Hazard labels (DOT) : 9A



TDG

Transport hazard class(es) (TDG) : 9

Hazard labels (TDG) : 9A



IMDG

Transport hazard class(es) (IMDG) : 9

Danger labels (IMDG) : 9A



IATA

Transport hazard class(es) (IATA) : 9

Danger labels (IATA) : 9A



14.4. Packing group

Packing group (DOT) : Not applicable.

Packing group (TDG) : 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) : UN3481

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DOT Special Provisions (49 CFR 172.102)	:	181 - When a package contains a combination of lithium batteries contained in equipment and lithium batteries packed with equipment, the following requirements apply: a. The shipper must ensure that all applicable requirements of §173.185 of this subchapter are met. The total mass of lithium batteries contained in any package must not exceed the quantity limits in columns (9A) and (9B) for passenger aircraft or cargo aircraft, as applicable; b. Except as provided in §173.185(c)(3) of this subchapter, the package must be marked “UN 3091 Lithium metal batteries packed with equipment”, or “UN 3481 Lithium ion batteries packed with equipment,” as appropriate. If a package contains both lithium metal batteries and lithium ion batteries packed with and contained in equipment, the package must be marked as required for both battery types. However, button cell batteries installed in equipment (including circuit boards) need not be considered; and c. The shipping paper must indicate “UN 3091 Lithium metal batteries packed with equipment” or “UN 3481 Lithium ion batteries packed with equipment,” as appropriate. If a package contains both lithium metal batteries and lithium ion batteries packed with and contained in equipment, then the shipping paper must indicate both “UN 3091 Lithium metal batteries packed with equipment” and “UN 3481 Lithium ion batteries packed with equipment.” 388 - a. Lithium batteries containing both primary lithium metal cells and rechargeable lithium ion cells that are not designed to be externally charged, must meet the following conditions: i. The rechargeable lithium ion cells can only be charged from the primary lithium metal cells; ii. Overcharge of the rechargeable lithium ion cells is precluded by design; iii. The battery has been tested as a primary lithium battery; and iv. Component cells of the battery must be of a type proved to meet the respective testing requirements of the Manual of Tests and Criteria, part III, subsection 38.3 (IBR, see 171.7 of this subchapter). b. Lithium batteries conforming to paragraph a. of this special provision must be assigned to UN Nos. 3090 or 3091, as appropriate. When such batteries are transported in accordance with 173.185(c), the total lithium content of all lithium metal cells contained in the battery must not exceed 1.5 g and the total capacity of all lithium ion cells contained in the battery must not exceed 10 Wh. 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. 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.

TDG

UN-No. (TDG)	:	UN3481
TDG Special Provisions	:	34 - (1) These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) and Part 2 (Classification), do not apply to the handling, offering for transport or transporting of lithium cells and batteries on a road vehicle, a railway vehicle or a vessel on a domestic voyage

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if
(a) for a lithium metal or lithium alloy cell, the lithium content is not more than 1 g, and, for a lithium-ion cell, the watt-hour rating is not more than 20 Wh;
(b) for a lithium metal or lithium alloy battery, the aggregate lithium content is not more than 2 g, and for a lithium-ion battery, the watt-hour rating is not more than 100 Wh;
(c) lithium ion batteries are marked with the watt-hour rating on the outside case, except for those manufactured before January 1, 2009;
(d) each cell and battery type passes each of the tests set out in paragraph 2.43.1(2)(a) of Part 2 (Classification);
(e) the cells and batteries are afforded protection against short circuit, including protection against contact with conductive materials within the same packaging that could lead to a short circuit;
(f) the cells and batteries are packed in a means of containment that completely encloses the cells and batteries;
(g) the gross mass of the cells and batteries does not exceed 30 kg, except when the cells and batteries are installed in or packed with equipment; and
(h) the cells and batteries are packed in a means of containment capable of withstanding a 1.2 m drop test in any orientation without damage to the cells or batteries contained inside the means of containment, without the contents shifting so as to allow battery-to-battery or cell-tocell, contact, and without release of contents.
(2) Cells and batteries referred to in subsection (1) that are installed in equipment must, unless they are afforded equivalent protection by the equipment in which they are contained,
(a) be afforded protection against damage and short circuit, including protection against contact with conductive materials within the same packaging that could lead to a short circuit;
(b) subject to subsection (3), be fitted to prevent accidental activation; and
(c) be packed in a means of containment designed, constructed, filled, closed, secured and maintained so that under normal conditions of transport, including handling, there will be no release of the dangerous goods that could endanger public safety.
(3) Paragraph (2)(b) does not apply to cells and batteries installed in devices that are intentionally active during transport such as radio frequency identification transmitters, watches and sensors, and that are not capable of generating a dangerous evolution of heat.
(4) Except for means of containment containing button cell batteries installed in equipment, including circuit boards, or no more than four cells installed in equipment or no more than two batteries installed in equipment, each means of containment must be marked with the appropriate lithium battery mark in accordance with section 4.24.
(5) Despite subsection (4), except for means of containment containing button cell batteries installed in equipment, including circuit boards, or no more than four cells installed in equipment or no more than two batteries installed in equipment, each means of containment may, until December 31, 2018, be marked with the following:
(a) “lithium metal”, “lithium métal”, “lithium ion” or “lithium ionique”, as appropriate;
(b) an indication that the means of containment must be handled with care and that a flammability hazard exists if the means of containment is damaged;
(c) an indication that special procedures must be followed in the event the means of containment is damaged, including inspection and repacking, if necessary; and
(d) a telephone number to call for additional information,123 - (1) The testing requirements in subsection 38.3 of Part III of the Manual of Tests and Criteria do not apply to production runs consisting of not more than 100 cells and batteries or to pre-production prototypes of cells and batteries that are transported on a road vehicle, a railway vehicle or a vessel on a domestic voyage if

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(a) the cells or batteries are imported, offered for transport, handled or transported in accordance with Packing Instruction P910 of the UN Recommendations; and
(b) the pre-production prototypes of cells and batteries are in transport for the purpose of testing.
(2) Despite paragraph (1)(b), batteries that have a total mass of 12 kg or more and that have a strong, impact-resistant outer casing, or assemblies of them, may be packed in an outer means of containment or protective enclosure designed, constructed, filled, closed, secured and maintained so that under normal conditions of transport, including handling, there will be no release of the dangerous goods that could endanger public safety. The batteries or battery assemblies must be protected from short-circuit,137 - (1) This shipping name applies to lithium ion cells or batteries, and lithium metal cells or batteries, that are damaged or defective and do not conform to subsection 2.43.1(2) of Part 2 (Classification).
(2) Lithium ion cells or batteries and lithium metal cells or batteries that are damaged or defective, include, but are not limited to, cells or batteries that have leaked or vented, or have sustained physical or mechanical damage, and cannot be diagnosed prior to transport, or that have been identified as being defective for safety reasons.
(3) Lithium ion cells or batteries and lithium metal cells or batteries that are damaged or defective must be packed in accordance with Packing Instructions P908 or LP904 of the UN Recommendations, as applicable.
(4) As applicable, the outer means of containment or the overpack must be marked legibly and visibly on a contrasting background, with the words “Damaged/Defective Lithium Ion Batteries”, “piles au lithium ionique endommagées/défectueuses”, “Damaged/Defective Lithium Metal Batteries” or “piles au lithium métal endommagées/défectueuses”.
(5) It is forbidden to transport lithium ion cells or batteries and lithium metal cells or batteries that are damaged or defective and that, under normal conditions of transport, are liable to disassemble rapidly, react dangerously, produce a flame or a dangerous evolution of heat, or produce a dangerous emission of toxic, corrosive or flammable gases or vapours.
(6) It is forbidden to transport by aircraft lithium ion cells or batteries and lithium metal cells or batteries that are damaged or defective,138 - (1) When transported for disposal or recycling, lithium ion cells or batteries and lithium metal cells or batteries, or equipment containing those cells or batteries,
(a) are not subject to subsection 2.43.1(2) of Part 2 (Classification);
(b) must be packed in accordance with Packing Instructions P909 or LP904 of the UN Recommendations, as applicable, whether packed with or without non-lithium cells or batteries or equipment containing those cells or batteries;
(c) must be in a means of containment or an overpack that is marked legibly and visibly on a contrasting background with the words “Lithium batteries for disposal”, “Piles au lithium destinées à l’élimination”, “Lithium batteries for recycling” or “Piles au lithium destinées au recyclage ”, as appropriate; and
(d) are forbidden for transport by aircraft.
(2) Damaged or defective cells and batteries must be offered for transport or transported under special provision 137,159 - (1) Subject to subsection (2), the label to be used for these dangerous goods is the one illustrated under the heading for lithium batteries “Class 9, Lithium Batteries” in the appendix to Part 4 (Dangerous Goods Safety Marks).
(2) The generic Class 9 label may be used until December 31, 2018.

Explosive Limit and Limited Quantity Index	:	0
Excepted quantities (TDG)	:	E0
Passenger Carrying Road Vehicle or Passenger Carrying Railway Vehicle Index	:	5 kg
Emergency Response Guide (ERG) Number	:	147

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IMDG

Special provisions (IMDG)	:	188, 230, 310, 348, 360, 376, 377, 384, 387, 390
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
Stowage and handling (IMDG)	:	SW19
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
PCA packing instructions (IATA)	:	967
PCA max net quantity (IATA)	:	5kg
CAO packing instructions (IATA)	:	967
CAO max net quantity (IATA)	:	35kg
Special provisions (IATA)	:	A48, A88, A99, A154, A164, A181, A185, A213, A220
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

Commercial status of components according to the United States Environmental Protection Agency's Toxic Substances Control Act (TSCA):

Name	CAS-No.	Listing	Commercial status	Flags
Cobalt lithium manganese nickel oxide	182442-95-1	Present	Active	PMN;S;5E
Graphite	7782-42-5	Present	Active	
Silicon monoxide	10097-28-6	Present	Active	
Copper	7440-50-8	Present	Active	
Aluminum	7429-90-5	Present	Active	
1,3-Dioxolan-2-one	96-49-1	Present	Active	
Carbonate, methyl ethyl	623-53-0	Present	Active	
Dimethyl carbonate	616-38-6	Present	Active	
Phosphate(1-), hexafluoro-, lithium	21324-40-3	Present	Active	PMN

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Copper (7440-50-8)	
Subject to reporting requirements of United States SARA Section 313	
CERCLA RQ	5000 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

Aluminum (7429-90-5)
Subject to reporting requirements of United States SARA Section 313

15.2. International regulations

CANADA

Cobalt lithium manganese nickel oxide (182442-95-1)
Listed on the Canadian DSL (Domestic Substances List)

Graphite (7782-42-5)
Listed on the Canadian DSL (Domestic Substances List)

Silicon monoxide (10097-28-6)
Listed on the Canadian NDSL (Non-Domestic Substances List)

Copper (7440-50-8)
Listed on the Canadian DSL (Domestic Substances List)

Aluminum (7429-90-5)
Listed on the Canadian DSL (Domestic Substances List)

1,3-Dioxolan-2-one (96-49-1)
Listed on the Canadian DSL (Domestic Substances List)

Carbonate, methyl ethyl (623-53-0)
Listed on the Canadian NDSL (Non-Domestic Substances List)

Dimethyl carbonate (616-38-6)
Listed on the Canadian DSL (Domestic Substances List)

Phosphate(1-), hexafluoro-, lithium (21324-40-3)
Listed on the Canadian NDSL (Non-Domestic Substances List)

EU-Regulations

Graphite (7782-42-5)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

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Silicon monoxide (10097-28-6)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Copper (7440-50-8)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Aluminum (7429-90-5)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

1,3-Dioxolan-2-one (96-49-1)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Carbonate, methyl ethyl (623-53-0)

Listed on ELINCS (European List of Notified Chemical Substances)

Dimethyl carbonate (616-38-6)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Phosphate(1-), hexafluoro-, lithium (21324-40-3)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations

Cobalt lithium manganese nickel oxide (182442-95-1)

Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Japanese Pollutant Release and Transfer Register Law (PRTR Law)
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on the TCSI (Taiwan Chemical Substance Inventory)
Listed on the Vietnam NCI (National Chemicals Inventory)

Graphite (7782-42-5)

Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)
Listed on the Vietnam NCI (National Chemicals Inventory)
Listed on Thailand Existing Chemicals Inventory (DIW)

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Silicon monoxide (10097-28-6)

Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on the Japanese ENCS (Existing New Chemical Substances) inventory
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on the TCSI (Taiwan Chemical Substance Inventory)
Listed on the Vietnam NCI (National Chemicals Inventory)

Copper (7440-50-8)

Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on the Japanese ENCS (Existing New Chemical Substances) inventory
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)
Listed on the Vietnam NCI (National Chemicals Inventory)
Listed on Thailand Existing Chemicals Inventory (DIW)

Aluminum (7429-90-5)

Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on the Japanese ENCS (Existing New Chemical Substances) inventory
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)
Listed on the Vietnam NCI (National Chemicals Inventory)
Listed on Thailand Existing Chemicals Inventory (DIW)

1,3-Dioxolan-2-one (96-49-1)

Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on the Japanese ENCS (Existing New Chemical Substances) inventory
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on the TCSI (Taiwan Chemical Substance Inventory)
Listed on the Vietnam NCI (National Chemicals Inventory)

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Carbonate, methyl ethyl (623-53-0)

Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on the Japanese ENCS (Existing New Chemical Substances) inventory
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on the TCSI (Taiwan Chemical Substance Inventory)
Listed on the Vietnam NCI (National Chemicals Inventory)
Listed on Thailand Existing Chemicals Inventory (DIW)

Dimethyl carbonate (616-38-6)

Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on the Japanese ENCS (Existing New Chemical Substances) inventory
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)
Listed on the Vietnam NCI (National Chemicals Inventory)
Listed on Thailand Existing Chemicals Inventory (DIW)

Phosphate(1-), hexafluoro-, lithium (21324-40-3)

Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on the Japanese ENCS (Existing New Chemical Substances) inventory
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on the TCSI (Taiwan Chemical Substance Inventory)
Listed on the Vietnam NCI (National Chemicals Inventory)
Listed on Thailand Existing Chemicals Inventory (DIW)

15.3. US State regulations

No additional information available

SECTION 16: Other information

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations (According to HCS-2012 APPENDIX D TO §1910.1200)

Version	:	1.0
Issue date	:	05/10/2024
Revision date	:	05/10/2024
Data sources	:	Loli. ECHA reference.
Training advice	:	Normal use of this product shall imply use in accordance with the instructions on the packaging.
Other information	:	No information available.

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Abbreviations and acronyms	
DOT	Department of Transportation
TDG	The Recommendations on the Transport of Dangerous Goods
EC50	Median effective concentration
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Median lethal concentration
LD50	Median lethal dose
SDS	Safety Data Sheet

Safety Data Sheet (SDS), USA

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.

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