



Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard 29 CFR 1910.1200.
This standard must be consulted for specific requirements.

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name:	Lithium-ion Battery - Rechargeable	File Name:	SDS-BAT Rev 01
		Issue Date:	24 August 2021
		Supersedes:	N/A

Company Name:	Evolution Power Tools Limited.
Company Address:	Venture One, Longacre Close, Holbrook Industrial Estate, Sheffield, S20 3FR, UK.

Company Customer Service Phone Number:	+44 (0)114 251 1022
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Chemtrec

Emergency Contact Number:	+1-800-424-9300 USA only
For International:	+1 703-527-3887

PRODUCT MODEL NUMBERS:	See Annex I
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SECTION 2: HAZARDS IDENTIFICATION

Health	Environmental	Physical
Eye Irritation: No classified hazards	Acute Toxicity: No classified hazards	Flammable liquid: No classified hazards
Skin Irritation: No classified hazards	Chronic Toxicity: No classified hazards	
Acute Toxicity, Oral: No classified hazards		
Acute Toxicity, Inhalation: No classified hazards		

GHS Label

No applicable labeling

Hazard Statements	Precautionary Statements
No exposure during routine handling of product	

CLASSIFIED HAZARDS

This material is not hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200. This SDS contains valuable information for the safe handling and proper use of this product. Save this SDS for future reference.

OTHER HAZARDS

Flammable:

Organic components will burn if cell is incinerated. Combustion of cell contents may cause evolution of Hydrogen Fluoride.

Potential Health Effects:

Fluoride interferes with nerve impulse conduction causing severe pain or absence of sensations.

WARNING:

No exposure during routine handling of product. Hydrofluoric Acid exposure during firefighting: This information is given for the use of professional fire fighters responding to a warehouse fire where fire from other materials may incinerate batteries. This section is provided solely in case of exposure, during firefighting, to the combustion by-products.

SECTION 3: COMPOSITION /INFORMATION OF INGREDIENTS

Chemical Name	CAS #	Weight %
Lithium Nickel Oxide (Li ₂ NiO ₂)	12325-84-7	0 - 35
Lithium Nickel Cobalt Manganese Oxides	182442-95-1	0 - 35
Graphite	7782-42-5	0 - 30
Iron (Fe)	7439-89-6	0 - 25
Lithium Nickelate	12031-65-1	0 - 25
Copper (Cu)	7440-50-8	0 - 20
Aluminium (Al)	7429-90-5	0 - 15
Cobalt Lithium Dioxide (Lithium cobaltite)	12190-79-3	0 - 15
Lithium Manganese (III, IV) oxide (LiMn ₂ O ₄)	12057-17-9	0 - 15
1,3-Dioxolan-2-one	96-49-1	0 - 10

Dimethyl carbonate (Carbonic acid dimethyl ester)	616-38-6	0 - 10
Polyethylene	9002-88-4	0 - 10
Lithium hexafluorophosphate (1-) (LiPF6)	21324-40-3	0 - 10
Carbon black	1333-86-4	0 - 5
Methyl propanoate	554-12-1	0 - 5
4-Fluoro-1,3-dioxolan-2-one	114435-02-8	0 - 5
Polypropylene	9003-07-0	0 - 3
Carboxymethyl cellulose sodium salt	9004-32-4	0 - 2
Polyvinylidene Fluoride	24937-79-9	0 - 2
Nickel (Ni)	7440-02-0	0 - 1
Lithium carbonate	554-13-2	0 - 1
Aluminium lithium oxide (ALiO)	11089-89-7	0 - 1
Boehmite (Al (OH)O)	1318-23-6	0 - 1
1-Methyl-2-pyrrolidinone	872-50-4	0 - 1
Chromium	7440-47-3	0 - 1
ethylbenzene	100-41-4	0 - 1
diiron trioxide	1309-37-1	0 - 1
ethyl acetate	141-78-6	0 - 1
Steel and other inert materials	N/A	Remainder

SECTION 4: FIRST AID MEASURES

No exposure during routine handling of product. Risk of exposure occurs only if the battery is mechanically or electrically abused.

No effect under routine handling and use to eyes, skin or if inhaled. Ingestion is not likely, given the physical size and state of the cell. If swallowed, seek medical attention immediately.

If exposure to internal materials within cell due to damaged outer casing the following actions are recommended:

EYE CONTACT:

Flush with water for 15 minutes without rubbing and immediately seek medical attention.

SKIN CONTACT:

Wash area immediately with soap and water. If irritation continues see medical attention.

INHALATION:

Leave area immediately and move to fresh air and seek medical attention.

INGESTION:

If swallowed, contact POISON CONTROL CENTER/DOCTOR immediately.

SECTION 5: FIRE FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA:

Water spray, carbon dioxide, dry chemical powder or appropriate foam. Use agent appropriate for surrounding materials.

UNSUITABLE EXTINGUISHING MEDIA:

No data available.

PRODUCTS OF COMBUSTION:

Organic components will burn if incinerated. Combustion of cell contents may cause evolution of Hydrogen Fluoride. In case of fire in an adjacent area, use water, CO₂, or dry chemical extinguishers if cells are packed in their original containers since the fuel of the fire is basically paper products.

PROTECTION OF FIREFIGHTERS:

Hydrofluoric Acid exposure during firefighting: This information is given for the use of professional fire fighters responding to a warehouse fire where fire from other materials may incinerate batteries. This section is provided solely in case of exposure, during firefighting, to the combustion by-products.

SECTION 6: ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:

Use standard industrial clothing in normal use.

ENVIRONMENTAL PRECAUTIONS:

No special precautions necessary.

METHODS FOR CONTAINMENT:

Not available.

METHODS FOR CLEAN-UP:

Transport container outdoors. Hold burned cells and fire cleanup solids for disposal as a potential hazardous waste. Unburned cells are not hazardous waste. A fire with over 100 kg of cells burnt will likely require reporting to environmental officials. Always consult and dispose of in accordance with all international, federal and local environmental laws.

OTHER INFORMATION:

No data available

SECTION 7: HANDLING AND STORAGE

HANDLING:

Use only approved charging equipment. Do not disassemble battery or battery pack. Do not puncture, crush or dispose of in fire.

STORAGE:

Store in a cool, dry place away from sparks and flame. Keep below 50°C. Keep above -60°C. Charge between 0°C and 45°C.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Chemical Name	ACGIH Regulation	OSHA Regulation	NIOSH Regulation	EU Regulation
Lithium Nickel Oxide (Li ₂ NiO ₂)	TWA = 1.5 mg/m ³ (inhalable particulate matter) (Nickle CAS. No.7440-02-0)	TWA = 1 mg/m ³ (metal and insoluble compounds (as Ni)) TWA = 1 mg/m ³ (soluble compounds (as Ni)) (Nickle CAS.No.7440-02-0)	Ca TWA = 0.015 mg/m ³ (metal and insoluble compounds (as Ni)) Ca TWA = 0.015 mg/m ³ (soluble compounds (as Ni)) (Nickle CAS.No.7440-02-0)	Not applicable
Lithium Nickel Cobalt Manganese Oxides	TWA = 0.02 mg/m ³ Co TWA = 0.02 mg/m ³ Mn	Not applicable	IDLH: 500 mg/m ³ Mn IDLH: 10 mg/m ³ Ni TWA = 1 mg/m ³ Mn TWA = 0.15 mg/m ³ except Nickle carbonyl Ni STEL: 3 mg/m ³	Not applicable
Graphite	TWA = 2 mg/m ³	Not applicable	Not applicable	Not applicable
Iron (Fe)	Not applicable	Not applicable	Not applicable	Not applicable
Lithium Nickelate	Not applicable	TWA = 1 mg/m ³ (Nickel, metal and insoluble compounds (as Ni), Nickle soluble compounds (as Ni), CAS.No.7440-02-0)	TWA = Ca 0.015 mg/m ³ (Nickel, metal and insoluble compounds (as Ni), Nickle soluble compounds (as Ni), CAS.No.7440-02-0)	Not applicable
Copper (Cu)	TWA = 0.2 mg/m ³ (fume)	Not applicable	Not applicable	Not applicable
Aluminium (Al)	TWA = 1 mg/m ³ (respirable particulate matter)	TWA = 15 mg/m ³ (Aluminium metal (as Al) Total dust) TWA = 5mg/m ³ (Aluminium metal (as Al) Respirable fraction)	TWA = 1 mg/m ³ (Aluminium metal (as Al) Respirable fraction)	Not applicable
Cobalt Lithium Dioxide (Lithium cobaltite)	Not applicable	Not applicable	Not applicable	Not applicable

Lithium Manganese (III, IV) oxide (LiMn ₂ O ₄)	TWA = 10 mg/m ³ (Magnesium oxide CAS. No.1309-48-4)	TWA = 15 mg/m ³ (Magnesium oxide fume - Total Particulate CAS.No.1309-48-4)	TWA = 10 mg/m ³ (Magnesium oxide fume - Total Particulate CAS.No.1309-48-4)	Not applicable
1,3-Dioxolan-2-one	Not applicable	Not applicable	Not applicable	Not applicable
Dimethyl carbonate (Carbonic acid dimethyl ester)	Not applicable	Not applicable	Not applicable	Not applicable
Polyethylene	Not applicable	Not applicable	Not applicable	Not applicable
Lithium hexafluorophosphate (1-) (LiPF ₆)	Not applicable	Not applicable	Not applicable	Not applicable
Carbon black	TWA = 3 mg/m ³ (inhalable particulate matter)	TWA = 3.5 mg/m ³	TWA = 3.5 mg/m ³ Ca TWA = 0.1 mg PAHs/m ³ (Carbon black in the presence of polycyclic aromatic hydrocarbons (PAHs))	Not applicable
Methyl propanoate	Not applicable	Not applicable	Not applicable	Not applicable
4-Fluoro-1,3-dioxolan-2- one	Not applicable	Not applicable	Not applicable	Not applicable
Polypropylene	TWA = 5mg/m ³	Not applicable	Not applicable	Not applicable
Carboxymethyl cellulose sodium salt	Not applicable	Not applicable	Not applicable	Not applicable
Polyvinylidene Fluoride	Not applicable	Not applicable	Not applicable	Not applicable
Nickel (Ni)	TWA = 1.5 mg/m ³ (inhalable particulate matter)	TWA = 1 mg/m ³ (metal and insoluble compounds (as Ni)) TWA = 1 mg/m ³ (soluble compounds (as Ni))	Ca TWA = 0.015 mg/m ³ (metal and insoluble compounds (as Ni)) Ca TWA = 0.015 mg/m ³ (soluble compounds (as Ni))	Not applicable
Lithium carbonate	Not applicable	Not applicable	Not applicable	Not applicable

Aluminium lithium oxide (AlLiO)	TWA = 1 mg/m ³ (respirable particulate matter) (Aluminium CAS. No. 7429-90-5)	TWA = 15 mg/m ³ (Aluminium metal (as Al) Total dust), TWA = 5 mg/m ³ (Aluminium metal (as Al) Respirable fraction), (Aluminium CAS.No.7429-90-5)	TWA = 1 mg/m ³ (Aluminium metal (as Al), Respirable fraction), (Aluminium CAS.No.7429-90-5)	Not applicable
Boehmite (Al(OH)O)	Not applicable	Not applicable	Not applicable	Not applicable
1-Methyl-2-pyrrolidinone	Not applicable	Not applicable	Not applicable	TWA = 40 mg/m ³ , TWA = 10 ppm, STEL = 80 mg/m ³ , STEL = 20 ppm
Chromium	TWA = 0.5 mg/m ³ (inhalable particulate matter); TLV basis: Respiratory tract irritation, TWA = 0.5mg/m ³	TWA = 0.5 mg/m ³ (Chromium (II) compounds (as Cr), Chromium (III) compounds (as Cr)) TWA = 1 mg/m ³ (Chromium metal and insol. salts (as Cr))	TWA = 0.5 mg/m ³ (Chromium (II) compounds (as Cr), Chromium (III) compounds (as Cr)) TWA = 0.5 mg/m ³ (Chromium metal and insol. salts (as Cr))	TWA = 2 mg/m ³
ethylbenzene	TWA = 20 ppm	TWA = 100 ppm TWA = 435 mg/m ³	TWA = 100 ppm (ST) 125 ppm	TWA = 442 mg/m ³ , TWA = 100 ppm, STEL = 884 mg/m ³ , STEL = 200 ppm
diiron trioxide	TWA = 5 mg/m ³	TWA = 10 mg/m ³ (fume)	TWA = 5 mg/m ³ (dust and fume)	Not applicable
ethyl acetate	TWA = 400 ppm	TWA = 400 ppm TWA = 1400 mg/m ³	TWA = 400 ppm	TWA = 734 mg/m ³ , TWA = 200 ppm, STEL = 1468 mg/m ³ , STEL = 400 ppm
Steel and other inert materials	Not applicable	Not applicable	Not applicable	Not applicable

EYE PROTECTION:

Not necessary under conditions of normal use

SKIN PROTECTION:

Not necessary under conditions of normal use

RESPIRATORY PROTECTION:

Not necessary under conditions of normal use

ENGINEERING CONTROLS:

Not necessary under conditions of normal use

GENERAL HYGIENE CONSIDERATIONS:

Not necessary under conditions of normal use

EXPOSURE GUIDELINES:

Not necessary under conditions of normal use

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Data represent typical values and are not intended to be specifications. NA=Not Applicable; ND=Not Determined

Physical state: Solid	Viscosity: NA
Colour: NA	Upper Explosive Limits (vol % in air): NA
Odor: Odorless	Lower Explosive Limits (vol % in air): NA
Odor Threshold: NA	Vapor pressure: NA
pH: NA	Vapor density: NA
Melting/Freezing Point: NA	Relative density: NA
VOC Content: NA	Solubility: Insoluble
Boiling Point: NA	Partition Coefficient: NA
Flash Point: NA	Auto-ignition Temperature: NA
Evaporation Rate: NA	Decomposition Temperature: NA
Specific Gravity: NA	Flammability (solid, gas): Organic components will burn if cell is incinerated.

SECTION 10: STABILITY AND REACTIVITY

INCOMPATIBLE MATERIALS:

Water, heat oxidizers and strong acids.

DECOMPOSITION PRODUCTS MAY INCLUDE:

None under normal conditions.
Hydrogen Fluoride, Phosphorus Oxides, Carbon Monoxide, Carbon Dioxide, Lithium Hydroxide, Manganese Oxides, Aluminum Oxide, possible fluoro-compounds, Carbon soot from decomposition by heat and combustion during burning.

CONDITIONS TO AVOID:

Do not crush, puncture, incinerate, immerse in water or heat over 212°F (100°C). Steel casing slowly dissolves in strong mineral acids.

POLYMERIZATION:

Hazardous polymerization will not occur. Spontaneous decomposition will not occur at normal temperature.

CHEMICAL STABILITY:

This product is stable under normal temperatures and pressures.

REACTIVITY:

Stable at normal temperature.

SECTION 11: TOXICOLOGY INFORMATION

LIKELY ROUTES OF EXPOSURE: Inhalation, Eye and Skin contact

Eye contact, skin contact, skin absorption, inhalation only if burned. Hydrofluoric acid is extremely corrosive. Contact with hydrogen fluoride fumes is to be avoided. Permissible exposure limit is 3ppm. In case of contact with hydrogen fluoride fumes, immediately leave the area and seek first aid and emergency medical attention. Symptoms may have delayed onset. Fluoride ions penetrate skin readily causing destruction of deep tissue layers even bone. Fluoride interferes with nerve impulse conduction causing severe pain or absence of sensations. Immediately flush eyes or skin with water for at least 20 minutes to neutralize the acidity and remove some fluoride. Remove and destroy all contaminated clothing and permeable personal possessions. Before re-use, impermeable possessions should be soaked in benzalkonium chloride after washing. Following flushing of the affected areas, an iced aqueous solution of benzalkonium chloride or 2.5% calcium gluconate gel should be applied to react with the fluoride ion. Compresses and wraps may be used for areas where immersion is not practical.

Medicated dressing should be changed every 2 minutes. Exposure to hydrofluoric acid fumes sufficient to cause pain requires immediate hospitalization for monitoring for pulmonary edema.

ACUTE SYMPTOMS AND EFFECTS:

Inhalation: No further toxicological data known
Eye contact: No further toxicological data known
Skin contact: No further toxicological data known
Ingestion: No further toxicological data known

OTHER:

No further data known.

SECTION 12: ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION:

None in routine handling of product.

TOXICITY:

No data available

PERSISTENCE AND DEGRADABILITY (BIOPERSISTENCY & BIODEGRADABILITY):

None in routine handling of product.

POTENTIAL OF BIOACCUMULATION:

None in routine handling of product.

MOBILITY IN SOIL:

None in routine handling of product.

OTHER ADVERSE EFFECTS:

No data available

SECTION 13: DISPOSAL CONSIDERATIONS

DISPOSAL:

Dispose in accordance with appropriate regulations. Always consult and obey all international, federal, provincial/state and local hazardous waste disposal laws. Some jurisdictions require recycling of this spent product. Battery recycling is encouraged. Lithium-ion batteries are safe for disposal in the normal municipal waste stream since they are not defined by the federal government as hazardous waste. However, Lithium-ion batteries are recyclable.

This product does not contain mercury, cadmium or Lithium (metal).

DO NOT INCINERATE or subject battery cells to temperatures in excess of 100°C (212°F).

SECTION 14: TRANSPORTATION INFORMATION

U.S. DOT HAZARDOUS MATERIAL REGULATIONS (RE: GROUND TRANSPORT)

Proper Shipping Description:

UN3480 Lithium-ion batteries; UN3481 Lithium-ion batteries packed with or contained in equipment; Class 9.

Evolution Power Tools Ltd. Lithium-ion batteries are to be shipped in compliance with relevant requirements of HMR "49 CFR 173.185".

CANADA TRANSPORT DANGEROUS GOODS (RE: GROUND TRANSPORT)

Proper Shipping Description:

UN3480 Lithium-ion batteries; UN3481 Lithium-ion batteries packed with or contained in equipment; Class 9.

Evolution Power Tools Ltd. Lithium-ion batteries are to be shipped in compliance with relevant requirements of TDG "Part 2" (Section 2.43), or TDG "Schedule 2" (Special Provision 34), as applicable.

INTERNATIONAL DANGEROUS GOODS REGULATIONS (RE: AIR, SEA, GROUND TRANSPORT)

Proper Shipping Description:

UN3480 Lithium-ion batteries; UN3481 Lithium-ion batteries packed with or contained in equipment; Class 9.

Evolution Power Tools Ltd. Lithium-ion batteries are to be shipped in compliance with relevant requirements of the following DG Regulations:

- IATA Dangerous Goods Regulations – 2021(62nd Edition) and ICAO Technical Instructions (2020-2021): Packing Instructions 965; 966; 967. Apply Section I, Section IB, or Section II, as applicable.
- IMDG Code: Packing Instruction P903, or Special Provision 188, as applicable.
- UN Model Regulations on the Transport of Dangerous Goods: Packing Instruction P903, or Special Provision 188, as applicable.
- UN European Agreements (ADR/RID/ADN): Packing Instruction P903, or Special Provision 188, as applicable.
- Australian Dangerous Goods (ADG): Packing Instruction P903, or Special Provision 188, as applicable.

IMPORTANT CONSIDERATIONS:

The proper classification, packaging, labeling, marking, and documentation requirements for shipping Lithium-ion batteries is dependent upon whether the batteries are:

- a.) Rated at 100 Watt-hours (Wh) or less; or
- b.) Rated at greater than 100Wh.

Lithium-ion batteries rated 100Wh or less are exempted from certain Class 9 DG requirements. Always check compliance of Lithium-ion battery consignments against the current DG Regulations in effect that govern the chosen mode of transport. When in doubt, contact the carrier or other trained Dangerous Goods professional to confirm acceptability.

UN 38.3 BATTERY TRANSPORTATION TESTING:

Evolution Power Tools Ltd. Rechargeable Lithium-ion batteries listed in Annex 1 have passed the relevant transportation test requirements as described in the UN *Manual of Tests and Criteria*, Part III, section 38.3.

UN 38.3 Test Reports are maintained on file at the headquarters of Evolution Power Tools Limited located at Venture One, Longacre Close, Holbrook Industrial Estate, Sheffield, S20 3FR, UK.

SECTION 15: REGULATORY INFORMATION

GLOBAL INVENTORIES

TSCA: United States	See Sec. 14. Compliant with, relevant transportation test requirements as described in the UN Manual of Tests & Criteria, Part III, Sub-section 38.3.
DSL: Canada	See Sec. 14. Compliant with, relevant transportation test requirements as described in the UN Manual of Tests & Criteria, Part III, Sub-section 38.3.
ECL: Korea	Compliant with, relevant transportation test requirements as described in the UN Manual of Tests & Criteria, Part III, Sub-section 38.3.
PICCS: Philippines	Compliant with, relevant transportation test requirements as described in the UN Manual of Tests & Criteria, Part III, Sub-section 38.3.
ENCS: Japan	Compliant with, relevant transportation test requirements as described in the UN Manual of Tests & Criteria, Part III, Sub-section 38.3.
AICS: Australia	Compliant with, relevant transportation test requirements as described in the UN Manual of Tests & Criteria, Part III, Sub-section 38.3.
IECS: China	Compliant with, relevant transportation test requirements as described in the UN Manual of Tests & Criteria, Part III, Sub-section 38.3.
EINECS: European Union	Compliant with, relevant transportation test requirements as described in the UN Manual of Tests & Criteria, Part III, Sub-section 38.3.

SARA 313 Information:

SARA Title III Section 313: This product does not contain regulated levels of any toxic chemical subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and 40 CFR part 372.

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65)

This product does not contain regulated levels of any toxic chemical subject to the reporting requirements of California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65)

WHMIS: Canadian Workplace

This product does not contain regulated levels of any toxic chemical subject to the reporting requirements.

SECTION 16: OTHER INFORMATION

ABBREVIATIONS:

- TSCA** Toxic Substance Control Act
- ICAO** International Civil Aviation Organization
- IMDG** International Maritime Dangerous
- OSHA** Occupational Safety and Health
- IARC/NTP** International Agency for Research on Cancer/National Toxicology Program
- SARA** Superfund Amendments and Reauthorization Act of 1986
- ACGIH** American Conference of Governmental Industrial Hygienists
- NIOSH/MSHA** National Institute for Occupational Safety Health/
Mine Safety and Health Administration
- WHMIS** Workplace Hazardous Materials Information System

Prepared by: Evolution Power Tools Limited

The batteries referenced herein are considered exempt articles and are not subject to the OSHA Hazard Communication Standard, therefore, a SDS is not required. This sheet is being provided as a service to our customers.

The information and recommendations set forth are made in good faith and believed to be accurate as of the date of preparation. **Evolution Power Tools Limited** makes no warranty, expressed or implied, regarding the accuracy of this data or the results to be obtained from the use thereto.

