

**SAFETY DATA SHEET****SECTION 1. IDENTIFICATION****Product identifier used on the label**: **Lithium-ion Battery Pack****Product Code(s)** : MTD48RB30/MTD48RB23**Recommended use of the chemical and restrictions on use**: Lithium battery packs for lawnmowers  
No restrictions on use known.**Chemical family** : Article**Name, address, and telephone number of the manufacturer:****MTD Consumer Products México S.A. de C.V.**Privada Murrieta S/N  
Parque Industrial San Ramón  
C.P. 84092Nogales, Sonora, México  
Manufacturer's Telephone # : 631 31 42991**Name, address, and telephone number of the supplier:****MTD Southwest Inc.**9235 S McKemy St.  
Tempe, AZ, USA  
85284

Supplier's Telephone # : (480) 961-1002 (8:00 am to 5:00 pm)

**24 Hr. Emergency Tel #** : INFOTRAC: (800) 535-5053 (Within Continental US and Canada); (352) 323-3500  
(International)**SECTION 2. HAZARDS IDENTIFICATION****Classification of the chemical**

Lithium ion battery contained in protective black plastic casing. No odor.

**Most important hazards:**

This product is an article, and is not hazardous in the form in which it is shipped by the manufacturer. However, if the battery is misused or damaged, it will present a physical and health hazard. If the battery is damaged or misused (e.g. is short-circuited; is exposed to moisture), hazardous properties may include the following:

When exposed to heat, when short circuited, or when exposed to incompatible materials, the battery may rupture and release hazardous substances. These substances can explode and burn.  
Causes skin and eye irritation. Harmful if inhaled. Inhalation of mists can cause severe respiratory irritation. Contains material that may cause adverse reproductive effects. Contains material which can cause cancer. Occupational exposure to the substance or mixture may cause adverse effects. For further information, please refer to section 11 of the SDS. An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Avoid release to the environment. See Section 12 for more environmental information.

If the battery is damaged or misused (e.g. is short-circuited; is exposed to moisture), the product will be classified as hazardous under U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015). Classification:

Acute toxicity, inhalation - Category 4  
Skin corrosion/irritation - Category 2  
Eye damage/irritation - Category 2  
Skin sensitization - Category 1A  
Carcinogen - Category 1  
Specific Target organ toxicity, repeated exposure- Category 1

The below U.S. OSHA Hazcom 2012 and Canadian WHMIS WHMIS 2015 labeling information, is being provided for informational purposes, should users be exposed to damaged batteries, or if the batteries are misused.

**Label elements***Hazard pictogram(s)*

## SAFETY DATA SHEET



Signal Word

DANGER!

Hazard statement(s)

Harmful if inhaled.  
 Causes skin irritation.  
 Causes serious eye irritation.  
 May cause an allergic skin reaction.  
 May cause cancer.  
 Causes damage to organs through prolonged or repeated exposure.

Precautionary statement(s)

Obtain special instructions before use.  
 Do not handle until all safety precautions have been read and understood.  
 Do not breathe dust, fume or vapor.  
 Wash exposed skin thoroughly after handling.  
 Use only outdoors or in a well-ventilated area.  
 Contaminated work clothing must not be allowed out of the workplace.  
 Wear protective gloves/clothing and eye/face protection.

IF exposed: Call a Poison Center or doctor/physician.  
 If on skin: Wash with plenty of water.  
 Take off contaminated clothing and wash it before reuse.  
 If skin irritation or rash occurs: Get medical advice/attention.  
 IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
 Call a poison center/doctor if you feel unwell.  
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.  
 Continue rinsing.  
 If eye irritation persists: get medical advice/attention.

Store in a well-ventilated place. Keep container tightly closed.  
 Store locked up.

Dispose of contents/container in accordance with local regulation.

**Other hazards**

Batteries may get hot, explode or ignite and cause serious injury if mishandled, crushed or abused. When exposed to heat, when short circuited, or when exposed to incompatible materials, the battery may rupture and release hazardous substances. These substances can explode and burn. Burning batteries may emit toxic fumes.

**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

Solid article. Lithium ion battery contained in protective black plastic casing.

<u>Chemical name</u>	<u>Common name and synonyms</u>	<u>CAS #</u>	<u>Concentration (% by weight)</u>
Lithium nickel oxide (LiNiO <sub>2</sub> )	Lithium nickel dioxide	12031-65-1	30.0 - 60.0
Graphite	Mineral carbon	7782-42-5	10.0 - 30.0
Iron	Not available.	7439-89-6	7.0 - 13.0
Copper	Not available.	7440-50-8	7.0 - 13.0
Carbonic acid, dimethyl ester	Methyl carbonate	616-38-6	7.0 - 13.0
Aluminum	Not available.	7429-90-5	1.0 - 5.0

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Carbonate, methyl ethyl	Carbonic acid, ethyl methyl ester	623-53-0	1.0 - 5.0
Lithium hexafluorophosphate	Not available.	21324-40-3	1.0 - 5.0
Carbon black	Furnace black Lamp black Thermal black	1333-86-4	1.0 - 5.0

The exact concentrations of the above listed chemicals are being withheld as a trade secret.

### SECTION 4. FIRST-AID MEASURES

#### Description of first aid measures

- Ingestion* : If a battery or the electrolyte is swallowed, consider it a chemical emergency. If battery is swallowed, consult a physician immediately. Do not induce vomiting, or give the person food or drink.
- Inhalation* : None required under normal conditions.  
If the battery is damaged, misused, or involved in a fire, and exposure occurs:  
IF INHALED: Remove person to fresh air and keep comfortable for breathing. If breathing is difficult, give oxygen by qualified medical personnel only. If breathing stops, provide artificial respiration. Call a POISON CENTER or doctor/physician if you feel unwell.
- Skin contact* : None required under normal conditions.  
If the battery is damaged, misused, or involved in a fire, and exposure occurs:  
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse.
- Eye contact* : None required under normal conditions.  
If the battery is damaged, misused, or involved in a fire, and exposure occurs:  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, consult a specialist.

#### Most important symptoms and effects, both acute and delayed

- : This product is an article, and is not hazardous in the form in which it is shipped by the manufacturer. However, if the battery is misused or damaged, it will present a physical and health hazard. If the battery is damaged or misused (e.g. is short-circuited; is exposed to moisture), hazardous properties may include the following:  
Causes skin irritation. Symptoms may include redness, itching and swelling.  
Causes serious eye irritation. Symptoms may include severe pain, tearing, redness, swelling and blurred vision.  
May cause an allergic skin reaction (e.g. swelling, rash and eczema).  
May cause cancer. Symptoms may include persistent coughing, shortness of breath, coughing up blood and wheezing.  
If product is heated or misused, inhalation of fumes may cause severe irritation to the nose, throat and respiratory tract. Symptoms may include coughing, choking and wheezing.  
Causes damage to organs through prolonged or repeated exposure. May produce symptoms of vasodilation (Reduced blood pressure and other cardiovascular effects to produce such symptoms as throbbing headache, light headedness, flushing, dizziness, weakness, heart palpitations, nausea, fatigue, confusion and possible loss of consciousness).

#### Indication of any immediate medical attention and special treatment needed

- : Provide general supportive measures and treat symptomatically.  
Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

### SECTION 5. FIRE-FIGHTING MEASURES

#### Extinguishing media

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### *Suitable extinguishing media*

- : Fighting a fire that contains lithium batteries requires:
  1. Removing external electrical power from device (if applicable).
  2. Extinguishing the fire, and
  3. Cooling of the remaining cells to stop the thermal runaway.Fires can be controlled by blanketing the fire with a Class D dry extinguisher or by ringing the fire with a dam of dry sand. Once the fire is extinguished, use flooding quantities of water to cool the batteries to prevent thermal runaway.

### *Unsuitable extinguishing media*

- : Use water spray with caution. May react slowly with water, releasing flammable hydrogen gas.

### **Special hazards arising from the substance or mixture / Conditions of flammability**

- : Not flammable under normal conditions of use. Batteries may get hot, explode or ignite and cause serious injury if mishandled, crushed or abused. When exposed to heat, when short circuited, or when exposed to incompatible materials, the battery may rupture and release hazardous substances. These substances can explode and burn. In contact with water releases flammable gases which may ignite spontaneously. Burning batteries may emit toxic fumes.

### **Flammability classification (OSHA 29 CFR 1910.106)**

- : Not considered flammable.

### **Hazardous combustion products**

- : Carbon oxides; Metal oxides; Oxygen; Lithium oxide; Sulfur oxides; Hydrogen sulfide; Other irritating fumes and smoke.

### **Special protective equipment and precautions for firefighters**

#### *Protective equipment for fire-fighters*

- : Firefighters should wear proper protective equipment and self-contained breathing apparatus with full face piece operated in positive pressure mode. Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

#### *Special fire-fighting procedures*

- : Do not enter fire area without proper protection. Move containers from fire area if safe to do so. Approach fire from upwind to avoid hazardous vapours and toxic decomposition products. Use water to cool fire-exposed containers. Do not allow run-off from fire fighting to enter drains or water courses. Dike for water control.

## SECTION 6. ACCIDENTAL RELEASE MEASURES

### **Personal precautions, protective equipment and emergency procedures**

- : Keep people away from and upwind of spill/leak. Restrict access to area until completion of clean-up. Wear personal protective equipment. Refer to protective measures listed in sections 7 and 8.

**Environmental precautions** : Prevent product from entering drains, sewers, waterways and soil. Avoid release to the environment.

### **Methods and material for containment and cleaning up**

- : Ventilate the area. Remove all sources of ignition. Prevent further leakage or spillage if safe to do so. Shovel into suitable container for disposal.  
If batteries show signs of leaking: Use inert, non-combustible absorbents to assist the pick up of material. Pick up and transfer to properly labeled containers. Notify the appropriate authorities as required. For waste disposal, see Section 13.

### **Special spill response procedures**

- : If a spill/release in excess of the EPA reportable quantity is made into the environment, immediately notify the national response center in the United States (phone: 1-800-424-8802).  
US CERCLA Reportable quantity (RQ): See section 15.

In Canada: Contact appropriate local and provincial environmental authorities for assistance and/or reporting requirements.

## SECTION 7. HANDLING AND STORAGE

### **Precautions for safe handling**

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- : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.

When used correctly, these batteries provide a safe source of power. When exposed to heat, when short circuited, or when exposed to incompatible materials, the battery may rupture and release hazardous substances. These substances can explode and burn. Do not short-circuit battery! Avoid reversing battery polarity within the battery assembly; this may cause the cell to flame or leak. Do not disassemble or damage the battery. Do not mix battery systems, such as alkaline and zinc carbon, in the same equipment. Be sure to securely pack batteries by providing partitions in packaging boxes. Use strong material for packaging boxes to avoid damage by vibration, impact, dropping and stacking during transport. Keep away from heat and flame. Do not allow contact with water. Keep away from incompatibles. DO NOT place on metal or conductive surfaces. This will short out the battery pack and destroy the batteries.

Use only outdoors or in a well-ventilated area. Wear suitable protective equipment during handling. Wear protective gloves/clothing and eye/face protection. Avoid contact with eyes, skin and clothing. Do not breathe dust, fume or vapor. Wash thoroughly after handling. Exhausted batteries should be immediately removed from equipment, and disposed of properly.

- Conditions for safe storage** : Store in a dry place. Store in a closed container. Store in original containers. Store in a cool, dry place out of direct sunlight. Store locked up. Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Inspect periodically for damage or leaks. Keep containers dry and tightly closed to avoid moisture absorption and contamination.

- Incompatible materials** : Water; Oxidizing agents; Acids; Strong bases; Halogenated compounds; Reducing agents; Reactive metals

### SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<u>Exposure Limits:</u>					
	<u>Chemical Name</u>	<u>ACGIH TLV</u>		<u>OSHA PEL</u>	
		<u>TWA</u>	<u>STEL</u>	<u>PEL</u>	<u>STEL</u>
Lithium nickel oxide (LiNiO <sub>2</sub> )	N/Av	N/Av	N/Av	N/Av	
Graphite	2 mg/m <sup>3</sup> (all forms except graphite fibers, respirable fraction)	N/Av	15 mg/m <sup>3</sup> (total dust); 5 mg/m <sup>3</sup> (respirable) (PNOR)	N/Av	
Iron	N/Av	N/Av	N/Av	N/Av	
Copper	0.2 mg/m <sup>3</sup> (fume); 1 mg/m <sup>3</sup> (Dust and mist)	N/Av	0.1 mg/m <sup>3</sup> (fume); 1 mg/m <sup>3</sup> (Dust and mist)	N/Av	
Carbonic acid, dimethyl ester	N/Av	N/Av	N/Av	N/Av	
Aluminum	1 mg/m <sup>3</sup> (respirable)	N/Av	15 mg/m <sup>3</sup> (total dust); 5 mg/m <sup>3</sup> (respirable)	N/Av	
Carbonate, methyl ethyl	N/Av	N/Av	N/Av	N/Av	
Lithium hexafluorophosphate	N/Av	N/Av	N/Av	N/Av	
Carbon black	3.0 mg/m <sup>3</sup> (inhalable)	N/Av	3.5 mg/m <sup>3</sup>	N/Av	

#### Exposure controls

Ventilation and engineering measures

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- : No special ventilation requirements under normal use. Provide adequate ventilation. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. In case of insufficient ventilation wear suitable respiratory equipment.
- Respiratory protection** : None required under normal conditions. If airbourne concentrations are above the permissible exposure limit or are not known, use NIOSH-approved respirators. Respirators should be selected based on the form and concentration of contaminants in air, and in accordance with OSHA (29 CFR 1910.134) or CSA Z94.4-02. Advice should be sought from respiratory protection specialists.
- Skin protection** : Not required under normal conditions of handling.  
If outer containers are damaged and leaking: Wear protective gloves/clothing. The suitability for a specific workplace should be discussed with the producers of the protective gloves. Wear resistant clothing and boots.
- Eye / face protection** : Not required under normal conditions of handling.  
If outer containers are damaged and leaking: Wear eye/face protection. Wear as appropriate: Safety glasses with side shields; Tightly fitting safety goggles. A full face shield may also be necessary.
- Other protective equipment** : Ensure that eyewash stations and safety showers are close to the workstation location. Other equipment may be required depending on workplace standards.
- General hygiene considerations** : Do not breathe dust, fume or vapor. Avoid contact with eyes, skin and clothing. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Remove and wash contaminated clothing before re-use. Handle in accordance with good industrial hygiene and safety practice.

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance** : Lithium ion battery contained in protective black plastic casing.
- Odour** : None.
- Odour threshold** : N/Av
- pH** : N/Av
- Melting/Freezing point** : N/Av
- Initial boiling point and boiling range** : N/Av
- Flash point** : Not applicable.
- Flashpoint (Method)** : Not applicable.
- Evaporation rate (BuAe = 1)** : N/Av
- Flammability (solid, gas)** : Not flammable.
- Lower flammable limit (% by vol.)** : N/Av
- Upper flammable limit (% by vol.)** : N/Av
- Oxidizing properties** : None known.
- Explosive properties** : Not explosive
- Vapour pressure** : N/Av
- Vapour density** : N/Av
- Relative density / Specific gravity** : N/Av
- Solubility in water** : Batteries are insoluble in water.
- Other solubility(ies)** : N/Av
- Partition coefficient: n-octanol/water or Coefficient of water/oil distribution** : N/Av
- Auto-ignition temperature** : N/Av
- Decomposition temperature** : N/Av
- Viscosity** : N/Av
- Volatiles (% by weight)** : N/Av
- Volatile organic Compounds (VOC's)** : N/Av

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### Absolute pressure of container

: N/Ap

Flame projection length : N/Ap

### Other physical/chemical comments

: Model # - MTD48RB30  
Nominal capacity-32.5Ah  
Rated capacity-30 Ah  
Wh-1,638Wh  
(number of cell=182)

Model# - MTD48RB23  
Nominal capacity-25 Ah  
Rated capacity- 23Ah  
Wh-1,260Wh  
(number of cell=140)

## SECTION 10. STABILITY AND REACTIVITY

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

**Chemical stability** : Stable under normal conditions.

### Possibility of hazardous reactions

: When exposed to heat, when short circuited, or when exposed to incompatible materials, the battery may rupture and release hazardous substances. These substances can explode and burn. May react slowly with water, releasing flammable hydrogen gas.

**Conditions to avoid** : Do not use in areas without adequate ventilation. Avoid contact with incompatible materials. Keep away from heat, direct flame and other ignition sources. Avoid moisture.

**Incompatible materials** : Water; Oxidizing agents; Acids; Strong bases; Halogenated compounds; Reducing agents; Reactive metals

### Hazardous decomposition products

: Hydrogen. Refer also to hazardous combustion products, Section 5.

## SECTION 11. TOXICOLOGICAL INFORMATION

### Information on likely routes of exposure:

**Routes of entry inhalation** : NO

**Routes of entry skin & eye** : YES

**Routes of entry Ingestion** : YES

### Routes of exposure skin absorption

: NO

### Potential Health Effects:

#### Signs and symptoms of short-term (acute) exposure

##### *Sign and symptoms Inhalation*

: This product is an article, and is not hazardous in the form in which it is shipped by the manufacturer. If the battery is damaged or misused (e.g. is short-circuited; is exposed to moisture), hazardous properties may include the following:  
Harmful if inhaled. If product is heated or misused, inhalation of fumes may cause severe irritation to the nose, throat and respiratory tract. Symptoms may include coughing, choking and wheezing.

##### *Sign and symptoms ingestion*

: If a battery or the electrolyte is swallowed, consider it a chemical emergency. Ingestion can cause gastrointestinal irritation, nausea, and diarrhea.

##### *Sign and symptoms skin*

: None expected, when used as intended. If the battery is damaged or misused (e.g. is short-circuited; is exposed to moisture), hazardous properties may include the following:  
Causes skin irritation. Symptoms may include redness, blistering, pain and swelling.

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- Sign and symptoms eyes** : None expected, when used as intended. If the battery is damaged or misused (e.g. is short-circuited; is exposed to moisture), hazardous properties may include the following:  
Causes serious eye irritation. Symptoms may include severe pain, tearing, redness, swelling and blurred vision.
- Potential Chronic Health Effects** : Causes damage to organs through prolonged or repeated exposure. May cause circulatory effects, such as increased blood pressure, or kidney damage on prolonged overexposure.
- Mutagenicity** : No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
- Carcinogenicity** : None expected, when used as intended. If the battery is damaged or misused (e.g. is short-circuited; is exposed to moisture), hazardous properties may include the following:  
This material is classified as hazardous under U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015). Classification:  
Carcinogen - Category 1. May cause cancer. Symptoms may include persistent coughing, shortness of breath, coughing up blood and wheezing.  
  
Contains carbon black, a suspected human carcinogenic agent. Carbon black is classified as carcinogenic by IARC (Group 2B). Contains Lithium Nickel Oxide which is listed as carcinogenic by IARC (Group 1).
- Reproductive effects & Teratogenicity** : This product is not expected to cause reproductive or developmental effects.
- Sensitization to material** : If the battery is damaged or misused (e.g. is short-circuited; is exposed to moisture), hazardous properties may include the following: May cause an allergic skin reaction (e.g. swelling, rash and eczema). Not expected to be a respiratory sensitizer.
- Specific target organ effects** : None expected, when used as intended.  
If the battery is damaged or misused (e.g. is short-circuited; is exposed to moisture), hazardous properties may include the following:  
This material is classified as hazardous under U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015). Classification:  
Specific Target organ toxicity, repeated exposure- Category 1 Causes damage to organs through prolonged or repeated exposure. May produce symptoms of vasodilation (Reduced blood pressure and other cardiovascular effects to produce such symptoms as throbbing headache, light headedness, flushing, dizziness, weakness, heart palpitations, nausea, fatigue, confusion and possible loss of consciousness).  
  
Not classified as a specific target organ toxicity-single exposure.
- Medical conditions aggravated by overexposure** : Pre-existing skin, eye, respiratory and central nervous system disorders.
- Synergistic materials** : None known or reported by the manufacturer.
- Toxicological data** : There is no available data for the product itself, only for the ingredients. See below for individual ingredient acute toxicity data.  
The calculated ATE values for this mixture are:  
ATE oral =7292.31 mg/kg  
ATE inhalation (dust/mist) = 3.20 mg/L



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<b>Chemical name</b>	<b>LC<sub>50</sub>(4hr)</b>	<b>LD<sub>50</sub></b>	
	<b>inh, rat</b>	<b>(Oral, rat)</b>	<b>(Rabbit, dermal)</b>
Lithium nickel oxide (LiNiO <sub>2</sub> )	N/Av	N/Av	N/Av
Graphite	> 64.4 mg/L (dust)	> 10 000 mg/kg	N/Av
Iron	N/Av	98 600 mg/kg	N/Av
Copper	> 5.11 mg/L (dust) (No mortality)	> 2500 mg/kg	> 2000 mg/kg
Carbonic acid, dimethyl ester	>5.36 mg/L	5000 mg/kg	>2000 mg/kg
Aluminum	> 2.3 mg/L (dust) (No mortality)	> 2000 mg/kg (No mortality)	N/Av
Carbonate, methyl ethyl	>17.6 mg/L (No mortality)	>5000mg/kg (No mortality)	N/Av
Lithium hexafluorophosphate	0.46-0.48 mg/L	300 mg/kg	N/Av
Carbon black	6.75 mg/L (dust)	> 10 000 mg/kg	> 3000 mg/kg

**Other important toxicological hazards**

: None known or reported by the manufacturer.

**SECTION 12. ECOLOGICAL INFORMATION**

**Ecotoxicity** : No data is available on the product itself. Contains material that may be harmful in the environment. The product should not be allowed to enter drains or water courses, or be deposited where it can affect ground or surface waters. This product is an article, and is not hazardous in the form in which it is shipped by the manufacturer.

See the following tables for individual ingredient ecotoxicity data.

Graphite	7782-42-5	> 100 mg/L (Zebra fish)	N/Av	None.
Iron	7439-89-6	> 10 000 mg/L (Zebra fish)	N/Av	None.
Carbonic acid, dimethyl ester	616-38-6	>100 mg/L (Zebra fish)	N/Av	Not applicable.
Carbonate, methyl ethyl	623-53-0	>100 mg/L (Rainbow trout)	N/Av	None.
Carbon black	1333-86-4	> 1000 mg/L (Zebra fish)	N/Av	None.

Graphite	7782-42-5	> 100 mg/L (Daphnia magna)	N/Av	None.
Iron	7439-89-6	> 100 mg/L (Daphnia magna)	5.9 mg/L	None.
Carbonic acid, dimethyl ester	616-38-6	>100 mg/L Daphnia magna (Water flea)	25 mg/L Daphnia magna (Water flea)	Not applicable.
Carbonate, methyl ethyl	623-53-0	>100 mg/L Daphnia magna (Water flea)	N/Av	None.
Carbon black	1333-86-4	> 5600 mg/L/24hr (Daphnia magna)	N/Av	None.

Graphite	7782-42-5	> 100 mg/L/72hr (Green algae)	≥ 100 mg/L/72hr	None.
Iron	7439-89-6	N/Av	N/Av	None.
Carbonic acid, dimethyl ester	616-38-6	>100 mg/L/72hr (Green algae)	>100 mg/L/72hr (Green algae)	Not applicable.
Carbonate, methyl ethyl	623-53-0	62mg/L (Green algae)	62mg/L (Green algae)	None.
Carbon black	1333-86-4	> 10 000 mg/L/72hr (Green algae)	N/Av	None.

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**Persistence and degradability**

: No data is available on the product itself.

**Bioaccumulation potential**

: No data is available on the product itself. See the following data for ingredient information.

<u>Components</u>	<u>Partition coefficient n-octanol/water (log Kow)</u>	<u>Bioconcentration factor (BCF)</u>
Carbonic acid, dimethyl ester (CAS 616-38-6)	0.354	3.2
Carbonate, methyl ethyl (CAS 623-53-0)	0.972	No bioaccumulation expected

**Mobility in soil**

: No data is available on the product itself.

**Other Adverse Environmental effects**

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

### SECTION 13. DISPOSAL CONSIDERATIONS

**Handling for Disposal**

: Handle in accordance with good industrial hygiene and safety practice. Refer to protective measures listed in sections 7 and 8. This material and its container must be disposed of in a safe way.

**Methods of Disposal**





: Dispose in accordance with all applicable federal, state, provincial and local regulations.

**RCRA**

: If this product, as supplied, becomes a waste in the United States, it may meet the criteria of a hazardous waste as defined under RCRA, Title 40 CFR 261. It is the responsibility of the waste generator to determine the proper waste identification and disposal method. For disposal of unused or waste material, check with local, state and federal environmental agencies.

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**SECTION 14. TRANSPORT INFORMATION**

Regulatory Information	UN Number	UN proper shipping name	Transport hazard class(es)	Packing Group	Label
49CFR/DOT	UN3480	Lithium ion batteries	9	none	
<b>49CFR/DOT Additional information</b>	If the battery is packaged with the equipment, then it would ship as Lithium ion batteries packed with or contained in equipment, UN3481. Refer to 49 CFR section 173.185 for additional information.				
TDG	UN3480	Lithium Ion Batteries	9	none	
<b>TDG Additional information</b>	Please consult the TDG guidelines for further information. If the battery is packaged with the equipment, then it would ship as Lithium ion batteries packed with or contained in equipment, UN3481.				
ICAO/IATA	UN3480	Lithium ion batteries	9	none	
<b>ICAO/IATA Additional information</b>	Refer to the appropriate Packing Instruction, prior to shipping this material. Review all State and Operator Variations, prior to shipping this material. If the battery is packaged with the equipment, then it would ship as Lithium ion batteries packed with or contained in equipment, UN3481.				
IMDG	UN3480	LITHIUM ION BATTERIES	9	none	
<b>IMDG Additional information</b>	Consult the IMDG regulations for exceptions. If the battery is packaged with the equipment, then it would ship as Lithium ion batteries packed with or contained in equipment, UN3481.				

**Special precautions for user** : Keep away from heat and flame. Keep containers dry and tightly closed to avoid moisture absorption and contamination. Appropriate advice on safety must accompany the package.

**Environmental hazards** : This product does not meet the criteria for an environmentally hazardous mixture, according to the IMDG Code. See Section 12 for more environmental information.

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**  
: No information available.

**SECTION 15 - REGULATORY INFORMATION**

**US Federal Information:**

Components listed below are present on the following U.S. Federal chemical lists:

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<u>Ingredients</u>	CAS #	TSCA Inventory	CERCLA Reportable Quantity(RQ) (40 CFR 117.302):	SARA TITLE III: Sec. 302, Extremely Hazardous Substance, 40 CFR 355:	SARA TITLE III: Sec. 313, 40 CFR 372, Specific Toxic Chemical	
					Toxic Chemical	de minimus Concentration
Lithium nickel oxide (LiNiO <sub>2</sub> )	12031-65-1	Yes	N/Ap	N/Av	No	N/Ap
Graphite	7782-42-5	Yes	None.	None.	No	N/Ap
Iron	7439-89-6	Yes	None.	None.	No	N/Ap
Copper	7440-50-8	Yes	5000 lbs / 2270 kg	None.	Yes	1%
Carbonic acid, dimethyl ester	616-38-6	Yes	N/Ap	N/Av	No	N/Ap
Aluminum	7429-90-5	Yes	None.	None.	Yes	1%
Carbonate, methyl ethyl	623-53-0	Yes	N/Ap	N/Av	No	N/Ap
Lithium hexafluorophosphate	21324-40-3	Yes	N/Ap	N/Av	No	N/Ap
Carbon black	1333-86-4	Yes	None.	None.	No	N/Ap

SARA TITLE III: Sec. 311 and 312, SDS Requirements, 40 CFR 370 Hazard Classes:

If the battery is damaged or misused (e.g. is short-circuited; is exposed to moisture), hazardous properties may include the following: Health hazards (Acute toxicity Skin irritation ; Eye irritation; Carcinogenicity; Specific target organ toxicity, repeated exposure).

Under SARA Sections 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are 500 pounds or the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.

**US State Right to Know Laws:**

The following chemicals are specifically listed by individual States:

<u>Ingredients</u>	CAS #	California Proposition 65		State "Right to Know" Lists					
		Listed	Type of Toxicity	CA	MA	MN	NJ	PA	RI
Lithium nickel oxide (LiNiO <sub>2</sub> )	12031-65-1	Yes	Cancer.	No	No	No	No	No	No
Graphite	7782-42-5	No	N/Ap	Yes	Yes	Yes	Yes	Yes	Yes
Iron	7439-89-6	No	N/Ap	Yes	No	No	No	No	No
Copper	7440-50-8	No	N/Ap	Yes	Yes	Yes	Yes	Yes	Yes
Carbonic acid, dimethyl ester	616-38-6	No	N/Ap	No	Yes	No	Yes	Yes	No
Aluminum	7429-90-5	No	N/Ap	Yes	Yes	Yes	Yes	Yes	Yes
Carbonate, methyl ethyl	623-53-0	No	N/Ap	No	No	No	No	No	No
Lithium hexafluorophosphate	21324-40-3	No	N/Ap	No	No	No	No	No	No
Carbon black	1333-86-4	Yes	Cancer (airborne, unbound particles of respirable size)	Yes	Yes	Yes	Yes	Yes	Yes

**Canadian Information:**

Canadian Environmental Protection Act (CEPA) information: All ingredients listed appear on the Domestic Substances List (DSL).

WHMIS information: Refer to Section 2 for a WHMIS Classification for this product.

## SAFETY DATA SHEET

### International Information:

Components listed below are present on the following International Inventory list:

<u>Ingredients</u>	<u>CAS #</u>	<u>European EINECS</u>	<u>Australia AICS</u>	<u>Philippines PICCS</u>	<u>Japan ENCS</u>	<u>Korea KECI/KECL</u>	<u>China IECSC</u>	<u>NewZealand IOC</u>
Lithium nickel oxide (LiNiO <sub>2</sub> )	12031-65-1	N/Av	N/Av	N/Av	(1)-1235	2002-3-2046	N/Av	N/Av
Graphite	7782-42-5	231-955-3	Present	Present	Not listed	KE-18101	Present	Not listed
Iron	7439-89-6	231-096-4	Present	Present	Not listed	KE-21059	Present	May be used as a single component chemical under an appropriate group standard.
Copper	7440-50-8	231-159-6	Present	Present	Not listed	KE-08896	Present	HSR002948
Carbonic acid, dimethyl ester	616-38-6	210-478-4	Present	Present	(2)-2853	KE-11278	Present	HSR001252
Aluminum	7429-90-5	231-072-3	Present	Present	Not listed	KE-00881	Present	HSR001263 (coated, PGI); HSR001471, HSR001473 (coated, PGII); HSR001474 (pyrophoric); HSR001472 (uncoated, PGI)
Carbonate, methyl ethyl	623-53-0	N/Av	N/Av	Present	(2)-3698	99-3-1287	Present	N/Av
Lithium hexafluorophosphate	21324-40-3	244-334-7	Present	Present	(1)-326	KE-22564	Present	N/Av
Carbon black	1333-86-4	215-609-9	Present	Present	(5)-3328; (5)-5222	KE-04682	Present	HSR002801

### SECTION 16. OTHER INFORMATION

#### Legend

: ACGIH: American Conference of Governmental Industrial Hygienists  
AICS: Australian Inventory of Chemical Substances  
CA: California  
CAS: Chemical Abstract Services  
CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act of 1980  
CFR: Code of Federal Regulations  
CSA: Canadian Standards Association  
DOT: Department of Transportation  
EC50: Effective Concentration 50%  
EINECS: European Inventory of Existing Commercial chemical Substances  
ENCS: Existing and New Chemical Substances  
EPA: Environmental Protection Agency  
HSDB: Hazardous Substances Data Bank  
IARC: International Agency for Research on Cancer  
IATA: International Air Transport Association  
IBC: Intermediate Bulk Container  
ICAO: International Civil Aviation Organisation  
IECSC: Inventory of Existing Chemical Substances  
IMDG: International Maritime Dangerous Goods  
Inh: Inhalation  
IOC: Inventory of Chemicals  
ISHL: Industrial Safety Health Law  
KECI: Korean Existing Chemicals Inventory  
KECL: Korean Existing Chemicals List  
LC: Lethal Concentration  
LD: Lethal Dose  
MA: Massachusetts

### SAFETY DATA SHEET

MN: Minnesota  
 N/Ap: Not Applicable  
 N/Av: Not Available  
 NIOSH: National Institute of Occupational Safety and Health  
 NJ: New Jersey  
 NOEC: No observable effect concentration  
 NTP: National Toxicology Program  
 OECD: Organisation for Economic Co-operation and Development  
 OSHA: Occupational Safety and Health Administration  
 PA: Pennsylvania  
 PEL: Permissible exposure limit  
 PICCS: Philippine Inventory of Chemicals and Chemical Substances  
 QSAR: Quantitative structure-activity relationship  
 RCRA: Resource Conservation and Recovery Act  
 RI: Rhode Island  
 RTECS: Registry of Toxic Effects of Chemical Substances  
 SARA: Superfund Amendments and Reauthorization Act  
 SDS: Safety Data Sheet  
 STEL: Short Term Exposure Limit  
 TLV: Threshold Limit Values  
 TSCA: Toxic Substance Control Act  
 WHMIS: Workplace Hazardous Materials Identification System

**References**

- : 1. ACGIH, Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices for 2018.
- 2. International Agency for Research on Cancer Monographs, searched 2018.
- 3. Canadian Centre for Occupational Health and Safety, CCHInfoWeb databases, 2018 (Chempendium, HSDB and RTECs).
- 4. Material Safety Data Sheets from manufacturer.
- 5. US EPA Title III List of Lists - March 2015 version.
- 6. California Proposition 65 List - November 23, 2018 version.
- 7. OECD - The Global Portal to Information on Chemical Substances - eChemPortal, 2018.

**Preparation Date (mm/dd/yyyy)**

: 03/13/2019

**Other special considerations for handling**

: Provide adequate information, instruction and training for operators.

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