SAFETY DATA SHEET

BT06 2170N 16 Module Pack

Section 1. Identification

GHS product identifier : Lithium-Ion Battery Pack 2170N 16 Module Pack

Product code : M21-116000-00, M21-179066-00

Other means of identification : BT06 2170N 16 Module Pack

Product type : Solid.

Relevant identified uses of the substance or mixture and uses advised against

Product use : Electric Vehicle. This product, under the normal conditions of use, meets the definition of an "ARTICLE".

Area of application : Consumer applications, Professional applications.

Manufacturer : Lucid USA, Inc. dba Lucid Motors
7373 Gateway Blvd, Newark,
CA 94560

Telephone (General): 1-650-802-8181

e-mail address of person responsible for this SDS : EHS@lucidmotors.com

Emergency telephone number (with hours of operation) : US and Canada 1-888-533-7762 (24 hours), Outside US and Canada +1-813-708-1083 (24 hours)

Section 2. Hazards identification

This product, under the normal conditions of use, meets the definition of an "ARTICLE".
The uses intended for this product as provided are not expected to pose a physical hazard or health risk to employees.
Risk of exposure only occurs if battery is mechanically, thermally or electrically abused.
The materials contained in this product may only represent a hazard if the integrity of the cell or battery is compromised; physically, thermally, or electrically abused.
Below are the hazards anticipated under those conditions:

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture :

H302	ACUTE TOXICITY (oral) - Category 4
H331	ACUTE TOXICITY (inhalation) - Category 3
H314	SKIN CORROSION - Category 1C
H318	SERIOUS EYE DAMAGE - Category 1
H334	RESPIRATORY SENSITIZATION - Category 1
H317	SKIN SENSITIZATION - Category 1
H350	CARCINOGENICITY - Category 1A
H360	TOXIC TO REPRODUCTION - Category 1B
H335	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
H372	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1

Section 2. Hazards identification

Percentage of the mixture consisting of ingredient(s) of unknown acute oral toxicity: 80%
Percentage of the mixture consisting of ingredient(s) of unknown acute inhalation toxicity: 100%

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : H302 - Harmful if swallowed.
H314 - Causes severe skin burns and eye damage.
H317 - May cause an allergic skin reaction.
H331 - Toxic if inhaled.
H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335 - May cause respiratory irritation.
H350 - May cause cancer.
H360 - May damage fertility or the unborn child.
H372 - Causes damage to organs through prolonged or repeated exposure. (bones, brain, kidneys, lungs, respiratory tract, teeth)

Precautionary statements

Prevention : P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P280 - Wear protective gloves: 1 - 4 hours (breakthrough time): Recommended: nitrile (> 0.1 mm).. Wear protective clothing. Wear eye or face protection.
P284 - Wear respiratory protection.
P271 - Use only outdoors or in a well-ventilated area.
P260 - Do not breathe dust.
P270 - Do not eat, drink or smoke when using this product.
P264 - Wash thoroughly after handling.

Response : P308 + P313 - IF exposed or concerned: Get medical advice or attention.
P304 + P340, P310 - IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor.
P342 + P311 - If experiencing respiratory symptoms: Call a POISON CENTER or doctor.
P301 + P310, P330, P331 - IF SWALLOWED: Immediately call a POISON CENTER or doctor. Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353, P310 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. Immediately call a POISON CENTER or doctor.
P333 + P313 - If skin irritation or rash occurs: Get medical advice or attention.
P363 - Wash contaminated clothing before reuse.
P305 + P351 + P338, P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.

Storage : P405 - Store locked up.
P403 + P233 - Store in a well-ventilated place. Keep container tightly closed.

Disposal : P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Section 2. Hazards identification

Supplemental label elements : Under normal conditions of processing and use, exposure to the chemical constituents in this product is unlikely. 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.

Hazards not otherwise classified : Causes severe digestive tract burns.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Other means of identification : Not available.

Ingredient name	Other names	%	Identifiers
Aluminum, non flammable solid	-	>10 - <25	CAS: 7429-90-5
Iron	-	>10 - <20	CAS: 7439-89-6
Natural graphite	-	>10 - <20	CAS: 7782-42-5
Cobalt lithium dioxide	-	>10 - <20	CAS: 12190-79-3
Lithium nickel dioxide	-	>10 - <20	CAS: 12031-65-1
Lithium manganese oxide	-	>10 - <20	CAS: 12057-17-9
Cobalt lithium manganese nickel oxide	-	>10 - <20	CAS: 182442-95-1
Aluminum boron cobalt lithium nickel oxide	-	>10 - <20	CAS: 207803-51-8
Copper	-	<10	CAS: 7440-50-8
Dimethyl carbonate	-	<10	CAS: 616-38-6
Isocyanic acid, polymethylenepolyphenylene ester	-	≤9	CAS: 9016-87-9
Mica-group minerals	-	<5	CAS: 12001-26-2
Ethylene carbonate	-	<5	CAS: 96-49-1
Lithium hexafluorophosphate(1-)	-	<5	CAS: 21324-40-3
Ethene, homopolymer	-	<5	CAS: 9002-88-4
Styrene-Butadiene copolymer	-	<5	CAS: 9003-55-8
MEC	-	<5	CAS: 623-53-0
Carbon	-	<5	CAS: 7440-44-0
Manganese	-	<5	CAS: 7439-96-5
Red phosphorus	-	<5	CAS: 7723-14-0
Sulfur	-	<5	CAS: 7704-34-9
Nickel powder	-	<5	CAS: 7440-02-0
Poly[(5,7-dihydro-1,3,5,7,-tetraoxobenzo[1,2-c: 4,5-c']dipyrrole-2,6(1H,3H)-diyl) -1,4-phenyleneoxy-1,4-phenylene]	-	<5	CAS: 25036-53-7
1-Propene, homopolymer	-	<5	CAS: 9003-07-0
4,4'-methylenediphenyl diisocyanate	-	≤5	CAS: 101-68-8
methylenediphenyl diisocyanate	-	<1	CAS: 26447-40-5
2,4-dioxo-1,3-diazetidine-1,3-diylbis[p-phenylenemethylene-p-phenylene] diisocyanate	-	≤0.3	CAS: 17589-24-1
Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-hydro-.omega.-hydroxypoly(oxy-1,2-ethanediyl)	-	≤0.3	CAS: 57636-09-6

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

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

Section 3. Composition/information on ingredients

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

This product, under the normal conditions of use, meets the definition of an "ARTICLE".
The uses intended for this product as provided are not expected to pose a physical hazard or health risk to employees.
Risk of exposure only occurs if battery is mechanically, thermally or electrically abused.
The materials contained in this product may only represent a hazard if the integrity of the cell or battery is compromised; physically, thermally, or electrically abused.
Below are the hazards anticipated under those conditions:

Description of necessary first aid measures

Eye contact : Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.

Inhalation : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. In the event of any complaints or symptoms, avoid further exposure.

Skin contact : Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : Toxic if inhaled. May cause respiratory irritation. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Skin contact : Causes severe burns. May cause an allergic skin reaction.

Ingestion : Severely corrosive to the digestive tract. Causes severe burns. Harmful if swallowed.

Section 4. First aid measures

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain
watering
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing
wheezing and breathing difficulties
asthma
reduced fetal weight
increase in fetal deaths
skeletal malformations

Skin contact : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur
reduced fetal weight
increase in fetal deaths
skeletal malformations

Ingestion : Adverse symptoms may include the following:
stomach pains
reduced fetal weight
increase in fetal deaths
skeletal malformations

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

This product, under the normal conditions of use, meets the definition of an "ARTICLE".
The uses intended for this product as provided are not expected to pose a physical hazard or health risk to employees.
Risk of exposure only occurs if battery is mechanically, thermally or electrically abused.
The materials contained in this product may only represent a hazard if the integrity of the cell or battery is compromised; physically, thermally, or electrically abused.
Below are the hazards anticipated under those conditions:

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.
Use flooding quantities of water.
Use fog water nozzle to cool and apply fire blanket to limit fire spread when flooding is not possible.

Section 5. Fire-fighting measures

Unsuitable extinguishing media : Do not use water jet.

Specific hazards arising from the chemical : No specific fire or explosion hazard.
If the battery cells are damaged, electrolyte may react with water to produce hydrogen fluoride (HF).
Fire may produce irritating, corrosive and/or toxic gases.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
sulfur oxides
phosphorus oxides
halogenated compounds
metal oxide/oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

This product, under the normal conditions of use, meets the definition of an "ARTICLE".
The uses intended for this product as provided are not expected to pose a physical hazard or health risk to employees.
Risk of exposure only occurs if battery is mechanically, thermally or electrically abused.
The materials contained in this product may only represent a hazard if the integrity of the cell or battery is compromised; physically, thermally, or electrically abused.
Below are the hazards anticipated under those conditions:

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : Do not touch or walk through spilled material. Provide adequate ventilation. Stop leak if without risk.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and materials for containment and cleaning up

Small spill : Place spilled material in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor. For small spills, add absorbent (soil may be used in the absence of other suitable materials) and use a non-sparking or explosion-proof means to transfer material to a sealable, appropriate container for disposal.

Large spill : Move containers from spill area. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

This product, under the normal conditions of use, meets the definition of an "ARTICLE".
The uses intended for this product as provided are not expected to pose a physical hazard or health risk to employees.
Risk of exposure only occurs if battery is mechanically, thermally or electrically abused.
The materials contained in this product may only represent a hazard if the integrity of the cell or battery is compromised; physically, thermally, or electrically abused.
Below are the hazards anticipated under those conditions:

Precautions for safe handling

Protective measures : Follow the directions.
Avoid short circuiting the battery. Avoid mechanical damage of the battery. Do not open or disassemble. Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems or asthma, allergies or chronic or recurrent respiratory disease should not be employed in any process in which this product is used. Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not ingest. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store locked up. Keep away from heat, sparks and flame. Batteries should be separated from other materials and stored in a non-combustible, well ventilated structure with sufficient clearance between walls and battery stacks. Do not place batteries near heating equipment. Store in a dry, cool and well-ventilated area. Avoid high temperatures. Avoid contact with water or humidity. Avoid short circuiting the battery. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Aluminum, non flammable solid	**ACGIH TLV (United States, 1/2024) [Aluminum, metal and insoluble compounds]** A4. TWA 8 hours: 1 mg/m³. Form: Respirable fraction. **NIOSH REL (United States, 10/2020)** TWA 10 hours: 10 mg/m³. Form: Total. TWA 10 hours: 5 mg/m³. Form: Respirable fraction. **OSHA PEL (United States, 5/2018)** TWA 8 hours: 15 mg/m³ (as Al). Form: Total dust. TWA 8 hours: 5 mg/m³ (as Al). Form: Respirable fraction. **CAL OSHA PEL (United States, 5/2018)** TWA 8 hours: 5 mg/m³. Form: powder.
Iron	None.
Natural graphite	**ACGIH TLV (United States, 1/2024)** TWA 8 hours: 2 mg/m³. Form: Respirable fraction. **NIOSH REL (United States, 10/2020)** TWA 10 hours: 2.5 mg/m³. Form: Respirable fraction. **OSHA PEL (United States, 5/2018)** TWA 8 hours: 15 mg/m³. Form: Total dust. TWA 8 hours: 5 mg/m³. Form: Respirable fraction.

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	OSHA PEL Z3 (United States, 6/2016) TWA 8 hours: 15 mppcf. **CAL OSHA PEL (United States, 5/2018)** TWA 8 hours: 2.5 mg/m³. Form: respirable dust.
Cobalt lithium dioxide	**ACGIH TLV (United States, 1/2024) [cobalt and inorganic compounds]** A3. Skin sensitizer , Inhalation sensitizer. TWA 8 hours: 0.02 mg/m³ (as Co).
Lithium nickel dioxide	**ACGIH TLV (United States, 1/2024) [Nickel, insoluble inorganic compounds]** A1. TWA 8 hours: 0.2 mg/m³ (as Ni). Form: Inhalable fraction. **NIOSH REL (United States, 10/2020) [nickel metal and other compounds]** NIA. TWA 10 hours: 0.015 mg/m³ (as Ni). **OSHA PEL (United States, 5/2018) [Nickel, metal and insoluble compounds]** TWA 8 hours: 1 mg/m³ (as Ni). **CAL OSHA PEL (United States, 5/2018) [nickel, insoluble compounds]** TWA 8 hours: 0.1 mg/m³ (as Ni).
Lithium manganese oxide	**ACGIH TLV (United States, 1/2024) [Manganese and inorganic compounds]** A4. TWA 8 hours: 0.02 mg/m³ (as Mn). Form: Respirable fraction. TWA 8 hours: 0.1 mg/m³ (as Mn). Form: Inhalable fraction. **NIOSH REL (United States, 10/2020) [manganese compounds and fume]** TWA 10 hours: 1 mg/m³ (as Mn). Form: Fume. STEL 15 minutes: 3 mg/m³ (as Mn). Form: Fume. **OSHA PEL (United States, 5/2018) [Manganese compounds]** CEIL: 5 mg/m³ (as Mn). **CAL OSHA PEL (United States, 5/2018) [manganese and compounds]** TWA 8 hours: 0.2 mg/m³ (as Mn).
Cobalt lithium manganese nickel oxide	**ACGIH TLV (United States, 1/2024) [cobalt and inorganic compounds]** A3. Skin sensitizer , Inhalation sensitizer. TWA 8 hours: 0.02 mg/m³ (as Co). **ACGIH TLV (United States, 1/2024) [Manganese and inorganic compounds]** A4. TWA 8 hours: 0.02 mg/m³ (as Mn). Form: Respirable fraction. TWA 8 hours: 0.1 mg/m³ (as Mn). Form: Inhalable fraction. **ACGIH TLV (United States, 1/2024) [Nickel, insoluble inorganic compounds]** A1. TWA 8 hours: 0.2 mg/m³ (as Ni). Form: Inhalable fraction. **NIOSH REL (United States, 10/2020) [manganese compounds and fume]** TWA 10 hours: 1 mg/m³ (as Mn). Form: Fume. STEL 15 minutes: 3 mg/m³ (as Mn). Form: Fume. **OSHA PEL (United States, 5/2018) [Manganese compounds]**

Section 8. Exposure controls/personal protection

	CEIL: 5 mg/m³ (as Mn). **OSHA PEL (United States, 5/2018) [Nickel, metal and insoluble compounds]** TWA 8 hours: 1 mg/m³ (as Ni). **CAL OSHA PEL (United States, 5/2018) [manganese and compounds]** TWA 8 hours: 0.2 mg/m³ (as Mn). **CAL OSHA PEL (United States, 5/2018) [nickel, insoluble compounds]** TWA 8 hours: 0.1 mg/m³ (as Ni).
Aluminum boron cobalt lithium nickel oxide	None.
Copper	**ACGIH TLV (United States, 1/2024) [copper dusts and mists]** TWA 8 hours: 1 mg/m³ (as Cu). Form: Dust and mist. **ACGIH TLV (United States, 1/2024) [copper fume]** TWA 8 hours: 0.2 mg/m³. Form: Fume. **NIOSH REL (United States, 10/2020)** TWA 10 hours: 1 mg/m³ (as Cu). Form: Dusts and Mists. **OSHA PEL (United States, 5/2018)** TWA 8 hours: 0.1 mg/m³. Form: Fume. TWA 8 hours: 1 mg/m³. Form: Dusts and Mists. **CAL OSHA PEL (United States, 5/2018)** TWA 8 hours: 0.1 mg/m³ (as Cu).
Dimethyl carbonate	None.
Isocyanic acid, polymethylenepolyphenylene ester	None.
Mica-group minerals	**ACGIH TLV (United States, 1/2024)** TWA 8 hours: 0.1 mg/m³. Form: Respirable fraction. **NIOSH REL (United States, 10/2020)** TWA 10 hours: 3 mg/m³. Form: Respirable fraction. **OSHA PEL Z3 (United States, 6/2016)** TWA 8 hours: 20 mppcf. **CAL OSHA PEL (United States, 5/2018)** TWA 8 hours: 3 mg/m³. Form: respirable dust.
Ethylene carbonate	None.
Lithium hexafluorophosphate(1-)	None.
Ethene, homopolymer	None.
Styrene-Butadiene copolymer	None.
MEC	None.
Carbon	None.
Manganese	**ACGIH TLV (United States, 1/2024) [Manganese and inorganic compounds]** A4. TWA 8 hours: 0.02 mg/m³ (as Mn). Form: Respirable fraction. TWA 8 hours: 0.1 mg/m³ (as Mn). Form: Inhalable fraction. **NIOSH REL (United States, 10/2020) [manganese compounds and fume]** TWA 10 hours: 1 mg/m³ (as Mn). Form: Fume. STEL 15 minutes: 3 mg/m³ (as Mn). Form: Fume. **OSHA PEL (United States, 5/2018)** CEIL: 5 mg/m³ (as Mn). Form: Fume. **CAL OSHA PEL (United States, 5/2018)** STEL 15 minutes: 3 mg/m³ (as Mn). TWA 8 hours: 0.2 mg/m³ (as Mn).
Red phosphorus	**NIOSH REL (United States, 10/2020)** TWA 10 hours: 0.1 mg/m³.

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	OSHA PEL (United States, 5/2018) TWA 8 hours: 0.1 mg/m³. **CAL OSHA PEL (United States, 5/2018)** TWA 8 hours: 0.1 mg/m³.
Sulfur	None.
Nickel powder	**ACGIH TLV (United States, 1/2024)** A5. TWA 8 hours: 1.5 mg/m³. Form: Inhalable fraction. **NIOSH REL (United States, 10/2020) [nickel metal and other compounds]** NIA. TWA 10 hours: 0.015 mg/m³ (as Ni). **OSHA PEL (United States, 5/2018) [Nickel, metal and insoluble compounds]** TWA 8 hours: 1 mg/m³ (as Ni). **CAL OSHA PEL (United States, 5/2018)** TWA 8 hours: 0.5 mg/m³ (as Ni).
Poly[(5,7-dihydro-1,3,5,7,-tetraoxobenzo[1,2-c:4,5-c']dipyrrole-2,6(1H,3H)-diyl)-1,4-phenyleneoxy-1,4-phenylene]	None.
1-Propene, homopolymer	None.
4,4'-methylenediphenyl diisocyanate	**ACGIH TLV (United States, 1/2024)** TWA 8 hours: 0.005 ppm. **NIOSH REL (United States, 10/2020)** TWA 10 hours: 0.05 mg/m³. TWA 10 hours: 0.005 ppm. CEIL 10 minutes: 0.2 mg/m³. CEIL 10 minutes: 0.02 ppm. **OSHA PEL (United States, 5/2018)** CEIL: 0.02 ppm. CEIL: 0.2 mg/m³. **CAL OSHA PEL (United States, 5/2018)** TWA 8 hours: 0.051 mg/m³. TWA 8 hours: 0.005 ppm.
methylenediphenyl diisocyanate	None.
2,4-dioxo-1,3-diazetidine-1,3-diylbis[p-phenylenemethylene-p-phenylene] diisocyanate	None.
Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-hydro-.omega.-hydroxypoly(oxy-1,2-ethanediyl)	None.

Biological exposure indices

Ingredient name	Exposure indices
Cobalt lithium dioxide	**ACGIH BEI (United States, 1/2024) [cobalt and inorganic compounds including cobalt oxides]** BEI: 15 µg/l, not combined with tungsten carbide - cobalt [in urine]. Sampling time: end of shift at end of workweek. BEI: Nonquantitative: Biological monitoring should be considered for this compound based on the review; however, a specific BEI® could not be determined due to insufficient data., cobalt with tungsten carbide - cobalt [in urine]. Sampling time: end of shift at end of workweek.
Lithium nickel dioxide	**ACGIH BEI (United States, 1/2024) [nickel and inorganic compounds]** BEI: 30 µg/l, nickel [in urine after exposure to soluble compounds]. Sampling time: post-shift

Section 8. Exposure controls/personal protection

	at end of workweek. BEI: 5 µg/l, nickel [in urine after exposure to elemental nickel and poorly soluble compounds]. Sampling time: post-shift at end of workweek.
Cobalt lithium manganese nickel oxide	**ACGIH BEI (United States, 1/2024) [cobalt and inorganic compounds including cobalt oxides]** BEI: 15 µg/l, not combined with tungsten carbide - cobalt [in urine]. Sampling time: end of shift at end of workweek. BEI: Nonquantitative: Biological monitoring should be considered for this compound based on the review; however, a specific BEI® could not be determined due to insufficient data., cobalt with tungsten carbide - cobalt [in urine]. Sampling time: end of shift at end of workweek. **ACGIH BEI (United States, 1/2024) [nickel and inorganic compounds]** BEI: 30 µg/l, nickel [in urine after exposure to soluble compounds]. Sampling time: post-shift at end of workweek. BEI: 5 µg/l, nickel [in urine after exposure to elemental nickel and poorly soluble compounds]. Sampling time: post-shift at end of workweek.
Nickel powder	**ACGIH BEI (United States, 1/2024) [nickel and inorganic compounds]** BEI: 30 µg/l, nickel [in urine after exposure to soluble compounds]. Sampling time: post-shift at end of workweek. BEI: 5 µg/l, nickel [in urine after exposure to elemental nickel and poorly soluble compounds]. Sampling time: post-shift at end of workweek.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. Airborne exposures to hazardous substances are not expected when product is used for its intended purpose.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location. Not required under normal conditions of use.

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Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead. Not required under normal conditions of use.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be always worn when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated. 1 - 4 hours (breakthrough time): Recommended: nitrile (> 0.1 mm). Not required under normal conditions of use.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Not required under normal conditions of use.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Not required under normal conditions of use.

Respiratory protection: Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. Not required under normal conditions of use.

Section 9. Physical and chemical properties

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance

Physical state : Solid. [Battery]

Color : Black.

Odor : None.

Odor threshold : Not available.

pH : Not applicable.

Melting point/freezing point : Not available.

Boiling point or initial boiling point and boiling range : Not applicable.

Flash point : Not applicable.

Evaporation rate : Not applicable.

Flammability : Not available.

Lower and upper explosion limit/flammability limit : Not applicable

Vapor pressure : Not applicable.

Relative vapor density : Not applicable.

Relative density : Not applicable.

Density : Not available.

Section 9. Physical and chemical properties

Media	Result
water	Not soluble

Miscible with water : No.

Partition coefficient: n-octanol/water : Not applicable.

Auto-ignition temperature : Not applicable.

Decomposition temperature : Not applicable.

SADT : Not available.

Viscosity : Dynamic (room temperature): Not applicable.
Kinematic (room temperature): Not applicable.
Kinematic (40°C (104°F)): Not applicable.

Particle characteristics

Median particle size : Not applicable.

Other information

Physical/chemical properties comments : No additional information.

Section 10. Stability and reactivity

Reactivity : Damaged non-discharged batteries could be at risk of overheating or a thermal runaway. This reaction gives off heat, fumes and vapors.

Chemical stability : This product is stable and non-reactive under conditions of normal use, storage and transport.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.
Under normal conditions of storage and use, hazardous polymerization will not occur.

Conditions to avoid : Keep away from heat, flame, sparks and other ignition sources.
Avoid high temperatures. (> 70 °C). Protect from moisture.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials, metals and acids.
water

Hazardous decomposition products : Thermal decomposition can lead to release of irritating gases and vapors.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name **Result**

Section 11. Toxicological information

Iron	**Rat - Oral - LD50** 750 mg/kg	Toxic effects: Blood - Changes in serum composition (e.g., TP, bilirubin, cholesterol) Enzyme inhibition, induction, or change in blood or tissue levels - Transaminases
Natural graphite	**Rat - Female - Oral - LD50** >2000 mg/kg	OECD [Acute Oral toxicity - Acute Toxic Class Method]
Cobalt lithium dioxide	**Rat - Female - Oral - LD50** >5000 mg/kg	OECD [Acute Oral Toxicity: Up-and-Down Procedure]
	Rat - Male, Female - Inhalation - LC50 Dusts and mists 5.05 mg/l [4 hours]	OECD [Acute Inhalation Toxicity - Acute Toxic Class (ATC) Method]
Lithium nickel dioxide	**Rat - Female - Oral - LD50** >2000 mg/kg	OECD [Acute Oral toxicity - Acute Toxic Class Method]
Copper	**Rat - Male, Female - Inhalation - LC50 Dusts and mists** >5.11 mg/l [4 hours]	OECD [Acute Inhalation Toxicity]
Dimethyl carbonate	**Rat - Oral - LD50** 13 g/kg	
	Rabbit - Dermal - LD50 >5 g/kg	
	Rat - Inhalation - LC50 Vapor >140 mg/l [4 hours]	
Isocyanic acid, polymethylenepolyphenylene ester	**Rat - Oral - LD50** 49 g/kg	Toxic effects: Behavioral - Somnolence (general depressed activity) Gastrointestinal - Hypermotility, diarrhea Changes in Chemistry or Temperature - Body temperature decrease
	Rabbit - Dermal - LD50 >9400 mg/kg	
	Rat - Inhalation - LC50 Dusts and mists 490 mg/m³ [4 hours]	Toxic effects: Eye - Other Lung, Thorax, or Respiration - Respiratory depression Blood - Hemorrhage
Ethylene carbonate	**Rat - Oral - LD50** 10 g/kg	
	Rat - Male, Female - Dermal - LD50 >2000 mg/kg	OECD [Acute Dermal Toxicity]
Lithium hexafluorophosphate(1-)	**Rat - Female - Oral - LD50** 200 mg/kg	OECD [Acute Oral toxicity - Acute Toxic Class Method]
Ethene, homopolymer	**Rat - Oral - LD50** >8 g/kg	
MEC	**Rat - Male, Female - Oral - LD50** >5000 mg/kg	OECD [Acute Oral Toxicity]
Carbon	**Rat - Female - Oral - LD50** >2000 mg/kg	
Manganese	**Rat - Oral - LD50** 9 g/kg	
	Rat - Inhalation - LC50 Dusts and mists 5.14 mg/l [4 hours]	OECD [Acute Inhalation Toxicity-Fixed Dose Procedure]
Red phosphorus	**Rat - Oral - LD50** >10 g/kg	
Sulfur	**Rat - Male, Female - Inhalation - LC50 Dusts and mists** >5.43 g/m³ [4 hours]	OECD [Acute Inhalation Toxicity]
Nickel powder	**Rat - Oral - LD50**	

Section 11. Toxicological information

	>2000 mg/kg	
1-Propene, homopolymer	**Rat - Oral - LD50** >8 g/kg	
4,4'-methylenediphenyl diisocyanate	**Rat - Oral - LD50** 9200 mg/kg	Toxic effects: Behavioral - Somnolence (general depressed activity) Behavioral - Ataxia Changes in Chemistry or Temperature - Body temperature decrease

Conclusion/Summary [Product] : Not available.

Skin corrosion/irritation

Product/ingredient name	Result
Ethylene carbonate	**Rabbit - Skin - Mild irritant** Amount/concentration applied: 660 mg
Manganese	**Rabbit - Skin - Mild irritant** Duration of treatment/exposure: 24 hours Amount/concentration applied: 500 mg

Conclusion/Summary [Product] : Not available.

Serious eye damage/eye irritation

Product/ingredient name	Result
Isocyanic acid, polymethylenepolyphenylene ester	**Rabbit - Eyes - Mild irritant** Amount/concentration applied: 100 mg
Styrene-Butadiene copolymer	**Rabbit - Eyes - Mild irritant** Duration of treatment/exposure: 24 hours Amount/concentration applied: 500 mg
Manganese	**Rabbit - Eyes - Mild irritant** Duration of treatment/exposure: 24 hours Amount/concentration applied: 500 mg
4,4'-methylenediphenyl diisocyanate	**Rabbit - Eyes - Moderate irritant** Amount/concentration applied: 100 mg

Conclusion/Summary [Product] : Not available.

Respiratory corrosion/irritation

Conclusion/Summary [Product] : Not available.

Respiratory or skin sensitization

Skin

Conclusion/Summary [Product] : Not available.

Respiratory

Conclusion/Summary [Product]

: Not available.

United States

Section 11. Toxicological information

Germ cell mutagenicity

Conclusion/Summary [Product] : Not available.

Carcinogenicity

Conclusion/Summary [Product] : Not available.

Classification

Product/ingredient name	OSHA	IARC	NTP
Cobalt lithium dioxide	-	2B	Reasonably anticipated to be a human carcinogen.
Lithium nickel dioxide	-	1	Known to be a human carcinogen.
Cobalt lithium manganese nickel oxide	-	1	Known to be a human carcinogen.
Aluminum boron cobalt lithium nickel oxide	-	1	Known to be a human carcinogen.
Isocyanic acid, polymethylenepolyphenylene ester	-	3	-
Ethene, homopolymer	-	3	-
Styrene-Butadiene copolymer	-	3	-
Nickel powder	-	2B	Reasonably anticipated to be a human carcinogen.
1-Propene, homopolymer	-	3	-
4,4'-methylenediphenyl diisocyanate	-	3	-

Reproductive toxicity

Conclusion/Summary [Product] : Not available.

Specific target organ toxicity (single exposure)

Product/ingredient name	Result
Isocyanic acid, polymethylenepolyphenylene ester	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
Carbon	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
4,4'-methylenediphenyl diisocyanate	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
methylenediphenyl diisocyanate	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
2,4-dioxo-1,3-diazetidine-1,3-diylbis[p-phenylenemethylene-p-phenylene] diisocyanate	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-hydro-.omega.-hydroxypoly(oxy-1,2-ethanediyl)	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) - Category 1

Specific target organ toxicity (repeated exposure)

Product/ingredient name	Result

Section 11. Toxicological information

Natural graphite	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (lungs) (inhalation) - Category 1
Lithium nickel dioxide	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (lungs, respiratory tract) - Category 1
Cobalt lithium manganese nickel oxide	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (lungs) (inhalation) - Category 1
Isocyanic acid, polymethylenepolyphenylene ester	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (lungs) (inhalation) - Category 2
Ethylene carbonate	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (kidneys) (oral) - Category 2
Lithium hexafluorophosphate(1-)	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (bones, teeth) - Category 1
Manganese	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (brain, lungs) - Category 1
Nickel powder	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (respiratory tract) (inhalation) - Category 1
4,4'-methylenediphenyl diisocyanate	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (respiratory tract) (inhalation) - Category 2
methylenediphenyl diisocyanate	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (lungs) - Category 2
2,4-dioxo-1,3-diazetidine-1,3-diylbis[p-phenylenemethylene-p-phenylene] diisocyanate	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2

Aspiration hazard

Not available.

Information on the likely routes of exposure

Exposure not expected under normal use: Oral, Dermal, Inhalation, Eyes

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : Toxic if inhaled. May cause respiratory irritation. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Skin contact : Causes severe burns. May cause an allergic skin reaction.

Ingestion : Severely corrosive to the digestive tract. Causes severe burns. Harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
pain
watering
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing
wheezing and breathing difficulties
asthma
reduced fetal weight
increase in fetal deaths
skeletal malformations

Section 11. Toxicological information

Skin contact : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur
reduced fetal weight
increase in fetal deaths
skeletal malformations

Ingestion : Adverse symptoms may include the following:
stomach pains
reduced fetal weight
increase in fetal deaths
skeletal malformations

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Conclusion/Summary [Product] : Not available.

General : Causes damage to organs through prolonged or repeated exposure. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : May cause cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : No known significant effects or critical hazards.

Reproductive toxicity : May damage fertility or the unborn child.

Numerical measures of toxicity Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
BT06 2170N 16 Module Pack	1297.4	16899.8	N/A	2.7	6.1
Iron	750	N/A	N/A	N/A	N/A
Natural graphite	2500	N/A	N/A	N/A	N/A
Cobalt lithium dioxide	N/A	N/A	N/A	N/A	5.05
Lithium nickel dioxide	2500	N/A	N/A	N/A	N/A
Lithium manganese oxide	500	N/A	N/A	11	N/A
Cobalt lithium manganese nickel oxide	N/A	N/A	N/A	0.5	N/A
Copper	500	N/A	N/A	N/A	N/A
Dimethyl carbonate	13000	N/A	N/A	N/A	N/A
Isocyanic acid, polymethylenepolyphenylene ester	49000	N/A	N/A	N/A	0.49
Ethylene carbonate	500	2500	N/A	N/A	N/A

Section 11. Toxicological information

Lithium hexafluorophosphate(1-)	200	N/A	N/A	N/A	N/A
Carbon	2500	N/A	N/A	N/A	N/A
Manganese	9000	N/A	N/A	N/A	5.14
Nickel powder	2500	N/A	N/A	N/A	N/A
4,4'-methylenediphenyl diisocyanate	9200	N/A	N/A	N/A	1.5
methylenediphenyl diisocyanate	N/A	N/A	N/A	N/A	1.5
2,4-dioxo-1,3-diazetidine-1,3-diylbis[p-phenylenemethylene-p-phenylene] diisocyanate	N/A	N/A	N/A	11	N/A

Other information

Under normal conditions of use, undamaged, closed batteries do not pose a health risk.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	
Aluminum, non flammable solid	**Acute - LC50 - Fresh water** Fish - Rainbow trout,donaldson trout - *Oncorhynchus mykiss* - Embryo 120 µg/l [96 hours]	Effect: Mortality
	Chronic - NOEC - Fresh water Aquatic plants - Coontail - *Ceratophyllum demersum* Weight: 3.5 g 9 mg/l [3 days]	Effect: Enzymes
	Acute - LC50 - Fresh water Daphnia - Water flea - *Daphnia magna* 38 mg/l [48 hours]	Effect: Mortality
Iron	**Acute - LC50 - Marine water** Crustaceans - Common shrimp, sand shrimp - *Crangon crangon* 33 to 100 mg/l [48 hours]	Effect: Mortality
	Acute - EC50 - Fresh water Aquatic plants - Duckweed - *Lemna minor* 3700 µg/l [4 days]	Effect: Growth
	Chronic - NOEC - Marine water Algae - Dinoflagellate - *Glenodinium halli* 100 mg/l [72 hours]	Effect: Population
	Acute - LC50 - Marine water Fish - Mudskipper - *Periophthalmus waltoni* - Adult 6.48 µg/l [96 hours]	Effect: Mortality
Natural graphite	**Acute - LC50 - Fresh water** Fish >100 mg/l [96 hours]	OECD [Fish, Acute Toxicity Test]
	Acute - EC50 - Fresh water Daphnia >100 mg/l [48 hours]	OECD [Daphnia sp. Acute Immobilization Test and Reproduction Test]
	Acute - EC50 - Fresh water Algae >100 mg/l [72 hours]	OECD [Alga, Growth Inhibition Test]
Copper	**Acute - LC50 - Marine water** Crustaceans - Scud Order - *Amphipoda*	Effect: Mortality

Section 12. Ecological information

	- Adult Size: 9 mm 0.072 µg/l [48 hours]	
	Chronic - NOEC - Marine water Algae - Diatom - *Nitzschia closterium* - Exponential growth phase 2.5 µg/l [72 hours]	Effect: Population
	Chronic - NOEC - Fresh water Fish - Nile tilapia - *Oreochromis niloticus* - Juvenile (Fledgling, Hatchling, Weanling) Weight: 8.3 g 0.8 µg/l [6 weeks]	Effect: Biochemistry
	Acute - LC50 - Marine water Fish - Mudskipper - *Periophthalmus waltoni* - Adult 7.56 µg/l [96 hours]	Effect: Mortality
	Chronic - NOEC - Fresh water Daphnia - Water flea - *Daphnia magna* 2 µg/l [21 days]	Effect: Mortality
	Acute - IC50 - Fresh water Algae - Green algae - *Raphidocelis subcapitata* - Exponential growth phase 13 µg/l [72 hours]	Effect: Population
Dimethyl carbonate	**Acute - LC50 - Fresh water** Fish - *Danio rerio* ≥100 mg/l [96 hours]	OECD [Fish, Acute Toxicity Test]
	Acute - NOEC - Fresh water Fish - *Danio rerio* ≥100 mg/l [96 hours]	OECD [Fish, Acute Toxicity Test]
	Chronic - NOEC - Fresh water Daphnia - Daphnia - *Dapnia magna* 25 mg/l [21 days]	OECD [Daphnia Magna Reproduction Test]
	Acute - EC50 - Fresh water Algae - Algae - *Pseudokirchneriella subcapitata* >100 mg/l [72 hours]	OECD [Alga, Growth Inhibition Test]
	Acute - NOEC - Fresh water Algae - Algae - *Pseudokirchneriella subcapitata* >100 mg/l [72 hours]	OECD [Alga, Growth Inhibition Test]
	Acute - EC50 - Fresh water Daphnia - Daphnia - *Daphnia magna* >74.16 mg/l [48 hours]	OECD [Daphnia sp. Acute Immobilization Test and Reproduction Test]
Ethylene carbonate	**Acute - LC50 - Fresh water** Fish - *Oncorhynchus mykiss* >100 mg/l [96 hours]	OECD [Fish, Acute Toxicity Test]
	Acute - EC50 - Fresh water Algae - Algae - *Pseudokirchneriella subcapitata* >100 mg/l [72 hours]	OECD [Alga, Growth Inhibition Test]
	Acute - NOEC - Fresh water Algae - Algae - *Pseudokirchneriella subcapitata* 100 mg/l [72 hours]	OECD [Alga, Growth Inhibition Test]
Lithium hexafluorophosphate(1-)	**Acute - LC50 - Fresh water** Daphnia - *Daphnia magna*	OECD [Daphnia sp. Acute Immobilization Test and Reproduction

Section 12. Ecological information

	>100 mg/l [48 hours]	Test]
	Acute - EC50 - Fresh water Algae - Algae - *Pseudokirchneriella subcapitata* >100 mg/l [96 hours]	OECD [Alga, Growth Inhibition Test]
MEC	**Acute - LC50 - Fresh water** Fish - *Oncorhynchus mykiss* >100 mg/l [96 hours]	OECD [Fish, Acute Toxicity Test]
	Acute - NOEC - Fresh water Fish - *Oncorhynchus mykiss* 100 mg/l [96 hours]	OECD [Fish, Acute Toxicity Test]
	Acute - NOEC - Fresh water Daphnia - *Daphnia magna* 100 mg/l [48 hours]	OECD [Daphnia sp. Acute Immobilization Test and Reproduction Test]
	Acute - LC50 - Fresh water Daphnia - *Daphnia magna* >100 mg/l [48 hours]	OECD [Daphnia sp. Acute Immobilization Test and Reproduction Test]
	Acute - EC50 - Fresh water Algae - *Desmodesmus subspicatus* >62 mg/l [72 hours]	OECD [Alga, Growth Inhibition Test]
	Acute - NOEC - Fresh water Algae - *Desmodesmus subspicatus* 62 mg/l [72 hours]	OECD [Alga, Growth Inhibition Test]
Manganese	**Acute - EC50 - Fresh water** Aquatic plants - Duckweed - *Lemna minor* 31 mg/l [4 days]	Effect: Growth
	Acute - LC50 - Fresh water Fish - Fathead minnow - *Pimephales promelas* 28 mg/l [96 hours]	Effect: Mortality
	Acute - LC50 - Fresh water Daphnia - Water flea - *Daphnia magna* 29 mg/l [48 hours]	Effect: Mortality
	Chronic - NOEC - Fresh water Daphnia - *Ceriodaphnia dubia* 1.7 mg/l [8 days]	OECD [Daphnia Magna Reproduction Test]
Red phosphorus	**Acute - EC50 - Fresh water** Algae - *Desmodesmus subspicatus* 18.3 mg/l [72 hours]	OECD [Alga, Growth Inhibition Test]
	Acute - NOEC - Fresh water Algae - *Desmodesmus subspicatus* 5 mg/l [72 hours]	OECD [Alga, Growth Inhibition Test]
	Acute - LC50 - Fresh water Fish 33.2 mg/l [96 hours]	OECD [Honeybees, Acute Oral Toxicity Test]
	Acute - EC50 - Fresh water Daphnia 10.5 mg/l [48 hours]	OECD [Daphnia sp. Acute Immobilization Test and Reproduction Test]
Sulfur	**Acute - LC50 - Fresh water** Fish - Rainbow trout,donaldson trout - *Oncorhynchus mykiss* Weight: 0.81 g >100 ppm [96 hours]	Effect: Mortality US EPA
Nickel powder	**Acute - EC50 - Fresh water** Aquatic plants - Duckweed - *Lemna minor*	Effect: Growth

Section 12. Ecological information

450 µg/l [4 days]	
Acute - LC50 - Fresh water Fish - common carp - *Cyprinus carpio* - Juvenile (Fledgling, Hatchling, Weanling) Size: 3.5 cm 1.3 ppm [96 hours]	Effect: Mortality
Chronic - NOEC - Marine water Algae - Dinoflagellate - *Glenodinium halli* 100 mg/l [72 hours]	Effect: Population
Chronic - NOEC - Fresh water Fish - common carp - *Cyprinus carpio* Age: 13 months; Size: 10.5 cm; Weight: 27.8 g 3.5 µg/l [4 weeks]	Effect: Accumulation
Acute - LC50 - Fresh water Crustaceans - Water flea - *Ceriodaphnia dubia* - Juvenile (Fledgling, Hatchling, Weanling) Age: 2 to 8 hours 34.6 µg/l [48 hours]	Effect: Mortality US EPA, OECD
Chronic - EC10 Daphnia - Water flea - *Daphnia magna* - Neonate Age: <24 hours 6.9 µg/l [21 days]	Effect: Reproduction OECD

Conclusion/Summary [Product] : Not available.

Persistence and degradability

Product/ingredient name	Result	
Dimethyl carbonate	**Aerobic - 188 mg/l** 86% [28 days] - Readily	OECD [Ready Biodegradability - Modified MITI Test (I)]
Ethylene carbonate	**Aerobic** 98.5% [28 days] - Readily	OECD [Ready Biodegradability - CO_2 Evolution Test]
4,4'-methylenediphenyl diisocyanate	**Aerobic** 0% [28 days] - Not readily	OECD [Ready Biodegradability - Manometric Respirometry Test]

Conclusion/Summary [Product] : Not available.

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Dimethyl carbonate	-	-	Readily
Ethylene carbonate	-	-	Readily
MEC	-	-	Readily
4,4'-methylenediphenyl diisocyanate	-	-	Not readily
methylenediphenyl diisocyanate	-	-	Not readily

Bioaccumulative potential

Section 12. Ecological information

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Cobalt lithium dioxide	-	15600	High
Dimethyl carbonate	0.354	-	Low
Ethylene carbonate	0.11	-	Low
MEC	0.972	-	Low
4,4'-methylenediphenyl diisocyanate	4.51	200	Low
methylenediphenyl diisocyanate	4.51	200	Low

Mobility in soil

Soil/Water partition coefficient : Not available.

Other adverse effects

No known significant effects or critical hazards.

Section 13. Disposal considerations

This product, under the normal conditions of use, meets the definition of an "ARTICLE".
The uses intended for this product as provided are not expected to pose a physical hazard or health risk to employees.
Risk of exposure only occurs if battery is mechanically, thermally or electrically abused.
The materials contained in this product may only represent a hazard if the integrity of the cell or battery is compromised; physically, thermally, or electrically abused.
Below are the hazards anticipated under those conditions:

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	IMDG	IATA
UN number	UN3480	UN3480	UN3480
UN proper shipping name	Lithium ion batteries	LITHIUM ION BATTERIES	Lithium ion batteries
Transport hazard class(es)	9 	9 	9 
Packing group	-	-	-

Section 14. Transport information

Environmental hazards	No.	No.	No.

Additional information

DOT Classification : **Reportable quantity** 20 lbs / 9.08 kg. The classification of the product is due solely to the presence of one or more US DOT-listed 'Hazardous substances' that are subject to reportable quantity requirements and only applies to shipments of packages greater than, or equal to, the product reportable quantity. Package sizes less than the product reportable quantity are not regulated as hazardous materials.
Limited quantity No.
Packaging instruction Exceptions: 185. Non-bulk: 185. Bulk: 185.
Quantity limitation Passenger aircraft/rail: Forbidden. Cargo aircraft: 35 kg.
Special provisions 388, 422, A54, A100

IMDG : **Emergency schedules** F-A, S-I
Special provisions 188, 230, 310, 348, 376, 377, 384, 387

IATA : **Quantity limitation** Passenger and Cargo Aircraft: Forbidden. Packaging instructions: Forbidden. Cargo Aircraft Only: Packaging instructions: See 965. Limited Quantities - Passenger Aircraft: Forbidden. Packaging instructions: Forbidden.
Special provisions A88, A99, A154, A183, A201, A213, A331, A334, A802

Special precautions for user : Not available

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 5(a)2 final significant new use rules**: Lithium nickel dioxide; Cobalt lithium manganese nickel oxide; Aluminum boron cobalt lithium nickel oxide

TSCA 5(e) substance consent order: Lithium nickel dioxide; Lithium manganese oxide; Cobalt lithium manganese nickel oxide; Aluminum boron cobalt lithium nickel oxide

TSCA 8(a) PAIR: 4,4'-methylenediphenyl diisocyanate; methylenediphenyl diisocyanate

TSCA 8(a) CDR Exempt/Partial exemption: Not determined

TSCA 8(c) calls for record of SAR: Isocyanic acid, polymethylenepolyphenylene ester; 4,4'-methylenediphenyl diisocyanate; methylenediphenyl diisocyanate

United States inventory (TSCA 8b): Not determined.

Clean Water Act (CWA) 307: Lithium nickel dioxide; Cobalt lithium manganese nickel oxide; Aluminum boron cobalt lithium nickel oxide; Copper; Nickel powder

Clean Water Act (CWA) 311: Red phosphorus

TSCA 12(b) - Chemical export notification

	One time notification		Annual notification		
Name	**4**	**5**	**5(f)**	**6**	**7**
Lithium nickel oxide	Not listed	Listed	Not listed	Not listed	Not listed
Lithium manganese oxide generic	Not listed	Listed	Not listed	Not listed	Not listed
Cobalt lithium manganese nickel oxide	Not listed	Listed	Not listed	Not listed	Not listed
aluminum boron cobalt lithium nickel oxide	Not listed	Listed	Not listed	Not listed	Not listed

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

Section 15. Regulatory information

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

Name	%	EHS	SARA 302 TPQ (lbs)	SARA 302 TPQ (gallons)	SARA 304 RQ (lbs)	SARA 304 RQ (gallons)
Red phosphorus	<5	Yes.	100	-	1	-

SARA 304 RQ : 20 lbs / 9.1 kg

SARA 311/312

Classification : ACUTE TOXICITY (oral) - Category 4
ACUTE TOXICITY (inhalation) - Category 3
SKIN CORROSION - Category 1C
SERIOUS EYE DAMAGE - Category 1
RESPIRATORY SENSITIZATION - Category 1
SKIN SENSITIZATION - Category 1
CARCINOGENICITY - Category 1A
TOXIC TO REPRODUCTION - Category 1B
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1
HNOC - Corrosive to digestive tract [severe]

Composition/information on ingredients

Name	%	Classification
Iron	>10 - <20	FLAMMABLE SOLIDS - Category 2 SELF-HEATING SUBSTANCES AND MIXTURES - Category 2 ACUTE TOXICITY (oral) - Category 4
Natural graphite	>10 - <20	CARCINOGENICITY - Category 1A SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1
Cobalt lithium dioxide	>10 - <20	CARCINOGENICITY - Category 2 TOXIC TO REPRODUCTION - Category 1B
Lithium nickel dioxide	>10 - <20	SKIN CORROSION - Category 1C SERIOUS EYE DAMAGE - Category 1 SKIN SENSITIZATION - Category 1 CARCINOGENICITY - Category 1A SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1 HNOC - Corrosive to digestive tract
Lithium manganese oxide	>10 - <20	ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (inhalation) - Category 4
Cobalt lithium manganese nickel oxide	>10 - <20	ACUTE TOXICITY (inhalation) - Category 2 CARCINOGENICITY - Category 1A SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1

Section 15. Regulatory information

Aluminum boron cobalt lithium nickel oxide	>10 - <20	CARCINOGENICITY - Category 1A
Copper	<10	ACUTE TOXICITY (oral) - Category 4
Dimethyl carbonate	<10	FLAMMABLE LIQUIDS - Category 2
Isocyanic acid, polymethylenepolyphenylene ester	≤9	ACUTE TOXICITY (inhalation) - Category 2 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A RESPIRATORY SENSITIZATION - Category 1 SKIN SENSITIZATION - Category 1A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
Ethylene carbonate	<5	ACUTE TOXICITY (oral) - Category 4 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
Lithium hexafluorophosphate(1-)	<5	ACUTE TOXICITY (oral) - Category 3 SKIN CORROSION - Category 1A SERIOUS EYE DAMAGE - Category 1 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1 HNOC - Corrosive to digestive tract [severe]
Styrene-Butadiene copolymer	<5	EYE IRRITATION - Category 2B
MEC	<5	FLAMMABLE LIQUIDS - Category 2
Carbon	<5	COMBUSTIBLE DUSTS EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
Manganese	<5	FLAMMABLE SOLIDS - Category 2 EYE IRRITATION - Category 2B SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1
Red phosphorus	<5	FLAMMABLE SOLIDS - Category 1
Sulfur	<5	FLAMMABLE SOLIDS - Category 2 SKIN IRRITATION - Category 2
Nickel powder	<5	FLAMMABLE SOLIDS - Category 1 SKIN SENSITIZATION - Category 1 CARCINOGENICITY - Category 2 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1
4,4'-methylenediphenyl diisocyanate	≤5	ACUTE TOXICITY (inhalation) - Category 4 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A RESPIRATORY SENSITIZATION - Category 1 SKIN SENSITIZATION - Category 1 CARCINOGENICITY - Category 2 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
methylenediphenyl diisocyanate	<1	ACUTE TOXICITY (inhalation) - Category 4 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A RESPIRATORY SENSITIZATION - Category 1 SKIN SENSITIZATION - Category 1 CARCINOGENICITY - Category 2

Section 15. Regulatory information

2,4-dioxo-1,3-diazetidine-1,3-diylbis[p-phenylenemethylene-p-phenylene] diisocyanate	≤0.3	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2 ACUTE TOXICITY (inhalation) - Category 4 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A RESPIRATORY SENSITIZATION - Category 1 SKIN SENSITIZATION - Category 1 CARCINOGENICITY - Category 2 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-hydro-.omega.-hydroxypoly(oxy-1,2-ethanediyl)	≤0.3	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) - Category 1

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	Product name	CAS number	%
Form R - Reporting requirements	Aluminum, non flammable solid	7429-90-5	>10 - <25
	Cobalt lithium dioxide	12190-79-3	>10 - <20
	Lithium nickel dioxide	12031-65-1	>10 - <20
	Lithium manganese oxide	12057-17-9	>10 - <20
	Cobalt lithium manganese nickel oxide	182442-95-1	>10 - <20
	Aluminum boron cobalt lithium nickel oxide	207803-51-8	>10 - <20
	Copper	7440-50-8	<10
	Isocyanic acid, polymethylenepolyphenylene ester	9016-87-9	≤9
	Manganese	7439-96-5	<5
	Nickel powder	7440-02-0	<5
	4,4'-methylenediphenyl diisocyanate	101-68-8	≤5
Supplier notification	Aluminum, non flammable solid	7429-90-5	>10 - <25
	Cobalt lithium dioxide	12190-79-3	>10 - <20
	Lithium nickel dioxide	12031-65-1	>10 - <20
	Lithium manganese oxide	12057-17-9	>10 - <20
	Cobalt lithium manganese nickel oxide	182442-95-1	>10 - <20
	Aluminum boron cobalt lithium nickel oxide	207803-51-8	>10 - <20
	Copper	7440-50-8	<10
	Isocyanic acid, polymethylenepolyphenylene ester	9016-87-9	≤9
	Manganese	7439-96-5	<5
	Nickel powder	7440-02-0	<5
	4,4'-methylenediphenyl diisocyanate	101-68-8	≤5

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts : The following components are listed: ALUMINUM; GRAPHITE (NATURAL)DUST; COPPER; METHYL CARBONATE; MICA DUST; ETHYLENE CARBONATE; MANGANESE; PHOSPHORUS (YELLOW); SULFUR; NICKEL; METHYLENE BISPHENYL ISOCYANATE

New York : The following components are listed: Copper; Phosphorus; Nickel; Methylene diphenyl diisocyanate

Section 15. Regulatory information

New Jersey : The following components are listed: ALUMINUM; GRAPHITE (NATURAL); COBALT compounds; NICKEL compounds; MANGANESE COMPOUNDS; COBALT compounds; COBALT compounds; COPPER; DIMETHYL CARBONATE; METHYLENE DIPHENYL DIISOCYANATE (POLYMERIC); MICA; MANGANESE; PHOSPHORUS; SULFUR; NICKEL; METHYLENE BISPHENYL ISOCYANATE

Pennsylvania : The following components are listed: GRAPHITE; COBALT COMPOUNDS; NICKEL COMPOUNDS; MANGANESE COMPOUNDS; COBALT COMPOUNDS; COBALT COMPOUNDS; COPPER FUME; CARBONIC ACID, DIMETHYL ESTER; MICA-GROUP MINERALS; 1,3-DIOXOLAN-2-ONE; MANGANESE COMPOUNDS; PHOSPHORUS; SULFUR; NICKEL CATALYST; BENZENE, 1,1'-METHYLENEBIS[4-ISOCYANATO-

California Prop. 65

⚠ **WARNING**: This product can expose you to chemicals including Nickel compounds, Nickel compounds, Nickel compounds and Nickel, which are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

Ingredient name	No significant risk level	Maximum acceptable dosage level
Nickel compounds	-	-
Nickel compounds	-	-
Nickel compounds	-	-
Nickel	-	-

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Section 16. Other information

Other special considerations : Risk of exposure only occurs if battery is mechanically, thermally or electrically abused. The following HMIS information only applies if there is a leak from the battery pack.

Hazardous Material Information System (U.S.A.)

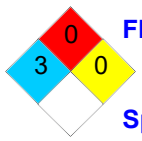
Health	*	4
Flammability		0
Physical hazards		0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

Section 16. Other information

National Fire Protection Association (U.S.A.)



Procedure used to derive the classification

Classification	Justification
ACUTE TOXICITY (oral) - Category 4	Calculation method
ACUTE TOXICITY (inhalation) - Category 3	Calculation method
SKIN CORROSION - Category 1C	Calculation method
SERIOUS EYE DAMAGE - Category 1	Calculation method
RESPIRATORY SENSITIZATION - Category 1	Calculation method
SKIN SENSITIZATION - Category 1	Calculation method
CARCINOGENICITY - Category 1A	Calculation method
TOXIC TO REPRODUCTION - Category 1B	Calculation method
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3	Calculation method
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1	Calculation method

History

Date of issue/Date of revision : 03/18/2025

Date of previous issue : No previous validation

Version : 1

Prepared by : Sphera Solutions

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
IMO = International Maritime Organization
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
N/A = Not available
SGG = Segregation Group
TDG = Transportation of Dangerous Goods
UN = United Nations

References : HCS (U.S.A.) - Hazard Communication Standard
International transport regulations

Indicates information that has changed from previously issued version.

Notice to reader

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Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.