

## 12 Ah FlexForce UN3480

## The Toro Company

Chemwatch: 7977-16  
Version No: 3.2  
Safety Data Sheet according to OSHA HazCom Standard (2024) requirements

Chemwatch Hazard Alert Code: 4

Initial Date: 10/09/2025  
Revision Date: 12/09/2025  
Print Date: 22/09/2025  
S.GHS.USA.EN

## SECTION 1 Identification

## Product Identifier

Product name	12 Ah FlexForce UN3480
Chemical Name	Not Applicable
Synonyms	Part no - 66912, 156-6912
Proper shipping name	Lithium ion batteries including lithium ion polymer batteries
Chemical formula	Not Applicable
Other means of identification	Not Available

## Recommended use of the chemical and restrictions on use

Relevant identified uses	Rechargeable Li-ion Cell. NOTE: Chemical materials are stored in sealed case. The toxic properties of the electrode materials are hazardous only if the materials are released by damaging the cell or if exposed to fire. The sealed battery is not hazardous in normal use. The chemical hazards are related to the leaked battery contents. Use according to manufacturer's directions.
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## Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party

Registered company name	The Toro Company
Address	8111 Lyndale Avenue South, Bloomington MN 55420 United States
Telephone	+1-952-888-8801
Fax	+1-952-887-8258
Website	<a href="http://www.toro.com">www.toro.com</a>
Email	HealthAndSafety@toro.com

## Emergency phone number

Association / Organisation	CHEMTEL	CHEMWATCH EMERGENCY RESPONSE (24/7)
Emergency telephone number(s)	1-800-255-3924	+1 855-237-5573 (ID#: 7977-16)
Other emergency telephone number(s)	+1-813-248-0585	+61 3 9573 3188

## SECTION 2 Hazard(s) identification

## Classification of the substance or mixture

## Chemwatch Hazard Ratings

	Min	Max
Flammability	0	
Toxicity	4	
Body Contact	3	
Reactivity	2	
Chronic	3	

0 = Minimum  
1 = Low  
2 = Moderate  
3 = High  
4 = Extreme

## NFPA 704 diamond



Note: The hazard category numbers found in GHS classification in section 2 of this SDSs are NOT to be used to fill in the NFPA 704 diamond. Blue = Health Red = Fire Yellow = Reactivity White = Special (Oxidizer or water reactive substances)

Classification	Acute Toxicity (Oral) Category 2, Skin Corrosion/Irritation Category 1B, Sensitisation (Skin) Category 1, Serious Eye Damage/Eye Irritation Category 1, Specific Target Organ Toxicity - Single Exposure (Respiratory Tract Irritation) Category 3, Germ Cell Mutagenicity Category 1A, Carcinogenicity Category 1A, Specific Target Organ Toxicity - Repeated Exposure Category 2, Hazardous to the Aquatic Environment Long-Term Hazard Category 2
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## Label elements

Hazard pictogram(s)	
Signal word	Danger

## Hazard statement(s)

H300	Fatal if swallowed.
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H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H335	May cause respiratory irritation.
H340	May cause genetic defects.
H350	May cause cancer.
H373	May cause damage to organs through prolonged or repeated exposure.
H411	Toxic to aquatic life with long lasting effects.

**Hazard(s) not otherwise classified**

Not Applicable

**Precautionary statement(s) Prevention**

P201	Obtain special instructions before use.
P260	Do not breathe dust/fume.
P264	Wash all exposed external body areas thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves, protective clothing, eye protection and face protection.

**Precautionary statement(s) Response**

P301+P310	IF SWALLOWED: Immediately call a POISON CENTER/doctor/physician/first aider.
P301+P330+P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. If more than 15 mins from Doctor, INDUCE VOMITING (if conscious).
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313	IF exposed or concerned: Get medical advice/ attention.
P310	Immediately call a POISON CENTER/doctor/physician/first aider.

**Precautionary statement(s) Storage**

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

**Precautionary statement(s) Disposal**

P501	Dispose of contents/container to authorised hazardous or special waste collection point in accordance with any local regulation.
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No further product hazard information.

**SECTION 3 Composition / information on ingredients****Substances**

See section below for composition of Mixtures

**Mixtures**

CAS No	%[weight]	Name
Not Available		hermetically sealed case with
113066-89-0	35-38	<u>lithium nickel cobalt oxide</u>
7782-42-5	20-22	<u>graphite</u>
7440-50-8	9-10	<u>copper</u>
7429-90-5	5-6	<u>aluminium</u>
96-49-1	14-16	<u>ethylene carbonate</u>
9003-07-0	5-6	<u>polypropylene</u>
623-53-0	4-5	<u>ethyl methyl carbonate</u>
21324-40-3	5-6	<u>lithium fluorophosphate</u>

The specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

**SECTION 4 First-aid measures****Description of first aid measures**

<b>Eye Contact</b>	<p>If this product comes in contact with the eyes:</p> <ul style="list-style-type: none"> <li>▶ Immediately hold eyelids apart and flush the eye continuously with running water.</li> <li>▶ Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.</li> <li>▶ Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.</li> <li>▶ Transport to hospital or doctor without delay.</li> <li>▶ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.</li> <li>▶ Generally not applicable.</li> </ul> <p>If this product comes in contact with the eyes:</p> <ul style="list-style-type: none"> <li>▶ Wash out immediately with fresh running water.</li> <li>▶ Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.</li> </ul>
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Continued...

	<ul style="list-style-type: none"> <li>▶ Seek medical attention without delay; if pain persists or recurs seek medical attention.</li> <li>▶ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.</li> </ul>
<b>Skin Contact</b>	<ul style="list-style-type: none"> <li>▶ Generally not applicable.</li> </ul> If skin contact occurs: <ul style="list-style-type: none"> <li>▶ Immediately remove all contaminated clothing, including footwear.</li> <li>▶ Flush skin and hair with running water (and soap if available).</li> <li>▶ Seek medical attention in event of irritation.</li> </ul>
<b>Inhalation</b>	Remove patient to fresh air and seek medical attention.
<b>Ingestion</b>	<ul style="list-style-type: none"> <li>▶ Generally not applicable.</li> </ul> Not considered a normal route of entry.

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

See Section 11

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

Treat symptomatically.

**SECTION 5 Fire-fighting measures****Extinguishing media**

- ▶ Alcohol stable foam.
- ▶ Dry chemical powder.
- ▶ BCF (where regulations permit).
- ▶ Carbon dioxide.
- ▶ Water spray or fog - Large fires only.
- ▶ Dry chemical powder.
- ▶ BCF (where regulations permit).
- ▶ Carbon dioxide.

**Special hazards arising from the substrate or mixture**

<b>Fire Incompatibility</b>	None known.
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**Special protective equipment and precautions for fire-fighters**

<b>Fire Fighting</b>	<ul style="list-style-type: none"> <li>▶ Alert Fire Brigade and tell them location and nature of hazard.</li> <li>▶ Wear breathing apparatus plus protective gloves in the event of a fire.</li> <li>▶ Prevent, by any means available, spillage from entering drains or water courses.</li> <li>▶ Use fire fighting procedures suitable for surrounding area.</li> <li>▶ <b>DO NOT</b> approach containers suspected to be hot.</li> <li>▶ Cool fire exposed containers with water spray from a protected location.</li> </ul> Slight hazard when exposed to heat, flame and oxidisers.
<b>Fire/Explosion Hazard</b>	<ul style="list-style-type: none"> <li>▶ Non combustible.</li> <li>▶ Not considered to be a significant fire risk.</li> <li>▶ Heating may cause expansion or decomposition leading to violent rupture of containers.</li> <li>▶ May emit acrid smoke. May emit corrosive and poisonous fumes.</li> </ul>

**SECTION 6 Accidental release measures****Personal precautions, protective equipment and emergency procedures**

See section 8

**Environmental precautions**

See section 12

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

<b>Minor Spills</b>	Clean up all spills immediately. Avoid contact with skin and eyes. Place in suitable containers for disposal.
<b>Major Spills</b>	<ul style="list-style-type: none"> <li>▶ Clear area of personnel and move upwind.</li> <li>▶ Alert Fire Brigade and tell them location and nature of hazard.</li> <li>▶ Wear breathing apparatus plus protective gloves.</li> <li>▶ Prevent, by any means available, spillage from entering drains or water course.</li> <li>▶ Stop leak if safe to do so.</li> <li>▶ Contain spill with sand, earth or vermiculite.</li> <li>▶ Clean up all spills immediately.</li> <li>▶ Wear protective clothing, safety glasses, dust mask, gloves.</li> <li>▶ Secure load if safe to do so. Bundle/collect recoverable product.</li> <li>▶ Use dry clean up procedures and avoid generating dust.</li> <li>▶ Vacuum up (consider explosion-proof machines designed to be grounded during storage and use).</li> </ul> Minor hazard. <ul style="list-style-type: none"> <li>▶ Clear area of personnel.</li> <li>▶ Alert Fire Brigade and tell them location and nature of hazard.</li> <li>▶ Control personal contact with the substance, by using protective equipment as required.</li> <li>▶ Prevent spillage from entering drains or water ways.</li> <li>▶ Contain spill with sand, earth or vermiculite.</li> </ul>

Personal Protective Equipment advice is contained in Section 8 of the SDS.

**SECTION 7 Handling and storage****Precautions for safe handling**

<b>Safe handling</b>	Do not connect the positive terminal to the negative terminal with electrical wire or chain. Avoid polarity reverse connection when installing the battery to an instrument. Do not wet the battery with water, seawater or acid; or expose to strong oxidizer. Do not damage or remove the external tube. Keep the battery away from heat and fire. Do not disassemble or reconstruct the battery; or solder the battery directly. Do not give a mechanical shock or deform. Do not use unauthorized charger or other charging method. Terminate charging when the charging process does not end within specified time. Use good occupational work practice. Observe manufacturer's storage and handling recommendations contained within this SDS. Avoid physical damage to containers.
<b>Other information</b>	<ul style="list-style-type: none"> <li>▶ Store away from incompatible materials.</li> <li>▶ Keep dry.</li> <li>▶ Store under cover.</li> <li>▶ Protect containers against physical damage.</li> <li>▶ Observe manufacturer's storage and handling recommendations contained within this SDS.</li> </ul> Keep out of reach of children. Store out of direct sunlight

**Conditions for safe storage, including any incompatibilities**

<b>Suitable container</b>	Store in original containers.
<b>Storage incompatibility</b>	▶ Avoid reaction with oxidising agents, bases and strong reducing agents.

**SECTION 8 Exposure controls / personal protection****Control parameters****Occupational Exposure Limits (OEL)****INGREDIENT DATA**

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
US OSHA Permissible Exposure Limits (PELs) Table Z-1	lithium nickel cobalt oxide	Particulates Not Otherwise Regulated (PNOR)- Respirable fraction	5 mg/m3	Not Available	Not Available	Not Available
US OSHA Permissible Exposure Limits (PELs) Table Z-1	lithium nickel cobalt oxide	Particulates Not Otherwise Regulated (PNOR)- Total dust	15 mg/m3	Not Available	Not Available	Not Available
US OSHA Permissible Exposure Limits (PELs) Table Z-3	lithium nickel cobalt oxide	Inert or Nuisance Dust: Respirable fraction	5 mg/m3 / 15 mppcf	Not Available	Not Available	Not Available
US OSHA Permissible Exposure Limits (PELs) Table Z-3	lithium nickel cobalt oxide	Inert or Nuisance Dust: Total Dust	15 mg/m3 / 50 mppcf	Not Available	Not Available	Not Available
US NIOSH Recommended Exposure Limits (RELs)	lithium nickel cobalt oxide	Particulates not otherwise regulated	Not Available	Not Available	Not Available	See Appendix D
US NIOSH Recommended Exposure Limits (RELs)	lithium nickel cobalt oxide	Nickel metal and other compounds (as Ni)	0.015 mg/m3	Not Available	Not Available	Ca; See Appendix A [*Note: The REL does not apply to Nickel carbonyl.]
US OSHA Permissible Exposure Limits (PELs) Table Z-1	graphite	Graphite, synthetic-Total dust	15 mg/m3	Not Available	Not Available	Not Available
US OSHA Permissible Exposure Limits (PELs) Table Z-1	graphite	Graphite, synthetic-Respirable Fraction	5 mg/m3	Not Available	Not Available	Not Available
US OSHA Permissible Exposure Limits (PELs) Table Z-3	graphite	Graphite (Natural)	15 mppcf	Not Available	Not Available	Not Available
US NIOSH Recommended Exposure Limits (RELs)	graphite	Graphite (natural)	2.5 mg/m3	Not Available	Not Available	Not Available
US OSHA Permissible Exposure Limits (PELs) Table Z-1	copper	Copper- Fume (as Cu)	0.1 mg/m3	Not Available	Not Available	Not Available
US OSHA Permissible Exposure Limits (PELs) Table Z-1	copper	Copper- Dusts and mists (as Cu)	1 mg/m3	Not Available	Not Available	Not Available
US OSHA Permissible Exposure Limits (PELs) Table Z-3	copper	Inert or Nuisance Dust: Total Dust	15 mg/m3 / 50 mppcf	Not Available	Not Available	Not Available
US OSHA Permissible Exposure Limits (PELs) Table Z-3	copper	Inert or Nuisance Dust: Respirable fraction	5 mg/m3 / 15 mppcf	Not Available	Not Available	Not Available
US NIOSH Recommended Exposure Limits (RELs)	copper	Copper (dusts and mists, as Cu)	1 mg/m3	Not Available	Not Available	[*Note: The REL also applies to other copper compounds (as Cu) except Copper fume.]
US OSHA Permissible Exposure Limits (PELs) Table Z-1	aluminium	Aluminum Metal (as Al)-Respirable fraction	5 mg/m3	Not Available	Not Available	Not Available
US OSHA Permissible Exposure Limits (PELs) Table Z-1	aluminium	Aluminum Metal (as Al)-Total dust	15 mg/m3	Not Available	Not Available	Not Available
US OSHA Permissible Exposure Limits (PELs) Table Z-3	aluminium	Inert or Nuisance Dust: Respirable fraction	5 mg/m3 / 15 mppcf	Not Available	Not Available	Not Available


Source	Ingredient	Material name	TWA	STEL	Peak	Notes
US OSHA Permissible Exposure Limits (PELs) Table Z-3	aluminium	Inert or Nuisance Dust: Total Dust	15 mg/m <sup>3</sup> / 50 mppcf	Not Available	Not Available	Not Available
US NIOSH Recommended Exposure Limits (RELs)	aluminium	Aluminum - total	10 mg/m <sup>3</sup>	Not Available	Not Available	Not Available
US NIOSH Recommended Exposure Limits (RELs)	aluminium	Aluminum - respirable	5 mg/m <sup>3</sup>	Not Available	Not Available	Not Available
US NIOSH Recommended Exposure Limits (RELs)	aluminium	Aluminum (pyro powders and welding fumes, as Al)	5 mg/m <sup>3</sup>	Not Available	Not Available	Not Available
US OSHA Permissible Exposure Limits (PELs) Table Z-1	polypropylene	Particulates Not Otherwise Regulated (PNOR)- Total dust	15 mg/m <sup>3</sup>	Not Available	Not Available	Not Available
US OSHA Permissible Exposure Limits (PELs) Table Z-1	polypropylene	Particulates Not Otherwise Regulated (PNOR)- Respirable fraction	5 mg/m <sup>3</sup>	Not Available	Not Available	Not Available
US OSHA Permissible Exposure Limits (PELs) Table Z-3	polypropylene	Inert or Nuisance Dust: Total Dust	15 mg/m <sup>3</sup> / 50 mppcf	Not Available	Not Available	Not Available
US OSHA Permissible Exposure Limits (PELs) Table Z-3	polypropylene	Inert or Nuisance Dust: Respirable fraction	5 mg/m <sup>3</sup> / 15 mppcf	Not Available	Not Available	Not Available
US NIOSH Recommended Exposure Limits (RELs)	polypropylene	Particulates not otherwise regulated	Not Available	Not Available	Not Available	See Appendix D
US OSHA Permissible Exposure Limits (PELs) Table Z-1	lithium fluorophosphate	Particulates Not Otherwise Regulated (PNOR)- Total dust	15 mg/m <sup>3</sup>	Not Available	Not Available	Not Available
US OSHA Permissible Exposure Limits (PELs) Table Z-1	lithium fluorophosphate	Particulates Not Otherwise Regulated (PNOR)- Respirable fraction	5 mg/m <sup>3</sup>	Not Available	Not Available	Not Available
US OSHA Permissible Exposure Limits (PELs) Table Z-3	lithium fluorophosphate	Inert or Nuisance Dust: Total Dust	15 mg/m <sup>3</sup> / 50 mppcf	Not Available	Not Available	Not Available
US OSHA Permissible Exposure Limits (PELs) Table Z-3	lithium fluorophosphate	Inert or Nuisance Dust: Respirable fraction	5 mg/m <sup>3</sup> / 15 mppcf	Not Available	Not Available	Not Available
US NIOSH Recommended Exposure Limits (RELs)	lithium fluorophosphate	Particulates not otherwise regulated	Not Available	Not Available	Not Available	See Appendix D

### Emergency Limits

Ingredient	TEEL-1	TEEL-2	TEEL-3
graphite	6 mg/m <sup>3</sup>	330 mg/m <sup>3</sup>	2,000 mg/m <sup>3</sup>
copper	3 mg/m <sup>3</sup>	33 mg/m <sup>3</sup>	200 mg/m <sup>3</sup>
ethylene carbonate	30 mg/m <sup>3</sup>	330 mg/m <sup>3</sup>	2,000 mg/m <sup>3</sup>
polypropylene	5.2 mg/m <sup>3</sup>	58 mg/m <sup>3</sup>	350 mg/m <sup>3</sup>
lithium fluorophosphate	7.5 mg/m <sup>3</sup>	83 mg/m <sup>3</sup>	500 mg/m <sup>3</sup>

Ingredient	Original IDLH	Revised IDLH
lithium nickel cobalt oxide	10 mg/m <sup>3</sup>	Not Available
graphite	1,250 mg/m <sup>3</sup>	Not Available
copper	100 mg/m <sup>3</sup>	Not Available
aluminium	Not Available	Not Available
ethylene carbonate	Not Available	Not Available
polypropylene	Not Available	Not Available
ethyl methyl carbonate	Not Available	Not Available
lithium fluorophosphate	Not Available	Not Available

### Exposure controls

<b>Appropriate engineering controls</b>	General exhaust is adequate under normal operating conditions.
<b>Individual protection measures, such as personal protective equipment</b>	
<b>Eye and face protection</b>	<ul style="list-style-type: none"> <li>▶ Safety glasses with side shields.</li> <li>▶ Chemical goggles. [AS/NZS 1337.1, EN166 or national equivalent]</li> <li>▶ Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available.</li> </ul> <p>None under normal operating conditions.</p> <p><b>OTHERWISE:</b></p>

	▶ Safety glasses.
<b>Skin protection</b>	See Hand protection below
<b>Hands/feet protection</b>	None under normal operating conditions. <b>OTHERWISE:</b> ▶ Rubber Gloves
<b>Body protection</b>	See Other protection below
<b>Other protection</b>	No special equipment needed when handling small quantities

**Respiratory protection**

Type A-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

Where the concentration of gas/particulates in the breathing zone, approaches or exceeds the "Exposure Standard" (or ES), respiratory protection is required. Degree of protection varies with both face-piece and Class of filter; the nature of protection varies with Type of filter.

Required Minimum Protection Factor	Half-Face Respirator	Full-Face Respirator	Powered Air Respirator
up to 10 x ES	A-AUS P2	-	A-PAPR-AUS / Class 1 P2
up to 50 x ES	-	A-AUS / Class 1 P2	-
up to 100 x ES	-	A-2 P2	A-PAPR-2 P2 ^

^ - Full-face

A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO<sub>2</sub>), G = Agricultural chemicals, K = Ammonia(NH<sub>3</sub>), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

- Respirators may be necessary when engineering and administrative controls do not adequately prevent exposures.
- The decision to use respiratory protection should be based on professional judgment that takes into account toxicity information, exposure measurement data, and frequency and likelihood of the worker's exposure - ensure users are not subject to high thermal loads which may result in heat stress or distress due to personal protective equipment (powered, positive flow, full face apparatus may be an option).
- Published occupational exposure limits, where they exist, will assist in determining the adequacy of the selected respiratory protection. These may be government mandated or vendor recommended.
- Certified respirators will be useful for protecting workers from inhalation of particulates when properly selected and fit tested as part of a complete respiratory protection program.
- Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU)
- Use approved positive flow mask if significant quantities of dust becomes airborne.
- Try to avoid creating dust conditions.

**SECTION 9 Physical and chemical properties****Information on basic physical and chemical properties**

<b>Appearance</b>	Blue cylindrical solid with no odour; insoluble in water.		
<b>Physical state</b>	Manufactured	<b>Relative density (Water = 1)</b>	Not Available
<b>Odour</b>	Not Available	<b>Partition coefficient n-octanol / water</b>	Not Available
<b>Odour threshold</b>	Not Available	<b>Auto-ignition temperature (°C)</b>	Not Applicable
<b>pH (as supplied)</b>	Not Applicable	<b>Decomposition temperature (°C)</b>	Not Available
<b>Melting point / freezing point (°C)</b>	Not Applicable	<b>Viscosity (cSt)</b>	Not Applicable
<b>Initial boiling point and boiling range (°C)</b>	Not Applicable	<b>Molecular weight (g/mol)</b>	Not Applicable
<b>Flash point (°C)</b>	Not Applicable	<b>Taste</b>	Not Available
<b>Evaporation rate</b>	Not Applicable	<b>Explosive properties</b>	Not Available
<b>Flammability</b>	Not Applicable	<b>Oxidising properties</b>	Not Available
<b>Upper Explosive Limit (%)</b>	Not Applicable	<b>Surface Tension (dyn/cm or mN/m)</b>	Not Applicable
<b>Lower Explosive Limit (%)</b>	Not Applicable	<b>Volatile Component (%vol)</b>	Not Applicable
<b>Vapour pressure (kPa)</b>	Not Applicable	<b>Gas group</b>	Not Available
<b>Solubility in water</b>	Immiscible	<b>pH as a solution (1%)</b>	Not Applicable
<b>Vapour density (Air = 1)</b>	Not Applicable	<b>VOC g/L</b>	Not Available
<b>Heat of Combustion (kJ/g)</b>	Not Available	<b>Ignition Distance (cm)</b>	Not Available
<b>Flame Height (cm)</b>	Not Available	<b>Flame Duration (s)</b>	Not Available
<b>Enclosed Space Ignition Time Equivalent (s/m<sup>3</sup>)</b>	Not Available	<b>Enclosed Space Ignition Deflagration Density (g/m<sup>3</sup>)</b>	Not Available
<b>Nanoform Solubility</b>	Not Available	<b>Nanoform Particle Characteristics</b>	Not Available
<b>Particle Size</b>	Not Available		

**SECTION 10 Stability and reactivity**

<b>Reactivity</b>	See section 7
<b>Chemical stability</b>	Product is considered stable and hazardous polymerisation will not occur.
<b>Possibility of hazardous reactions</b>	See section 7
<b>Conditions to avoid</b>	See section 7

<b>Incompatible materials</b>	See section 7
<b>Hazardous decomposition products</b>	See section 5

## SECTION 11 Toxicological information

### Information on toxicological effects

<b>a) Acute Toxicity</b>	There is sufficient evidence to classify this material as acutely toxic.
<b>b) Skin Irritation/Corrosion</b>	There is sufficient evidence to classify this material as skin corrosive or irritating.
<b>c) Serious Eye Damage/Irritation</b>	There is sufficient evidence to classify this material as eye damaging or irritating
<b>d) Respiratory or Skin sensitisation</b>	There is sufficient evidence to classify this material as sensitising to skin or the respiratory system
<b>e) Mutagenicity</b>	There is sufficient evidence to classify this material as mutagenic
<b>f) Carcinogenicity</b>	There is sufficient evidence to classify this material as carcinogenic
<b>g) Reproductivity</b>	Based on available data, the classification criteria are not met.
<b>h) STOT - Single Exposure</b>	There is sufficient evidence to classify this material as toxic to specific organs through single exposure
<b>i) STOT - Repeated Exposure</b>	There is sufficient evidence to classify this material as toxic to specific organs through repeated exposure
<b>j) Aspiration Hazard</b>	Based on available data, the classification criteria are not met.

<b>Inhaled</b>	Vapors or fumes may cause respiratory tract irritation. Not normally a hazard due to physical form of product.
<b>Ingestion</b>	Considered an unlikely route of entry in commercial/industrial environments Ingestion may result in nausea, abdominal irritation, pain and vomiting
<b>Skin Contact</b>	The electrolyte causes eye irritation and damage. Not normally a hazard due to physical form of product.
<b>Eye</b>	The electrolyte causes eye irritation and damage. Not normally a hazard due to physical form of product.
<b>Chronic</b>	The chemicals in this product are contained in a sealed case and exposure does not occur during normal handling and use. Not normally a hazard due to physical form of product.

	<b>TOXICITY</b>	<b>IRRITATION</b>
<b>12 Ah FlexForce UN3480</b>	Not Available	Not Available
<b>lithium nickel cobalt oxide</b>	Not Available	Not Available
<b>graphite</b>	Inhalation (Rat) LC50: >2 mg/L4h <sup>[1]</sup> Oral (Rat) LD50: >200 mg/kg <sup>[1]</sup>	Eye: no adverse effect observed (not irritating) <sup>[1]</sup> Skin: no adverse effect observed (not irritating) <sup>[1]</sup>
<b>copper</b>	dermal (rat) LD50: >2000 mg/kg <sup>[1]</sup> Inhalation (Rat) LC50: 0.733 mg/l4h <sup>[1]</sup> Oral (Mouse) LD50: 0.7 mg/kg <sup>[2]</sup>	Eye: no adverse effect observed (not irritating) <sup>[1]</sup> Skin: no adverse effect observed (not irritating) <sup>[1]</sup>
<b>aluminium</b>	Inhalation (Rat) LC50: >2.3 mg/l4h <sup>[1]</sup> Oral (Rat) LD50: >2000 mg/kg <sup>[1]</sup>	Eye: no adverse effect observed (not irritating) <sup>[1]</sup> Skin: no adverse effect observed (not irritating) <sup>[1]</sup>
<b>ethylene carbonate</b>	dermal (rat) LD50: >2000 mg/kg <sup>[1]</sup> Oral (Rat) LD50: >2000 mg/kg <sup>[1]</sup>	Eye: adverse effect observed (irritating) <sup>[1]</sup> Skin (Rodent - rabbit): 660mg - Mild Skin: no adverse effect observed (not irritating) <sup>[1]</sup>
<b>polypropylene</b>	Oral (Mouse) LD50: 3200 mg/kg <sup>[2]</sup>	Not Available
<b>ethyl methyl carbonate</b>	Inhalation (Rat) LC50: >17.6 mg/l4h <sup>[1]</sup> Oral (Rat) LD50: >5000 mg/kg <sup>[1]</sup>	Not Available
<b>lithium fluorophosphate</b>	Oral (Rat) LD50: 50-300 mg/kg <sup>[1]</sup>	Eye: adverse effect observed (irritating) <sup>[1]</sup> Skin: adverse effect observed (corrosive) <sup>[1]</sup>

**Legend:** 1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2. Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances

<b>LITHIUM NICKEL COBALT OXIDE</b>	<p>Goitrogenic: Goitrogens are substances that suppress the function of the thyroid gland by interfering with iodine uptake, which can, as a result, cause an enlargement of the thyroid (a goitre). Goitrogens include: - Vitexin, a flavonoid, which inhibits thyroid peroxidase, contributing to goitre - Thiocyanate and perchlorate, which decrease iodide uptake by competitive inhibition and consequently increase release of TSH from the pituitary gland - Lithium, which inhibits thyroid hormone release - Certain foods, such as soy and millet (containing vitexins) and vegetables in the genus Brassica (which includes broccoli, Brussels sprouts, cabbage, cauliflower and horseradish). - Caffeine (found in coffee, tea, cola and chocolate), which acts on thyroid function as a suppressant.</p>
<b>COPPER</b>	<p>WARNING: Inhalation of high concentrations of copper fume may cause "metal fume fever", an acute industrial disease of short duration. Symptoms are tiredness, influenza like respiratory tract irritation with fever. for copper and its compounds (typically copper chloride): <b>Acute toxicity:</b> There are no reliable acute oral toxicity results available. In an acute dermal toxicity study (OECD TG 402), one group of 5 male rats and 5 groups of 5 female rats received doses of 1000, 1500 and 2000 mg/kg bw via dermal application for 24 hours. The LD50 values of copper monochloride were 2,000 mg/kg bw or greater for male (no deaths observed) and 1,224 mg/kg bw for female. Four females died at both 1500 and 2000 mg/kg bw, and one at 1,000 mg/kg bw. Symptom of the hardness of skin, an exudation of hardness site, the formation of scar and reddish changes were observed on application sites in all treated animals. Skin inflammation and injury were also noted.</p>
<b>ETHYLENE CARBONATE</b>	<p>The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis. The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin. For ethylene carbonate: Ethylene carbonate is rapidly converted to ethylene glycol, and both substances have similar toxicity in animals. In animals, chronic exposure has resulted in kidney damage. Testing has not shown ethylene carbonate to cause genetic toxicity. At sufficient doses, ethylene carbonate caused birth defects. For ethylene glycol: Ethylene glycol is quickly and extensively absorbed throughout the gastrointestinal tract. Limited information suggests that it is also absorbed through the airways; absorption through skin is apparently slow. Following absorption, it is distributed throughout the body. In humans, it is initially metabolized by alcohol dehydrogenase to form glycoaldehyde, which is rapidly converted to glycolic acid and glyoxal. These breakdown products are oxidized to glyoxylate, which may be further metabolized to formic acid, oxalic acid, and glycine. Breakdown of both glycine and formic acid can generate carbon dioxide, which is one of the major elimination products of ethylene glycol.</p>
<b>POLYPROPYLENE</b>	<p>* For pyrolyzate For poly-alpha-olefins (PAOs): PAOs are highly branched, isoparaffinic chemicals produced by oligomerisation of 1-octene, 1-decene and/or 1-dodecene. The crude polyalphaolefin mixture is then distilled into appropriate product fractions to meet specific viscosity specifications and hydrogenated. In existing data, there appears to be no data to show that these structural analogs cause health effects. In addition, there is evidence in the literature that alkanes with 30 or more carbon atoms are unlikely to be absorbed when given by mouth. The physical and chemical properties make it unlikely that significant absorption into the body will occur. There are also no functional groups on PAO molecules that are biologically active. The substance is classified by IARC as Group 3: <b>NOT</b> classifiable as to its carcinogenicity to humans. Evidence of carcinogenicity may be inadequate or limited in animal testing.</p>
<b>LITHIUM NICKEL COBALT OXIDE &amp; COPPER</b>	<p>The following information refers to contact allergens as a group and may not be specific to this product. Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions. The significance of the contact allergen is not simply determined by its sensitisation potential: the distribution of the substance and the opportunities for contact with it are equally important. A weakly sensitising substance which is widely distributed can be a more important allergen than one with stronger sensitising potential with which few individuals come into contact.</p>
<b>LITHIUM NICKEL COBALT OXIDE &amp; GRAPHITE &amp; ALUMINIUM &amp; ETHYL METHYL CARBONATE &amp; LITHIUM FLUOROPHOSPHATE</b>	<p>No significant acute toxicological data identified in literature search.</p>
<b>GRAPHITE &amp; ETHYLENE CARBONATE &amp; LITHIUM FLUOROPHOSPHATE</b>	<p>Asthma-like symptoms may continue for months or even years after exposure to the material ends. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur after exposure to high levels of highly irritating compound. Main criteria for diagnosing RADS include the absence of previous airways disease in a non-atopic individual, with sudden onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. Other criteria for diagnosis of RADS include a reversible airflow pattern on lung function tests, moderate to severe bronchial hyperreactivity on methacholine challenge testing, and the lack of minimal lymphocytic inflammation, without eosinophilia. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. On the other hand, industrial bronchitis is a disorder that occurs as a result of exposure due to high concentrations of irritating substance (often particles) and is completely reversible after exposure ceases.</p>

<b>Acute Toxicity</b>	✓	<b>Carcinogenicity</b>	✓
<b>Skin Irritation/Corrosion</b>	✓	<b>Reproductivity</b>	✗
<b>Serious Eye Damage/Irritation</b>	✓	<b>STOT - Single Exposure</b>	✓
<b>Respiratory or Skin sensitisation</b>	✓	<b>STOT - Repeated Exposure</b>	✓
<b>Mutagenicity</b>	✓	<b>Aspiration Hazard</b>	✗

**Legend:** ✗ – Data either not available or does not fill the criteria for classification  
✓ – Data available to make classification

## SECTION 12 Ecological information

### Toxicity

Continued...

## 12 Ah FlexForce UN3480

12 Ah FlexForce UN3480	Endpoint	Test Duration (hr)	Species	Value	Source
	Not Available	Not Available	Not Available	Not Available	Not Available
lithium nickel cobalt oxide	Endpoint	Test Duration (hr)	Species	Value	Source
	Not Available	Not Available	Not Available	Not Available	Not Available
graphite	Endpoint	Test Duration (hr)	Species	Value	Source
	EC50	72h	Algae or other aquatic plants	>100mg/l	2
	EC50	48h	Crustacea	>100mg/l	2
	NOEC(ECx)	96h	Fish	>=100mg/l	2
	LC50	96h	Fish	>100mg/l	2
copper	Endpoint	Test Duration (hr)	Species	Value	Source
	EC50	72h	Algae or other aquatic plants	0.011-0.017mg/L	4
	EC50	48h	Crustacea	<0.001mg/L	4
	EC50	96h	Algae or other aquatic plants	0.03-0.058mg/l	4
	NOEC(ECx)	48h	Fish	<0.001mg/L	4
LC50	96h	Fish	0.003mg/L	2	
aluminium	Endpoint	Test Duration (hr)	Species	Value	Source
	EC50	72h	Algae or other aquatic plants	0.017mg/L	2
	EC50	48h	Crustacea	0.736mg/L	2
	EC50	96h	Algae or other aquatic plants	0.005mg/L	2
	NOEC(ECx)	72h	Algae or other aquatic plants	>100mg/l	1
LC50	96h	Fish	0.078-0.108mg/l	2	
ethylene carbonate	Endpoint	Test Duration (hr)	Species	Value	Source
	EC50	72h	Algae or other aquatic plants	>100mg/l	2
	EC50	48h	Crustacea	>100mg/l	2
	LC50	96h	Fish	>100mg/l	2
NOEC(ECx)	72h	Algae or other aquatic plants	100mg/l	2	
polypropylene	Endpoint	Test Duration (hr)	Species	Value	Source
	Not Available	Not Available	Not Available	Not Available	Not Available
ethyl methyl carbonate	Endpoint	Test Duration (hr)	Species	Value	Source
	EC50	72h	Algae or other aquatic plants	>62mg/l	2
	EC50	48h	Crustacea	>100mg/l	2
	NOEC(ECx)	72h	Algae or other aquatic plants	62mg/l	2
LC50	96h	Fish	>100mg/l	2	
lithium fluorophosphate	Endpoint	Test Duration (hr)	Species	Value	Source
	NOEC(ECx)	528h	Fish	0.2mg/l	2
	EC50	72h	Algae or other aquatic plants	62mg/l	2
	EC50	48h	Crustacea	98mg/l	2
	EC50	96h	Algae or other aquatic plants	43mg/l	2
LC50	96h	Fish	42mg/l	2	
Legend:	Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data				

On the basis of available evidence concerning either toxicity, persistence, potential to accumulate and or observed environmental fate and behaviour, the material may present a danger, immediate or long-term and /or delayed, to the structure and/ or functioning of natural ecosystems.

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**DO NOT discharge into sewer or waterways.**

## Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
ethylene carbonate	HIGH	HIGH
polypropylene	LOW	LOW
ethyl methyl carbonate	HIGH	HIGH

## Bioaccumulative potential

Continued...

12 Ah FlexForce UN3480

Ingredient	Bioaccumulation
aluminium	LOW (LogKOW = 0.33)
ethylene carbonate	LOW (LogKOW = -0.3388)
polypropylene	LOW (LogKOW = 17.21)
ethyl methyl carbonate	LOW (LogKOW = 0.7247)

**Mobility in soil**

Ingredient	Mobility
ethylene carbonate	LOW (Log KOC = 9.168)
polypropylene	LOW (Log KOC = 23.74)
ethyl methyl carbonate	LOW (Log KOC = 15.22)

**Other adverse effects**

No evidence of ozone depleting properties were found in the current literature.



**SECTION 13 Disposal considerations**

**Waste treatment methods**

Product / Packaging disposal	
	<ul style="list-style-type: none"> <li>▶ Recycle wherever possible or consult manufacturer for recycling options.</li> <li>▶ Consult State Land Waste Management Authority for disposal.</li> <li>▶ Bury residue in an authorised landfill.</li> <li>▶ Recycle containers if possible, or dispose of in an authorised landfill.</li> </ul>

**SECTION 14 Transport information**

**Labels Required**

	
Marine Pollutant	

Shipping container, transport vehicle placarding, and labeling may vary from the below information. This depends on the quantity shipped, the applicability of excepted quantity requirements, limited quantity requirements, and/or special provisions according to US DOT, IATA and IMDG regulations. In case of reshipment, it is the responsibility of the shipper to determine the appropriate labels and markings in accordance with applicable transport regulations.

**Land transport (DOT)**

14.1. UN number or ID number	3480	
14.2. UN proper shipping name	Lithium ion batteries including lithium ion polymer batteries	
14.3. Transport hazard class(es)	Class	9
	Subsidiary Hazard	Not Applicable
14.4. Packing group	Not Applicable	
14.5. Environmental hazard	Environmentally hazardous	
14.6. Special precautions for user	Hazard Label	9
	Special provisions	388, 422, A54, A100

**Air transport (ICAO-IATA / DGR)**

14.1. UN number	3480	
14.2. UN proper shipping name	Lithium ion batteries (including lithium ion polymer batteries)	
14.3. Transport hazard class(es)	ICAO/IATA Class	9
	ICAO / IATA Subsidiary Hazard	Not Applicable
	ERG Code	12FZ
14.4. Packing group	Not Applicable	
14.5. Environmental hazard	Environmentally hazardous	
14.6. Special precautions for user	Special provisions	A88 A99 A154 A164 A183 A201 A213 A331 A334 A802
	Cargo Only Packing Instructions	See 965
	Cargo Only Maximum Qty / Pack	See 965
	Passenger and Cargo Packing Instructions	Forbidden

Passenger and Cargo Maximum Qty / Pack	Forbidden
Passenger and Cargo Limited Quantity Packing Instructions	Forbidden
Passenger and Cargo Limited Maximum Qty / Pack	Forbidden

**Sea transport (IMDG-Code / GGVSee)**

14.1. UN number	3480	
14.2. UN proper shipping name	LITHIUM ION BATTERIES (including lithium ion polymer batteries)	
14.3. Transport hazard class(es)	IMDG Class	9
	IMDG Subsidiary Hazard	Not Applicable
14.4. Packing group	Not Applicable	
14.5. Environmental hazard	Marine Pollutant	
14.6. Special precautions for user	EMS Number	F-A, S-I
	Special provisions	188 230 310 348 376 377 384 387
	Limited Quantities	0

**14.7. Maritime transport in bulk according to IMO instruments****14.7.1. Transport in bulk according to Annex II of MARPOL and the IBC code**

Not Applicable

**14.7.2. Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code**

Product name	Group
lithium nickel cobalt oxide	Not Available
graphite	Not Available
copper	Not Available
aluminium	Not Available
ethylene carbonate	Not Available
polypropylene	Not Available
ethyl methyl carbonate	Not Available
lithium fluorophosphate	Not Available

**14.7.3. Transport in bulk in accordance with the IGC Code**

Product name	Ship Type
lithium nickel cobalt oxide	Not Available
graphite	Not Available
copper	Not Available
aluminium	Not Available
ethylene carbonate	Not Available
polypropylene	Not Available
ethyl methyl carbonate	Not Available
lithium fluorophosphate	Not Available

**SECTION 15 Regulatory information****Safety, health and environmental regulations / legislation specific for the substance or mixture****lithium nickel cobalt oxide is found on the following regulatory lists**

Chemical Footprint Project - Chemicals of High Concern List  
 International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs  
 International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Group 1: Carcinogenic to humans  
 International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)  
 US - Alaska Air Quality Control - Concentrations Triggering an Air Quality Episode for Air Pollutants Other Than PM-2.5  
 US - California Hazardous Air Pollutants Identified as Toxic Air Contaminants  
 US - California Proposition 65 - Carcinogens  
 US - California Safe Drinking Water and Toxic Enforcement Act of 1986 - Proposition 65 List  
 US Clean Air Act - Hazardous Air Pollutants  
 US CWA (Clean Water Act) - Priority Pollutants  
 US CWA (Clean Water Act) - Toxic Pollutants  
 US EPA Integrated Risk Information System (IRIS)  
 US EPCRA Section 313 Chemical List  
 US National Toxicology Program (NTP) 15th Report Part A Known to be Human Carcinogens  
 US National Toxicology Program (NTP) 15th Report Part B. Reasonably Anticipated to be a Human Carcinogen  
 US New York City Community Right-to-Know: List of Hazardous Substances  
 US NIOSH Recommended Exposure Limits (RELs)  
 US OSHA Permissible Exposure Limits (PELs) Table Z-1  
 US OSHA Permissible Exposure Limits (PELs) Table Z-3

Continued...

**graphite is found on the following regulatory lists**

International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)  
US - Alaska Air Quality Control - Concentrations Triggering an Air Quality Episode for Air Pollutants Other Than PM-2.5  
US - Massachusetts - Right To Know Listed Chemicals  
US - New Jersey Right to Know Hazardous Substances  
US - Pennsylvania - Hazardous Substance List  
US DOE Temporary Emergency Exposure Limits (TEELs)  
US NIOSH Recommended Exposure Limits (RELs)  
US OSHA Permissible Exposure Limits (PELs) Table Z-1  
US OSHA Permissible Exposure Limits (PELs) Table Z-3  
US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

**copper is found on the following regulatory lists**

International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)  
US - Alaska Air Quality Control - Concentrations Triggering an Air Quality Episode for Air Pollutants Other Than PM-2.5  
US - Massachusetts - Right To Know Listed Chemicals  
US - New Jersey Right to Know Hazardous Substances  
US - Pennsylvania - Hazardous Substance List  
US ATSDR Minimal Risk Levels for Hazardous Substances (MRLs)  
US CWA (Clean Water Act) - Priority Pollutants  
US CWA (Clean Water Act) - Toxic Pollutants  
US DOE Temporary Emergency Exposure Limits (TEELs)  
US EPA Integrated Risk Information System (IRIS)  
US EPA Pesticide Chemical Search - Antimicrobial  
US EPA Pesticide Chemical Search - Conventional Chemical  
US EPCRA Section 313 Chemical List  
US New York City Community Right-to-Know: List of Hazardous Substances  
US NIOSH Recommended Exposure Limits (RELs)  
US OSHA Permissible Exposure Limits (PELs) Table Z-1  
US OSHA Permissible Exposure Limits (PELs) Table Z-3  
US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

**aluminium is found on the following regulatory lists**

International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)  
US - Alaska Air Quality Control - Concentrations Triggering an Air Quality Episode for Air Pollutants Other Than PM-2.5  
US - Massachusetts - Right To Know Listed Chemicals  
US - New Jersey Right to Know - Special Health Hazard Substance List (SHHSL): Flammables  
US - New Jersey Right to Know Hazardous Substances  
US - Pennsylvania - Hazardous Substance List  
US ATSDR Minimal Risk Levels for Hazardous Substances (MRLs)  
US Department of Homeland Security (DHS) - Chemical Facility Anti-Terrorism Standards (CFATS) - Chemicals of Interest  
US EPA Pesticide Chemical Search - Antimicrobial  
US EPCRA Section 313 Chemical List  
US New York City Community Right-to-Know: List of Hazardous Substances  
US NIOSH Recommended Exposure Limits (RELs)  
US OSHA Permissible Exposure Limits (PELs) Table Z-1  
US OSHA Permissible Exposure Limits (PELs) Table Z-3  
US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

**ethylene carbonate is found on the following regulatory lists**

US - Massachusetts - Right To Know Listed Chemicals  
US - Pennsylvania - Hazardous Substance List  
US DOE Temporary Emergency Exposure Limits (TEELs)  
US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

**polypropylene is found on the following regulatory lists**

Chemical Footprint Project - Chemicals of High Concern List  
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Not Classified as Carcinogenic  
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)  
US - Alaska Air Quality Control - Concentrations Triggering an Air Quality Episode for Air Pollutants Other Than PM-2.5  
US DOE Temporary Emergency Exposure Limits (TEELs)  
US NIOSH Recommended Exposure Limits (RELs)  
US OSHA Permissible Exposure Limits (PELs) Table Z-1  
US OSHA Permissible Exposure Limits (PELs) Table Z-3  
US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

**ethyl methyl carbonate is found on the following regulatory lists**

US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

**lithium fluorophosphate is found on the following regulatory lists**

International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)  
US - Alaska Air Quality Control - Concentrations Triggering an Air Quality Episode for Air Pollutants Other Than PM-2.5  
US DOE Temporary Emergency Exposure Limits (TEELs)  
US NIOSH Recommended Exposure Limits (RELs)  
US OSHA Permissible Exposure Limits (PELs) Table Z-1  
US OSHA Permissible Exposure Limits (PELs) Table Z-3  
US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

**Additional Regulatory Information**

Not Applicable

**Federal Regulations**

**Superfund Amendments and Reauthorization Act of 1986 (SARA)****Section 311/312 hazard categories**

Flammable (Gases, Aerosols, Liquids, or Solids)	No
Gas under pressure	No
Explosive	No
Self-heating	No
Pyrophoric (Liquid or Solid)	No
Pyrophoric Gas	No
Corrosive to metal	No
Oxidizer (Liquid, Solid or Gas)	No
Organic Peroxide	No
Self-reactive	No
In contact with water emits flammable gas	No
Combustible Dust	No
Carcinogenicity	Yes
Acute toxicity (any route of exposure)	Yes
Reproductive toxicity	No
Skin Corrosion or Irritation	Yes
Respiratory or Skin Sensitization	Yes
Serious eye damage or eye irritation	Yes
Specific target organ toxicity (single or repeated exposure)	Yes
Aspiration Hazard	No
Germ cell mutagenicity	Yes
Simple Asphyxiant	No
Hazards Not Otherwise Classified	No

**US. EPA CERCLA Hazardous Substances and Reportable Quantities (40 CFR 302.4)**

Name	Reportable Quantity in Pounds (lb)	Reportable Quantity in kg
copper	5000	2270

**US. EPCRA Section 313 Toxic Release Inventory (TRI) (40 CFR 372)**

This product contains the following EPCRA section 313 chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know-Act of 1986 (40 CFR 372):

CAS No	%[weight]	Name
113066-89-0	35-38	lithium nickel cobalt oxide
7440-50-8	9-10	copper
7429-90-5	5-6	aluminium

*This information must be included in all SDSs that are copied and distributed for this material.*

**Additional Federal Regulatory Information**

Not Applicable

**State Regulations****US. California Proposition 65**

**⚠ WARNING:** This product can expose you to chemicals including **lithium nickel cobalt oxide**, which is known to the State of California to cause cancer. For more information, go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

**Additional State Regulatory Information**

Not Applicable

**National Inventory Status**

National Inventory	Status
Australia - AIIIC / Australia Non-Industrial Use	No (lithium nickel cobalt oxide; ethyl methyl carbonate)
Canada - DSL	No (lithium nickel cobalt oxide; ethyl methyl carbonate; lithium fluorophosphate)
Canada - NDSL	No (lithium nickel cobalt oxide; graphite; copper; aluminium; ethylene carbonate; polypropylene)
China - IECSC	Yes
Europe - EINEC / ELINCS / NLP	No (polypropylene)
Japan - ENCS	No (lithium nickel cobalt oxide; graphite; copper; aluminium)
Korea - KECI	No (lithium nickel cobalt oxide)
New Zealand - NZIoC	No (ethyl methyl carbonate; lithium fluorophosphate)

Continued...

National Inventory	Status
Philippines - PICCS	No (lithium nickel cobalt oxide)
USA - TSCA	TSCA Inventory 'Active' substance(s) (graphite; copper; aluminium; ethylene carbonate; polypropylene; ethyl methyl carbonate; lithium fluorophosphate); No (lithium nickel cobalt oxide)
Taiwan - TCSI	Yes
Mexico - INSQ	No (lithium nickel cobalt oxide; ethylene carbonate; ethyl methyl carbonate; lithium fluorophosphate)
Vietnam - NCI	No (lithium nickel cobalt oxide)
Russia - FBEPH	No (lithium nickel cobalt oxide; lithium fluorophosphate)
UAE - Control List (Banned/Restricted Substances)	No (lithium nickel cobalt oxide; copper; ethylene carbonate; polypropylene; ethyl methyl carbonate; lithium fluorophosphate)
<b>Legend:</b>	Yes = All CAS declared ingredients are on the inventory No = One or more of the CAS listed ingredients are not on the inventory. These ingredients may be exempt or will require registration.

## SECTION 16 Other information

<b>Revision Date</b>	12/09/2025
<b>Initial Date</b>	10/09/2025

### SDS Version Summary

Version	Date of Update	Sections Updated
3.1	12/09/2025	Identification of the substance / mixture and of the company / undertaking - Synonyms, Name
3.2	17/09/2025	Identification of the substance / mixture and of the company / undertaking - Synonyms, Name

### Other information

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

### Definitions and abbreviations

- ▶ PC - TWA: Permissible Concentration-Time Weighted Average
- ▶ PC - STEL: Permissible Concentration-Short Term Exposure Limit
- ▶ IARC: International Agency for Research on Cancer
- ▶ ACGIH: American Conference of Governmental Industrial Hygienists
- ▶ STEL: Short Term Exposure Limit
- ▶ TEEL: Temporary Emergency Exposure Limit,
- ▶ IDLH: Immediately Dangerous to Life or Health Concentrations
- ▶ ES: Exposure Standard
- ▶ OSF: Odour Safety Factor
- ▶ NOAEL: No Observed Adverse Effect Level
- ▶ LOAEL: Lowest Observed Adverse Effect Level
- ▶ TLV: Threshold Limit Value
- ▶ LOD: Limit Of Detection
- ▶ OTV: Odour Threshold Value
- ▶ BCF: BioConcentration Factors
- ▶ BEI: Biological Exposure Index
- ▶ DNEL: Derived No-Effect Level
- ▶ PNEC: Predicted no-effect concentration
- ▶ MARPOL: International Convention for the Prevention of Pollution from Ships
- ▶ IMSBC: International Maritime Solid Bulk Cargoes Code
- ▶ IGC: International Gas Carrier Code
- ▶ IBC: International Bulk Chemical Code
  
- ▶ AIIC: Australian Inventory of Industrial Chemicals
- ▶ DSL: Domestic Substances List
- ▶ NDSL: Non-Domestic Substances List
- ▶ IECSC: Inventory of Existing Chemical Substance in China
- ▶ EINECS: European Inventory of Existing Commercial chemical Substances
- ▶ ELINCS: European List of Notified Chemical Substances
- ▶ NLP: No-Longer Polymers
- ▶ ENCS: Existing and New Chemical Substances Inventory
- ▶ KECI: Korea Existing Chemicals Inventory
- ▶ NZIoC: New Zealand Inventory of Chemicals
- ▶ PICCS: Philippine Inventory of Chemicals and Chemical Substances
- ▶ TSCA: Toxic Substances Control Act
- ▶ TCSI: Taiwan Chemical Substance Inventory
- ▶ INSQ: Inventario Nacional de Sustancias Químicas
- ▶ NCI: National Chemical Inventory
- ▶ FBEPH: Russian Register of Potentially Hazardous Chemical and Biological Substances

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