

# SAFETY DATA SHEET: Lithium Niobate Coated Lithium Nickel Manganese Cobalt Oxide

Version: 3.2

Revision Date: 04/03/2020

## Section 1: Identification

### 1.1) Product identifier:

Product Name : Lithium Niobate coated Lithium nickel manganese cobalt oxide

Synonyms : LiNbO<sub>3</sub> coated NMC, LIB-NMCxyz

Product Number : PO0185

CAS Number : NMC- 346417-97-8, LiNbO<sub>3</sub>- 12031-63-9

### 1.2) Company information:

Address: MSE Supplies, LLC  
4400 E Broadway Blvd, Suite 600  
Tucson, AZ 85711, USA

Telephone: +1 520-789-6673

Email: [info@mse Supplies.com](mailto:info@mse Supplies.com)

Emergency Telephone : +1-703-527-3887

### 1.3) Relevant identified uses of the substance or mixture and uses advised against:

Identifies uses: Laboratory chemicals, Synthesis of substances

## Section 2: Hazard(s) Identification

### 2.1) Classification of the substance or mixture GHS classification in accordance with 29 CFR 1910 (OSHA HCS):

Skin sensitization (Category 1), H317

Carcinogenicity (Category 2), H351

For the full text of the H-Statements mentioned in this Section, see Section 16.

### 2.2) GHS Label elements, including precautionary statements:

**Pictograms:**

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## Single word Hazard Statement(s)

Hazard statement(s) H317  
H351

## Danger

May cause an allergic skin reaction.  
Suspected of causing cancer.

## Precautionary Statement(s)

P201

P202

P261

P272

P280

P302 + P352

P308 + P313

P321

P333 + P313

P363

P405

P501

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.

Contaminated work clothing should not be allowed out of the workplace.

Wear protective gloves.

IF ON SKIN: Wash with plenty of soap and water.

IF exposed or concerned: Get medical advice/ attention.

Specific treatment (see supplemental first aid instructions on this label).

If skin irritation or rash occurs: Get medical advice/ attention.

Wash contaminated clothing before reuse.

Store locked up.

Dispose of contents/ container to an approved waste disposal plant.

## 2.3) Hazards not otherwise classified (HNOC) or covered by GHS:

None

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Section 3: Composition/Information on Ingredients

**3.1) Substances:**

Formula:  $\text{LiNbO}_3$  coated  $\text{LiNi}(x)\text{Mn}(y)\text{Co}(z)\text{O}_2$

CAS Number: 346417-97-8 and 12031-63-9

Component	Classification	Concentration
Lithium nickel manganese cobalt oxide CAS# 346417-97-8	Skin Sens. 1; Carc. 2; H317, H351	99%
Lithium Niobate CAS# 12031-63-9		1%

Section 4: First-Aid Measures

**4.1) Description of first aid measures:**

**General advice**

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

**If inhaled**

If breathed in, move person into fresh air. If not breathing, give artificial respiration.

**In case of skin contact**

Wash off with soap and plenty of water.

**In case of eye contact**

Flush eyes with water as a precaution.

**If swallowed**

Never give anything by mouth to an unconscious person. Rinse mouth with water.

**4.2) Most important symptoms and effects, both acute and delayed:**

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11.

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## **4.3) Indication of any immediate medical attention and special treatment needed:**

No data available

## Section 5: Fire-Fighting Measures

### **5.1) Suitable extinguishing media:**

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

### **5.2) Special hazards arising from the substance or mixture:**

No data available

### **5.3) Advise for firefighters:**

Wear self-contained breathing apparatus for firefighting if necessary.

### **5.4) Further information:**

No data available

## Section 6: Accidental Release Measures

### **6.1) Personal precautions, protective equipment, and emergency procedures:**

Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

### **6.2) Environmental precautions:**

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

### **6.3) Methods and materials for containment and cleaning up:**

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

### **6.4) Reference to other sections:**

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For disposal see section 13.

**Section 7: Handling and Storage**

**7.1) Precautions for safe handling:**

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. For precautions see section 2.2.

**7.2) Conditions for safe storage, including any incompatibilities:**

Keep container tightly closed in a dry and well-ventilated place. Keep in a dry place.

**7.3) Specific end use(s):**

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

**Section 8: Exposure Controls/Personal Protection**

**8.1) Control parameters:**

**Components with workplace control parameters**

Component	CAS-Number	Value	Control Parameters	Basis
Lithium nickel manganese cobalt oxide	346417-97-8	TWA	0.020000 mg/m <sup>3</sup>	USA. ACGIH Threshold Limit Values (TLV)
	<b>Remarks</b>	Pulmonary function Asthma Myocardial effects Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Confirmed animal carcinogen with unknown relevance to humans varies		
		TWA	0.02 mg/m <sup>3</sup>	USA. ACGIH Threshold Limit Values (TLV)

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		Pulmonary function Asthma Myocardial effects Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Confirmed animal carcinogen with unknown relevance to humans varies
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**Biological occupational exposure limits**

Component	CAS-Number	Parameters	Value	Biological Specimen	Basis
Lithium nickel manganese cobalt oxide	346417-97-8	Cobalt	5 µg/l	Urine	ACGIH - Biological Exposure Indices (BEI)
	<b>Remarks</b>	End of shift at end of workweek			
		Cobalt		Urine	ACGIH - Biological Exposure Indices (BEI)
		End of shift at end of workweek			

**8.2) Exposure controls:**

**Appropriate engineering controls:**

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

**Personal protective equipment**

**Eye/face protection:**

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

**Skin protection:**

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Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

## **Full contact**

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min

Material tested: Dermatril® (KCL 740)

## **Splash contact**

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min

Material tested: Dermatril® (KCL 740) data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

## **Body protection:**

Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

## **Respiratory protection:**

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

## **Control of environmental exposure:**

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Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

## Section 9: Physical and Chemical Properties

### 9.2) Information on basic physical and chemical properties:

a) Appearance (physical state, color, etc.)	Form: powder Color: black
b) Upper/lower flammability or explosive limits	No data available
c) Odor	No data available
d) Odor threshold	No data available
e) Vapor pressure	No data available
f) Vapor density	No data available
g) pH	No data available
h) Density	No data available
i) Melting point/freezing point	Melting point/range: > 290 °C (> 554 °F) - lit.
j) Solubility(ies)	No data available
k) Initial boiling point and boiling range	No data available
l) Flash point	No data available
m) Evaporation rate	No data available
n) Flammability (solid, gas)	No data available
o) Partition coefficient: n-octanol/water	No data available
q) Auto-ignition temperature	No data available
r) Decomposition temperature	No data available
s) Viscosity	No data available
t) Explosive properties	No data available



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u) Oxidizing properties	No data available
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**9.2) Other Safety information:**

No data available

Section 10: Stability and Reactivity

**10.1) Reactivity:**

No data available

**10.2) Chemical Stability:**

Stable under recommended storage conditions.

**10.3) Possibility of hazardous reactions:**

No data available

**10.4) Conditions to avoid:**

No data available

**10.5) Incompatible materials:**

Strong oxidizing agents

**10.6) Hazardous decomposition products:**

Other decomposition products - No data available

Hazardous decomposition products formed under fire conditions. - Nickel/nickel oxides, Lithium oxides, Cobalt/cobalt oxides, Manganese/manganese oxides, Niobium Oxides

In the event of fire: see section 5

Section 11: Toxicological Information

**11.1) Information on toxicological effects:**

**Acute toxicity:**

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No data available

Inhalation: No data available

Dermal: No data available

**Skin corrosion/irritation:**

No data available

**Serious eye damage/ eye irritation:**

No data available

**Respiratory or skin sensitization:**

No data available

**Germ cell mutagenicity:**

No data available

**Carcinogenicity:**

Limited evidence of a carcinogenic effect.

IRC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

**Reproductive toxicity:**

No data available

**Specific target organ toxicity – single exposure:**

No data available

**Specific target organ toxicity – repeated exposure:**

No data available

**Aspiration hazard:**

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No data available

**Additional information:**

RTECS: Not available

Large doses of lithium ion have caused dizziness and prostration, and can cause kidney damage if sodium intake is limited. Dehydration, weight loss, dermatological effects, and thyroid disturbances have been reported. Central nervous system effects that include slurred speech, blurred vision, sensory loss, ataxia, and convulsions may occur. Diarrhea, vomiting, and neuromuscular effects such as tremor, clonus, and hyperactive reflexes may occur as a result of repeated exposure to lithium ion.

## Section 12: Ecological Information

**12.1) Toxicity:**

No data available

**12.1) Persistence and degradability:**

No data available

**12.3) Bioaccumulative potential:**

No data available

**12.4) Mobility in soil:**

No data available

**12.5) Results of PBT and vPvB assessment:**

BT/vPvB assessment not available as chemical safety assessment not required/not conducted

**12.6) Other adverse effects:**

No data available

## Section 13: Disposal Considerations



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## 13.1) Waste treatment methods:

### Product:

Offer surplus and non-recyclable solutions to a licensed disposal company.  
Contact a licensed professional waste disposal service to dispose of this material.  
Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

### Contaminated packaging:

Dispose of as unused product.

## Section 14: Transport Information

### DOT (US):

Not dangerous goods

### IMDG:

Not dangerous goods

### IATA:

Not dangerous goods

## Section 15: Regulatory Information

### SARA 302 Components:

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

### SARA 313 Components:

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This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

**SARA 311/312 Hazards:**

Acute Health Hazard, Chronic Health Hazard

**Massachusetts Right To Know Components:**

No components are subject to the Massachusetts Right to Know Act.

**Pennsylvania Right To Know Components:**

	CAS-Number	Revision Data
Lithium nickel manganese cobalt oxide	345417-97-8	2007-07-01

**New Jersey Right To Know Components:**

	CAS-Number	Revision Data
Lithium nickel manganese cobalt oxide	345417-97-8	2007-07-01

**California Prop. 65 Components:**

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

Section 16: Other Information

**Full text of H-Statements referred to under sections 2 and 3.**

Carc.	Carcinogenicity
H317	May cause an allergic skin reaction.
H315	Suspected of causing cancer.
Skin Sens.	Skin sensitization

**HMIS Rating**

Health hazard:	2
Chronic Health Hazard:	*
Flammability:	0
Physical Hazard:	0

**NFPA Rating**

Health hazard:	2
Fire Hazard:	0
Reactivity Hazard:	0



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## **Further information**

MSE Supplies LLC cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. This document has been prepared using data from sources considered to be technically reliable and the information is believed to be correct. MSE Supplies LLC makes no warranties, expressed or implied, as to the accuracy of the information contained herein. MSE Supplies cannot anticipate all conditions under which this information and its products may be used and the actual conditions of use are beyond its control. The user is responsible to evaluate all available information when using this product for any particular use and to comply with all Federal, State, Provincial and Local laws, statutes and regulations. See [www.msesupplies.com](http://www.msesupplies.com) for additional terms and conditions of sale.

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