

## SECTION 1: PRODUCT & COMPANY IDENTIFICATION

### 1.1 Product Identifiers

Product Name: NANOMYTE® BE-50E (previously BE-50E-111)  
 Product Description: Lithium Manganese Nickel Cobalt Oxide (NMC111) electrode sheet

### 1.2 Relevant Identified Uses of the Substance or Mixture and Uses Advised Against

Identified Uses: Laboratory chemicals, research & development, lithium-ion batteries

### 1.3 Details of the Supplier of the Safety Data Sheet

Company: NEI Corporation  
 Address: 400 Apgar Drive, Unit E | Somerset, NJ 08873 – USA  
 Phone: +1 (732) 868-3141 Fax: +1 (732) 868-3143  
 Email: productinfo@neicorporation.com

### 1.4 Emergency Telephone Number

Manufacturer: +1 (732) 868-3142 (9am to 6pm EST / UTC -0500)  
 U.S. Poison Control Center: +1-800-222-1222


## SECTION 2: HAZARDS 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

### 2.2 GHS Label elements, including precautionary statements

Pictogram(s): 

Signal Word: Warning

#### Hazard Statement(s):

H317 May cause an allergic skin reaction  
 H351 Suspected of causing cancer

#### Precautionary Statement(s):

P202 Do not handle until all safety precautions have been read and understood  
 P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray  
 P280 Wear protective gloves / protective clothing / eye protection / face protection.  
 P302 + P352 IF ON SKIN: Wash with plenty of soap and water.  
 P308 + P313 IF exposed or concerned: Get medical advice/ attention.  
 P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.  
 P403 + P232+ P233 Store in a well-ventilated place. Protect from moisture. Keep container tightly closed.  
 P501 Dispose of contents/ container to an approved waste disposal plant.

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

Contains a combustible dust [carbon black]

## SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

### 3.1 Substances

Component Name	Synonyms	Formula	CAS #	Wt. %
Cobalt Lithium Manganese Nickel Oxide	NMC111, MC333	LiNi <sub>0.33</sub> Mn <sub>0.33</sub> Co <sub>0.33</sub> O <sub>2</sub>	346417-97-8	90%
<b>Hazards:</b> Skin sensitization (Cat. 1, H317); Carcinogenicity (Cat. 2, H351)				

Component Name	Synonyms	Formula	CAS #	Wt. %
Poly(vinylidene fluoride)	PVDF	(C <sub>2</sub> H <sub>2</sub> F <sub>2</sub> ) <sub>x</sub>	24937-79-9	5%
<b>Hazards:</b> Not a hazardous substance or mixture				
Carbon Black	Carbon	C	1333-86-4	5%
<b>Hazards:</b> Carcinogenicity (Cat. 2, H351)				
Aluminum Foil Sheet	Aluminium	Al	7429-90-5	(substrate)
<b>Hazards:</b> Not a hazardous substance or mixture				

## SECTION 4: FIRST AID MEASURES

### 4.1 Description of First Aid Measures

**General Advice:**

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

**After Inhalation:**

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

**After Skin Contact:**

Wash with soap and copious amounts of water. Consult a physician.

**After Eye Contact:**

Flush eyes with water as a precaution. Seek medical attention if irritation develops.

**After Swallowing:**

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

### 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 Section 11.

### 4.3 Indication of Any Immediate Medical Attention and Special Treatment Needed

No data available.

## SECTION 5: FIREFIGHTING MEASURES

### 5.1 Suitable Extinguishing Media

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

### 5.2 Hazardous Combustion Products

Nickel Oxides, Lithium Oxides, Cobalt Oxides, Manganese Oxides, Carbon Oxides, Hydrogen Fluoride

### 5.3 Advice for Firefighters

Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

### 5.4 Other Information

Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

### 6.1 Personal Precautions, Protective Equipment, and Emergency Procedures

Use personal protective equipment. Avoid dust formation. Avoid breathing dust. Ensure adequate ventilation. Evacuate personnel to safe areas.

### 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 closed containers for disposal.

### 6.4 Reference to Other Sections

For personal protection, see section 8; for disposal see Section 13.

## SECTION 7: HANDLING AND STORAGE

### 7.1 Precautions for Safe Handling

Keep container tightly closed. Avoid contact with the skin and eyes. Avoid inhalation of dusts. Ensure adequate ventilation. Wear appropriate respiratory protection. Wear suitable protective clothing and gloves.

### 7.2 Conditions for Safe Storage (including any incompatibilities)

Keep container tightly sealed in a dry and well-ventilated place. Keep in a dry place (avoid moisture).

### 7.3 Specific End Uses

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 #	Value	Control Parameters	Basis
Cobalt Lithium manganese Nickel Oxide [NMC111]	346417-97-8	C	5 mg/m <sup>3</sup>	OSHA Permissible Exposure Limit (PEL)
		TWA	0.02 mg/m <sup>3</sup>	ACGIH Threshold Limit Value (TLV)
		TWA	1 mg/m <sup>3</sup>	NIOSH Recommended Exposure Limit (REL)
		ST	3 mg/m <sup>3</sup>	NIOSH Recommended Exposure Limit (REL)
		PEL	0.2 mg/m <sup>3</sup>	California Permissible Exposure Limits for chemical contaminants
<i>Remarks: Pulmonary function; Asthma; Myocardial effects; Confirmed animal carcinogen with unknown relevance to humans</i>				
Carbon Black	1333-86-4	TWA	3.5 mg/m <sup>3</sup>	OSHA Permissible Exposure Limit (PEL)
		TWA	3.5 mg/m <sup>3</sup>	NIOSH Recommended Exposure Limit (REL)
		TWA	3.0 mg/m <sup>3</sup>	ACGIH Threshold Limit Value (TLV)
		PEL	3.5 mg/m <sup>3</sup>	California Permissible Exposure Limits for chemical contaminants
<i>Remarks: Bronchitis; Confirmed animal carcinogen with unknown relevance to humans; Not classifiable as a human carcinogen</i>				

### 8.2 Exposure Controls

#### Appropriate Engineering Controls

Handle in accordance with good industrial hygiene and safety practice. Keep away from food and beverages. Remove all soiled and contaminated clothing immediately. Wash hands after use.

#### Personal Protective Equipment

Eye / Face Protection:

Safety glasses with side-shields conforming to EN166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin Protection:

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.

Recommendation: Nitrile rubber, 0.11mm thick (full or splash contact).

*Recommendations are advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use. 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

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

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

---

### 9.1 Information on Basic Physical and Chemical Properties

Physical State:	Sheet
Color:	Black
Odor:	Odorless
Odor Threshold:	No Data Available
pH:	No Data Available
Melting Point / Range:	No Data Available
Boiling Point / Range:	No Data Available
Flash Point:	No Data Available
Evaporation Rate:	No Data Available
Flammability:	No Data Available
Upper Explosion Limit:	No Data Available
Lower Explosion Limit:	No Data Available
Vapor Pressure:	No Data Available
Vapor Density:	No Data Available
Relative Density:	No Data Available
Water Solubility:	No Data Available
Partition Coefficient:	No Data Available
Auto-ignition Temperature:	No Data Available
Decomposition Temperature:	No Data Available
Viscosity:	No Data Available

### 9.2 Other Safety Information

No Data Available

## SECTION 10: STABILITY AND REACTIVITY

---

### 10.1 Reactivity

No hazardous reactions if stored and handled as prescribed/indicated.

### 10.2 Chemical Stability

Stable under recommended storage conditions.

### 10.3 Possibility of Hazardous Reactions

The product is chemically stable. No hazardous reactions when stored and handled according to instructions.

### 10.4 Conditions to Avoid

Avoid dust formation and exposure to moisture.

### 10.5 Incompatible Materials

Strong acids, strong alkalis, strong oxidizing agents, strong reducing agents

### 10.6 Hazardous Decomposition Products

Possible thermal decomposition products: cobalt oxides, metallic oxides

## SECTION 11: TOXICOLOGICAL INFORMATION

---

### 11.1 Information on Toxicological Effects

**Acute Toxicity**

Component	Oral LD50	Dermal LD50	Inhalation LC50
Cobalt Lithium Manganese Nickel Oxide	No data available	No data available	No data available
Carbon Black	> 8,000 mg/kg (Rat)	No data available	No data available
PVDF	No data available	No data available	No data available

**Skin corrosion/irritation**

No Data Available

**Serious eye damage/eye irritation**

No Data Available

**Respiratory or skin sensitization**

May cause allergic skin reaction

**Germ cell mutagenicity**

No Data Available

**Carcinogenicity**

Suspected of causing cancer. The product has not been tested. This statement has been derived from the properties of the individual components.

IARC: Possibly carcinogenic to humans (NMC111 and carbon black).

ACGIH: Carbon black is a confirmed animal carcinogen with unknown relevance to humans (A3).

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 on OSHA's list of regulated carcinogens.

**Reproductive toxicity**

No Data Available

**Teratogenicity**

No Data Available

**Specific target organ toxicity - single exposure (Globally Harmonized System)**

No Data Available

**Specific target organ toxicity - repeated exposure (Globally Harmonized System)**

No Data Available

**Aspiration hazard**

Not applicable

**Additional Information**

RTECS: FF5800000 (carbon black)

To the best of our knowledge, the toxicological properties have not been thoroughly investigated.

**SECTION 12: ECOLOGICAL INFORMATION**

**12.1 Toxicity**

Component	Green Algae	Freshwater Fish	Water Flea
Cobalt Lithium Manganese Nickel Oxide	No data available	No data available	No data available
Carbon Black	10,000 mg/l – 72 h	1,000 mg/l – 96 h	5,600 mg/l – 24 h
PVDF	No data available	No data available	No data available

**12.2 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**

PBT/vPvB assessment not available as chemical safety assessment not conducted

**12.6 Other Adverse Effects**

Do not allow to enter drains or waterways.

**SECTION 13: DISPOSAL CONSIDERATIONS**

---

**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.

**13.2 Waste Treatment Methods – Contaminated Packaging**

Dispose of as unused product, clean residue from packaging (do not allow in drains), & dispose of properly.

**SECTION 14: TRANSPORT INFORMATION**

---

**14.1 Department of Transportation (DOT - US)**

Not classified as a dangerous good under transport regulations

**14.2 International Maritime Dangerous Goods (IMDG)**

Not classified as a dangerous good under transport regulations

**14.3 International Air Transport Association (IATA)**

Not classified as a dangerous good under transport regulations

**14.4 Other**

**HS Classification #:** 2825.90

**Schedule B #:** 2825.90.0002

**SECTION 15: REGULATORY INFORMATION**

---

**15.1 Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture**

**SARA 302 Components**

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

**SARA 313 Components**

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

**Right to Know Components**

<u>Component</u>	<u>CAS #</u>	<u>State</u>
Lithium Manganese Nickel Cobalt Oxide	346417-97-8	NJ, PA Right to Know
Poly(vinylidene fluoride)	24937-79-9	NJ, PA Right to Know
Carbon Black	1333-86-4	MA, NJ, PA, MN, LA, CA Right to Know

**CALIFORNIA PROPOSITION 65**

This product can expose you to chemicals including Nickel Compounds and Carbon Black (CAS #1333-86-4) which is known to the State of California to cause cancer.

**Toxic Substances Control Act (TSCA) Chemical Substance Inventory**

**Components:** Poly(vinylidene fluoride), CAS #249347-79-9; Carbon Black, CAS #1333-86-4

**15.2 Chemical Safety Assessment**

A chemical safety assessment was not carried out for this product.

**SECTION 16: OTHER INFORMATION**

---

**REACH Number**

A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

**IMPORTANT**

NEI has attempted to provide current and accurate information to the best of its knowledge. NEI makes no representations regarding the accuracy or completeness of the information and assumes no liability for any loss, damage, injury of any kind which may result from or arise out of the use of or reliance on the information by any person. Employers should use this information only as a supplement to other information gathered by them and should make independent judgment of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty and any use of the product not in conformance with this Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

**– END OF SDS –**