

SECTION 1: PRODUCT & COMPANY IDENTIFICATION

1.1 Product Identifiers

Product Name: NANOMYTE® BE-35E

Product Description: Lithium Manganese Oxide electrode sheet

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

Identified Uses: Cathode material for 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)

Carcinogenicity (Category 2B), H351 [Carbon Black]

2.2 Label Elements

GHS Label Elements, including precautionary statements

Pictogram(s):



Signal Word: Warning

Hazard Statement(s):

H351 Contains a component suspected of causing cancer

Precautionary Statement(s):

P261 Avoid breathing dust / fume / gas / mist / vapors / spray

P280 Wear protective gloves, protective clothing, & eye protection

P301 + P330 IF SWALLOWED: Rinse mouth

P302 + P352 IF ON SKIN: Wash with plenty of soap and water

P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P308 + P313 If exposed or concerned, get medical advice/ attention.

P402 + P404 Store in a dry place. Store in a closed container.

P501 Dispose of contents/ container to an approved waste disposal plant.

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

Combustible dust [Carbon Black]

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substances

Component Name	Synonyms	Formula	CAS #	Concentration
Lithium Manganese Oxide	Lithium Manganate, LMO	LiMn ₂ O ₄	12057-17-9	90%
Poly(vinylidene fluoride)	PVDF	(C ₂ H ₂ F ₂) _x	24937-79-9	5%
Carbon Black	Carbon, C	C	1333-86-4	5%
Aluminum Foil	Aluminium	Al	7429-90-5	(substrate)

SECTION 4: FIRST AID MEASURES

4.1 Description of First Aid Measures

General Advice:

Move out of exposed area. Seek medical attention if irritation occurs. Show this SDS to the doctor in attendance.

After Inhalation:

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

After Skin Contact:

Wash off with soap and plenty of water. Consult a physician if irritation occurs.

After Eye Contact:

Flush eyes with water as a precaution.

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 in 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 Special Hazards Arising from the Substance or Mixture

Lithium oxides, Manganese/manganese oxides, Carbon oxides, Hydrogen fluoride

5.3 Advice for Firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Other 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.

6.2 Environmental Precautions

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

For safe handling, see Section 7; for personal protection, see Section 8; 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. Appropriate personal protective equipment should be used at all times. For precautions see Section 2.2

7.2 Conditions for Safe Storage (including any incompatibilities)

Store sealed, in a dry and well-ventilated place. Avoid contamination with incompatible materials (see Section 10.5)

7.3 Specific End Uses

A part 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:

Components	CAS #	Value	Control Parameters	Basis
Lithium Manganese (III,IV) Oxide	12057-17-9	C	5 mg/m ³	USA Occupational Exposure Limits (OSHA) – Table Z-1 Limits for Air Contaminants
		TWA	0.2 mg/m ³	USA. ACGIH Threshold Limit Values (TLV)
		ST	3 mg/m ³	USA. NIOSH Recommended Exposure Limits
		TWA	1 mg/m ³	USA. NIOSH Recommended Exposure Limits
Remarks:	Ceiling limit is to be determined from breathing-zone air samples.			
Remarks:	Central Nervous System impairment. Adopted values or notations enclosed are those for which changes are proposed in the NIC. See Notice of Intended Changes (NIC) varies.			
Carbon Black	1333-86-4	TWA	3.5000 mg/m ³	OSHA Permissible Exposure Limit (PEL)
		TWA	3.5000 mg/m ³	NIOSH Recommended Exposure Limit (REL)
		TWA	0.1000 mg PAHs/m ³	NIOSH Recommended Exposure Limit (REL) (carbon black in the presence of PAHs)
		Remarks:	Potential Occupational Carcinogen – Carbon black in presence of polycyclic aromatic hydrocarbons	
		TWA	3.5000 mg/m ³	(ACGIH) Threshold Limit Value (TLV) (inhalable particulate matter)
Remarks:	Bronchitis - Confirmed animal carcinogen with unknown relevance to humans			

8.2 Exposure Controls

Appropriate Engineering Controls

Handle in accordance with good industrial hygiene and safety practice. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Personal Protective Equipment

Eye / Face Protection:

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.

Body Protection:

Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.

Respiratory Protection:

Respiratory protection is not required. Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN 143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of Environmental Exposure

Do not let product enter drains.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on Basic Physical and Chemical Properties

- Physical State: Solid (cast electrode 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 Data Available

10.2 Chemical Stability

Stable under recommended storage conditions (see Section 7.2)

10.3 Possibility of Hazardous Reactions

No Data Available

10.4 Conditions to Avoid

Do not heat over 290 °C

10.5 Incompatible Materials

Strong oxidizing agents, Chlorates, Nitrates

10.6 Hazardous Decomposition Products

Other Decomposition Products: No Data Available (in the event of fire, see Section 5)

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on Toxicological Effects

Acute Toxicity

Oral LD50:	> 6,000 mg/kg (Rat)	[PVDF]
	> 8,000 mg/kg (Rat)	[Carbon Black]
Dermal LD50:	> 3,000 mg/kg (Rabbit)	[Carbon Black]
Inhalation LC50:	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

- IARC:** Group 2B: Carbon black is *possibly carcinogenic* to humans based on sufficient experimental evidence on animals and inadequate evidence from epidemiological studies. No other component of this product (present at levels greater than or equal to 0.1%) is identified as a probable, possible, or confirmed human carcinogen by IARC.
- ACGIH:** No component of this product (present at levels greater than or equal to 0.1%) is identified as a carcinogen or potential carcinogen by ACGIH.
- 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

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

No Data Available

Additional Information

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

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to Fish:	LC50 – Danio rerio (zebra fish) > 1,000 mg/l - 96 h	[Carbon Black]
Toxicity to daphnia and other aquatic invertebrates:	EC50 – Daphnia magna (Water flea) > 5,600 mg/l - 24 h	[Carbon Black]
Toxicity to algae:	EC50 - Desmodesmus subspicatus (green algae) 10,000 mg/l - 72 h	[Carbon Black]

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

No Data Available

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 Dangerous Goods

14.2 International Maritime Dangerous Goods (IMDG)

Not Dangerous Goods

14.3 International Air Transport Association (IATA)

Not Dangerous Goods

14.4 Other

HS Classification #: 2825.90

Schedule B #: 2825.90.9000

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

The following product components are cited on the lists below:

Component	CAS #	List Citations
Lithium Manganese Oxide	12057-17-9	NJ, PA Right to Know
Poly(vinylidene fluoride)	249347-79-9	NJ, PA Right to Know
Carbon Black	1333-86-4	MA, NJ, PA, MN, LA, CA Right to Know

CALIFORNIA PROPOSITION 65

WARNING! This product contains a chemical known to the State of California to cause cancer.

Component: 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.

HMIS Classification

Health Hazard: 0
 Flammability Hazard: 0
 Physical Hazard: 0

NFPA Rating

Health Hazard: 0
 Flammability Hazard: 0
 Reactivity Hazard: 0

Further Information

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 –