

SECTION 1: PRODUCT & COMPANY IDENTIFICATION

1.1 Product Identifiers

Product Name: NANOMYTE® SE-50
Product Description: Polymer-Ceramic composite solid electrolyte
CAS Number: A CAS number has not been assigned to this material

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

Identified Uses: Scientific research and development (solid electrolyte material for Li-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 Numbers

Manufacturer: +1 (732) 868-3142 (9am to 6pm EST / UTC -0500)
U.S. Poison Control Center: +1-800-222-1222
ChemTel (North America): +1 (800) 255-3924 (during transportation only)
ChemTel (International): +1 (813) 248-0585 (during transportation only – collect calls accepted)

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the Substance or Mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Acute toxicity, Oral (Category 3), H301 [LiTFSI]
Acute toxicity, Dermal (Category 3), H311 [LiTFSI]
Skin corrosion (Category 1B), H314 [LiTFSI]
Serious eye damage (Category 1), H318 [LiTFSI]
Specific target organ toxicity, single exposure; respiratory tract irritation (Category 3) – H335 [metal oxide]
Specific target organ toxicity - repeated exposure (Category 2), H373 [LiTFSI]
Chronic aquatic toxicity (Category 3), H412 [LiTFSI]

2.2 GHS Label elements, including precautionary statements

Pictogram(s): 

Signal Word: Danger

Hazard Statement(s):

H301 + H311: Toxic if swallowed or in contact with skin
H314: Causes severe skin burns and eye damage.
H318: Causes serious eye damage.
H335: May cause respiratory irritation
H373: May cause damage to organs through prolonged or repeated exposure
H412: Harmful to aquatic life with long lasting effects.

Precautionary Statement(s):

P260: Do not breathe dust / fume / gas / mist / vapors / spray.
P264: Wash skin thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P273: Avoid release to the environment.
P280: Wear protective gloves/ protective clothing/ eye protection/ face protection.

- P301 + P310 + P330: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Rinse mouth.
- P301 + P330 + P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
- P303 + P361 + P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
- P304 + P340 + P310: IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor/ physician.
- P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 - P310: IF IN EYES: Immediately call a POISON CENTER or doctor/ physician.
 - P314: Get medical advice/ attention if you feel unwell.
 - P362: Take off contaminated clothing and wash before reuse.
 - P405: Store locked up.
 - P501: Dispose of contents/ container to an approved waste disposal plant.

2.3 Other Hazards (not otherwise classified)

None

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substances

Component	CAS #	Classification	Wt. Percent
Proprietary polymer	N/A (experimental)	No known hazards	60 – 70%
Bis(trifluoromethane)sulfonamide lithium salt ("LiTFSI")	90076-65-6	Acute Tox. (Cat. 3); Skin Corr. (Cat. 1B); Eye Dam. (Cat. 1); STOT RE (Cat. 2); Aquatic Acute (Cat. 3); Aquatic Chronic (Cat. 3)	20 – 30%
Metal oxide	N/A (proprietary)	Skin Corr. (Cat. 1B); STOT SE (Cat. 3)	< 10%

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

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:

Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

After Eye Contact:

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.

After Swallowing:

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

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 Hazardous Combustion Products

Carbon oxides, Nitrogen oxides (NOx), Zirconium oxides, Sulphur oxides, Hydrogen fluoride, Lithium oxides

5.3 Advice for Firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Other Information

No further information available

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions, Protective Equipment, and Emergency Procedures

Use personal protective equipment at all times. Wear respiratory protection. 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. Discharge into the environment must be avoided.

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

Handle in a controlled environment, under inert gas. Appropriate personal protective equipment should be used at all times. Avoid contact with eyes and skin. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. Avoid breathing dust. For additional precautions, see section 2.2.

7.2 Conditions for Safe Storage (including any incompatibilities)

Best stored under inert gas. Keep container tightly sealed, in a cool, dry, and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. This material is moisture and air sensitive. Protect from humidity and keep away from water. Keep away from oxidizing agents. Store in a locked cabinet or with access restricted to technical experts or their assistants.

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

Occupational exposure limit values are unknown for this product.

8.2 Exposure Controls

Appropriate Engineering Controls

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. Keep away from food and beverages.

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.

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. Discharge into the environment must be avoided.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on Basic Physical and Chemical Properties

Form:	Solid monolith
Color:	Yellowish / Off-white
Odor:	Odorless
pH (20 °C):	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
Explosive Properties:	No Data Available
Oxidizing Properties:	No Data Available

9.2 Other 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

Avoid moisture

10.5 Incompatible Materials

Air, water / moisture, oxidizing agents

10.6 Hazardous 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: No Data Available
Inhalation LC50: No Data Available
Dermal LD50: No Data Available
Other Information: No Data Available

Skin corrosion/irritation

Contains a component that causes severe skin burns

Serious eye damage/eye irritation

Contains a component that causes serious eye damage

Respiratory or skin sensitization

No Data Available

Germ cell mutagenicity

No Data Available

Carcinogenicity

IARC: No classification data on carcinogenic properties of the material is available.

ACGIH: No classification data on carcinogenic properties of the material is available.

NTP: No classification data on carcinogenic properties of the material is available.

OSHA: No classification data on carcinogenic properties of the material is available.

Reproductive Toxicity

No Data Available

Teratogenicity

No Data Available

Specific Target Organ Toxicity - Single Exposure (Globally Harmonized System)

Contains a component that may cause respiratory irritation

Specific Target Organ Toxicity - Repeated Exposure (Globally Harmonized System)

Effects not known

Aspiration Hazard

No Data Available

Additional Information (of components)

Lithium Salt: Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin. May cause shortness of breath, cough, headache, or nausea.

Note: The chemical, physical, and toxicological properties of this product have not been thoroughly investigated.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Aquatic toxicity – low; no further information 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 / required.

12.6 Other Adverse Effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Harmful to aquatic life with long lasting effects.

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. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

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)

UN number: 2923 Class: 8 (6.1) Packing Group: II
 Proper Shipping Name: Corrosive solids, toxic, n.o.s. (Bis(trifluoromethane)sulfonimide lithium salt)
 Poison Inhalation Hazard: No

14.2 International Maritime Dangerous Goods (IMDG)

UN number: 2923 Class: 8 (6.1) Packing Group: II EMS-No: F-A, S-B
 Proper Shipping Name: Corrosive solids, toxic, n.o.s. (Bis(trifluoromethane)sulfonimide lithium salt)

14.3 International Air Transport Association (IATA)

UN number: 2923 Class: 8 (6.1) Packing Group: II
 Proper Shipping Name: Corrosive solids, toxic, n.o.s. (Bis(trifluoromethane)sulfonimide lithium salt)

14.4 Additional Transport Information

HS Classification #: 3909.50 **Schedule B #:** 3909.50.1000
 Air Excepted Quantities: 30g (net) / 0.5kg (gross) [E2]
 Air Limited Quantities: 5kg (Y844)
 Ground Limited Quantities: 1kg (net) / 30kg (gross)

SECTION 15: REGULATORY INFORMATION

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

OSHA HAZARDS (HCS)

Toxic by ingestion, target organ effect, toxic by skin contact, corrosive, aquatic toxicity

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:

<u>Component</u>	<u>CAS #</u>	<u>List Citations</u>
Bis(trifluoromethane)sulfonimide lithium salt	90076-65-6	PA, NJ Right to Know

CALIFORNIA PROPOSITION 65

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

15.2 Chemical Safety Assessment

A chemical safety assessment was not carried out for this product

SECTION 16: OTHER INFORMATION

Full Text of H-Statements referred to under Section 3

Acute Tox:	Acute toxicity	Skin Corr:	Skin corrosion
Aquatic Acute:	Acute aquatic toxicity	STOT SE:	Specific target organ toxicity, single exposure
Aquatic Chronic:	Chronic aquatic toxicity	STOT RE:	Specific target organ toxicity, repeated exposure
Eye Dam:	Serious eye damage		

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:	3
Flammability Hazard:	0
Physical Hazard:	1

NFPA Rating

Health Hazard:	3
Flammability Hazard:	0
Reactivity Hazard:	1

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 –