

SECTION 1: PRODUCT & COMPANY IDENTIFICATION

1.1 Product Identifiers

Product Name: NANOMYTE® SE-50A
 Product Description: Polymer Ceramic Hybrid solid electrolyte solution in Acetonitrile
 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 Number

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)

Flammable liquids (Category 2), H225 [ACN]
 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]
 Acute toxicity, Inhalation (Category 4), H332 [ACN]
 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 Label Elements

GHS Label Elements, including precautionary statements



Signal Word: Danger

Hazard Statement(s):

H225 Highly flammable liquid and vapor
 H301 + H311 Toxic if swallowed or in contact with skin
 H314 Causes severe skin burns and eye damage
 H318 Causes serious eye damage.
 H332 Harmful if inhaled
 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):

- P202 Do not handle until all safety precautions have been read and understood
- P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- P233 Keep container tightly closed
- P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment
- P242 Use only non-sparking tools.
- P243 Take precautionary measures against static discharge
- P260 Do not breathe dust / fume / gas / mist / vapors / spray
- P262 Do not get in eyes, on skin, or on clothing
- P264 Wash skin thoroughly after handling
- P270 Do not eat, drink or smoke when using this product
- P271 Use only outdoors or in a well-ventilated area
- P273 Avoid release to the environment.
- P280 Wear protective gloves, protective clothing, & eye protection
- P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
- 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.
- P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
- P403 + P235 Store in a well-ventilated place. Keep cool.
- P405 Store locked up
- P501 Dispose of contents / container in accordance with national / international regulations

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

None

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substances

Component	CAS #	Classification	Wt. Percent
Acetonitrile ("ACN")	75-05-8	Flam. Liq. (Cat. 2); Acute Tox. (Cat. 4); Eye Irrit. (Cat. 2A)	60 – 80%
Proprietary polymer	N/A (experimental)	No known hazards	15 – 30%
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)	5 – 10%
Metal oxide	N/A (proprietary)	Skin Corr. (Cat. 1B); STOT SE (Cat. 3)	1 – 5%

For the full text of the Classification statements mentioned in this Section, see Section 2

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 further relevant information 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 and full protective suit

5.4 Other Information

No further relevant 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 breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low 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

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations.

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, skin, and clothing. Avoid inhalation of vapor or mist. Use explosion-proof equipment. Keep away from sources of ignition – no smoking. Take measures to prevent the buildup of electrostatic charge. 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. Keep away from oxidizing agents. Protect from moisture and water. 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

Component	CAS-No.	Value	Control parameters	Basis
Acetonitrile	75-05-8	TWA	20 ppm	USA. ACGIH Threshold Limit Values (TLV)
		TWA	20 ppm; 34 mg/m ³	USA. NIOSH Recommended Exposure Limits
		TWA	40 ppm; 70 mg/m ³	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants

Remarks: Lower Respiratory Tract irritation; Not classifiable as a human carcinogen; Danger of cutaneous absorption; Forms cyanide in the body; values in mg/m³ is approximate.

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, flame retardant, antistatic protective clothing. 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 respirator with multipurpose combination (US) or type ABEK (EN 14387) 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:	Liquid
Color:	Off white
Odor:	Ether-like
pH:	Not determined
Melting point/range:	Not determined
Specific Gravity:	Not determined
Density (20 °C):	Not determined
Viscosity (20 °C):	Not determined
Boiling Point:	Not determined

Flashpoint: Not determined
Ignition Temperature: Not determined
Auto-ignition Temperature: Not determined
Lower Explosion Limit: Not determined
Upper Explosion Limit: Not determined
Vapor Pressure: Not determined
Vapor Density: Not determined
Water Solubility: Not determined
Evaporation Rate: Not determined

9.2 Other Information

No further relevant information available

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

No information known

10.2 Chemical Stability

Stable under recommended storage conditions (see Section 7.2)

10.3 Possibility of Hazardous Reactions

Vapors may form explosive mixture with air

10.4 Conditions to Avoid

Air, water / moisture, heat, flames, sparks, extremes of temperatures, and direct sunlight

10.5 Incompatible Materials

Acids, bases, oxidizing agents, reducing agents, alkali metals

10.6 Hazardous Decomposition Products

No data available (in 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

Causes severe skin burns

Serious eye damage/eye irritation

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)

May cause respiratory irritation

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

Effects not known

Aspiration Hazard

No Data Available

Additional Information (components)

Acetonitrile: Treat as cyanide poisoning. Always have on hand a cyanide first-aid kit, together with proper instructions. The onset of symptoms is generally delayed pending conversion to cyanide. May cause nausea, vomiting, diarrhea, headache, dizziness, rash, cyanosis, excitement, depression, drowsiness, impaired judgment, lack of coordination, stupor, or death. (RTECS: AL7700000)

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. (RTECS: Not available)

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

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

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 / required.

12.6 Other Adverse Effects

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

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods – Product

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. 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)

UN number: 3286

Class: 3 (6.1, 8)

Packing Group: II

Proper Shipping Name: Flammable liquid, toxic, corrosive, n.o.s. (Solution of Acetonitrile and Bis(trifluoromethane)sulfonimide lithium salt)

14.2 International Maritime Dangerous Goods (IMDG)

UN number: 3286

Class: 3 (6.1, 8)

Packing Group: II

Proper Shipping Name: Flammable liquid, toxic, corrosive, n.o.s. (Solution of Acetonitrile and Bis(trifluoromethane)sulfonimide lithium salt)

14.3 International Air Transport Association (IATA)

UN number: 3286

Class: 3 (6.1, 8)

Packing Group: II

Proper Shipping Name: Flammable liquid, toxic, corrosive, n.o.s. (Solution of Acetonitrile and Bis(trifluoromethane)sulfonimide lithium salt)

14.4 Additional Transport Information

HS Classification #: 2926.90

Schedule B #: 2926.90.0005

Air Excepted Quantities: 30g or mL (net) / 0.5kg or L (gross) [E2]

Air Limited Quantities: 0.5L (Y340)

Ground Limited Quantities: 1kg or L (net) / 30kg or L (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

The following components are subject to reporting levels established by SARA Title III, Section 313:

Acetonitrile (CAS #: 75-05-8)

SARA 311/312 Hazards

Fire Hazard, Acute Health Hazard

The following product components are cited on the lists below:

<u>Component</u>	<u>CAS #</u>	<u>List Citations</u>
Acetonitrile	75-05-8	MA, PA, NJ Right to Know
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

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: 3
 Physical Hazard: 1

NFPA Rating

Health Hazard: 3
 Flammability Hazard: 3
 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 -