



SAFETY DATA SHEET

Section 1 Product and Company Identification

Chemical Product or Sample Name: Luna XPN1 Part A
CAS Number: Mixture
Synonyms: Conductive structural adhesive
Recommended Use(s): Research sample
Company Information: Luna Innovations Incorporated
 706 Forest Street Suite A
 Charlottesville, VA 22903
e-mail: solutions@lunainnovations.com
Web: www.lunainnovations.com
Telephone: (434) 972-9950 (M-W; 8:00 a.m. – 5:00 p.m. EDT)
Fax: (434) 972-9956

Section 2 Hazards Identification

EMERGENCY OVERVIEW

OSHA /HCS Status: This material is considered to be hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

GHS Classification:



Hazard Class	<u>Hazard Category</u>
Skin Irritation	2
Eye Irritation	2A
Skin Sensitization	1
Specific Target Organ Toxicity – Single Exposure	3
Carcinogenicity	2B; see other hazards for details
Health Hazard Signal Words / Route of Entry:	WARNING Suspected of causing cancer. Causes eye irritation. May cause allergic skin reaction. May cause skin irritation.
Other Hazards / Comments:	Hazardous, carcinogen! The International Agency for Research on Cancer (IARC) defines metallic nickel as <i>possibly carcinogenic to</i>



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humans, Group 2B. Do not inhale dry particulates. Persons with known history of nickel sensitive asthma should avoid contact.

POTENTIAL HEALTH EFFECTS

Potential routes of entry: Inhalation, skin, eyes.

Inhalation: May cause nose and throat irritation.

Skin Contact: Contact made with uncured resin may cause skin irritation or rash. Prolonged or repeated exposure may cause an allergic sensitization.

Eye Contact: Will cause eye irritation.

Ingestion: Not a likely route of exposure.

Existing conditions aggravated by exposure: Eye, skin and respiratory disorders.

See Section 11 for additional toxicological information

POTENTIAL ENVIRONMENTAL EFFECTS

None known.

Section 3 Composition and Information on Ingredients

Nanomaterial or contains nanomaterials (engineered) with at least one dimensions of <100 nm)? Yes

Component	CAS #	% by wt
Epoxy resin	Trade secret	50-90%
Nickel	7440-02-0	10-50%

Section 4 First Aid Measures

Eye Contact: Rinse immediately with plenty of water and seek medical advice.

Skin Contact: Remove any contaminated clothing and shoes. Wash skin thoroughly with soap and water. If skin irritation occurs, or if person feels unwell, consult a physician.

Inhalation: Remove person to fresh air. If symptoms develop and persist get medical attention.

Ingestion: Do not induce vomiting. Drink water as a precaution and obtain medical attention. Never give anything by mouth to an unconscious person.

Notes to physician: Treat symptomatically and supportively.

Section 5 Fire Fighting Measures

See Section 9 for flammable properties.

Special Fire Fighting Procedures: See below under protective equipment (Section 8).

Extinguishing media: Water spray (fog), foam, dry chemical or carbon dioxide.

Protective Equipment: Wear self-contained breathing apparatus and full protective clothing, such as turn-out gear. Cartridge respirators do not

Unusual Fire or Explosion Hazards:



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provide adequate protection for fire fighters or exotherm mitigation.

Hazardous combustion products: Oxides of carbon. Oxides of nitrogen. Hydrocarbons.

Section 6 Accidental Release Measures

Isolate the spill and deny entry to unnecessary and unprotected personnel.

Personal Protection: Wear PPE per Section 8.

Spill Procedures: Prevent further leakage or spillage if safe to do so. Contain spill. Do not let product enter drains. Do not flush into surface water. Soak up with inert absorbent material (e.g. sand silica gel, acid binder, universal binder, sawdust). Recover as much material as possible and store in a closed container until ready for disposal.

Environmental Precautions and Cleanup Methods: Do not put down drain and see Section 13.

Section 7 Handling and Storage

Precautions: Avoid contact with eyes, skin and clothing. Use only with adequate ventilation. Do not heat Part A at temperature greater than 80 °C (176 °F). This material may self-react at higher temperatures and cause an exotherm. The exotherm has the potential for release of excessive energy and toxic gasses. Empty containers will retain product residue and thus the same associated hazards.

Storage: Keep in a cool, well ventilated area. Keep container closed.

Section 8 Exposure Controls and Personal Protection

**Engineering Controls/
Ventilation** Local exhaust ventilation is recommended when general ventilation is not sufficient to control airborne contamination below occupational exposure limits.

Eye Protection: Safety glasses/goggles

Respiratory Protection: Use NIOSH approved respirator if there is potential to exceed exposure limit(s). Observe OSHA regulations for respiratory use (29 CFR 1910.134).

Skin Protection: Use chemical resistant gloves, such as nitrile, and other protective clothing to prevent skin contact.

Component(s)	CAS #	OSHA/PEL	ACGIH/TLV
Epoxy resin	Trade secret	None	None
Nickel	7440-02-0	TWA 1mg/m ³	1.5 mg/m ³ (inhalable fraction)

Section 9 Physical and Chemical Properties

Appearance (color, physical form, shape): Dark grey paste

Odor Characteristics: Mild

Odor Threshold: Not determined

pH: Not determined

Flash Point: Greater than 93 °C (200 °F)

Flammability (solid, gas): Not determined

Initial Boiling Point and Boiling Range: Not determined



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Evaporation Rate:	Not determined
Melting/Freezing Point:	Not determined
Upper/Lower Flammability or Explosive Limits:	Not determined
Vapor Pressure:	Not determined
Vapor Density:	Greater than 1
Specific Gravity or Relative Density:	Not determined
Solubility (specify solvent):	Not determined
Auto-ignition Temperature:	Not determined
Decomposition Temperature:	Not determined
% Volatile:	Not determined
Partition Coefficient:	Not determined
Viscosity:	Not determined

Section 10 Stability and Reactivity

Stability:	Stable under normal conditions of storage and use.
Hazardous polymerization:	May occur
Hazardous Decomposition Products:	Oxides of nitrogen. Oxides of carbon. Hydrocarbons.
Incompatibilities:	Keep away from strong oxidizing agents, strong acids, strong bases, amines
Conditions to avoid:	Temperatures above 80 °C.

Section 11 Toxicological Information

Carcinogenicity

Carcinogenic listed by IARC:	Yes	If yes, list groups:	Group 2B
Carcinogenic by NTP:	Yes		
Carcinogenic by OSHA:	No		

Acute or Chronic Toxicity

Acute Effects: Nickel: LD₅₀ Intraperitoneal Rat: 250mg/kg

Chronic Effects: Contact made with uncured resin may cause skin irritation or rash. Prolonged or repeated exposure may cause an allergic sensitization.

Section 12 Environmental Information

Ecotoxicological Information:	No specific studies have been conducted on the ecotoxicity of this sample material.
Chemical Fate Information:	No specific studies have been conducted on the environmental fate of this sample material.

Section 13 Disposal Considerations

Recover or recycle if possible.

Do not discard into any sewers, on the ground, or into any body of water.

Upon completion of tests, dispose of material safely and in accordance with local, state, and federal regulations. It is the responsibility of the waste generator to determine the proper waste identification and disposal methods.



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Section 14 Transportation Information

DOT:

Proper Shipping Name: Not regulated
Hazard Class: None
Packing Group: None
UN Number: None

IATA:

Proper Shipping Name: Not regulated
Hazard Class: None
Packing Group: None
UN Number: None

24-hr Transportation Emergency Numbers:

For Hazardous Materials [or Dangerous Goods] Incident (Spill, Leak, Fire, Exposure, or Accident):

Within USA and Canada: 1-800-424-9300

Outside USA and Canada: +1 703-527-3887 (collect calls accepted)

Section 15 Regulatory Information

TSCA Inventory Status: All components comprising this sample are either exempt or listed on the TSCA inventory.

Section 313: Nickel

California Proposition 65: This sample contains chemicals known to the State of California to cause cancer—Epoxy resin, nickel.

Section 16 Other Information

Research Notice: The information provided herein is for a research sample and represents the results of preliminary investigations. This research sample is for use by qualified research personnel only. It is offered in good faith, consistent with 29 CFR 1910.1200, recognizing that additional information, including data on hazardous properties, may be developed at a later time.

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