



Safety Data Sheet

NECi Superior Enzymes
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Nitrate Reductase Enzymes:

Higher plant (*Arabidopsis thaliana*) NADH:Nitrate Reductase (EC 1.7.1.1) = AtNaR

Yeast (*Pichia pastoris*) NAD(P)H:Nitrate Reductase (EC 1.7.1.2) = YNaR

Expressed in the GRAS yeast *Pichia pastoris*. Purified by Affinity Chromatography to >95%.

Section 1: Identification of the Supplier and Substance/Mixture

Highly purified protein does not contain residual fermentation material. The product does not contain ingredients of animal, plant or microbial origin other than that used in the fermentation process. The product is provided in pack sizes from 0.1 to 5.0 Enzyme Activity Units (U) per vial: 1 U equals 25 – 50 micrograms of protein. Additives are reagent grade. End use is for analysis of nitrate in agricultural, environmental, industrial, biomedical, water or wastewater samples. **No animal-derived materials.** No hazardous materials.

Section 2: Hazards Identification

Threshold Limit Value: varied, but below known limits as supplied in kits

Supplied freeze-dried in solid form as “protein glass”.

Contents are not classed as hazardous materials. No UN/NA codes.

No applicable regulations for international transportation. No labels required.

Section 3: Composition and Information on Ingredients Substance

Common name, Chemical name, CAS number, Formula: **See Table Below**

Principal Hazardous Component: NA Biologic Activity: NA

Exposure Limits: Not established

Chemical Name	CAS Number	Chemical Formula	Quantity per Vial
Nitrate Reductase: AtNaR or YNaR Recombinant protein purified from Yeast (<i>Pichia pastoris</i>) Supplied as “protein glass”	At NaR: 9029-27-0 YNaR: 9013-03-0	Complex Peptide	<50 micrograms/1U
Sucrose	57-50-1	C ₁₂ H ₂₂ O ₁₁	<25 milligrams
MOPS buffer	1132-61-2	C ₇ H ₁₅ N ₀ O ₄ S	<1 milligram
EDTA (Ethylenediaminetetraacetic acid disodium salt dihydrate)	6381-92-6	C ₁₀ H ₁₄ N ₂ O ₈ .2Na.2H ₂ O	<1 microgram

Section 4: First Aid Measures

Enzymes/Proteins may cause allergic reactions in certain sensitive individuals, minimized hazard in protein glass form as supplied. Any chemical may cause skin or eye irritation.

Inhalation: Unlikely. Remove affected individual from source.

Eyes: Remove contact lenses if present. Flush thoroughly with saline or water. Contact physician if irritation or redness persists.

Skin: Contact physician if irritation develops

Ingestion: Not known to be harmful if swallowed. Obtain medical attention as required.

Section 5: Fire Fighting Measures

No special fire fighting equipment, media, or clothing is required.

Auto-ignition temperature: N/A **Flash Point:** N/A **Flammable Limits in Air (% by volume):** N/A

Unusual fire or Explosion Hazards: N/A **Stability:** Degradation products are not hazardous

Section 6: Accidental Release Measures

Wear appropriate protective equipment for storage and when handling. No additional precautions are required.

If Released or Spilled: Use normal cleanup procedures for liquid spills. Wash area thoroughly with water. Wash contaminated clothing prior to reuse.

Waste Disposal: Dispose of waste in accordance with all applicable Federal, State, and Local regulations. May be sewerred in most cases.

Section 7: Handling and Storage

Refer to product label for storage conditions. Store freeze-dried proteins in a cool, dry area in tightly closed containers when not in use. Some proteins are temperature-sensitive: store at temperature suggested on label.

Handling: No special precautions required; see Section 8. Avoid generation of dust or aerosols.

Section 8: Exposure Controls and Personal Protection

Respiratory Protection: approved dust mask may be used when handling a powdered form of a product in order to avoid breathing particulates. Avoid direct contact with skin or eyes. Sensitive individuals should wear protective clothing.

Ventilation: Good ventilation is advisable, standard vent fan and local exhaust as required.

Section 9: Physical and Chemical Properties

Appearance and Odor: Protein glass: Colorless to slightly brown solid, no odor. **NADH:** Powdery flake, white.

Solubility in Water: Soluble in water

Section 10: Stability and Reactivity

Stability: Stable **Hazardous Decomposition Products:** None Known

Hazardous Polymerization: Will Not Occur

Section 11: Toxicological Information

Acute Overexposure: May cause skin, eye, or respiratory irritation upon contact

Chronic Overexposure: May cause allergic reactions in certain sensitive individuals. None known.

The toxicological properties of this material have not been fully investigated. Always follow Good Laboratory and Industrial Hygiene Practices and wear personal protective equipment when handling chemicals.

Section 12: Ecological Information

Environmental Hazard: None Known

Section 13: Disposal Considerations

Dispose of waste in accordance with all Local, State, and Federal regulations. Chemical residues are generally classified as special waste: therefore transportation, storage, treatment, and disposal must be conducted in compliance with all applicable regulations. Rinse empty containers thoroughly before recycling.

Section 14: Transport Information

Proper Shipping Name: Not regulated **Hazard Class:** N/A **Packaging Group:** N/A

Reportable Quantity: N/A **Labels Required:** N/A

International Transportation Requirements: Not Regulated **UN/NA Code:** N/A

Section 15: Regulatory Information

US Federal and State: Materials are exempt for the US Environmental Protection Agency Toxic Controlled Substances Control Act (TSCA) inventory. Not known to be listed or regulated under any State jurisdiction.

International: EC: /R42/43, May cause sensitization by inhalation and skin contact. S36, wear suitable, protective clothing.

Section 16: Other Useful Information

The information provided in this SDS is believed to be correct but does not purport to be all inclusive. The information is presented as a guide. NECi assumes no liability for its accuracy or completeness. NECi does not assume liability for damages resulting from handling, use, and/or disposal of these products.