

Nicotinamide Adenine Dinucleotide Reduced Form (NADH) disodium salt

Catalog # **NH01-C59**

Lot # **K4488-15**

CAS 606-68-8

Product Description

Molecular Formula: $C_{21}H_{27}N_7O_{14}P_2 Na_2$

Molecular Weight: 709.41

Physical Appearance: White to yellowish powder

pH of Solution: 7.0-10.0 (100mg/mL water)

Alternative name(s)

β -nicotinamide adenine dinucleotide reduced form disodium salt, Reduced Coenzyme-I disodium salt, β -NADH disodium salt, Disodium NADH

Storage and Stability

Transport product sealed, dry, and protected from light at ambient temperature. Store product dry and protected from light. For long term storage keep between -25°C and -15°C.

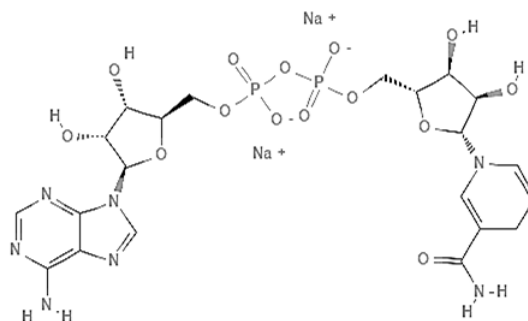
Scientific Background

Nicotinamide adenine dinucleotide reduced form (NADH) disodium salt is a coenzyme necessary for the catalytic reaction of certain metabolic enzymes found in all living cells (1). It consists of two nucleosides joined by a pyrophosphate (2). Enzymes catalyze the reversible transfer of a hydride ion (H⁻) from NADH to a substrate molecule to form the oxidized product NAD. The reaction is easily reversible when NAD⁺ oxidizes another molecule and is re-reduced to NADH. Thus, the coenzyme can continuously cycle between the NAD⁺ and NADH forms without being consumed (3). Laboratory applications of this enzyme include biocatalytic synthesis reactions, and kinetic studies.

References

1. Pollak N, Dölle C, Ziegler M. The power to reduce: pyridine nucleotides—small molecules with a multitude of functions. *Biochem J*. 2007 Mar 1;402(2):205-18. doi: 10.1042/BJ20061638. PMID: 17295611; PMCID: PMC1798440.
2. Alfred D. Winer. Crystallization of Nicotinamide Adenine Dinucleotide, *Journal of Biological Chemistry*, Volume 239, Issue 10, 1964, Pages PC3598-PC3600, ISSN 0021-9258. [https://doi.org/10.1016/S0021-9258\(18\)97765-3](https://doi.org/10.1016/S0021-9258(18)97765-3).
3. Katsyuba E, Romani M, Hofer D, Auwerx J. NAD⁺ homeostasis in health and disease. *Nat Metab*. 2020 Jan;2(1):9-31. doi: 10.1038/s42255-019-0161-5. Epub 2020 Jan 20. PMID: 32694684.
4. National Center for Biotechnology Information (2022). PubChem Compound Summary for CID 2724710, Disodium nicotinamide adenine dinucleotide. Retrieved October 24, 2022 from <https://pubchem.ncbi.nlm.nih.gov/compound/Disodium-nicotinamide-adenine-dinucleotide>.

Molecular Structure



Purity Analysis

Purity:	≥98% (HPLC)
Assay:	≥95% (UV) (calculated on sodium free and dry basis)
	≥90% (UV) (calculated on dry basis)
Sodium Content:	6.5±1%
Water Content:	≤5%
Triethylamine:	≤1%
Ethanol:	≤1%

Nicotinamide Adenine Dinucleotide Reduced Form (NADH) disodium salt

Catalog #	NH01-C59
Cas#	606-68-8
Lot #	K4488-15
Expiration Date	2024-04-22
Purity	≥98% (HPLC)
Format	White to yellowish powder
Stability	Two years
Storage & Shipping	Transport product sealed, dry, and protected from light at ambient temperature. Store product dry and protected from light. For long term storage keep between -25°C and -15°C.

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SAFETY DATA SHEET

Article 1 - Product Identification

Product Name: Nicotinamide Adenine Dinucleotide Reduced Form (NADH) disodium salt Catalog # NH01-C59

This product is sold only for research use by qualified laboratory personnel, and is not to be used as a drug, medical device, food additive, cosmetic, nor household chemical. It is not to be used in diagnostic, therapeutic, consumer, agricultural, nor pesticidal applications.

Supplier's Name: SignalChem Diagnostics Inc.
Street Address: 110-13120 Vanier Place
City, Prov. Postal Code: Richmond, BC, V6V 2J2
Country: Canada
Fax: 604-232-4601
EMERGENCY PHONE: 604-232-4600

Article 2 - Hazard Identification

Classification of Substance (GHS)

Not a hazardous substance or mixture.

Label Elements

Not a hazardous substance or mixture.

Other hazards: None

Article 3 - Composition/Information on Ingredients

Product Name(s): β -nicotinamide adenine dinucleotide reduced form disodium salt
Reduced Coenzyme-I disodium salt
 β -NADH disodium salt
Disodium NADH

Chemical Name: β -nicotinamide adenine dinucleotide reduced form disodium salt

Molecular Formula: $C_{21}H_{27}N_7Na_2O_{14}P_2$

CAS Number: 606-68-8

Concentration: $\geq 98\%$

Article 4 - First-aid Measures

- **General information:** Consult a physician and provide this SDS.
- **After inhalation:** Breathe in fresh air. If victim cannot breathe, give artificial respiration and consult a physician.
- **After skin contact:** Immediately wash with soap and plenty of water and rinse thoroughly. Consult a physician.
- **After eye contact:** Rinse opened eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do so. Consult a physician.
- **After swallowing:** Not expected to present a significant ingestion hazard under anticipated conditions of normal use. If you feel unwell, seek medical advice.

Article 5 - Fire-fighting Measures

- **Suitable extinguishing media:** Use water spray, extinguishing powder, carbon dioxide, or other appropriate measure that is suitable to the environment.
- **Specific hazards arising from the substance or mixture:** During combustion, may emit irritant fumes.
Carbon oxides
Nitrogen oxides (NOx)
Oxides of phosphorus
Sodium oxides
Fire may cause evolution of:
nitrogen oxides, Oxides of phosphorus
Combustible.
- **Special protective equipment and precautions for fire-fighters:** Self-contained breathing apparatus and protective clothing.
- **Further information:** Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

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Article 6 – Accidental Release Measures

- **Personal precautions, protective equipment, and emergency procedures:** Apply standard laboratory practices and personal protective equipment. Avoid breathing vapors, mist, dust, or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Refer to protective measures listed in sections 8.
- **Environmental precautions:** Try to prevent further leakage or spillage. Keep the product away from drains or water courses.
- **Methods and materials for containment and cleaning up:** Absorb solutions with finely-powdered liquid-binding material (diatomite, universal binders); Decontaminate surfaces and equipment by scrubbing with alcohol; Dispose of contaminated material according to Section 13.

Article 7 - Handling and Storage

- **Precautions for safe handling:** Wear chemical safety goggles and compatible chemical-resistant gloves. Avoid inhalation, contact with eyes, skin or clothing. Avoid dust and aerosol formation. Use only in areas with appropriate exhaust ventilation.
- **Conditions for safe storage:** Keep container upright, tightly closed, and dry. See product datasheet for recommended storage temperature

Article 8 - Exposure Controls/Personal Protection

- **Components with limit monitoring values at workplace:**
Contains no substances with occupational exposure limit values.
- **Appropriate engineering controls:**
Apply adequate ventilation including mechanical exhaust or laboratory fume hood. Follow standard laboratory practices.
- **Individual protection measures:**
Respiratory protection:
Use appropriate respirator if there is inadequate ventilation by following the government standards.
Hand protection:
In case of contact through splashing, wear nitrile rubber gloves with thickness >0.1 mm and break through time > 480 min. In case of full contact, wear nitrile rubber gloves with thickness >0.11mm and break through time > 480 min. Use proper glove removal technique to avoid skin contact. Discard gloves after use by following the applicable laboratory regulations. Wash and dry hands.
Eye/face protection:
Safety goggles with side-shields approved under appropriate government standards.
Skin/body protection:
Use appropriate clothing, footwear and any additional protection measures to protect from splashing or contamination.

Article 9 – Physical and Chemical Properties

Appearance: White to yellowish powder	Danger of explosion: Product does not present an explosion hazard.
Odour/Odour Threshold: Not determined.	Explosion limits: Not available.
pH: Not available.	Decomposition temperature: Not available.
Melting point/freezing point: Not determined.	Vapor pressure at 20 °C: Not available.
Boiling point/Boiling range: Not determined.	Density: Not determined.
Flash point: Not determined.	Relative density: Not determined.
Flammability (solid, gaseous): Not determined.	Vapor density: Not determined.
Ignition temperature: Not determined.	Evaporation rate: Not determined.
Auto-igniting: Product is not self-igniting.	Solubility in / Miscibility with Water: Not determined.

Article 10 - Stability and Reactivity

- **Reactivity:** No data available
- **Chemical stability:** Decomposes on exposure to light. The product is chemically stable under standard ambient conditions (room temperature)
- **Possible hazardous reactions:** Violent reactions possible with: Alkali metals, oxidizing agents, reducing agents, acid chlorides, ammonia, peroxides, acids
- **Conditions to avoid:** Heat, light, and moisture.
- **Incompatible materials:** Not determined.
- **Hazardous decomposition products:** Not determined.

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SAFETY DATA SHEET

Article 11 - Toxicological Information

- **Acute toxicity:** Not classified based on available information.
- **LD/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:** No data available.
- **Reproductive toxicity:** No data available.
- **Teratogenicity:** No data available.
- **Specific target organ toxicity - single exposure/ - repeated exposure (GHS):** No data available.
- **Aspiration hazard:** No data available.
- **Potential health effects:**
 - Inhalation: No data available.
 - Ingestion: No data available
 - Skin: No data available
 - Eyes: No data available
- **Signs and Symptoms of Exposure:** No data available
- **Synergistic effects:** No data available.

Article 12 - Ecological Information

- **Eco-toxicity:** No data available.
- **Biodegradability:** No data available.
- **Bio-accumulative potential:** No data available.
- **Mobility in soil:** No data available.
- **PBT and vPvB assessment:** No data available.
- **Other adverse effects:** No data available.

Article 13 - Disposal Considerations

- **Disposal methods:** Dispose of in accordance with applicable national, regional, or local laws and regulations. For additional handling information and protection of employees please refer to Article 7 and 8.
- **Contaminated packaging:** Disposal should be made in accordance with official regulations. Use water or cleansing agents to clean the area.

Article 14 - Transport Information

- **DOT:** Not dangerous goods.
- **IMDG:** Not dangerous goods.
- **IATA:** Not dangerous goods.

Article 15 - Regulatory Information

- **WHMIS Classification:** Non-hazardous.
- **GHS label elements:** Not applicable.
- **Signal word:** Not applicable.
- **Hazard statements:** Not applicable.

Article 16 - Other Information

The above information is believed to be correct but does not purport to be all-inclusive and shall be used only as a guide. SignalChem shall not be held liable for any damage resulting from handling or from contact with the above product. See the Technical Specification, Packing Slip, Invoice, and Product Catalog for additional terms and conditions of sale.

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