1. Identification

Product identifier: Niacinamide

Other means of identification:
- Catalog number: 1462006
- Chemical name: 3-Pyridinecarboxamide
- Synonym(s): Nicotinamide; Vitamin B3

Recommended use: Specified quality tests and assay use only.

Recommended restrictions: Not for use as a drug. Not for administration to humans or animals.

Manufacturer/Importer/Supplier/Distributor information:
- Company name: U. S. Pharmacopeia
- Address: 12601 Twinbrook Parkway
  Rockville
  MD
  20852-1790
  US
- Telephone: RS Technical Services 301-816-8129
- Website: www.usp.org
- E-mail: RSTECH@usp.org
- Emergency phone number: CHEMTREC within US & Canada 1-800-424-9300
  CHEMTREC outside US & Canada +1 703-527-3887

2. Hazard(s) identification

Note: This product is supplied in a small quantity which does not constitute a combustible dust hazard. The physical properties of this material indicate that in large quantities accumulated dust may be hazardous.

Physical hazards: Not classified.

Health hazards: Serious eye damage/eye irritation Category 2A

OSHA hazard(s): Not classified.

Label elements:
- Signal word: Warning
- Hazard statement: Causes serious eye irritation.

Precautionary statement:
- Prevention: Wash thoroughly after handling. Wear eye/face protection.
- Response: If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
- Storage: Not available.
- Disposal: Not available.

Hazard(s) not otherwise classified (HNOC): Not classified.

3. Composition/information on ingredients

Substance: Niacinamide

Hazardous components:

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Common name and synonyms</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Niacinamide</td>
<td>Nicotinamide; Vitamin B3</td>
<td>98-92-0</td>
<td>100</td>
</tr>
</tbody>
</table>

Material name: Niacinamide

5984  Version #: 02  Revision date: 05-05-2014  Issue date: 04-21-2008
4. First-aid measures

Inhalation
Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact
Rinse skin with water/shower. Get medical attention if irritation develops and persists.

Eye contact
Get medical attention if irritation develops and persists.

Ingestion
Rinse mouth. If ingestion of a large amount does occur, call a poison control center immediately.

Most important symptoms/effects, acute and delayed
Irritation of eyes and mucous membranes.

Indication of immediate medical attention and special treatment needed
Treatment for overdose should be symptomatic and supportive and may include the following: Administer activated charcoal as a slurry. For hypotension, infuse 10 to 20 mg/kg isotonic fluid. If persistent, administer dopamine or norepinephrine. [Poisindex]

General information
Remove from exposure. Remove contaminated clothing. For treatment advice, seek guidance from an occupational health physician or other licensed health-care provider familiar with workplace chemical exposures. In the United States, the national poison control center phone number is 1-800-222-1222. If person is not breathing, give artificial respiration. If breathing is difficult, give oxygen if available. Persons developing serious hypersensitivity (anaphylactic) reactions must receive immediate medical attention.

5. Fire-fighting measures

Suitable extinguishing media
Use fire-extinguishing media appropriate for surrounding materials. Water. Foam. Dry chemical or CO2.

Unsuitable extinguishing media
None known.

Specific hazards arising from the chemical
Explosion hazard: Avoid generating dust; fine dust dispersed in air in sufficient concentrations and in the presence of an ignition source is a potential dust explosion hazard. No unusual fire or explosion hazards noted.

Special protective equipment and precautions for firefighters
Wear suitable protective equipment.

Fire-fighting equipment/instructions
Use water spray to cool unopened containers. As with all fires, evacuate personnel to a safe area. Firefighters should use self-contained breathing equipment and protective clothing.

Specific methods
Use standard firefighting procedures and consider the hazards of other involved materials.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Keep unnecessary personnel away. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Avoid inhalation of dust from the spilled material. Wear appropriate personal protective equipment.

Methods and materials for containment and cleaning up
Sweep up or vacuum up spillage and collect in suitable container for disposal. Avoid the generation of dusts during clean-up. For waste disposal, see section 13 of the SDS. Clean surface thoroughly to remove residual contamination.

7. Handling and storage

Precautions for safe handling
As a general rule, when handling USP Reference Standards, avoid all contact and inhalation of dust, mists, and/or vapors associated with the material. Clean equipment and work surfaces with suitable detergent or solvent after use. After removing gloves, wash hands and other exposed skin thoroughly. Combustible dust clouds may be created where operations produce fine material (dust). Avoid significant deposits of material, especially on horizontal surfaces, which may become airborne and form combustible dust clouds and may contribute to secondary explosions.

Conditions for safe storage, including any incompatibilities
Store in tight container as defined in the USP-NF. This material should be handled and stored per label instructions to ensure product integrity.

8. Exposure controls/personal protection

Biological limit values
No biological exposure limits noted for the ingredient(s).

Exposure guidelines
No exposure standards allocated.

Appropriate engineering controls
Airborne exposure should be controlled primarily by engineering controls such as general dilution ventilation, local exhaust ventilation, or process enclosure. Local exhaust ventilation is generally preferred to general exhaust because it can control the contaminant at its source, preventing dispersion into the work area. An industrial hygiene survey involving air monitoring may be used to determine the effectiveness of engineering controls. Effectiveness of engineering controls intended for use with highly potent materials should be assessed by use of nontoxic surrogate materials.
Individual protection measures, such as personal protective equipment

**Eye/face protection**
Safety glasses with sideshields are recommended. Face shields or goggles may be required if splash potential exists or if corrosive materials are present. Approved eye protection (e.g., bearing the ANSI Z87 or CSA stamp) is preferred. Maintain eyewash facilities in the work area.

**Skin protection**
**Hand protection**
Chemically compatible gloves. For handling solutions, ensure that the glove material is protective against the solvent being used. Use handling practices that minimize direct hand contact. Employees who are sensitive to natural rubber (latex) should use nitrile or other synthetic nonlatex gloves. Use of powdered latex gloves should be avoided due to the risk of latex allergy.

**Other**
For handling of laboratory scale quantities, a cloth lab coat is recommended. Where significant quantities are handled, work clothing may be necessary to prevent take-home contamination.

**Respiratory protection**
Where respirators are deemed necessary to reduce or control occupational exposures, use NIOSH-approved respiratory protection and have an effective respirator program in place (applicable U.S. regulation OSHA 29 CFR 1910.134).

**Thermal hazards**
Not available.

**General hygiene considerations**
Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

**Appearance**
White crystalline powder.

**Physical state**
Solid.

**Form**
Powder.

**Odor**
Odorless or nearly so.

**Odor threshold**
Not available.

**pH**
Solutions are neutral to litmus.

**Melting point/freezing point**
262.4 - 267.8 °F (128 - 131 °C)

**Initial boiling point and boiling range**
314.6 °F (157 °C) 0.000067 kPa

**Flash point**
359.60 °F (182.00 °C) (TOC)

**Evaporation rate**
Not available.

**Flammability (solid, gas)**
Not applicable.

**Upper/lower flammability or explosive limits**
- **Flammability limit - lower (%)**
  Not available.
- **Flammability limit - upper (%)**
  Not available.
- **Explosive limit - lower (%)**
  Not available.
- **Explosive limit - upper (%)**
  Not available.

**Vapor pressure**
0.0000264 kPa at 25 °C
31.4 hPa at 25 °C

**Vapor density**
Not available.

**Relative density**
Not available.

**Solubility in water**
Freely soluble.

**Partition coefficient (n-octanol/water)**
-0.37

**Auto-ignition temperature**
Not available.

**Viscosity**
Not available.

**Other information**
- **Chemical family**
  Pyridine derivative.
- **Molecular formula**
  C6-H6-N2-O
- **Molecular weight**
  122.13 g/mol
- **Solubility (other)**
  Freely soluble in ethanol; soluble in butanol, in glycerol, in amyl alcohol, in ethylene glycol, and in acetone; slightly soluble in chloroform, in ether, and in benzene.
- **Specific gravity**
  1.4 at 25 °C

10. Stability and reactivity

**Reactivity**
No reactivity hazards known.

**Chemical stability**
Stable at normal conditions.
Possibility of hazardous reactions: Not available.
Conditions to avoid: None known.
Hazardous decomposition products: NOx. Irritating and/or toxic fumes or gases. Emits toxic fumes under fire conditions.

11. Toxico logical information

Information on likely routes of exposure

<table>
<thead>
<tr>
<th>Route</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ingestion</td>
<td>Based on available data, the classification criteria are not met.</td>
</tr>
<tr>
<td>Inhalation</td>
<td>Due to lack of data the classification is not possible.</td>
</tr>
<tr>
<td>Skin contact</td>
<td>Based on available data, the classification criteria are not met.</td>
</tr>
<tr>
<td>Eye contact</td>
<td>Causes serious eye irritation.</td>
</tr>
</tbody>
</table>

Symptoms related to the physical, chemical, and toxicological characteristics


Delayed and immediate effects of exposure

Liver toxicity.

Cross sensitivity

Persons sensitive to niacin may be sensitive to this material also.

Medical conditions aggravated by exposure


Acute toxicity

<table>
<thead>
<tr>
<th>Product</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Niacinamide (CAS 98-92-0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dermal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50 Rabbit</td>
<td>&gt; 2000 mg/kg</td>
<td></td>
</tr>
<tr>
<td>Oral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50 Mouse</td>
<td>2500 mg/kg</td>
<td></td>
</tr>
<tr>
<td>Rat</td>
<td>3500 mg/kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5.5 g/kg</td>
<td></td>
</tr>
</tbody>
</table>

Skin corrosion/irritation

Based on available data, the classification criteria are not met.

Serious eye damage/eye irritation

Causes serious eye irritation.

Local effects

Irritancy test
Result: Irritant.
Species: Rabbit
Organ: Eye
Irritancy test
Result: Non-irritant.
Species: Rabbit
Organ: Skin

Respiratory sensitization

Due to lack of data the classification is not possible.

Skin sensitization

Based on available data, the classification criteria are not met.

Sensitization

Guinea pig maximization test
Result: Non-sensitizing.
Species: Guinea pig
Organ: Skin

Guinea pig maximization test
Result: Sensitizing.
Species: Guinea pig
Organ: Skin

Sensitization test
Result: Non-sensitizing.
Species: Guinea pig
Organ: Skin

Germ cell mutagenicity

Due to lack of data the classification is not possible. Data from germ cell mutagenicity tests were not found.
Mutagenicity
Ames test in Salmonella
Result: Not mutagenic except for one strain that showed a weakly positive response.
In vivo micronucleus test
Result: Not clastogenic.
Mutagenicity test in Saccharomyces
Result: Not mutagenic.
Sister chromatid exchange assay in Chinese hamster lung fibroblasts
Result: Caused sister chromatid exchanges but chromosome aberrations were not induced.
Sister chromatid exchange assay in Chinese hamster ovary cells
Result: Caused sister chromatid exchanges and induced chromosome aberrations.
Sister chromatid exchange assay in human lymphoblastoid cells
Result: Caused sister chromatid exchanges.
Unscheduled DNA synthesis assay in rat hepatocytes
Result: Caused unscheduled DNA synthesis.

Carcinogenicity
This material is not considered to be a carcinogen by IARC, NTP, or OSHA.
1 % Drinking water carcinogenicity study
Result: No increase in tumor formation.
Species: Mouse

Reproductive toxicity
Based on available data, the classification criteria are not met.
Reproductivity
0 - 1000 mg Reproductivity and development tests, with oral administration of nicotinic acid, a material with similar physiological function and comparable kinetics as niacinamide
Result: No increase in the incidence of birth defects.
Species: Rat
61 mg/kg Reproductivity and development study, with subcutaneous administration of niacinamide
Result: No significant effects on the fetuses.
Species: Mouse

Specific target organ toxicity - single exposure
Based on available data, the classification criteria are not met.

Specific target organ toxicity - repeated exposure
Based on available data, the classification criteria are not met.

Aspiration hazard
Due to lack of data the classification is not possible.

12. Ecological information
Ecotoxicity
Low acute toxicity to aquatic organisms.
Persistence and degradability
Readily biodegradable.
Bioaccumulative potential
The product does not contain any substances expected to be bioaccumulating.
Mobility in soil
Not available.
Other adverse effects
Not available.

13. Disposal considerations
Disposal instructions
Dispose in accordance with all applicable regulations. Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste.
Local disposal regulations
Not available.
Hazardous waste code
Not available.
Waste from residues / unused products
Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging
Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information
DOT
Not regulated as a hazardous material by DOT.
IATA
Not regulated as a dangerous good.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
No information available.

15. Regulatory information

US federal regulations
CERCLA/SARA Hazardous Substances - Not applicable.
All components are on the U.S. EPA TSCA Inventory List.

Superfund Amendments and Reauthorization Act of 1986 (SARA)
Hazard categories
Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance
No

SARA 311/312 Hazardous chemical
No

Other federal regulations
Safe Drinking Water Act (SDWA) Not regulated.

Food and Drug Administration (FDA)
Total food additive
Direct food additive
GRAS food additive

US state regulations
California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories

<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Australian Inventory of Chemical Substances (AICS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Non-Domestic Substances List (NDSL)</td>
<td>No</td>
</tr>
<tr>
<td>China</td>
<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European Inventory of Existing Commercial Chemical Substances (EINECS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European List of Notified Chemical Substances (ELINCS)</td>
<td>No</td>
</tr>
<tr>
<td>Japan</td>
<td>Inventory of Existing and New Chemical Substances (ENCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Korea</td>
<td>Existing Chemicals List (ECL)</td>
<td>Yes</td>
</tr>
<tr>
<td>New Zealand</td>
<td>New Zealand Inventory</td>
<td>Yes</td>
</tr>
<tr>
<td>Philippines</td>
<td>Philippine Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act (TSCA) Inventory</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

16. Other information, including date of preparation or last revision

Issue date 04-21-2008
Revision date 05-05-2014
Version # 02
Further information Refer to NFPA 654, Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids, for safe handling.
Material name: Niacinamide

5984 Version #: 02 Revision date: 05-05-2014 Issue date: 04-21-2008