1. Identification

Product Name: N-Vinyl-2-pyrrolidone, stabilized

Cat No.: AC140920000; AC140920025; AC140920050; AC140920100; AC140925000

CAS-No: 88-12-0

Synonyms: N-Vinylbutyrolactam

Recommended Use: Laboratory chemicals.
Uses advised against: Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet:

Company:
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number:
For information US call: 001-800-ACROS-01 / Europe call: +32 14 57 52 11
Emergency Number US:001-201-796-7100 / Europe: +32 14 57 52 99
CHEMTREC Tel. No.US:001-800-424-9300 / Europe:001-703-527-3887

2. Hazard(s) identification

Classification:
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute oral toxicity: Category 4
Acute dermal toxicity: Category 4
Acute Inhalation Toxicity - Vapors: Category 4
Serious Eye Damage/Eye Irritation: Category 1
Carcinogenicity: Category 2
Specific target organ toxicity (single exposure): Category 3
Target Organs - Respiratory system.
Specific target organ toxicity - (repeated exposure): Category 1
Target Organs - Liver.
N-Vinyl-2-pyrrolidone, stabilized  

Revision Date 18-Jan-2018

Danger

**Hazard Statements**
Causes serious eye damage  
May cause respiratory irritation  
Suspected of causing cancer  
Causes damage to organs through prolonged or repeated exposure  
Harmful if swallowed, in contact with skin or if inhaled

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**Precautionary Statements**

**Prevention**
Obtain special instructions before use  
Do not handle until all safety precautions have been read and understood  
Use personal protective equipment as required  
Wash face, hands and any exposed skin thoroughly after handling  
Do not eat, drink or smoke when using this product  
Use only outdoors or in a well-ventilated area  
Do not breathe dust/fume/gas/mist/vapors/spray

**Response**
IF exposed or concerned: Get medical attention/advice

**Inhalation**
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

**Skin**
IF ON SKIN: Wash with plenty of soap and water  
Call a POISON CENTER or doctor/physician if you feel unwell  
Wash contaminated clothing before reuse

**Eyes**
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
Immediately call a POISON CENTER or doctor/physician

**Ingestion**
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell  
Rinse mouth

**Storage**
Store locked up  
Store in a well-ventilated place. Keep container tightly closed

**Disposal**
Dispose of contents/container to an approved waste disposal plant

**Hazards not otherwise classified (HNOC)**
None identified

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### 3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-Vinyl-2-pyrrolidone</td>
<td>88-12-0</td>
<td>&gt;95</td>
</tr>
</tbody>
</table>

---

### 4. First-aid measures

**General Advice**
If symptoms persist, call a physician.
Eye Contact: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.

Skin Contact: Wash off immediately with plenty of water for at least 15 minutes. Get medical attention.

Inhalation: Remove to fresh air. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Clean mouth with water and drink afterwards plenty of water.

Most important symptoms and effects: Causes eye burns.

Notes to Physician: Treat symptomatically.

## 5. Fire-fighting measures

### Suitable Extinguishing Media
Water spray, carbon dioxide (CO2), dry chemical, alcohol-resistant foam.

### Unsuitable Extinguishing Media
No information available

### Flash Point
95 °C / 203 °F

### Autoignition Temperature
240 °C / 464 °F

### Explosion Limits
- **Upper**: 10 vol%
- **Lower**: 1.4 vol%

### Hazardous Combustion Products
Carbon monoxide (CO), Carbon dioxide (CO2), Nitrogen oxides (NOx).

### Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

### NFPA
- **Health**: 3
- **Flammability**: 1
- **Instability**: 1
- **Physical hazards**: N/A

## 6. Accidental release measures

### Personal Precautions
Ensure adequate ventilation. Use personal protective equipment as required.

### Environmental Precautions
Should not be released into the environment. Do not flush into surface water or sanitary sewer system. See Section 12 for additional Ecological Information.

### Methods for Containment and Clean Up
Soak up with inert absorbent material. Keep in suitable, closed containers for disposal.

## 7. Handling and storage

### Handling
Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation. Ensure adequate ventilation.

### Storage
Keep containers tightly closed in a dry, cool and well-ventilated place. Store indoors. Do not freeze.
8. Exposure controls / personal protection

Exposure Guidelines

<table>
<thead>
<tr>
<th>Component</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH IDLH</th>
<th>Mexico OEL (TWA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-Vinyl-2-pyrrolidone</td>
<td>TWA: 0.05 ppm</td>
<td></td>
<td></td>
<td>TWA: 0.05 ppm</td>
</tr>
</tbody>
</table>

Legend

ACGIH - American Conference of Governmental Industrial Hygienists

Engineering Measures

Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment

**Eye/face Protection**

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166. Tight sealing safety goggles. Face protection shield.

**Skin and body protection**

Wear appropriate protective gloves and clothing to prevent skin exposure.

**Respiratory Protection**

Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

<table>
<thead>
<tr>
<th>Physical State</th>
<th>Liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Light yellow</td>
</tr>
<tr>
<td>Odor</td>
<td>Strong</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>No information available</td>
</tr>
<tr>
<td>pH</td>
<td>9-10  100 g/L (20°C)</td>
</tr>
<tr>
<td>Melting Point/Range</td>
<td>13 - 14 °C / 55.4 - 57.2 °F</td>
</tr>
<tr>
<td>Boiling Point/Range</td>
<td>218 °C / 424 °F @ 760 mmHg</td>
</tr>
<tr>
<td>Flash Point</td>
<td>95 °C / 203 °F</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>No information available</td>
</tr>
<tr>
<td>Flammability (solid,gas)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flammability or explosive limits</td>
<td></td>
</tr>
<tr>
<td>Upper</td>
<td>10 vol%</td>
</tr>
<tr>
<td>Lower</td>
<td>1.4 vol%</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>0.12 mbar @ 20°C</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>No information available</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>1.043</td>
</tr>
<tr>
<td>Solubility</td>
<td>Soluble in water</td>
</tr>
<tr>
<td>Partition coefficient; n-octanol/water</td>
<td>No data available</td>
</tr>
<tr>
<td>Autoignition Temperature</td>
<td>240 °C / 464 °F</td>
</tr>
<tr>
<td>Decomposition Temperature</td>
<td>No information available</td>
</tr>
<tr>
<td>Viscosity</td>
<td>2.4 mPa.s @ 20 °C</td>
</tr>
<tr>
<td>Molecular Formula</td>
<td>C6 H9 N O</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>111.14</td>
</tr>
</tbody>
</table>

10. Stability and reactivity

**Reactive Hazard**

None known, based on information available

**Stability**

Stable under normal conditions.
Conditions to Avoid
Incompatible products. Excess heat.

Incompatible Materials
Strong oxidizing agents

Hazardous Decomposition Products
Carbon monoxide (CO), Carbon dioxide (CO$_2$), Nitrogen oxides (NOx)

Hazardous Polymerization
Hazardous polymerization may occur in the presence of alcohols, acids, bases and amines.

Hazardous Reactions
None under normal processing.

11. Toxicological information

Acute Toxicity

<table>
<thead>
<tr>
<th>Component</th>
<th>LD50 Oral (Rat)</th>
<th>LD50 Dermal (Rabbit)</th>
<th>LC50 Inhalation (Rat) 4h</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-Vinyl-2-pyrrolidone</td>
<td>1043 mg/kg</td>
<td>1040 mg/kg</td>
<td>LC50 = 3070 mg/m$^3$</td>
</tr>
</tbody>
</table>

Toxicologically Synergistic Products
No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation
Severe eye irritant Irritating to respiratory system

Sensitization
No information available

Carcinogenicity
The table below indicates whether each agency has listed any ingredient as a carcinogen.

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>IARC</th>
<th>NTP</th>
<th>ACGIH</th>
<th>OSHA</th>
<th>Mexico</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-Vinyl-2-pyrrolidone</td>
<td>88-12-0</td>
<td>Not listed</td>
<td>Not listed</td>
<td>A3</td>
<td>Not listed</td>
<td>A3</td>
</tr>
</tbody>
</table>

ACGIH: (American Conference of Governmental Industrial Hygienists)

A1 - Known Human Carcinogen
A2 - Suspected Human Carcinogen
A3 - Animal Carcinogen

Mutagenic Effects
Not mutagenic in AMES Test

Reproductive Effects
No information available.

Developmental Effects
No information available.

Teratogenicity
No information available.

STOT - single exposure
Respiratory system

STOT - repeated exposure
Liver

Aspiration hazard
No information available

Symptoms / effects, both acute and delayed
No information available

Endocrine Disruptor Information
No information available

Other Adverse Effects
See actual entry in RTECS for complete information.

12. Ecological information

Ecotoxicity
Do not empty into drains. Contains a substance which is:. Harmful to aquatic organisms. The product contains following substances which are hazardous for the environment.
N-Vinyl-2-pyrrolidone, stabilized

<table>
<thead>
<tr>
<th>Component</th>
<th>Freshwater Algae</th>
<th>Freshwater Fish</th>
<th>Microtox</th>
<th>Water Flea</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-Vinyl-2-pyrrolidone</td>
<td>EC50 = 780 mg/L  72h</td>
<td>Not listed</td>
<td>EC50 = 4812 mg/L  17h</td>
<td>EC50 = 45 mg/L  48h</td>
</tr>
</tbody>
</table>

### Persistence and Degradability
Soluble in water. Persistence is unlikely based on information available.

### Bioaccumulation/Accumulation
No information available.

### Mobility
Will likely be mobile in the environment due to its water solubility.

<table>
<thead>
<tr>
<th>Component</th>
<th>log Pow</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-Vinyl-2-pyrrolidone</td>
<td>0.4</td>
</tr>
</tbody>
</table>

### 13. Disposal considerations

**Waste Disposal Methods**
Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

### 14. Transport information

<table>
<thead>
<tr>
<th>DOT</th>
<th>Not regulated</th>
</tr>
</thead>
<tbody>
<tr>
<td>TDG</td>
<td>Not regulated</td>
</tr>
<tr>
<td>IATA</td>
<td>Not regulated</td>
</tr>
<tr>
<td>IMDG/IMO</td>
<td>Not regulated</td>
</tr>
</tbody>
</table>

### 15. Regulatory information

#### United States of America Inventory

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>TSCA</th>
<th>TSCA Inventory notification - Active/Inactive</th>
<th>TSCA - EPA Regulatory Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-Vinyl-2-pyrrolidone</td>
<td>88-12-0</td>
<td>X</td>
<td>ACTIVE</td>
<td>-</td>
</tr>
</tbody>
</table>

**Legend:**
- **TSCA** - Toxic Substances Control Act, (40 CFR Part 710)
- **X** - Listed
- **'-'** - Not Listed
- **TSCA 12(b)** - Notices of Export
  - Not applicable

#### International Inventories
- Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Australia (AICS), China (IECSC), Korea (ECL).

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>DSL</th>
<th>NDSL</th>
<th>EINECS</th>
<th>PICCS</th>
<th>ENCS</th>
<th>AICS</th>
<th>IECSC</th>
<th>KECL</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-Vinyl-2-pyrrolidone</td>
<td>88-12-0</td>
<td>X</td>
<td>-</td>
<td>201-800-4</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>KE-13323</td>
</tr>
</tbody>
</table>

#### U.S. Federal Regulations

- **SARA 313**
  - Not applicable
- **SARA 311/312 Hazard Categories**
  - See section 2 for more information
- **CWA (Clean Water Act)**
  - Not applicable
- **Clean Air Act**
  - Not applicable
- **OSHA - Occupational Safety and Health Administration**
  - Not applicable
- **CERCLA**
  - This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)
California Proposition 65
This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

<table>
<thead>
<tr>
<th>Component</th>
<th>Massachusetts</th>
<th>New Jersey</th>
<th>Pennsylvania</th>
<th>Illinois</th>
<th>Rhode Island</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-Vinyl-2-pyrrolidone</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

U.S. Department of Transportation
Reportable Quantity (RQ): N
DOT Marine Pollutant: N
DOT Severe Marine Pollutant: N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Other International Regulations
Mexico - Grade Slight risk, Grade 1

16. Other information

Prepared By Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 29-Apr-2010
Revision Date 18-Jan-2018
Print Date 18-Jan-2018
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS