

# Material Safety Data Sheet

| HAZARD WARNINGS                                                                                                                                                                                                                                      | RISK PHRASES                                                                                                                                                                                                                                        | PROTECTIVE CLOTHING                                                                                                                                                                                                                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | <p>Toxic compound, do not ingest or inhale. Avoid all contact with this material.</p> <p><b>CARCINOGEN. MINIMIZE EXPOSURE.</b></p> <p>Irritating to skin, eyes, and the respiratory system.</p> <p>Heat sensitive material.</p> <p>Refrigerate.</p> |     |

## Section I. Chemical Product and Company Identification

|                  |                                                                                        |                                 |                                                                                           |
|------------------|----------------------------------------------------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------|
| Chemical Name    | <b>1-Vinyl-2-pyrrolidone</b><br>(stabilized with N,N'-Di-sec-butyl-p-phenylenediamine) |                                 |                                                                                           |
| Catalog Number   | V0026                                                                                  | Supplier                        | TCI America<br>9211 N. Harborage St.<br>Portland OR<br>1-800-423-8616                     |
| Synonym          | 1-Ethenyl-2-pyrrolidinone (9CI)                                                        |                                 |                                                                                           |
| Chemical Formula | C <sub>6</sub> H <sub>9</sub> NO                                                       |                                 |                                                                                           |
| CAS Number       | 88-12-0                                                                                | In case of<br>Emergency<br>Call | <b>Chemtrec®</b><br><b>(800) 424-9300 (U.S.)</b><br><b>(703) 527-3887 (International)</b> |

## Section II. Composition and Information on Ingredients

| Chemical Name                                                                   | CAS Number | Percent (%)    | TLV/PEL                                                                                              | Toxicology Data                                                                                                                                      |
|---------------------------------------------------------------------------------|------------|----------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1-Vinyl-2-pyrrolidone<br>(stabilized with N,N'-Di-sec-butyl-p-phenylenediamine) | 88-12-0    | Min. 99.0 (GC) | This chemical is classified as a carcinogen. There is no acceptable exposure limit for a carcinogen. | Rat LD <sub>50</sub> (oral) 1470 mg/kg<br>Rabbit LD <sub>50</sub> (dermal) 560 mg/kg<br>Rat LD <sub>50</sub> (inhalation) 3200 mg/m <sup>3</sup> /4H |

## Section III. Hazards Identification

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Acute Health Effects   | <p>Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death. Irritating to eyes and skin on contact. Inhalation causes irritation of the lungs and respiratory system. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.</p> <p>Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.</p>                                                                            |
| Chronic Health Effects | <p><b>CARCINOGENIC EFFECTS</b> : Carcinogenic by RTECS criteria.</p> <p><b>MUTAGENIC EFFECTS</b> : Not available.</p> <p><b>TERATOGENIC EFFECTS</b> : Tumorigenic Effects</p> <p>Rat TCLo (Inhalation) 10 ppm/6 hours/2 years intermittent</p> <p>Toxic Effects:</p> <p>Tumorigenic - Carcinogenic by RTECS criteria</p> <p>Sense Organs and Special Senses (Nose, Eye, Ear, and Taste) - Tumors</p> <p>Liver - Tumors</p> <p><b>DEVELOPMENTAL TOXICITY</b>: Not available.</p> <p>Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.</p> |

## Section IV. First Aid Measures

|              |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Eye Contact  | Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.                                                                                                                                                                                                                                                                                                |
| Skin Contact | In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.                                                                                                                                                                                                             |
| Inhalation   | If the victim is not breathing, perform mouth-to-mouth resuscitation. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, oxygen can be administered. Seek medical attention if respiration problems do not improve.                                                                                                                                                                                             |
| Ingestion    | INDUCE VOMITING by sticking finger in throat. Lower the head so that the vomit will not reenter the mouth and throat. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. |

## Section V. Fire and Explosion Data

|                     |                                                                                                        |                  |                        |
|---------------------|--------------------------------------------------------------------------------------------------------|------------------|------------------------|
| Flammability        | May be combustible at high temperature.                                                                | Auto-Ignition    | 240 °C (464 °F)        |
| Flash Points        | 102 °C (215.6 °F).                                                                                     | Flammable Limits | LOWER: 1.4% UPPER: 10% |
| Combustion Products | These products are toxic carbon oxides (CO, CO <sub>2</sub> ), nitrogen oxides (NO, NO <sub>2</sub> ). |                  |                        |
| Fire Hazards        | Not available.                                                                                         |                  |                        |

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Emergency phone number (800) 424-9300

(stabilized with N,N'-Di-sec-butyl-p-phenylenediamine)

|                                      |                                                                                                                                                                                                        |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Explosion Hazards                    | Risks of explosion of the product in presence of mechanical impact: Not available.<br>Risks of explosion of the product in presence of static discharge: Not available.                                |
| Fire Fighting Media and Instructions | SMALL FIRE: Use DRY chemical powder.<br>LARGE FIRE: Use water spray, fog or foam. DO NOT use water jet.<br>Consult with local fire authorities before attempting large scale fire-fighting operations. |

## Section VI. Accidental Release Measures

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Spill Cleanup Instructions | Toxic material. Carcinogenic material. Irritating material. Heat sensitive material.<br>Keep away from heat. Absorb with an inert material and put the spilled material in an appropriate waste disposal.<br>Mechanical exhaust required. Stop leak if without risk. DO NOT get water inside container. DO NOT touch spilled material.<br>Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Consult federal, state, and/or local authorities for assistance on disposal. |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Section VII. Handling and Storage

|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Handling and Storage Information | TOXIC. CARCINOGEN. IRRITANT. HEAT SENSITIVE. REFRIGERATE. Keep locked up. Keep away from heat.<br>Mechanical exhaust required. Avoid excessive heat and light. DO NOT ingest. Do not breathe gas/fumes/ vapor/spray.<br>Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Treat symptomatically and supportively.<br>Always store away from incompatible compounds such as oxidizing agents, acids. |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Section VIII. Exposure Controls/Personal Protection

|                      |                                                                                                                                                                                                                                                                                                                                             |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Engineering Controls | Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash station and safety shower is proximal to the work-station location.                                                                                               |
| Personal Protection  | Splash goggles. Lab coat. Vapor respirator. Boots. Gloves. A MSHA/NIOSH approved respirator must be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.<br> |
| Exposure Limits      | This chemical is classified as a carcinogen. There is no acceptable exposure limit for a carcinogen.                                                                                                                                                                                                                                        |

## Section IX. Physical and Chemical Properties

|                       |                                             |                       |                                                           |
|-----------------------|---------------------------------------------|-----------------------|-----------------------------------------------------------|
| Physical state @ 20°C | Liquid. (Clear. Colorless, reddish yellow.) | Solubility            | Soluble in many organic solvents.<br>Miscible with water. |
| Specific Gravity      | 1.05 (water=1)                              |                       |                                                           |
| Molecular Weight      | 111.14                                      | Partition Coefficient | LOG P <sub>ow</sub> : 0.4                                 |
| Boiling Point         | 148°C (298.4°F) @ 100 mmHg                  | Vapor Pressure        | 13.3 Pa (@ 24°C)                                          |
| Melting Point         | 13°C (55.4°F)                               | Vapor Density         | 3.8 (Air = 1)                                             |
| Refractive Index      | 1.51                                        | Volatility            | Not available.                                            |
| Critical Temperature  | Not available.                              | Odor                  | Not available.                                            |
| Viscosity             | Not available.                              | Taste                 | Not available.                                            |

## Section X. Stability and Reactivity Data

|                           |                                                                                               |
|---------------------------|-----------------------------------------------------------------------------------------------|
| Stability                 | This material is stable if stored under proper conditions. (See Section VII for instructions) |
| Conditions of Instability | Avoid excessive heat and light.                                                               |
| Incompatibilities         | Reactive with oxidizing agents, strong acids.                                                 |

## Section XI. Toxicological Information

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RTECS Number          | UY6107000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Routes of Exposure    | Eye Contact. Ingestion. Inhalation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Toxicity Data         | Rat LD <sub>50</sub> (oral) 1470 mg/kg<br>Rabbit LD <sub>50</sub> (dermal) 560 mg/kg<br>Rat LD <sub>50</sub> (inhalation) 3200 mg/m <sup>3</sup> /4H                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Chronic Toxic Effects | <b>CARCINOGENIC EFFECTS</b> : Carcinogenic by RTECS criteria.<br><b>MUTAGENIC EFFECTS</b> : Not available.<br><b>TERATOGENIC EFFECTS</b> : Tumorigenic Effects<br>Rat TCLo (Inhalation) 10 ppm/6 hours/2 years intermittent<br>Toxic Effects:<br>Tumorigenic - Carcinogenic by RTECS criteria<br>Sense Organs and Special Senses (Nose, Eye, Ear, and Taste) - Tumors<br>Liver - Tumors<br><b>DEVELOPMENTAL TOXICITY</b> : Not available.<br>Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs. |

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Emergency phone number (800) 424-9300

(stabilized with N,N'-Di-sec-butyl-p-phenylenediamine)

## Acute Toxic Effects

Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death. Irritating to eyes and skin on contact. Inhalation causes irritation of the lungs and respiratory system. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.

**Section XII. Ecological Information**

## Ecotoxicity

Not available.

## Environmental Fate

Not available.

**Section XIII. Disposal Considerations**

## Waste Disposal

Recycle to process, if possible. Consult your local regional authorities. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. Observe all federal, state and local regulations when disposing of the substance.

**Section XIV. Transport Information**

## DOT Classification

DOT CLASS 6.1: Toxic material.

## PIN Number

UN2810

## Proper Shipping Name

Toxic liquid, organic, n.o.s.

## Packing Group (PG)

III

## DOT Pictograms

**Section XV. Other Regulatory Information and Pictograms**TSCA Chemical Inventory  
(EPA)This compound is **ON** the EPA Toxic Substances Control Act (TSCA) inventory list.WHMIS Classification  
(Canada)

CLASS B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F).  
CLASS D-1B: Material causing immediate and serious toxic effects (TOXIC).  
On DSL.

## EINECS Number (EEC)

201-800-4

## EEC Risk Statements

R23/24/25- Toxic by inhalation, in contact with skin and if swallowed.  
R45- May cause cancer.  
R36/37/38- Irritating to eyes, respiratory system and skin.

## Japanese Regulatory Data

ENCS no.: 5-114

**Section XVI. Other Information****Version 1.0****Validated on 12/23/2010.****Printed 12/23/2010.****Notice to Reader**

TCI laboratory chemicals are for research purposes only and are NOT intended for use as drugs, food additives, households, or pesticides. The information herein is believed to be correct, but does not claim to be all inclusive and should be used only as a guide. Neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All chemical reagents must be handled with the recognition that their chemical, physiological, toxicological, and hazardous properties have not been fully investigated or determined. All chemical reagents should be handled only by individuals who are familiar with their potential hazards and who have been fully trained in proper safety, laboratory, and chemical handling procedures. Although certain hazards are described herein, we can not guarantee that these are the only hazards which exist. Our MSDS sheets are based only on data available at the time of shipping and are subject to change without notice as new information is obtained. Avoid long storage periods since the product is subject to degradation with age and may become more dangerous or hazardous. It is the responsibility of the user to request updated MSDS sheets for products that are stored for extended periods. Disposal of unused product must be undertaken by qualified personnel who are knowledgeable in all applicable regulations and follow all pertinent safety precautions including the use of appropriate protective equipment (e.g. protective goggles, protective clothing, breathing equipment, facial mask, fume hood). For proper handling and disposal, always comply with federal, state, and local regulations.