

**Safety data sheet as per COMMISSION REGULATION (EU) No 453/2010  
of 20 May 2010 amending Regulation (EC) No 1907/2006  
Product: 2-pyrrolidone**



**SECTION 1: Identification of the substance/mixture and of the company/undertaking**

**1.1 Product identifier**

**Trade name: 2-pyrrolidone**

**CAS No.: 616-45-5**

**EC No.: 210-483-1**

**1.2 Relevant identified uses of the substance or mixture and uses advised against**

**Relevant identified uses:** Used in manufacture of 2-vinylpyrrolidone (NVP), and as intermediate to pharmaceuticals; used as a solvent in water based ink formulations and as a copolymer in floor polishes

**Sector of use:** SU 8, 9 Manufacture SU 10 Formulations

**Environmental release category:** Manufacture (ERC1) and formulations (ERC2)

**Uses identified against:** not for uses other than those identified

**1.3 Details of the supplier of the safety data sheet:**

**Manufacturer/Supplier:**

Prasol Chemicals Ltd.,  
Prasol House, Plot No.A-17/2/3,  
T.T.C. Indl. Area, Khairne M.I.D.C.,  
Navi Mumbai - 400 710  
Maharashtra, India.  
Tel: +91-22-27782555  
Fax: +91-22-27782430

**Further information obtainable from:**

Mr. Dhaval Parikh

e-mail:sales@prasolchem.com; inquiry@prasolchem.com

**Information in case of emergency:**

Product safety department Tel: +91-22- 27782555; Fax:+91-22- 27782430

Other Comments (e.g. language(s) of the phone service): English

**SECTION 2: Hazards identification**

**2.1 Classification of the substance or mixture**

**2.1.1 Classification according to Regulation (EC) No 1272/2008 (CLP)**



GHS07 Exclamation mark

Eye Irrit. 2 H319: Causes serious eye irritation.

**2.1.2 Classification according to Directive 67/548/EEC or Directive 1999/45/EC**



Xi; R36 Irritating to eyes.

**Information concerning particular hazards for human and environment:** No further data

**2.2 Label elements**

**Labeling according to Regulation (EC) No 1272/2008 (CLP)**

The substance is classified and labeled according to the CLP regulation.

**Hazard pictograms**



GHS07 Exclamation mark

**Signal word** Warning

**Hazard-determining components of labeling:** 2-pyrrolidone

**Hazard statements**

H319: Causes serious eye irritation

**Precautionary statements**

P308+P313: IF exposed or concerned: Get medical advice/attention.

P280: Wear protective gloves/protective clothing/eye protection/face protection.

P302+P352: IF ON SKIN: Wash with plenty of water/

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P305+P351+P338 **IF IN EYES:** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

**2.3 Other hazards**

**Results of PBT and vPvB assessment:** data not available

**SECTION 3: Composition/information on ingredients**

**Chemical characterization:**

CAS No.	EC Number	Description
616-45-5	210-483-1	2-pyrrolidone

**Additional information:**

Molecular Formula: C<sub>4</sub>H<sub>7</sub>NO                      Molecular Weight: 85.11g/mol

**SECTION 4: First aid measures**

**4.1 General information:** Consult a physician. Show this safety data sheet to the doctor in attendance.

**After inhalation:** If breathed in, move person into fresh air. If not breathing, give artificial respiration.

**After skin contact:** Wash off with soap and plenty of water. Take victim immediately to hospital.

**After eye contact:** Rinse thoroughly with plenty of water for at least 15 minutes.

**After swallowing:** Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water.

**4.2 Most important symptoms and effects, both acute and delayed**

**The following symptoms may occur:** Causes eye, skin, and respiratory tract irritation. Vapors may cause irritation to the eyes, respiratory system and the skin. May cause skin irritation and/or dermatitis. Provokes tears. Dermal absorption possible. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea

**4.3 Indication of any immediate medical attention and special treatment needed**

No further relevant information available.

**Information for doctor:** Treat symptomatically and supportively. No known specific antidote

**SECTION 5: Firefighting measures**

**5.1 Suitable extinguishing agents:**

For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.

**5.2 Special hazards arising from the substance or mixture** Vapors are heavier than air and may spread along floors. Vapors may form explosive mixture with air. Heating or fire can release toxic gas (Nitrogen oxides (NO<sub>x</sub>), Carbon monoxide)

**5.3 Advice for firefighters:** Wear self-contained breathing apparatus for firefighting if necessary.

**Additional information** Use water spray to cool unopened containers

**SECTION 6: Accidental release measures**

**6.1 Personal precautions, protective equipment and emergency procedures**

Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

**6.2 Environmental precautions:** Dilute with plenty of water. Do not allow to enter sewers/ surface or ground water.

**6.3 Methods and material for containment and cleaning up:**

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations

**6.4 Reference to other sections**

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment

See Section 13 for disposal information

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## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling:

Avoid contact with skin and eyes. Avoid inhalation of vapor or mist. Take measures to prevent the buildup of electrostatic charge.

**Information about fire - and explosion protection:** Keep ignition sources away. Do not smoke.

### 7.2 Conditions for safe storage, including any incompatibilities:

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

**Information about storage in one common storage facility:** Store away from incompatible materials.

**Further information about storage conditions:** Store away from moisture. Store in a cool and dry place.

### 7.3 Specific end use(s) No further relevant information available

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

#### Components with occupational exposure limits

N-vinylpyrrolidone ACGIH TLV TWA value 0.05 ppm

**Additional information:** The lists valid during the making were used as basis.

### 8.2 Exposure controls

#### Personal protective equipment:

**General protective and hygienic measures:** Immediately remove all soiled and contaminated clothing

Wash hands before breaks and at the end of work. Avoid contact with the eyes and skin.

**Respiratory protection:** Respiratory protection is not required. Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN 143) dust masks

**Protection of hands:** Protective gloves

**Material of gloves:** Neoprene/ Butyl rubber

**Eye protection:** Goggles

**Body protection:** Complete suit protecting against chemicals. Flame retardant antistatic protective clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

**Appearance** : colorless to pale yellow liquid

**Odour** : fish-like

**Odour threshold** : no data available

**pH** : no data available

**Melting point/Melting range** : 25°C

**Initial Boiling point/Boiling range** : 250°C

**Flash point (closed cup)** : 138°C

**Evaporation rate** : not applicable

**Flammability (solid, gas)** : no data available

**Upper/lower flammability or explosive limits:**

LEL: 1.8%; UEL: 16.6%

**Vapour pressure at 25°C** : 0.0175 hPa

**Vapour density** : 2.9 (air=1)

**Relative density at 20°C** : 1.116g/cm<sup>3</sup>

**Solubility in / Miscibility with water** : completely miscible

**Partition coefficient (n-octanol/water) at 25°C: log Pow** -0.71

**Auto-ignition temperature** : 395°C

**Decomposition temperature** : no data available

**Viscosity at 26°C** : 16.4mPa/s

**Explosive properties** : none (structural reasons)

**Oxidising properties** : none (structural reasons)

**9.2 Other information:** pKa 14.7 at 20°C

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### SECTION 10: Stability and Reactivity

**10.1 Reactivity** No dangerous reactions if stored and handled as indicated. Not corrosive to steel. Non oxidizing. Forms no flammable gases in contact with water. Hygroscopic

**10.2 Chemical stability**

Under storage at normal ambient temperatures (minus 40° C to + 40° C), the product is stable.  
No hazardous reaction when handled and stored according to provisions.

**10.3 Possibility of hazardous reactions** none under normal processing

**10.4 Conditions to avoid** Heat, flames and sparks. avoid static electricity discharge

**10.5 Incompatible materials:** Strong acids and oxidizing agents, Strong bases

**10.6 Hazardous decomposition products:** Heating or fire can release toxic gas (Nitrogen oxides (NOx), Carbon monoxide)

### SECTION 11: Toxicological information

#### 11.1 Information on toxicological effects

**Acute toxicity:**

LD50 Oral rat >2000mg/kg

LD50 subcutaneous mouse 4000mg/kg bw

**Skin corrosion/irritation:** not irritating (rabbit), slight irritation after 4h exposure

**Serious eye damage/irritation:** Irritating Category 2 (reversible effects on eye)

**Respiratory or skin sensitization:** No sensitizing effects known (guinea pigs)

**Germ cell mutagenicity:** non genotoxic

**Carcinogenicity:** No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**Reproductive toxicity:** not expected to cause reproductive toxicity

**STOT-single exposure:** no further data

**STOT-repeated exposure:** NOAEL 207 mg/kg b.w.rat, Affected organ: kidney

**Aspiration hazard:** no data available

**Additional information:** To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated

### SECTION 12: Ecological information

#### 12.1 Toxicity

**Aquatic toxicity:**

LC50 96h >4600mg/L (Danio rerio / zebra fish)

EC50 24h >500mg/L (Daphnia magna)

EC50 72 h >500 mg/l (growth rate) (Scenedesmus subspicatus)

EC50 30 min >1000mg/l (activated sludge)

#### 12.2 Persistence and degradability

**Biodegradation** readily biodegradable (98% reduction in dissolved organic content in 9d)

**12.3 Bio accumulative potential** not expected to bio-accumulate; log Pow -0.71

**12.4 Mobility in soil** The substance will not evaporate into the atmosphere from the water surface.

Adsorption to solid soil phase is not expected

**12.5 Results of PBT and vPvB assessment** PBT/vPvB assessment not available as chemical safety assessment not conducted

**12.6 Other adverse effects** No further relevant information available

### SECTION 13: Disposal considerations

#### 13.1 Waste treatment methods

**Product:** Contact a licensed professional waste disposal service to dispose of this material. Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company.

**Contaminated packaging:** Disposal must be made according to official regulations.

**Recommended cleansing agents:** Water, if necessary together with cleansing agents.

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**SECTION 14: Transport information**

**Land Transport (ADR/RID)      Marine Transport (IMDG)      Air Transport (ICAO/ IATA)**  
**14.1 UN/ID Number:** -  
**14.2 UN proper shipping name:** Not Dangerous goods  
**14.3 Transport hazard class:** -  
**14.4 Packaging group:** -  
**14.5 Environmental hazards:** not a marine pollutant  
**14.6 Special precautions for the user:** no further information  
**14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:** no data available

**SECTION 15: Regulatory information**

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**  
This safety datasheet complies with the requirements of COMMISSION REGULATION (EU) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006  
**Hazard pictograms** Please refer section 2  
**Signal word** none  
**Labeling according to EU guidelines:**  
**Code letter and hazard designation of product:** Please refer section 2  
**Risk phrases:** Please refer section 2  
**15.2 Chemical safety assessment** A Chemical Safety Assessment has not been carried out and will be applicable at the time of REACH Registration.  
**Substances of very high concern (SVHC) according to REACH, Article 57** The substance is not listed as SVHC.

**SECTION 16: Other information**

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

**Department issuing MSDS:**

Product safety department

**Contact:**

Tel: +91-22- 27782555

Fax: +91-22- 27782430

**Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

CAS: Chemical Abstracts Service (division of the American Chemical Society)

EC20: 20% effective concentration

EC50: Half maximal effective concentration

EINECS: European Inventory of Existing Commercial Chemical Substances

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

IATA: International Air Transport Association

IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

ICAO: International Civil Aviation Organization

IMDG: International Maritime Code for Dangerous Goods

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50%

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

**Sources**

REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on classification, labeling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006

ECHA: [http://apps.echa.europa.eu/registered/data/dossiers/DISS-9ebbecfd-445f-4e5d-e044-00144f67d031/DISS-9ebbecfd-445f-4e5d-e044-00144f67d031.html](http://apps.echa.europa.eu/registered/data/dossiers/DISS-9ebbecfd-445f-4e5d-e044-00144f67d031/DISS-9ebbecfd-445f-4e5d-e044-00144f67d031_DISS-9ebbecfd-445f-4e5d-e044-00144f67d031.html)

**Sigma SDS:**

<http://www.sigmaaldrich.com/MSDS/MSDS/DisplayMSDSPage.do?country=IN&language=en&productNumber=240338&brand=ALDRICH&PageToGoToURL=http%3A%2F%2Fwww.sigmaaldrich.com%2Fcatalog%2Fproduct%2Faldrich%2F240338%3Flang%3Den>

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Pubmed: <http://pubchem.ncbi.nlm.nih.gov/compound/2-Pyrrolidinone#section=CAS>

**Data compared to the previous version altered.**

- Section 1: Chemical Product and Company Identification
- Section 3: Composition and Information on Ingredients
- Section 4: First Aid Measures
- Section 5: Fire and Explosion Data
- Section 6: Accidental Release Measures
- Section 7: Handling and Storage
- Section 8: Exposure Controls/Personal Protection
- Section 9: Physical and Chemical Properties
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- Section 12: Ecological Information
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