

# Product Stewardship Summary

## 2-Pyrrolidinone, 1-octyl-

### General Statement

2-Pyrrolidinone, 1-octyl- is a substituted heterocyclic organic compound and a rapid nonionic wetting agent in dishwashing, industrial, and institutional cleaners. It also can serve as a solvent for polymers and hydrophobic substances and has uses as a dye carrier for aramid fabrics. 2-Pyrrolidinone, 1-octyl- is a low to moderate hazard material and risk of adverse health effects associated with both occupational and consumer use of this chemical is anticipated to be low.

### Chemical Identity

Name: 2-Pyrrolidinone, 1-octyl-

Brand Names: Surfadone™ LP-100

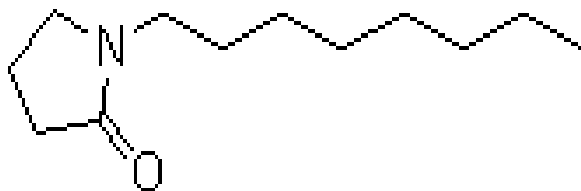
Chemical name (IUPAC): n-(n-octyl)-2-pyrrolidinone

CAS number(s): 2687-94-7

EC number: 403-700-8

Molecular formula: C<sub>12</sub>H<sub>23</sub>NO

Structure:



### Uses and Applications

2-Pyrrolidinone, 1-octyl-, through its interaction with anionic surfactant micelles, enhances water solubility and results in synergistic surface tension reduction and wetting enhancement at low concentrations. It is also used as an intermediate in the production of electronics, industrial chemicals, and as an initial product of some chemical syntheses. This chemical is also used in the textile industry.



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## Physical/Chemical Properties

### Phys/Chem Safety Assessment

Property	Value
Form	Viscous
Physical state	Liquid
Color	Clear
Odor	Slight, amine-like
Density	0.9221 g/cm <sup>3</sup> @ 20°C
Melting / boiling point	-13°F (-25°C)/ 338-342°F (170-172°C)
Flammability	No data available
Explosive properties	No data available
Self-ignition temperature	No data available
Vapor pressure	0.071 Pa @ 25°C
Mol weight	197.31 g/mol
Water solubility	1.36 g/L (20°C )
Flash point	113°C
Octanol-water partition coefficient (Log <sub>k<sub>ow</sub></sub> )	3.27 @22.3°C

## Exposure, Hazard and Safety Assessment

The following section describes possible exposures scenarios and hazards associated with 2-Pyrrolidinone, 1-octyl-. The exposure assessment describes both the amount of and the frequency with which a chemical substance reaches a person, a population of people, or the environment. Hazard refers to the inherent properties of a substance that make it capable of causing harm to human health or the environment. The safety assessment reports the possibility of a harmful event arising from exposure to a chemical or physical agent under specific conditions. Just because a substance may possess potentially harmful properties does not mean that it automatically poses a risk. It is not possible to make that determination without understanding the exposure.

### Human Health Effects

#### Human Exposure Assessment

**Consumer:** 2-Pyrrolidinone, 1-octyl- is used in the production of agrochemicals, electronics, industrial chemicals and solvents. Consumer exposure is most likely limited to low levels of 2-Pyrrolidinone, 1-octyl- present within final product formulations.

**Worker:** In industrial settings, 2-Pyrrolidinone, 1-octyl- is manufactured and handled in closed processes as much as possible, which ensures that worker exposure to 2-Pyrrolidinone, 1-octyl- is minimized. When there is potential for exposure, during loading, unloading, sampling or during maintenance operations, exposure to 2-Pyrrolidinone, 1-octyl- can be further minimized by the proper use of personal protective equipment.

#### Human Hazard Assessment

2-Pyrrolidinone, 1-octyl- is low for both acute and repeat dose toxicity. It is neither mutagenic or genotoxic, is not associated with reproductive or developmental toxicity, and is not classified for carcinogenicity. 2-Pyrrolidinone, 1-octyl- can cause serious eye damage and skin corrosion.

Effect Assessment	Result
Acute Toxicity Oral / inhalation / dermal	Low toxicity
Irritation / corrosion Skin / eye / respiratory test	Skin Corrosion Causes serious eye irritation
Toxicity after repeated exposure Oral / inhalation / dermal	Does not cause significant toxicity to internal organs after repeated exposure in animal studies by oral route
Genotoxicity / Mutagenicity	Neither mutagenic or genotoxic
Carcinogenicity	Not classified as carcinogenic
Toxicity for reproduction	Does not cause adverse effect on fertility and development after repeated exposure in animal studies by oral route

### Human Health Safety Assessment

**Consumer:** 2-Pyrrolidinone, 1-octyl- is used in the production of agrochemicals, electronics, industrial chemicals and solvents. Consumer exposure is most likely limited to low levels of 2-Pyrrolidinone, 1-octyl- present within final product formulations. 2-Pyrrolidinone, 1-octyl- is low for both acute and repeat dose toxicity. It is neither mutagenic or genotoxic, is not associated with reproductive or developmental toxicity, and is not classified for carcinogenicity. Based on the low levels of 2-Pyrrolidinone, 1-octyl- present in consumer products and the low toxicity associated with the chemical, subsequent risk is unlikely.

**Worker:** In industrial settings, 2-Pyrrolidinone, 1-octyl- is manufactured and handled primarily in closed processes which limit exposure. Based on good manufacturing processes and industrial hygiene the occupational health risk associated with 2-Pyrrolidinone, 1-octyl- is low.

### Environmental Effects

#### Environmental Exposures

2-Pyrrolidinone, 1-octyl- is readily biodegradable and has a moderate potential for bioaccumulation. It is soluble in water and has a low potential for volatilization. Volatilization from water surfaces is not expected. If released into the environment it is estimated that 2-Pyrrolidinone, 1-dodecyl- will primarily partition to soil and water.

#### Environmental Hazard Assessment

Effect Assessment	Result
Aquatic Toxicity	Moderate acute toxicity to aquatic organisms Toxic to aquatic life with long lasting effects

Fate and behavior	Result
Biodegradation	Readily biodegradable
Bioaccumulation potential	Not considered bioaccumulate (log Kow = 3.27)
PBT / vPvB conclusion	Not considered to be either PBT or vPvB

### Environmental Safety Assessment

If released into the environment it is anticipated that 2-Pyrrolidinone, 1-octyl- will degrade rapidly. 2-Pyrrolidinone, 1-octyl- is considered moderately toxic to fish and aquatic invertebrates and harmful to algae. Large releases into the environment should be avoided.

## Risk Management Recommendations

**Consumer:** Consumer products that contain significant levels 2-Pyrrolidinone, 1-octyl- should include necessary safety labeling to describe method and frequency of recommended use and provide appropriate handling and disposal methods.

**Worker:** Exposure to 2-Pyrrolidinone, 1-octyl- in the workplace can be controlled by sufficient ventilation, proper handling and storage techniques, and the use of appropriate personal protective equipment as recommended in the SDS.

A selection of occupational exposure limits is below.

- No occupational exposure limits known

## Regulatory Agency Review

2-Pyrrolidinone, 1-octyl- is on the following lists:

Australian Inventory of Chemical Substances (AICS)  
China - Chemical Inventory of Existing Chemical Substances (IECSC) - CAS Numbers  
ECHA - List of Pre-registered Substances  
Environment Canada - Domestic Substances List (DSL)  
EPA - Chemical Update System (CUS) - 2002  
EPA - DfE - Safer Chemical Ingredients List - Safer Chemicals Ingredient List  
EPA - DfE - Safer Chemical Ingredients List - Surfactants  
EPA - Inert Ingredients in Pesticide Products  
EPA - Inert Ingredients Permitted for Use in Nonfood Pesticide Products  
EPA - TSCA - Inventory  
EU - Cosmetic Ingredients and Fragrance Inventory  
EU - European List of Notified Chemical Substances (ELINCS)  
EU - Table 3.1 of Annex VI to the CLP Regulation  
EU - Table 3.2 of Annex VI to the CLP Regulation  
New Zealand - Inventory of Chemicals (NZIoC)  
OECD - High Production Volume (HPV) Chemicals - 2004  
OECD - High Production Volume (HPV) Chemicals - 2007  
Philippine Inventory of Chemicals and Chemical Substances (PICCS)

## Regulatory Information / Classification and Labeling

Under the Globally Harmonized System for classification and labeling (GHS), substances are classified according to their physical, health, and environmental hazards. The hazards are communicated via specific labels and the (Extended) SDS. GHS attempts to standardize hazard communication so that the intended audience (workers, consumers, transport workers, and emergency responders) can better understand the hazards of the chemicals in use.

### GHS Classification:

Skin Corrosion, Category 1B  
Aquatic toxicity (chronic), Category 2

### Hazard Statements:

H314: Causes severe skin burns and eye damage  
H411: Toxic to aquatic life with long lasting effects

**Signal Word: Danger**

### Precautionary Statements:

P264: Wash skin thoroughly after handling.  
P273: Avoid release to the environment.  
P280: Wear protective gloves/ protective clothing/ eye protection/ face protection.  
P301: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.  
P303: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.  
P304: IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor/ physician.  
P305: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P310: Immediately call a POISON CENTER or doctor/ physician.  
P363: Wash contaminated clothing before reuse.  
P391: Collect spillage.  
P405: Store locked up.  
P501: Dispose of contents/container to an approved waste disposal plant.

#### Hazard Pictograms:



#### Conclusion

2-Pyrrolidinone, 1-octyl- is a useful chemical in the production of agrochemicals, electronics, industrial chemicals and solvents. When handled responsibly, the potential for skin and eye damage can be minimized, allowing consumers and workers to use materials containing 2-Pyrrolidinone, 1-octyl- safely.

#### Contact Information with Company

Ashland Inc.  
5200 Blazer Parkway  
Dublin, Ohio 43017 <http://www.ashland.com/contact>

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**Revision:** 1

#### Additional Information

For more information on GHS, visit <http://www.osha.gov/dsg/hazcom/ghsguideoct05.pdf> or [http://live.unece.org/trans/danger/publi/ghs/ghs\\_welcome\\_e.html](http://live.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html).

Ashland product stewardship summaries are located at <http://www.ashland.com/sustainability/product/product-stewardship>

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*Inclusion on the New Zealand Inventory of Chemicals applies only to the pure substance listed. The importer of record must determine whether or not their substances are in compliance.*