

# Safety data sheet

acc. to Safe Work Australia - Code of Practice



## N-Butyl-2-pyrrolidone SOLVAGREEN® ≥99,5 %, for synthesis

article number: **1E8A**  
Version: **GHS 2.0 en**  
Replaces version of: 2020-09-02  
Version: (GHS 1)

date of compilation: 2020-09-02  
Revision: 2022-02-07

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

### 1.1 Product identifier

|                                 |   |
|---------------------------------|---|
| Identification of the substance | <b>N-Butyl-2-pyrrolidone SOLVAGREEN® ≥99,5 %, for synthesis</b> |
| Article number                  | 1E8A  |
| CAS number                      | 3470-98-2   |

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

|                           |   |
|---------------------------|---|
| Relevant identified uses: | Laboratory and analytical use<br>Laboratory chemical  |
| Uses advised against:     | Do not use for products which come into contact with foodstuffs. Do not use for private purposes (household). |

### 1.3 Details of the supplier of the safety data sheet

Carl Roth GmbH + Co KG  
Schoemperlenstr. 3-5  
D-76185 Karlsruhe  
Germany

**Telephone:**+49 (0) 721 - 56 06 0  
**Telefax:** +49 (0) 721 - 56 06 149  
**e-mail:** sicherheit@carlroth.de  
**Website:** www.carlroth.de

Competent person responsible for the safety data sheet: :Department Health, Safety and Environment

**e-mail (competent person):** **sicherheit@carlroth.de**

### 1.4 Emergency telephone number

| Name   | Street          | Postal code/city   | Telephone | Website |
|--|-----------------|--------------------|-----------|---------|
| NSW Poisons Information Centre<br>Childrens Hospital | Hawkesbury Road | 2145 Westmead, NSW | 131126    |         |

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

#### Classification acc. to GHS

| Section | Hazard class                      | Category | Hazard class and category | Hazard statement |
|---------|-----------------------------------|----------|---------------------------|------------------|
| 3.10    | Acute toxicity (oral)             | 4        | Acute Tox. 4              | H302             |
| 3.2     | Skin corrosion/irritation         | 2        | Skin Irrit. 2             | H315             |
| 3.3     | Serious eye damage/eye irritation | 2A       | Eye Irrit. 2A             | H319             |

For full text of abbreviations: see SECTION 16

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### 2.2 Label elements

#### Labelling

#### Signal word

Warning

#### Pictograms

GHS07



#### Hazard statements

|      |                               |
|------|-------------------------------|
| H302 | Harmful if swallowed          |
| H315 | Causes skin irritation        |
| H319 | Causes serious eye irritation |

#### Precautionary statements

##### Precautionary statements - prevention

P280 Wear protective gloves

##### Precautionary statements - response

|                |   |
|----------------|---|
| P302+P352      | IF ON SKIN: Wash with plenty of soap and water  |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing |
| P321           | Specific treatment (see on this label)  |
| P337+P313      | If eye irritation persists: Get medical advice/attention  |

##### Precautionary statements - disposal

P501 Dispose of contents/container to industrial combustion plant

### 2.3 Other hazards

#### Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

## SECTION 3: Composition/information on ingredients

### 3.1 Substances

|                   |                                   |
|-------------------|-----------------------------------|
| Name of substance | N-Butyl-2-pyrrolidone             |
| Molecular formula | C <sub>8</sub> H <sub>15</sub> NO |
| Molar mass        | 141.2 g/mol                       |
| CAS No            | 3470-98-2                         |

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## SECTION 4: First aid measures

### 4.1 Description of first aid measures



#### General notes

Take off contaminated clothing.

#### Following inhalation

Provide fresh air. In all cases of doubt, or when symptoms persist, seek medical advice.

#### Following skin contact

Rinse skin with water/shower. In case of skin irritation, consult a physician.

#### Following eye contact

Irrigate copiously with clean, fresh water for at least 10 minutes, holding the eyelids apart. In case of eye irritation consult an ophthalmologist.

#### Following ingestion

Rinse mouth with water (only if the person is conscious). Call a doctor.

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

Vomiting, Irritation

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

none

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media



#### Suitable extinguishing media

co-ordinate firefighting measures to the fire surroundings  
water spray, dry extinguishing powder, BC-powder, carbon dioxide (CO<sub>2</sub>)

#### Unsuitable extinguishing media

water jet

### 5.2 Special hazards arising from the substance or mixture

Combustible.

#### Hazardous combustion products

In case of fire may be liberated: Nitrogen oxides (NO<sub>x</sub>), Carbon monoxide (CO), Carbon dioxide (CO<sub>2</sub>)

### 5.3 Advice for firefighters

In case of fire and/or explosion do not breathe fumes. Fight fire with normal precautions from a reasonable distance. Wear self-contained breathing apparatus.

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## SECTION 6: Accidental release measures

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



#### For non-emergency personnel

Avoid contact with skin, eyes and clothes. Do not breathe vapour/spray.

### 6.2 Environmental precautions

Keep away from drains, surface and ground water.

### 6.3 Methods and material for containment and cleaning up

#### Advice on how to contain a spill

Covering of drains.

#### Advice on how to clean up a spill

Absorb with liquid-binding material (sand, diatomaceous earth, acid- or universal binding agents).

#### Other information relating to spills and releases

Place in appropriate containers for disposal. Ventilate affected area.

### 6.4 Reference to other sections

Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

Provision of sufficient ventilation.

#### Advice on general occupational hygiene

Wash hands before breaks and after work. Keep away from food, drink and animal feedingstuffs.

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

Keep container tightly closed.

#### Incompatible substances or mixtures

Observe hints for combined storage.

#### Consideration of other advice:

#### Specific designs for storage rooms or vessels

Recommended storage temperature: 15 – 25 °C

### 7.3 Specific end use(s)

No information available.

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### SECTION 8: Exposure controls/personal protection

#### 8.1 Control parameters

##### National limit values

##### Occupational exposure limit values (Workplace Exposure Limits)

This information is not available.

##### Human health values

| Relevant DNELs and other threshold levels |                        |                                    |                   |                            |
|---|------------------------|------------------------------------|-------------------|----------------------------|
| Endpoint                                  | Threshold level        | Protection goal, route of exposure | Used in           | Exposure time              |
| DNEL                                      | 24.1 mg/m <sup>3</sup> | human, inhalatory                  | worker (industry) | chronic - systemic effects |
| DNEL                                      | 10 mg/kg bw/day        | human, dermal                      | worker (industry) | chronic - systemic effects |

##### Environmental values

| Relevant PNECs and other threshold levels |                 |                       |                              |                              |
|---|-----------------|-----------------------|------------------------------|------------------------------|
| End-point                                 | Threshold level | Organism              | Environmental compartment    | Exposure time                |
| PNEC                                      | 4 mg/l          | aquatic organisms     | freshwater                   | short-term (single instance) |
| PNEC                                      | 0.4 mg/l        | aquatic organisms     | marine water                 | short-term (single instance) |
| PNEC                                      | 30.62 mg/l      | aquatic organisms     | sewage treatment plant (STP) | short-term (single instance) |
| PNEC                                      | 20.17 mg/kg     | aquatic organisms     | freshwater sediment          | short-term (single instance) |
| PNEC                                      | 2.017 mg/kg     | aquatic organisms     | marine sediment              | short-term (single instance) |
| PNEC                                      | 1.68 mg/kg      | terrestrial organisms | soil                         | short-term (single instance) |

#### 8.2 Exposure controls

##### Individual protection measures (personal protective equipment)

##### Eye/face protection



Use safety goggle with side protection.

##### Skin protection



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### • hand protection

Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves. The times are approximate values from measurements at 22 °C and permanent contact. Increased temperatures due to heated substances, body heat etc. and a reduction of the effective layer thickness by stretching can lead to a considerable reduction of the breakthrough time. If in doubt, contact manufacturer. At an approx. 1.5 times larger / smaller layer thickness, the respective breakthrough time is doubled / halved. The data apply only to the pure substance. When transferred to substance mixtures, they may only be considered as a guide.

### • type of material

Butyl caoutchouc (butyl rubber)

### • material thickness

0,5 mm

### • breakthrough times of the glove material

>480 minutes (permeation: level 6)

### • other protection measures

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended.

### Respiratory protection



Respiratory protection necessary at: Aerosol or mist formation. Type: A (against organic gases and vapours with a boiling point of > 65 °C, colour code: Brown).

### Environmental exposure controls

Keep away from drains, surface and ground water.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

|  |   |
|--|---|
| Physical state   | liquid  |
| Colour   | colourless - clear  |
| Odour  | characteristic  |
| Melting point/freezing point                             | <-75 °C   |
| Boiling point or initial boiling point and boiling range | 240.6 °C at 1,013 hPa (ECHA)                              |
| Flammability   | this material is combustible, but will not ignite readily |
| Lower and upper explosion limit                          | 0.9 vol% (LEL) - 8.7 vol% (UEL)                           |
| Flash point  | 108 °C at 1,013 hPa (ECHA)                                |
| Auto-ignition temperature                                | 210 °C at 1,013 hPa (ECHA)                                |
| Decomposition temperature                                | not relevant  |
| pH (value)   | 7.6 (in aqueous solution: 100 g/l)                        |

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|   |   |
|---|---|
| Kinematic viscosity                                 | 4.489 mm <sup>2</sup> /s at 20 °C                           |
| <u>Solubility(ies)</u>                              |   |
| Water solubility                                    | (soluble)   |
| <u>Partition coefficient</u>                        |   |
| Partition coefficient n-octanol/water (log value):  | 1.265 (20 °C) (ECHA)  |
| Soil organic carbon/water (log KOC)                 | 1.265 (ECHA)  |
| Vapour pressure                                     | 13 Pa at 25 °C  |
| <u>Density and/or relative density</u>              |   |
| Density   | 0.958 g/cm <sup>3</sup> at 20 °C (ECHA)                     |
| Relative vapour density                             | information on this property is not available               |
| Particle characteristics                            | not relevant (liquid)                                       |
| <u>Other safety parameters</u>                      |   |
| Oxidising properties                                | none  |
| <b>9.2 Other information</b>                        |   |
| Information with regard to physical hazard classes: | hazard classes acc. to GHS (physical hazards): not relevant |
| Other safety characteristics:                       |   |
| Surface tension                                     | 67.31 mN/m (20 °C) (ECHA)                                   |

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

This material is not reactive under normal ambient conditions.

#### If heated

Vapours may form explosive mixtures with air.

### 10.2 Chemical stability

The material is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

### 10.3 Possibility of hazardous reactions

**Violent reaction with:** strong oxidiser

### 10.4 Conditions to avoid

There are no specific conditions known which have to be avoided.

### 10.5 Incompatible materials

different plastics

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### 10.6 Hazardous decomposition products

Hazardous combustion products: see section 5.

## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

#### Classification acc. to GHS

#### Acute toxicity

Harmful if swallowed.

| Acute toxicity |          |                     |         |        |        |
|----------------|----------|---------------------|---------|--------|--------|
| Exposure route | Endpoint | Value               | Species | Method | Source |
| oral           | LD50     | >300 – <2,000 mg/kg | rat     |        | ECHA   |
| dermal         | LD50     | >2,000 mg/kg        | rat     |        | ECHA   |

#### Skin corrosion/irritation

Causes skin irritation.

#### Serious eye damage/eye irritation

Causes serious eye irritation.

#### Respiratory or skin sensitisation

Shall not be classified as a respiratory or skin sensitiser.

#### Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.

#### Carcinogenicity

Shall not be classified as carcinogenic.

#### Reproductive toxicity

Shall not be classified as a reproductive toxicant.

#### Specific target organ toxicity - single exposure

Shall not be classified as a specific target organ toxicant (single exposure).

#### Specific target organ toxicity - repeated exposure

Shall not be classified as a specific target organ toxicant (repeated exposure).

#### Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

#### Symptoms related to the physical, chemical and toxicological characteristics

##### • If swallowed

vomiting, nausea, gastrointestinal complaints

##### • If in eyes

Causes serious eye irritation

##### • If inhaled

Data are not available.



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- **If on skin**

causes skin irritation

- **Other information**

none

### 11.2 Endocrine disrupting properties

Not listed.

## SECTION 12: Ecological information

### 12.1 Toxicity

Shall not be classified as hazardous to the aquatic environment.

| Aquatic toxicity (acute) |           |                       |        |               |
|--------------------------|-----------|-----------------------|--------|---------------|
| Endpoint                 | Value     | Species               | Source | Exposure time |
| LC50                     | >100 mg/l | fish                  | ECHA   | 96 h          |
| EC50                     | >100 mg/l | aquatic invertebrates | ECHA   | 48 h          |
| ErC50                    | >160 mg/l | algae                 | ECHA   | 72 h          |

| Aquatic toxicity (chronic) |           |                       |        |               |
|----------------------------|-----------|-----------------------|--------|---------------|
| Endpoint                   | Value     | Species               | Source | Exposure time |
| EC50                       | >100 mg/l | aquatic invertebrates | ECHA   | 21 d          |

### Biodegradation

Data are not available.

### 12.2 Process of degradability

Theoretical Oxygen Demand with nitrification: 2.776 mg/mg

Theoretical Oxygen Demand: 2.379 mg/mg

Theoretical Carbon Dioxide: 2.493 mg/mg

| Process of degradability |                  |      |
|--------------------------|------------------|------|
| Process                  | Degradation rate | Time |
| oxygen depletion         | 0 %              | 28 d |
| DOC removal              | 2.9 %            | 14 d |

### 12.3 Bioaccumulative potential

Does not significantly accumulate in organisms.

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|                           |                      |
|---------------------------|----------------------|
| n-octanol/water (log KOW) | 1.265 (20 °C) (ECHA) |
| BCF                       | 3.198 (ECHA)         |

### 12.4 Mobility in soil

|  |  |
|--|--|
| Henry's law constant                                 | 0.007 Pa m <sup>3</sup> /mol at 25 °C (ECHA) |
| The Organic Carbon normalised adsorption coefficient | 1.265 (ECHA)                                 |

### 12.5 Results of PBT and vPvB assessment

Data are not available.

### 12.6 Endocrine disrupting properties

Not listed.

### 12.7 Other adverse effects

Data are not available.

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods



This material and its container must be disposed of as hazardous waste. Dispose of contents/container in accordance with local/regional/national/international regulations.

#### Sewage disposal-relevant information

Do not empty into drains.

### 13.3 Remarks

Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities. Please consider the relevant national or regional provisions.

## SECTION 14: Transport information

- |   |   |
|---|---|
| 14.1 UN number  | not subject to transport regulations                                  |
| 14.2 UN proper shipping name  | not assigned  |
| 14.3 Transport hazard class(es)   | not assigned  |
| 14.4 Packing group  | not assigned  |
| 14.5 Environmental hazards  | non-environmentally hazardous acc. to the dangerous goods regulations |
| 14.6 Special precautions for user                                       | There is no additional information.                                   |
| 14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code | The cargo is not intended to be carried in bulk.                      |

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### 14.8 Information for each of the UN Model Regulations

#### Transport information National regulations Additional information (UN RTDG)

Not subject to transport regulations. UN RTDG

#### International Maritime Dangerous Goods Code (IMDG) - Additional information

Not subject to IMDG.

#### International Civil Aviation Organization (ICAO-IATA/DGR) - Additional information

Not subject to ICAO-IATA.

## SECTION 15: Regulatory information

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

There is no additional information.

#### Other information

Directive 94/33/EC on the protection of young people at work. Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers.

#### National inventories

| Country | Inventory | Status              |
|---------|-----------|---------------------|
| EU      | ECSI      | substance is listed |
| JP      | ISHA-ENCS | substance is listed |
| NZ      | NZIoC     | substance is listed |
| PH      | PICCS     | substance is listed |
| TW      | TCSI      | substance is listed |
| US      | TSCA      | substance is listed |

#### Legend

|           |   |
|-----------|---|
| ECSI      | EC Substance Inventory (EINECS, ELINCS, NLP)                      |
| ISHA-ENCS | Inventory of Existing and New Chemical Substances (ISHA-ENCS)     |
| NZIoC     | New Zealand Inventory of Chemicals                                |
| PICCS     | Philippine Inventory of Chemicals and Chemical Substances (PICCS) |
| TCSI      | Taiwan Chemical Substance Inventory                               |
| TSCA      | Toxic Substance Control Act                                       |

### 15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out for this substance.

## SECTION 16: Other information

#### Indication of changes (revised safety data sheet)

Alignment to regulation: Globally Harmonized System of Classification and Labelling of Chemicals ("Purple book").

Restructuring: section 9, section 14

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| Section | Former entry (text/value)  | Actual entry (text/value)   | Safety-relevant |
|---------|--|---|-----------------|
| 2.1     |  | Classification acc. to GHS:<br>change in the listing (table)  | yes             |
| 2.2     | Labelling of packages where the contents do not exceed 125 ml:<br>Signal word: Warning |   | yes             |
| 2.2     |  | Labelling of packages where the contents do not exceed 125 ml:<br>change in the listing (table)                           | yes             |
| 2.2     |  | Labelling of packages where the contents do not exceed 125 ml:<br>change in the listing (table)                           | yes             |
| 2.2     |  | Labelling of packages where the contents do not exceed 125 ml:<br>change in the listing (table)                           | yes             |
| 2.3     | Other hazards:<br>There is no additional information.                                  | Other hazards   | yes             |
| 2.3     |  | Results of PBT and vPvB assessment:<br>According to the results of its assessment, this substance is not a PBT or a vPvB. | yes             |

### Abbreviations and acronyms

| Abbr.    | Descriptions of used abbreviations   |
|----------|--|
| BCF      | Bioconcentration factor  |
| CAS      | Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)   |
| DGR      | Dangerous Goods Regulations (see IATA/DGR)   |
| DNEL     | Derived No-Effect Level  |
| EC50     | Effective Concentration 50 %. The EC50 corresponds to the concentration of a tested substance causing 50 % changes in response (e.g. on growth) during a specified time interval |
| EINECS   | European Inventory of Existing Commercial Chemical Substances  |
| ELINCS   | European List of Notified Chemical Substances  |
| ErC50    | ≡ EC50: in this method, that concentration of test substance which results in a 50 % reduction in either growth (EbC50) or growth rate (ErC50) relative to the control           |
| GHS      | "Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations  |
| IATA     | International Air Transport Association  |
| IATA/DGR | Dangerous Goods Regulations (DGR) for the air transport (IATA)   |
| ICAO     | International Civil Aviation Organization  |
| IMDG     | International Maritime Dangerous Goods Code  |
| LC50     | Lethal Concentration 50%: the LC50 corresponds to the concentration of a tested substance causing 50 % lethality during a specified time interval                                |
| LD50     | Lethal Dose 50 %: the LD50 corresponds to the dose of a tested substance causing 50 % lethality during a specified time interval   |
| LEL      | Lower explosion limit (LEL)  |
| MARPOL   | International Convention for the Prevention of Pollution from Ships (abbr. of "Marine Pollutant")  |

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| Abbr.   | Descriptions of used abbreviations                    |
|---------|---|
| NLP     | No-Longer Polymer                                     |
| PBT     | Persistent, Bioaccumulative and Toxic                 |
| PNEC    | Predicted No-Effect Concentration                     |
| UEL     | Upper explosion limit (UEL)                           |
| UN RTDG | UN Recommendations on the Transport of Dangerous Good |
| vPvB    | Very Persistent and very Bioaccumulative              |

### Key literature references and sources for data

Safe Work Australia's Code of Practice for Labelling of Workplace Hazardous Chemicals (under WHS Regulations).

UN Recommendations on the Transport of Dangerous Good. International Maritime Dangerous Goods Code (IMDG). Dangerous Goods Regulations (DGR) for the air transport (IATA).

### List of relevant phrases (code and full text as stated in section 2 and 3)

| Code | Text                           |
|------|--------------------------------|
| H302 | Harmful if swallowed.          |
| H315 | Causes skin irritation.        |
| H319 | Causes serious eye irritation. |

### Disclaimer

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product.