

# Safety Data Sheet

acc. to 29 CFR 1910.1200 App D

Date of compilation: 2023-10-10

## SECTION 1: Identification

### 1.1 Product identifier

Product name/Code R4188  
Product description Polyurethane Dispersion

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

Relevant identified uses  
Polymer  
Uses advised against  
All uses other than those indicated on the product label and technical data sheet.

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

Essential Polymers  
28391 Essential Road  
P.O. Box 12  
Merton 53089 WI  
United States  
  
Telephone: 262-538-0091  
Website: [www.essentialpolymers.com](http://www.essentialpolymers.com)

### 1.4 Emergency telephone number

Emergency information service 800-843-6174 (24 hours)

## SECTION 2: Hazard(s) identification

### 2.1 Classification of the substance or mixture

Classification acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)  
Repr. 1B.

### 2.2 Label elements

Labelling acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

- Signal word Danger

- Pictograms



- Hazard statements  
May damage fertility or the unborn child.

- Precautionary statements  
Obtain special instructions before use.  
Wear protective gloves/protective clothing/eye protection/face protection.  
If exposed or concerned: Get medical advice/attention.  
Store locked up.  
Dispose of contents/container to industrial combustion plant.

Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

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## 2.3 Other hazards

of no significance

## SECTION 3: Composition/information on ingredients

### 3.1 Substance / Mixture

Mixture

### 3.2 Mixtures

Description of the mixture

| Name of substance      | CAS No   | Wt%      | Classification acc. to GHS                                                                                |
|------------------------|----------|----------|-----------------------------------------------------------------------------------------------------------|
| N-methyl-2-pyrrolidone | 872-50-4 | 5 - < 10 | Skin Irrit. 2 / H315<br>Eye Irrit. 2 / H319<br>Repr. 1B / H360<br>STOT SE 3 / H335<br>Flam. Liq. 4 / H227 |

Any concentration shown as a range is to protect confidentiality or is due to batch variation. There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section. For full text of abbreviations: see SECTION 16.

## SECTION 4: First-aid measures

### 4.1 Description of first-aid measures

General notes

Do not leave affected person unattended. Remove victim out of the danger area. Keep affected person warm, still and covered. Take off immediately all contaminated clothing. In all cases of doubt, or when symptoms persist, seek medical advice. In case of unconsciousness place person in the recovery position. Never give anything by mouth.

Following inhalation

If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions. Provide fresh air.

Following skin contact

Wash with plenty of soap and water.

Following eye contact

Remove contact lenses, if present and easy to do. Continue rinsing. Irrigate copiously with clean, fresh water for at least 10 minutes, holding the eyelids apart.

Following ingestion

Rinse mouth with water (only if the person is conscious). Do NOT induce vomiting.

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

Symptoms and effects are not known to date.

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

none

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## SECTION 5: Fire-fighting measures

### 5.1 Extinguishing media

Suitable extinguishing media

Water spray, BC-powder, Carbon dioxide (CO<sub>2</sub>)

Unsuitable extinguishing media

Water jet

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

Hazardous combustion products

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. Coordinate firefighting measures to the fire surroundings. Do not allow firefighting water to enter drains or water courses. Collect contaminated firefighting water separately. Fight fire with normal precautions from a reasonable distance.

Special protective equipment for firefighters

Self-contained breathing apparatus (SCBA). Standard protective clothing for firefighters.

## SECTION 6: Accidental release measures

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

For non-emergency personnel

Remove persons to safety.

For emergency responders

Wear breathing apparatus if exposed to vapors/dust/aerosols/gases.

### 6.2 Environmental precautions

Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it in accordance with all local, state and federal regulations.

### 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

Wipe up with absorbent material (e.g. cloth, fleece). Collect spillage: sawdust, kieselgur (diatomite), sand, universal binder

Appropriate containment techniques

Use of adsorbent materials.

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.

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## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

Recommendations

- Measures to prevent fire as well as aerosol and dust generation

Use local and general ventilation. Use only in well-ventilated areas.

Advice on general occupational hygiene

Wash hands after use. Do not eat, drink and smoke in work areas. Remove contaminated clothing and protective equipment before entering eating areas. Never keep food or drink in the vicinity of chemicals. Never place chemicals in containers that are normally used for food or drink. Keep away from food, drink and animal feedingstuffs.

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

Environmental Controls

Protect against external exposure, such as

frost

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

| Occupational exposure limit values (Workplace Exposure Limits) |                                                                             |          |            |           |                          |            |                           |                 |                                |          |               |
|----------------------------------------------------------------|-----------------------------------------------------------------------------|----------|------------|-----------|--------------------------|------------|---------------------------|-----------------|--------------------------------|----------|---------------|
| Country                                                        | Name of agent                                                               | CAS No   | Identifier | TWA [ppm] | TWA [mg/m <sup>3</sup> ] | STEL [ppm] | STEL [mg/m <sup>3</sup> ] | Ceiling-C [ppm] | Ceiling-C [mg/m <sup>3</sup> ] | Notation | Source        |
| US                                                             | N-methylpyrrolidone (NMP) (1-methyl-2-pyrrolidone) (N-methyl-2-pyrrolidone) | 872-50-4 | PEL (CA)   | 1         | 4                        |            |                           |                 |                                |          | Cal/ OSHA PEL |

Notation

Ceiling-C

STEL

TWA

ceiling value is a limit value above which exposure should not occur

short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period (unless otherwise specified)

time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average (unless otherwise specified)

### 8.2 Exposure controls

Appropriate engineering controls

General ventilation.

Individual protection measures (personal protective equipment)

Eye/face protection

Wear eye/face protection.

Skin protection

- Hand protection

Wear suitable gloves. Chemical protection gloves are suitable. Check leak-tightness/impermeability prior to use. In the case of wanting to use the gloves again, clean them before taking off and air them well. 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.

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## - Other protection measures

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended. Wash hands thoroughly after handling.

## Respiratory protection

In case of inadequate ventilation wear appropriate respiratory protection.

## Environmental exposure controls

Use appropriate container to avoid environmental contamination. Keep away from drains, surface and ground water.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

#### Appearance

|                |            |
|----------------|------------|
| Physical state | liquid     |
| Color          | amber      |
| Odor           | Amine-like |

#### Other safety parameters

|                                         |                            |
|-----------------------------------------|----------------------------|
| pH (value)                              | 7.5 – 8.5                  |
| Melting point/freezing point            | 0 °C (32 °F)               |
| Initial boiling point and boiling range | 100 °C (212 °F)            |
| Flash point                             | >93.33 °C (>200 °F) (c.c.) |
| Lower explosion limit (LEL)             | not determined             |
| Upper explosion limit (UEL)             | not determined             |
| Evaporation rate                        | not determined             |
| Flammability (solid, gas)               | not relevant, (fluid)      |
| Vapor pressure                          | <4 kPa at 20 °C            |
| Density                                 | 1.05 g/cm <sup>3</sup>     |
| Vapor density                           | <1 (Air=1)                 |
| Solubility(ies)                         | not determined             |
| VOC                                     | 10.5%                      |

#### Partition coefficient

|                             |                                   |
|-----------------------------|-----------------------------------|
| - n-octanol/water (log KOW) | this information is not available |
|-----------------------------|-----------------------------------|

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|                           |                   |
|---------------------------|-------------------|
| Auto-ignition temperature | 251 °C (483.8 °F) |
| Decomposition temperature | not determined    |
| Viscosity                 | not determined    |

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

Concerning incompatibility: see below "Conditions to avoid" and "Incompatible materials".

### 10.2 Chemical stability

See below "Conditions to avoid".

### 10.3 Possibility of hazardous reactions

No known hazardous reactions.

### 10.4 Conditions to avoid

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

### 10.5 Incompatible materials

Oxidizers

### 10.6 Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced. Hazardous combustion products: see section 5.

## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

Test data are not available for the complete mixture.

#### Classification procedure

The method for classification of the mixture is based on ingredients of the mixture (additivity formula).

#### Classification acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

#### Acute toxicity

Shall not be classified as acutely toxic.

| Acute toxicity of components of the mixture |          |                           |          |              |         |
|---------------------------------------------|----------|---------------------------|----------|--------------|---------|
| Name of substance                           | CAS No   | Exposure route            | Endpoint | Value        | Species |
| N-methyl-2-pyrrolidone                      | 872-50-4 | oral                      | LD50     | 4,150 mg/kg  | rat     |
| N-methyl-2-pyrrolidone                      | 872-50-4 | inhalation: dust/<br>mist | LC50     | >5.1 mg/l/4h | rat     |
| N-methyl-2-pyrrolidone                      | 872-50-4 | dermal                    | LD50     | >5,000 mg/kg | rat     |

#### Skin corrosion/irritation

Shall not be classified as corrosive/irritant to skin.

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## Serious eye damage/eye irritation

Shall not be classified as seriously damaging to the eye or eye irritant.

## Respiratory or skin sensitization

Shall not be classified as a respiratory or skin sensitizer.

## Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.

## Carcinogenicity

Shall not be classified as carcinogenic.

## Reproductive toxicity

May damage the unborn child. May damage fertility.

## 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.

## SECTION 12: Ecological information

### 12.1 Toxicity

Shall not be classified as hazardous to the aquatic environment.

| Aquatic toxicity (acute) of components of the mixture |          |          |             |                       |               |
|-------------------------------------------------------|----------|----------|-------------|-----------------------|---------------|
| Name of substance                                     | CAS No   | Endpoint | Value       | Species               | Exposure time |
| N-methyl-2-pyrrolidone                                | 872-50-4 | LC50     | >500 mg/l   | fish                  | 96 h          |
| N-methyl-2-pyrrolidone                                | 872-50-4 | EC50     | >1,000 mg/l | aquatic invertebrates | 24 h          |
| N-methyl-2-pyrrolidone                                | 872-50-4 | ErC50    | 600.5 mg/l  | algae                 | 72 h          |

### 12.2 Persistence and degradability

Data are not available.

### 12.3 Bioaccumulative potential

Data are not available.

### 12.4 Mobility in soil

Data are not available.

### 12.5 Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB. Does not contain a PBT-/vPvB-substance in a concentration of  $\geq 0.1\%$ .

### 12.6 Endocrine disrupting properties

Does not contain an endocrine disruptor (EDC) in a concentration of  $\geq 0.1\%$ .

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## 12.7 Other adverse effects

Data are not available.

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

Sewage disposal-relevant information

Do not empty into drains. Avoid release to the environment.

Waste treatment of containers/packages

Completely emptied packages can be recycled. Handle contaminated packages in the same way as the substance itself.

#### Remarks

Dispose of contents/container in accordance with local/regional/national/international regulations. Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities. Dispose of contents/container to an authorized waste treatment facility. Waste should not be disposed of by release to sewers. Avoid release to the environment. Empty container and inner liner may contain product residues. Ideally, waste should be prevented and what cannot be prevented should be re-used, recycled and recovered as much as feasible.

## SECTION 14: Transport information

### Information for each of the UN Model Regulations

#### Transport of dangerous goods by road or rail (49 CFR US DOT) - Additional information

Not subject to transport regulations.

#### 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 specific for the product in question

#### National regulations

##### Toxic Substance Control Act (TSCA)

all ingredients are listed (ACTIVE) or exempt from listing

##### DSL/NDSL (Canada)

not all ingredients are listed on or exempt from the DSL, but are listed on the NDSL

#### Superfund Amendment and Reauthorization Act (SARA TITLE III)

- Specific Toxic Chemical Listings (EPCRA Section 313)

Toxics Release Inventory: Specific Toxic Chemical Listings

| Name of substance      | CAS No   | Remarks | Effective date |
|------------------------|----------|---------|----------------|
| N-methyl-2-pyrrolidone | 872-50-4 |         | 1995-01-01     |

#### Clean Air Act

none of the ingredients are listed



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## California Environmental Protection Agency (Cal/EPA): Proposition 65 - Safe Drinking Water and Toxic Enforcement Act of 1987

Proposition 65 List of chemicals

| Name acc. to inventory | CAS No   | Remarks | Type of the toxicity |
|------------------------|----------|---------|----------------------|
| N-methylpyrrolidone    | 872-50-4 |         | developmental        |

## Industry or sector specific available guidance(s)

### NPCA-HMIS® III

Hazardous Materials Identification System. American Coatings Association.

| Category            | Rating | Description                                                                                                                                                |
|---------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Chronic             | *      | chronic (long-term) health effects may result from repeated overexposure                                                                                   |
| Health              | 0      | no significant risk to health                                                                                                                              |
| Flammability        | 1      | material that must be preheated before ignition can occur                                                                                                  |
| Physical hazard     | 0      | material that is normally stable, even under fire conditions, and will not react with water, polymerize, decompose, condense, or self-react. Non-explosive |
| Personal protection | -      |                                                                                                                                                            |

### NFPA® 704

National Fire Protection Association: Standard System for the Identification of the Hazards of Materials for Emergency Response (United States).

| Category       | Degree of hazard | Description                                                                                                   |
|----------------|------------------|---------------------------------------------------------------------------------------------------------------|
| Flammability   | 1                | material that must be preheated before ignition can occur                                                     |
| Health         | 0                | material that, under emergency conditions, would offer no hazard beyond that of ordinary combustible material |
| Instability    | 0                | material that is normally stable, even under fire conditions                                                  |
| Special hazard |                  |                                                                                                               |

## SECTION 16: Other information, including date of preparation or last revision

### Abbreviations and acronyms

| Abbr.         | Descriptions of used abbreviations                                                                     |
|---------------|--------------------------------------------------------------------------------------------------------|
| 49 CFR US DOT | 49 CFR U.S. Department of Transportation                                                               |
| Cal/OSHA PEL  | California Division of Occupational Safety and Health (Cal/OSHA): Permissible Exposure Limits (PELs)   |
| CAS           | Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances) |
| Ceiling-C     | Ceiling value                                                                                          |
| DGR           | Dangerous Goods Regulations (see IATA/DGR)                                                             |

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| Abbr.          | Descriptions of used abbreviations                                                                                                                                               |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 |
| 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           |
| Eye Dam.       | Seriously damaging to the eye                                                                                                                                                    |
| Eye Irrit.     | Irritant to the eye                                                                                                                                                              |
| Flam. Liq.     | Flammable liquid                                                                                                                                                                 |
| 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                                                 |
| NPCA-HMIS® III | National Paint and Coatings Association: Hazardous Materials Identification System - HMIS® III, Third Edition                                                                    |
| OSHA           | Occupational Safety and Health Administration (United States)                                                                                                                    |
| PBT            | Persistent, Bioaccumulative and Toxic                                                                                                                                            |
| ppm            | Parts per million                                                                                                                                                                |
| Repr.          | Reproductive toxicity                                                                                                                                                            |
| Skin Corr.     | Corrosive to skin                                                                                                                                                                |
| Skin Irrit.    | Irritant to skin                                                                                                                                                                 |
| STEL           | Short-term exposure limit                                                                                                                                                        |
| STOT SE        | Specific target organ toxicity - single exposure                                                                                                                                 |
| TWA            | Time-weighted average                                                                                                                                                            |
| VOC            | Volatile Organic Compounds                                                                                                                                                       |
| vPvB           | Very Persistent and very Bioaccumulative                                                                                                                                         |

## Key literature references and sources for data

OSHA Hazard Communication Standard (HCS), 29 CFR 1910.1200.

Transport of dangerous goods by road or rail (49 CFR US DOT). International Maritime Dangerous Goods Code (IMDG). Dangerous Goods Regulations (DGR) for the air transport (IATA).

## Classification procedure

Physical and chemical properties: The classification is based on the tested mixture and/or formulator knowledge.

Health hazards, Environmental hazards: The method for classification of the mixture is based on ingredients of the mixture (additivity formula).

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

| Code | Text                                      |
|------|-------------------------------------------|
| H227 | Combustible liquid.                       |
| H315 | Causes skin irritation.                   |
| H319 | Causes serious eye irritation.            |
| H335 | May cause respiratory irritation.         |
| H360 | May damage fertility or the unborn child. |

## Disclaimer

To the best of our knowledge, the information contained herein is accurate. However, 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 materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.