

# SAFETY DATA SHEET

Version 6.9  
Revision Date 12/07/2023  
Print Date 02/24/2024

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

### 1.1 Product identifiers

Product name : Acrylamide  
Product Number : A3553  
Brand : Sigma  
Index-No. : 616-003-00-0  
CAS-No. : 79-06-1

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

Identified uses : Laboratory chemicals, Synthesis of substances

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

Company : Sigma-Aldrich Inc.  
3050 SPRUCE ST  
ST. LOUIS MO 63103  
UNITED STATES  
Telephone : +1 314 771-5765  
Fax : +1 800 325-5052

### 1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

#### GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Acute toxicity, Oral (Category 3), H301  
Acute toxicity, Inhalation (Category 4), H332  
Acute toxicity, Dermal (Category 4), H312  
Skin irritation (Category 2), H315  
Eye irritation (Category 2A), H319  
Skin sensitization (Category 1), H317  
Germ cell mutagenicity (Category 1B), H340  
Carcinogenicity (Category 1B), H350  
Reproductive toxicity (Category 2), H361

Specific target organ toxicity - repeated exposure, Oral (Category 1), Peripheral nervous system, H372

Short-term (acute) aquatic hazard (Category 3), H402

For the full text of the H-Statements mentioned in this Section, see Section 16.

## 2.2 GHS Label elements, including precautionary statements

Pictogram



Signal Word

Danger

Hazard Statements

|             |  |
|-------------|--|
| H301        | Toxic if swallowed.  |
| H312 + H332 | Harmful in contact with skin or if inhaled.  |
| H315        | Causes skin irritation.  |
| H317        | May cause an allergic skin reaction.   |
| H319        | Causes serious eye irritation.   |
| H340        | May cause genetic defects.   |
| H350        | May cause cancer.  |
| H361        | Suspected of damaging fertility or the unborn child.   |
| H372        | Causes damage to organs (Peripheral nervous system) through prolonged or repeated exposure if swallowed. |
| H402        | Harmful to aquatic life.   |

Precautionary Statements

|                    |  |
|--------------------|--|
| P201               | Obtain special instructions before use.  |
| P202               | Do not handle until all safety precautions have been read and understood.  |
| P260               | Do not breathe dust.   |
| P264               | Wash skin thoroughly after handling.   |
| P270               | Do not eat, drink or smoke when using this product.  |
| P271               | Use only outdoors or in a well-ventilated area.  |
| P272               | Contaminated work clothing must not be allowed out of the workplace.   |
| P273               | Avoid release to the environment.  |
| P280               | Wear protective gloves/ protective clothing/ eye protection/ face protection.  |
| P301 + P310 + P330 | IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.   |
| P302 + P352 + P312 | IF ON SKIN: Wash with plenty of water. Call a POISON CENTER/ doctor if you feel unwell.  |
| P304 + P340 + P312 | IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.      |
| P305 + P351 + P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P308 + P313        | IF exposed or concerned: Get medical advice/ attention.  |
| P333 + P313        | If skin irritation or rash occurs: Get medical advice/ attention.  |
| P337 + P313        | If eye irritation persists: Get medical advice/ attention.   |
| P362               | Take off contaminated clothing and wash before reuse.  |
| P405               | Store locked up.   |
| P501               | Dispose of contents/ container to an approved waste disposal   |

plant.

## 2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

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### SECTION 3: Composition/information on ingredients

#### 3.1 Substances

|                  |   |                                     |
|------------------|---|-------------------------------------|
| Synonyms         | : | Acrylic acid amide<br>2-Propenamide |
| Formula          | : | C <sub>3</sub> H <sub>5</sub> NO    |
| Molecular weight | : | 71.08 g/mol                         |
| CAS-No.          | : | 79-06-1                             |
| EC-No.           | : | 201-173-7                           |
| Index-No.        | : | 616-003-00-0                        |

| Component         | Classification  | Concentration |
|-------------------|---|---------------|
| <b>acrylamide</b> |   |               |
|                   | Acute Tox. 3; Acute Tox. 4; Skin Irrit. 2; Eye Irrit. 2A; Skin Sens. 1; Muta. 1B; Carc. 1B; Repr. 2; STOT RE 1; Aquatic Acute 3; H301, H332, H312, H315, H319, H317, H340, H350, H361, H372, H402 | <= 100 %      |

For the full text of the H-Statements mentioned in this Section, see Section 16.

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### SECTION 4: First aid measures

#### 4.1 Description of first-aid measures

##### General advice

Show this material safety data sheet to the doctor in attendance.

##### If inhaled

After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

##### In case of skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Consult a physician.

##### In case of eye contact

After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

##### If swallowed

If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting

(only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible.

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

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

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

No data available

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**SECTION 5: Firefighting measures**

**5.1 Extinguishing media**

**Suitable extinguishing media**

Water Foam Carbon dioxide (CO<sub>2</sub>) Dry powder

**Unsuitable extinguishing media**

For this substance/mixture no limitations of extinguishing agents are given.

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

Carbon oxides

Nitrogen oxides (NO<sub>x</sub>)

Combustible.

Vapors are heavier than air and may spread along floors.

Forms explosive mixtures with air on intense heating.

Development of hazardous combustion gases or vapours possible in the event of fire.

**5.3 Advice for firefighters**

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

**5.4 Further information**

Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

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**SECTION 6: Accidental release measures**

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

Advice for non-emergency personnel: Avoid generation and inhalation of dusts in all circumstances. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

For personal protection see section 8.

**6.2 Environmental precautions**

Do not let product enter drains.

**6.3 Methods and materials for containment and cleaning up**

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully. Dispose of properly. Clean up affected area. Avoid generation of dusts.

**6.4 Reference to other sections**

For disposal see section 13.

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## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

#### Advice on safe handling

Work under hood. Do not inhale substance/mixture.

#### Hygiene measures

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

For precautions see section 2.2.

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

#### Storage conditions

Tightly closed. Dry. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons.

Light sensitive.

#### Storage class

Storage class (TRGS 510): 6.1C: Combustible, acute toxic Cat.3 / toxic compounds or compounds which causing chronic effects

### 7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

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## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

#### Ingredients with workplace control parameters

| Component  | CAS-No. | Value  | Control parameters     | Basis   |
|------------|---------|--|------------------------|---|
| acrylamide | 79-06-1 | TWA  | 0.03 mg/m <sup>3</sup> | USA. ACGIH Threshold Limit Values (TLV)   |
|            | Remarks | Dermal Sensitization<br>Confirmed animal carcinogen with unknown relevance to humans<br>Danger of cutaneous absorption |                        |   |
|            |         | TWA  | 0.03 mg/m <sup>3</sup> | USA. NIOSH Recommended Exposure Limits  |
|            |         | Potential Occupational Carcinogen<br>Potential for dermal absorption   |                        |   |
|            |         | TWA  | 0.3 mg/m <sup>3</sup>  | USA. Occupational Exposure Limits (OSHA) - Table Z-1<br>Limits for Air Contaminants |
|            |         | Skin designation   |                        |   |

|  |  |      |                        |   |
|--|--|------|------------------------|---|
|  |  | PEL  | 0.03 mg/m <sup>3</sup> | California permissible exposure limits for chemical contaminants (Title 8, Article 107) |
|  |  | Skin |                        |   |

### Biological occupational exposure limits

| Component  | CAS-No. | Parameters                                  | Value                             | Biological specimen | Basis                                     |
|------------|---------|---|-----------------------------------|---------------------|---|
| acrylamide | 79-06-1 | N-(2-Carbamoylethyl)valine (CbEV)           | 500pico moles per gram Hemoglobin | In blood            | ACGIH - Biological Exposure Indices (BEI) |
|            | Remarks | Not critical                                |                                   |                     |   |
|            |         | S-(2-Carbamoylethyl)mercapturic acid (AAMA) | 800µg/g creatinine                | Urine               | ACGIH - Biological Exposure Indices (BEI) |
|            |         | End of shift                                |                                   |                     |   |

## 8.2 Exposure controls

### Appropriate engineering controls

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

### Personal protective equipment

#### Eye/face protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

#### Skin protection

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

Full contact

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min

Material tested:KCL 741 Dermatril® L

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

Splash contact

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min  
Material tested:KCL 741 Dermatril® L

### **Body Protection**

protective clothing

### **Respiratory protection**

Recommended Filter type: Filter A-(P3)

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer.

These measures have to be properly documented.

required when dusts are generated. Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

### **Control of environmental exposure**

Do not let product enter drains.

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## **SECTION 9: Physical and chemical properties**

### **9.1 Information on basic physical and chemical properties**

- |   |   |
|---|---|
| a) Appearance                                   | Form: powder<br>Color: white                                      |
| b) Odor   | odorless  |
| c) Odor Threshold                               | Not applicable  |
| d) pH   | 5.2 - 6 at 500 g/l  |
| e) Melting point/freezing point                 | Melting point/range: 82 - 86 °C (180 - 187 °F) - lit.             |
| f) Initial boiling point and boiling range      | 125 °C 257 °F at 33 hPa - lit.                                    |
| g) Flash point                                  | 138 °C (280 °F) - closed cup                                      |
| h) Evaporation rate                             | No data available   |
| i) Flammability (solid, gas)                    | No data available   |
| j) Upper/lower flammability or explosive limits | No data available   |
| k) Vapor pressure                               | 2.1 hPa at 84.50 °C (184.10 °F)<br>0.04 hPa at 40 °C(104 °F)      |
| l) Vapor density                                | 2.45 - (Air = 1.0)  |
| m) Density                                      | 1.12 g/cm <sup>3</sup> at 30 °C (86 °F)                           |
| Relative density                                | 1.1230 °C - OPPTS 830.7300  |
| n) Water solubility                             | 200 g/l at 20 °C (68 °F)  |
| o) Partition coefficient: n-octanol/water       | log Pow: -0.9 at 20 °C (68 °F) - Bioaccumulation is not expected. |

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- |                              |                   |
|------------------------------|-------------------|
| p) Autoignition temperature  | No data available |
| q) Decomposition temperature | No data available |
| r) Viscosity                 | No data available |
| s) Explosive properties      | No data available |
| t) Oxidizing properties      | none              |

## 9.2 Other safety information

|                        |                    |
|------------------------|--------------------|
| Relative vapor density | 2.45 - (Air = 1.0) |
|------------------------|--------------------|

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## SECTION 10: Stability and reactivity

### 10.1 Reactivity

Forms explosive mixtures with air on intense heating.  
A range from approx. 15 Kelvin below the flash point is to be rated as critical.  
The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.

### 10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

### 10.3 Possibility of hazardous reactions

Violent reactions possible with:  
alkalines  
Oxidizing agents  
Reducing agents  
Bases  
Metals  
Peroxides  
acids

### 10.4 Conditions to avoid

Strong heating.

### 10.5 Incompatible materials

Strong oxidizing agents

### 10.6 Hazardous decomposition products

In the event of fire: see section 5



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## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

#### Acute toxicity

LD50 Oral - Rat - female - 177 mg/kg  
(OECD Test Guideline 401)

Acute toxicity estimate Inhalation - 1.6 mg/l - dust/mist

(Expert judgment)

LD50 Dermal - Rabbit - male and female - 1,141 mg/kg  
(OECD Test Guideline 402)

Remarks: (Regulation (EC) No 1272/2008, Annex VI)  
No data available

#### Skin corrosion/irritation

Remarks: Causes skin irritation.  
(Regulation (EC) No 1272/2008, Annex VI)

#### Serious eye damage/eye irritation

Eyes - Rabbit

Result: Eye irritation - 24 h

(OECD Test Guideline 405)

Remarks: (Regulation (EC) No 1272/2008, Annex VI)

#### Respiratory or skin sensitization

Maximization Test - Guinea pig

Result: positive

(OECD Test Guideline 406)

Remarks: (Regulation (EC) No 1272/2008, Annex VI)

#### Germ cell mutagenicity

May cause genetic defects.

Test Type: Ames test

Test system: Salmonella typhimurium

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 471

Result: negative

Test Type: Chromosome aberration test in vitro

Test system: Chinese hamster lung cells

Metabolic activation: without metabolic activation

Method: OECD Test Guideline 473

Result: positive

Test Type: In vitro mammalian cell gene mutation test

Test system: Chinese hamster ovary cells

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 476

Result: negative

Test Type: dominant lethal test

Species: Rat

Application Route: Oral

Method: OECD Test Guideline 478

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Result: positive

### **Carcinogenicity**

Presumed to have carcinogenic potential for humans

IARC: 2A - Group 2A: Probably carcinogenic to humans (acrylamide)

NTP: RAHC - Reasonably anticipated to be a human carcinogen (acrylamide)

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

### **Reproductive toxicity**

Suspected of damaging fertility.

### **Specific target organ toxicity - single exposure**

No data available

### **Specific target organ toxicity - repeated exposure**

Oral - Causes damage to organs through prolonged or repeated exposure.

- Peripheral nervous system

### **Aspiration hazard**

No data available

## **11.2 Additional Information**

Repeated dose toxicity - Rat - male and female - Oral - 2 yr - NOAEL (No observed adverse effect level) - 0.5 mg/kg

RTECS: AS3325000

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Liver - Irregularities - Based on Human Evidence

Liver - Irregularities - Based on Human Evidence

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## **SECTION 12: Ecological information**

### **12.1 Toxicity**

|   |   |
|---|---|
| Toxicity to daphnia and other aquatic invertebrates | flow-through test EC50 - Daphnia magna (Water flea) - 98 mg/l - 48 h (US-EPA)                 |
| Toxicity to algae                                   | static test NOEC - Pseudokirchneriella subcapitata - 56 mg/l - 72 h (OECD Test Guideline 201) |
| Toxicity to bacteria                                | EC50 - Photobacterium phosphoreum - 13,500 mg/l<br>Remarks: (IUCLID)                          |
| Toxicity to fish(Chronic toxicity)                  | NOEC - Cyprinus carpio (Carp) - 5 mg/l - 28 d<br>Remarks: (ECHA)                              |

## 12.2 Persistence and degradability

Biodegradability aerobic - Exposure time 28 d  
Result: 100 % - Readily biodegradable.  
(OECD Test Guideline 301D)

## 12.3 Bioaccumulative potential

Bioaccumulation Oncorhynchus mykiss (rainbow trout) - 72 h  
- 0.71 mg/l(acrylamide)

Bioconcentration factor (BCF): 1.65

## 12.4 Mobility in soil

No data available

## 12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

## 12.6 Endocrine disrupting properties

No data available

## 12.7 Other adverse effects

No data available

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## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

#### Product

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

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## SECTION 14: Transport information

### DOT (US)

UN number: 2074 Class: 6.1 Packing group: III  
Proper shipping name: Acrylamide, solid  
Reportable Quantity (RQ): 5000 lbs  
Poison Inhalation Hazard: No

### IMDG

UN number: 2074 Class: 6.1 Packing group: III EMS-No: F-A, S-A  
Proper shipping name: ACRYLAMIDE, SOLID

### IATA

UN number: 2074 Class: 6.1 Packing group: III  
Proper shipping name: Acrylamide, solid

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**SECTION 15: Regulatory information****SARA 302 Components**

|            |                    |                             |
|------------|--------------------|-----------------------------|
| acrylamide | CAS-No.<br>79-06-1 | Revision Date<br>2008-11-03 |
|------------|--------------------|-----------------------------|

**SARA 313 Components**

The following components are subject to reporting levels established by SARA Title III, Section 313:

|            |                    |                             |
|------------|--------------------|-----------------------------|
| acrylamide | CAS-No.<br>79-06-1 | Revision Date<br>2008-11-03 |
|------------|--------------------|-----------------------------|

**SARA 311/312 Hazards**

Acute Health Hazard, Chronic Health Hazard

**Massachusetts Right To Know Components**

|            |                    |                             |
|------------|--------------------|-----------------------------|
| acrylamide | CAS-No.<br>79-06-1 | Revision Date<br>2008-11-03 |
|------------|--------------------|-----------------------------|

**Pennsylvania Right To Know Components**

|            |                    |                             |
|------------|--------------------|-----------------------------|
| acrylamide | CAS-No.<br>79-06-1 | Revision Date<br>2008-11-03 |
|------------|--------------------|-----------------------------|

**California Prop. 65 Components**

|   |                    |                             |
|---|--------------------|-----------------------------|
| , which is/are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to <a href="http://www.P65Warnings.ca.gov/acrylamide">www.P65Warnings.ca.gov/acrylamide</a> | CAS-No.<br>79-06-1 | Revision Date<br>2007-09-28 |
|---|--------------------|-----------------------------|

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**SECTION 16: Other information****Further information**

The information is believed to be correct but is not exhaustive and will be used solely as a guideline, which is based on current knowledge of the chemical substance or mixture and is applicable to appropriate safety precautions for the product. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See [www.sigma-aldrich.com](http://www.sigma-aldrich.com) and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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