SAFETY DATA SHEET

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

1.1 Product identifiers

<table>
<thead>
<tr>
<th>Product name</th>
<th>Acrylamide solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Number</td>
<td>A4058</td>
</tr>
<tr>
<td>Brand</td>
<td>Sigma</td>
</tr>
<tr>
<td>Index-No.</td>
<td>616-003-00-0</td>
</tr>
<tr>
<td>CAS-No.</td>
<td>79-06-1</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Company</th>
<th>Sigma-Aldrich Inc.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3050 SPRUCE ST</td>
</tr>
<tr>
<td></td>
<td>ST. LOUIS MO 63103</td>
</tr>
<tr>
<td></td>
<td>UNITED STATES</td>
</tr>
<tr>
<td>Telephone</td>
<td>+1 314 771-5765</td>
</tr>
<tr>
<td>Fax</td>
<td>+1 800 325-5052</td>
</tr>
</tbody>
</table>

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 4), H302
- Acute toxicity, Inhalation (Category 4), H332
- 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 statement(s)**
- H302 + H332: Harmful if swallowed 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 statement(s)**
- P201: Obtain special instructions before use.
- P202: Do not handle until all safety precautions have been read and understood.
- P260: Do not breathe mist or vapors.
- 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 + P312 + P330: IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth.
- P302 + P352: IF ON SKIN: Wash with plenty of soap and water.
- 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

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

3.2 Mixtures

**Formula**: \( C_3H_5NO \)

**Molecular weight**: 71.08 g/mol
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
After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

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

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Foam Carbon dioxide (CO2) Dry powder

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

For the full text of the H-Statements mentioned in this Section, see Section 16.
5.2 Special hazards arising from the substance or mixture
- Carbon oxides
- Nitrogen oxides (NOx)
- Ammonia
- Carbon oxides
- Nitrogen oxides (NOx)
- Combustible.

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.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Advice for non-emergency personnel: Do not breathe vapors, aerosols. 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 with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

6.4 Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Advice on safe handling
Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

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

Storage stability
Recommended storage temperature
2 - 8 °C
Light sensitive. Store under inert gas.

**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

---

### SECTION 8: Exposure controls/personal protection

#### 8.1 Control parameters

**Ingredients with workplace control parameters**

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>acrylamide</td>
<td>79-06-1</td>
<td>TWA</td>
<td>0.03 mg/m³</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
</tbody>
</table>

**Remarks**
Dermal Sensitization
Suspected human carcinogen
Danger of cutaneous absorption

<table>
<thead>
<tr>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>TWA</td>
<td>0.03 mg/m³</td>
<td>USA. NIOSH Recommended Exposure Limits</td>
</tr>
</tbody>
</table>

Potential Occupational Carcinogen
Potential for dermal absorption

<table>
<thead>
<tr>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>TWA</td>
<td>0.3 mg/m³</td>
<td>USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants</td>
</tr>
</tbody>
</table>

**Skin designation**

<table>
<thead>
<tr>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEL</td>
<td>0.03 mg/m³</td>
<td>California permissible exposure limits for chemical contaminants (Title 8, Article 107)</td>
</tr>
</tbody>
</table>

#### 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**
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
- Material: Nitrile rubber
- Minimum layer thickness: 0.11 mm
- Break through time: > 480 min
Material tested: Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: > 480 min
Material tested: Dermatril® (KCL 740 / Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

**Body Protection**
protective clothing

**Respiratory protection**
required when vapours/aerosols 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.

---

**SECTION 9: Physical and chemical properties**

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

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Appearance</td>
<td>Form: liquid</td>
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<tr>
<td>b) Odor</td>
<td>No data available</td>
</tr>
<tr>
<td>c) Odor Threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>d) pH</td>
<td>No data available</td>
</tr>
<tr>
<td>e) Melting point/freezing point</td>
<td>No data available</td>
</tr>
<tr>
<td>f) Initial boiling point and boiling range</td>
<td>No data available</td>
</tr>
<tr>
<td>g) Flash point</td>
<td>() No data available</td>
</tr>
<tr>
<td>h) Evaporation rate</td>
<td>No data available</td>
</tr>
<tr>
<td>i) Flammability (solid, gas)</td>
<td>No data available</td>
</tr>
<tr>
<td>j) Upper/lower flammability or explosive limits</td>
<td>No data available</td>
</tr>
<tr>
<td>k) Vapor pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>l) Vapor density</td>
<td>No data available</td>
</tr>
</tbody>
</table>
m) Density
Relative density
n) Water solubility
soluble
o) Partition coefficient: n-octanol/water
p) Autoignition temperature
q) Decomposition temperature
r) Viscosity
s) Explosive properties
t) Oxidizing properties

9.2 Other safety information
No data available

SECTION 10: Stability and reactivity
10.1 Reactivity
No data available
10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature).
10.3 Possibility of hazardous reactions
No data available
10.4 Conditions to avoid
no information available
10.5 Incompatible materials
Acids, Bases, Oxidizing agents, Reducing agents, Iron and iron salts., Copper, Aluminum, Brass, Free radical initiators
10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information
11.1 Information on toxicological effects
Mixture
Acute toxicity
Acute toxicity estimate Oral - 442.5 mg/kg
(Calculation method)
Symptoms: Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.
LD50 Oral - Rat - female - 177 mg/kg (acrylamide)  
(OECD Test Guideline 401)  
LC50 Inhalation - 4 h - 11 mg/l - vapor  
Symptoms: Possible symptoms: mucosal irritations  
Acute toxicity estimate Inhalation - 1.6 mg/l - dust/mist  
(acrylamide)  
(Expert judgment)  
Acute toxicity estimate Dermal - 2,853 mg/kg  
(Calculation method)  
LD50 Dermal - Rabbit - male and female - 1,141 mg/kg (acrylamide)  
(OECD Test Guideline 402)  
No data available  

**Skin corrosion/irritation**  
Remarks: Mixture causes skin irritation.  
Remarks: Causes skin irritation.  
(Regulation (EC) No 1272/2008, Annex VI)  

**Serious eye damage/eye irritation**  
Remarks: Mixture causes serious eye irritation.  
Eyes - Rabbit (acrylamide)  
Result: Eye irritation - 24 h  
(OECD Test Guideline 405)  

**Respiratory or skin sensitization**  
May cause sensitization by skin contact.  
Mixture may cause an allergic skin reaction.  
Maximization Test - Guinea pig (acrylamide)  
Result: positive  
(OECD Test Guideline 406)  

**Germ cell mutagenicity**  
Possible mutagen  
May cause genetic defects. (acrylamide)  
Test Type: Ames test  
(acrylamide)  
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  
(acrylamide)  
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  
(acrylamide)  
Test system: Chinese hamster ovary cells  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 476  
Result: negative  
(acrylamide)
Test Type: dominant lethal test  
Species: Rat  

Application Route: Oral  
Method: OECD Test Guideline 478  
Result: positive  

**Carcinogenicity**  
Possible carcinogen.  
Presumed to have carcinogenic potential for humans (acrylamide)  
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 the unborn child.  
Suspected of damaging fertility.  
Suspected of damaging fertility. (acrylamide)  

**Specific target organ toxicity - single exposure**  
No data available  

**Specific target organ toxicity - repeated exposure**  
Mixture 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  
(acrylamide)  
Acrylamide toxicity is manifested as a sensorimotor peripheral neuropathy.  
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. (acrylamide)  

Other dangerous properties can not be excluded.  

This substance should be handled with particular care.  

Handle in accordance with good industrial hygiene and safety practice.  

Liver - Irregularities - Based on Human Evidence  
Liver - Irregularities - Based on Human Evidence (acrylamide)
Components
acrylamide

**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)
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)

**Respiratory or skin sensitization**
Maximization Test - Guinea pig
Result: positive
(OECD Test Guideline 406)

**Germ cell mutagenicity**
May cause genetic defects.
Test Type: Ames test
Test system: Salmonella typhimurium
Result: negative
Test Type: Chromosome aberration test in vitro
Test system: Chinese hamster lung cells
Result: positive
Test Type: In vitro mammalian cell gene mutation test
Test system: Chinese hamster ovary cells
Result: negative
Method: OECD Test Guideline 478
Species: Rat - male
Result: positive

**Carcinogenicity**
Presumed to have carcinogenic potential for humans

**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
SECTION 12: Ecological information

12.1 Toxicity

**Mixture**

Toxicity to fish

- static test LC50 - Oncorhynchus mykiss (rainbow trout) - 180 mg/l - 96 h (acrylamide)
  (OECD Test Guideline 203)

Toxicity to daphnia and other aquatic invertebrates

- flow-through test EC50 - Daphnia magna (Water flea) - 98 mg/l - 48 h (acrylamide)
  (US-EPA)

Toxicity to algae

- static test NOEC - Pseudokirchneriella subcapitata - 56 mg/l - 72 h (acrylamide)
  (OECD Test Guideline 201)

Toxicity to bacteria

- EC50 - Photobacterium phosphoreum - 13,500 mg/l (acrylamide)
  Remarks: (IUCLID)

Toxicity to fish (Chronic toxicity)

- NOEC - Cyprinus carpio (Carp) - 5 mg/l - 28 d (acrylamide)
  Remarks: (ECHA)

12.2 Persistence and degradability

**Biodegradability**

- aerobic - Exposure time 28 d (acrylamide)
  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

**Components**

**acrylamide**

Toxicity to fish

- static test LC50 - Oncorhynchus mykiss (rainbow trout) - 180 mg/l - 96 h
  (OECD Test Guideline 203)

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 Remarks: (IUCLID)

Toxicity to fish (Chronic toxicity): NOEC - Cyprinus carpio (Carp) - 5 mg/l - 28 d Remarks: (ECHA)

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. See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14: Transport information

**DOT (US)**
UN number: 3426 Class: 6.1 Packing group: III
Proper shipping name: Acrylamide solution
Reportable Quantity (RQ):
Poison Inhalation Hazard: No

**IMDG**
UN number: 3426 Class: 6.1 Packing group: III EMS:
No: F-A, S-A
Proper shipping name: ACRYLAMIDE SOLUTION

**IATA**
UN number: 3426 Class: 6.1 Packing group: III
Proper shipping name: Acrylamide solution

SECTION 15: Regulatory information

**SARA 302 Components**
acrylamide CAS-No. Revision Date
79-06-1 2008-11-03

**SARA 313 Components**
The following components are subject to reporting levels established by SARA Title III, Section 313:
acrylamide CAS-No. Revision Date
79-06-1 2008-11-03

Sigma - A4058
**SARA 311/312 Hazards**
Acute Health Hazard, Chronic Health Hazard

**Massachusetts Right To Know Components**

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
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<tr>
<td>water</td>
<td>7732-18-5</td>
<td></td>
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<tr>
<td>acrylamide</td>
<td>79-06-1</td>
<td>2008-11-03</td>
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</table>

**Pennsylvania Right To Know Components**

<table>
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<th>Component</th>
<th>CAS-No.</th>
<th>Revision Date</th>
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</thead>
<tbody>
<tr>
<td>acrylamide</td>
<td>79-06-1</td>
<td>2008-11-03</td>
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</tbody>
</table>

**California Prop. 65 Components**

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Revision Date</th>
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</thead>
<tbody>
<tr>
<td>acrylamide</td>
<td>79-06-1</td>
<td>2007-09-28</td>
</tr>
</tbody>
</table>

For more information go to www.P65Warnings.ca.gov.acrylamide

---

**SECTION 16: Other information**

**Further information**

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. 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 and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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Version: 6.7 Revision Date: 03/18/2023 Print Date: 08/12/2023