

## SAFETY DATA SHEET (SDS)

in accordance with Regulation (EC) No 1907/2006 (REACH), Annex II — Regulation (EU) 2020/878

Date: 08.09.2026 | Version: 5 | EN

## amoniak

azane

CAS 7664-41-7

H<sub>3</sub>N

EC 231-635-3

MOLAR MASS  
17.03LOGP  
-1.14

## HAZARD CLASSIFICATION (GHS / CLP)



Danger

H221 H331 H314 H400

Hazard class scope limited to the harmonised classification (CLP Annex VI); classes outside the harmonised entry may require supplier self-classification (CLP Art. 4(3)) — verify with the supplier safety data sheet.

## 1. Identification of the substance/mixture and of the company/undertaking

|                       |                                 |
|-----------------------|---------------------------------|
| 1.1 Substance name    | amoniak                         |
| 1.1 IUPAC name        | azane                           |
| 1.1 CAS number        | 7664-41-7                       |
| 1.1 EC number         | 231-635-3                       |
| 1.1 PubChem CID       | 222                             |
| 1.1 InChIKey          | QGZKDVFNNGYKY-UHFFFAOYSA-N      |
| 1.1 SMILES            | N                               |
| 1.1 Molecular formula | H <sub>3</sub> N <sup>[7]</sup> |
| 1.1 Molar mass        | 17.031 g/mol <sup>[7]</sup>     |
| 1.1 Exact mass        | 17.0265 Da <sup>[7]</sup>       |

## 1.2 Uses

For laboratory and research purposes. Not for use in the production of food, medicines or cosmetics without appropriate authorisation.

## 1.3 Details of the supplier

REFERENCE COPY — NO  
SUPPLIER DETAILS — NOT FOR  
DISTRIBUTION

Supplier details are not included in this reference copy. The supplier placing the substance on the market must complete this section and remains responsible for the sheet under REACH. MolGod.org prepares documentation and is not the supplier of this substance.

## 1.4 Emergency telephone number

### Emergency telephone

112 (EU-wide emergency number)

Contact the poison centre designated in the country of placing on the market (CLP Art. 45).

## 2. Hazards identification



**Danger**

### Hazard statements (H) [3][4][13]

|             |                                         |
|-------------|-----------------------------------------|
| <b>H221</b> | Flammable gas                           |
| <b>H331</b> | Toxic if inhaled                        |
| <b>H314</b> | Causes severe skin burns and eye damage |
| <b>H400</b> | Very toxic to aquatic life              |

### Precautionary statements (P) [3][4][13]

|                       |                                                                                                                                 |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------|
| <b>P260</b>           | Do not breathe dust/fume/gas/mist/vapours/spray                                                                                 |
| <b>P264</b>           | Wash thoroughly after handling                                                                                                  |
| <b>P271</b>           | Use only outdoors or in a well-ventilated area                                                                                  |
| <b>P273</b>           | Avoid release to the environment                                                                                                |
| <b>P280</b>           | Wear protective gloves/protective clothing/eye protection/face protection                                                       |
| <b>P301+P330+P331</b> | IF SWALLOWED: Rinse mouth; Do NOT induce vomiting                                                                               |
| <b>P303+P361+P353</b> | IF ON SKIN (or hair): Take off immediately all contaminated clothing; Rinse skin with water or shower                           |
| <b>P304+P340</b>      | IF INHALED: Remove person to fresh air and keep comfortable for breathing                                                       |
| <b>P305+P351+P338</b> | IF IN EYES: Rinse cautiously with water for several minutes; Remove contact lenses, if present and easy to do. Continue rinsing |
| <b>P310</b>           | Immediately call a POISON CENTER or doctor/physician                                                                            |
| <b>P311</b>           | Call a POISON CENTER or doctor/physician                                                                                        |
| <b>P321</b>           | Specific treatment                                                                                                              |
| <b>P363</b>           | Wash contaminated clothing before reuse                                                                                         |
| <b>P391</b>           | Collect spillage                                                                                                                |
| <b>P403+P233</b>      | Store in a well-ventilated place: Keep container tightly closed                                                                 |
| <b>P405</b>           | Store locked up                                                                                                                 |
| <b>P501</b>           | Dispose of contents/container to an approved waste collection point                                                             |

**Hazard class scope limited to the harmonised classification (CLP Annex VI); classes outside the harmonised entry may require supplier self-classification (CLP Art. 4(3)) — verify with the supplier safety data sheet.**

### 3. Composition/information on ingredients

|                   |                                                                                       |
|-------------------|---------------------------------------------------------------------------------------|
| Substance type    | pure substance                                                                        |
| CAS Number        | 7664-41-7                                                                             |
| EC number         | 231-635-3                                                                             |
| Molecular formula | H <sub>3</sub> N                                                                      |
| Concentration     | ≥99% (typical reagent-grade purity — to be confirmed by the supplier's specification) |
| Clp index no      | 007-001-00-5                                                                          |

### 4. First aid measures



#### Inhalation

Move the affected person to fresh air. Keep at rest. Call a physician. Semi-sitting position. Give oxygen if available. If not breathing: artificial respiration (qualified personnel only). [\[1\]\[2\]\[17\]](#)

#### Skin contact

Remove contaminated clothing. Rinse skin with soap and water (min. 15 minutes). Call a physician immediately. [\[1\]\[2\]\[17\]](#)

#### Eye contact

Rinse eyes with running water (min. 15 minutes). Remove contact lenses if possible. If irritation persists — consult an ophthalmologist. [\[1\]\[2\]\[17\]](#)

#### Ingestion

Do NOT induce vomiting (unless directed by a physician). Rinse mouth with water. Never give anything by mouth to an unconscious person. Emergency number: 112 (EU-wide). Contact the poison centre designated in your country (CLP Art. 45). [\[1\]\[2\]\[17\]](#)

#### Symptoms and effects

cough, shortness of breath, headache, dizziness; skin redness and irritation. [\[3\]\[13\]](#)

#### Notes for physician

Requires verification

**Emergency numbers: Emergency: 112 (EU-wide).  
Poison centre: as designated in the country of  
placing on the market (CLP Art. 45).**

### 5. Firefighting measures

|                                |                                                                                                                              |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Suitable extinguishing media   | Alcohol-resistant foam, carbon dioxide (CO <sub>2</sub> ), dry chemical powder, water spray/mist. <a href="#">[1][2][17]</a> |
| Unsuitable extinguishing media | Full/compact water jet (splashes and spreads the burning liquid, which floats on water). <a href="#">[1][2][17]</a>          |
| Specific hazards               | Thermal decomposition products:NOx. <a href="#">[18]</a>                                                                     |
| Advice for firefighters        | Use self-contained breathing apparatus (SCBA). Full protective suit. <a href="#">[1][2][17]</a>                              |
| Flash Point                    | 132 [wartość z poprzedniej regeneracji, 2026-08-27]°C [PL] <a href="#">[9]</a>                                               |
| Auto-ignition temperature      | 651°C <a href="#">[9]</a>                                                                                                    |

### 6. Accidental release measures

|                                         |                                                                                                               |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------|
| Personal precautions                    | Use personal protective equipment (see Section 8). Avoid breathing gas. <a href="#">[1][2][17]</a>            |
| Environmental precautions               | Prevent entry into sewers, groundwater and surface water. <a href="#">[1][2][17]</a>                          |
| Methods for containment and cleaning up | Ventilate the area. Stop the flow if it is safe to do so. Remove ignition sources. <a href="#">[1][2][17]</a> |
| Related sections                        | 8; 13                                                                                                         |

## 7. Handling and storage

|                               |                                                                                                                          |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| <b>Precautions</b>            | Work in a fume hood or with adequate ventilation. No eating, drinking or smoking in the work area. <sup>[1][2][17]</sup> |
| <b>Storage temperature</b>    | Store at room temperature (15-25°C) or as indicated on the label. <sup>[1][2][17]</sup>                                  |
| <b>Humidity</b>               | Store in a dry place (<60% RH). <sup>[1][2][17]</sup>                                                                    |
| <b>Light</b>                  | Protect from direct sunlight. <sup>[1][2][17]</sup>                                                                      |
| <b>Incompatible materials</b> | Strong oxidizers, strong acids, Amphoteric metals (Al, Zn), Ignition sources, open flames. <sup>[18]</sup>               |

## 8. Exposure controls/personal protection

### 8.1 Control parameters

|                           |                                                                                                                                                |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>OEL — NDS (Poland)</b> | NDS = 14 mg/m <sup>3</sup> (TWA) · NDSC <sub>h</sub> = 28 mg/m <sup>3</sup> (STEL) — Rozp. MRIPS Dz.U. 2024 poz.1017 <sup>[25]</sup>           |
| <b>OEL (EU)</b>           | The EU OEL value has not been verified against the available dataset — check the IOELV/BOELV directives; do not assume the absence of a value. |
| <b>DNEL</b>               | No data available.                                                                                                                             |
| <b>PNEC</b>               | No data available.                                                                                                                             |

### 8.2 Personal protective equipment (PPE) <sup>[5][6][19]</sup>

|                                                                                                                                                                                           |                                                                                                                                                                        |                                                                                                                                                                                                                                    |                                                                                                                                                 |                                                                                                                                                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br><b>Chemical-resistant protective gloves</b><br>EN ISO 374-1:2016+A1:2018<br>nitrile (min. 0.11 mm) | <br><b>Closed safety spectacles or goggles</b><br>EN ISO 16321-1:2022 / EN 166:2001 | <br><b>Respiratory protection</b><br>EN 14387:2004+A1:2008<br>gas/vapour filter per EN 14387 (select type B/E/K per substance nature) — NOT FFP | <br><b>Face shield (splash risk)</b><br>EN ISO 16321-1:2022 | <br><b>Chemical-resistant protective clothing</b><br>EN 13034:2005+A1:2009 (typ 6) / EN 14126:2003 (bio) |
| <br><b>Closed safety footwear with toe protection</b><br>EN ISO 20345:2022 (S2/S3)                     |                                                                                                                                                                        |                                                                                                                                                                                                                                    |                                                                                                                                                 |                                                                                                                                                                                               |

## 9. Physical and chemical properties

| Property (item 9.1)             | Value                                                                     | Source |
|---------------------------------|---------------------------------------------------------------------------|--------|
| <b>Physical state</b>           | Gaz (w warunkach normalnych)                                              |        |
| <b>Colour</b>                   | No data available.                                                        |        |
| <b>Odour</b>                    | No data available.                                                        |        |
| <b>pH (1% aqueous solution)</b> | Not applicable                                                            |        |
| <b>Melting point</b>            | -77.73°C <sup>[8]</sup>                                                   |        |
| <b>Boiling point</b>            | -33.34°C <sup>[9][24]</sup>                                               |        |
| <b>Flash point</b>              | 132 [wartość z poprzedniej regeneracji, 2026-08-27]°C [PL] <sup>[9]</sup> |        |

| Property (item 9.1)                               | Value                                       | Source |
|---------------------------------------------------|---------------------------------------------|--------|
| Flammability                                      | Flam. Gas 2 (H221) <sup>[3][13]</sup>       |        |
| Lower and upper explosion limit                   | 14–32.5 % obj. <sup>[24]</sup>              |        |
| Density (20°C)                                    | Not applicable (REACH 9.1(q))               |        |
| Vapour pressure                                   | 1001.2 kPa (7510 mmHg, 25°C) <sup>[9]</sup> |        |
| Relative vapour density                           | 0.59 <sup>[23]</sup>                        |        |
| Dynamic viscosity                                 | 0.255 mPa·s <sup>[9]</sup>                  |        |
| Kinematic viscosity                               | Not applicable (REACH 9.1(l))               |        |
| Refractive index n <sub>D</sub> <sup>20</sup>     | 1.3327 <sup>[9]</sup>                       |        |
| Auto-ignition temperature                         | 651°C <sup>[9]</sup>                        |        |
| Decomposition temperature                         | Not applicable                              |        |
| Surface Tension                                   | 23.3 mN/m <sup>[9]</sup>                    |        |
| Stała dysocjacji (pKa)                            | pKa = 9.25 <sup>[9]</sup>                   |        |
| Rozpuszcz. w wodzie                               | 482 g/L, 25°C <sup>[9]</sup>                |        |
| Particle characteristics                          | Not applicable (REACH 9.1(r))               |        |
| Partition coefficient n-octanol/water (log value) | -1.14 <sup>[9]</sup>                        |        |
| Molar mass                                        | 17.031 g/mol <sup>[7]</sup>                 |        |
| Molecular formula                                 | H <sub>3</sub> N <sup>[7]</sup>             |        |
| Lipinski rule (RO5)                               | PASS                                        |        |

Where a property above reads "No data available", no measured value was found in the public sources consulted for this substance. The property has not been determined by MolGod.org and no value is inferred. "Not applicable" means the property has no meaning for this substance in the form supplied.

## 10. Stability and reactivity

|                        |                                                                                            |
|------------------------|--------------------------------------------------------------------------------------------|
| Reactivity             | Stable under normal storage and handling conditions.                                       |
| Chemical stability     | Thermally stable under recommended conditions.                                             |
| Hazardous reactions    | No hazardous reactions known under normal conditions.                                      |
| Conditions to avoid    | High temperatures, direct sunlight, moisture.                                              |
| Incompatible materials | Strong oxidizers, strong acids, Amphoteric metals (Al, Zn), Ignition sources, open flames. |
| Decomposition products | Thermal decomposition products:NOx.                                                        |

## 11. Toxicological information

|                   |                                                                                                                                                             |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LD50 (oral)       | 350 mg/kg (rat) <sup>[10][11]</sup>                                                                                                                         |
| LD50 (dermal)     | No data available.                                                                                                                                          |
| LC50 (inhalation) | LC50 5100 mg/m3 (rat) <sup>[11][12]</sup>                                                                                                                   |
| Skin irritation   | Category 1 (H314) — corrosive; sub-category (1A/1B/1C) per CLP Annex VI entry. <sup>[3][13]</sup>                                                           |
| Eye irritation    | Serious eye damage — covered by the corrosive classification (H314; CLP Annex I 3.3.2.1). <sup>[3][13]</sup>                                                |
| Sensitisation     | Not classified for this hazard (outside the scope of the harmonised classification in CLP Annex VI; verify supplier self-classification) <sup>[3][13]</sup> |

|                                              |                                                                                                                                                             |
|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Mutagenicity</b>                          | Not classified for this hazard (outside the scope of the harmonised classification in CLP Annex VI; verify supplier self-classification) <sup>[3][13]</sup> |
| <b>Carcinogenicity</b>                       | Not classified for this hazard (outside the scope of the harmonised classification in CLP Annex VI; verify supplier self-classification) <sup>[3][13]</sup> |
| <b>IARC classification (carcinogenicity)</b> | No individual IARC monograph for this CAS — this is not confirmation of the absence of carcinogenicity (cf. CLP/GHS classification in section 2).           |
| <b>Reproductive toxicity</b>                 | Not classified for this hazard (outside the scope of the harmonised classification in CLP Annex VI; verify supplier self-classification) <sup>[3][13]</sup> |
| <b>STOT — single exposure</b>                | Not classified for this hazard (outside the scope of the harmonised classification in CLP Annex VI; verify supplier self-classification) <sup>[3][13]</sup> |
| <b>STOT — repeated exposure</b>              | Not classified for this hazard (outside the scope of the harmonised classification in CLP Annex VI; verify supplier self-classification) <sup>[3][13]</sup> |
| <b>Aspiration hazard</b>                     | Not classified for this hazard (outside the scope of the harmonised classification in CLP Annex VI; verify supplier self-classification) <sup>[3][13]</sup> |

## 12. Ecological information

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Aquatic toxicity</b>                | Harmonised classification (CLP Annex VI): H400 — Very toxic to aquatic life (Aquatic Acute 1)(M-factor for acute/chronic cat. 1 — to be verified per Table 3 of Annex VI, if assigned.). LC <sub>50</sub> (fish): 0.3 mg/L (Hypophthalmichthys nobilis, 96 h). EC <sub>50</sub> (Daphnia): 2.1 mg/L (Daphnia magna, 24 h). EC <sub>50</sub> (algae): 29.2 mg/L (Ulva fasciata, 96 h) <sup>[22]</sup> |
| <b>Persistence / biodegradability</b>  | No data available.                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Bioaccumulative potential</b>       | log Kow = -1.14 <sup>[9]</sup> . Low bioaccumulation potential (log Kow < 4.5 — PBT/vPvB screening criterion per ECHA Guidance R.11). <sup>[20][21]</sup>                                                                                                                                                                                                                                            |
| <b>Mobility in soil</b>                | No data available.                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>PBT/vPvB assessment</b>             | Insufficient data to assess PBT/vPvB.                                                                                                                                                                                                                                                                                                                                                                |
| <b>Endocrine disrupting properties</b> | Zgłoszone efekty na układ hormonalny w badaniach na zwierzętach (dane ekotoksykologiczne, US EPA ECOTOX; nie stanowią regulacyjnej klasyfikacji ED wg 2018/605). [PL] <sup>[22]</sup>                                                                                                                                                                                                                |

## 13. Disposal considerations

|                         |                                                                                                                                                               |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Disposal method</b>  | Hand over for disposal to licensed contractors in accordance with national and local regulations. Do not discharge into sewers.                               |
| <b>Waste code (EWC)</b> | 16 05 06* — Laboratory and analytical chemicals (np. chemical reagents) zawierające substancje niebezpieczne. EWC code verification required. <sup>[16]</sup> |
| <b>Packaging</b>        | Cleaned packaging may be recycled. Contaminated packaging must be treated as hazardous waste.                                                                 |

## 14. Transport information



Class 2 — Gases



Class 6.1 — Toxic substances



Class 8 — Corrosive substances

|                               |                                                                                                                                                                   |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UN number</b>              | UN 2672 <sup>[15]</sup>                                                                                                                                           |
| <b>Proper shipping name</b>   | Ammonia solution (10-35%) <sup>[15]</sup>                                                                                                                         |
| <b>Transport hazard class</b> | 8 <sup>[15]</sup>                                                                                                                                                 |
| <b>Packing Group</b>          | III <sup>[15]</sup>                                                                                                                                               |
| <b>Environmental hazard</b>   | CLP classification (H400) indicates aquatic environmental hazard — marine pollutant marking may be required; confirm per ADR 2.2.9 / IMDG criteria <sup>[3]</sup> |

|                                                        |                                                                                                                                                                                        |
|--------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Special precautions</b>                             | Handle as dangerous goods according to the assigned class (ADR/IMDG/IATA); apply the precautions appropriate to that class.                                                            |
| <b>CN/HS code</b>                                      | CN/HS code: verification required in the Eurostat Combined Nomenclature.                                                                                                               |
| <b>Notes</b>                                           | Transport classification per ADR / UN Model Regulations (UN number, class and packing group above). Verify the ADR/IMDG/IATA edition in force on the date of shipment. <sup>[15]</sup> |
| <b>Environmentally hazardous (mark: fish and tree)</b> | Yes                                                                                                                                                                                    |

## 15. Regulatory information

|                         |                                                                                                                                                                             |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SVHC status</b>      | SVHC status not verified against the available dataset — check the current ECHA Candidate List; do not assume absence. <sup>[1]</sup>                                       |
| <b>REACH Annex XIV</b>  | Not verified against the ECHA Authorisation List — check REACH Annex XIV. <sup>[1]</sup>                                                                                    |
| <b>REACH Annex XVII</b> | Not confirmed in the available Annex XVII dataset — verify against the current ECHA list before placing on the market; do not assume absence of restriction. <sup>[1]</sup> |

## 16. Other information

Legal status of classification: harmonised under CLP Annex VI — Reg. (EC) No 1272/2008 (as at the date of issue). Entries with an entry-into-force date after 08.09.2026 were omitted as future (not yet applicable).

Data aggregated automatically from public reference databases (PubChem, ECHA, NIST and others).

### Scientific citations (10)

Muhammad Djoni Bustan. PENGARUH PROSES PENGINTEGRASIAN PANAS TERHADAP KONVERSI AMONIAK PADA INTERCOOLER REAKTOR AMONIAK DENGAN ANALISIS EKSERGI DAN PINCH. Reaktor (2010). DOI: 10.14710/reaktor.13.2.117-123

Femi Earnestly. Analisis Kadar Klorida, Amoniak Di Sumber Air Tanah Universitas Muhammadiyah Sumbar Padang. Jurnal Katalisator (2018). DOI: 10.22216/jk.v3i2.3392

Maria Maria, Affan Ahmad. Pengaruh Konsentrasi Klorin Terhadap Penurunan Kadar Amoniak (NH3) Pada Air Limbah Domestik. Jurnal Ilmu Kesehatan Masyarakat (2017). DOI: 10.33221/jikm.v6i04.29

Alfian Dony Saputra, Haeruddin Haeruddin, Niniek Widyorini. EFEKTIVITAS KOMBINASI MIKROORGANISME DAN TUMBUHAN AIR Lemna minor SEBAGAI BIOREMEDIATOR DALAM MEREDUKSI SENYAWA AMONIAK, NITRIT, DAN NITRAT PADA LIMBAH PENCUCIAN IKAN. Management of Aquatic Resources Journal (MAQUARES) (2016). DOI: 10.14710/marj.v5i3.14393

Arnelis Arnelis, Andri Kurniawan, Nasrul Zubir et al.. Kadar Amoniak Darah Pasien Sirosis Hati dengan Ensefalopati Hepatik Minimal. Majalah Kedokteran Andalas (2022). DOI: 10.25077/mka.v45.i2.p167-172.2022

### Full text of H statements

|             |                                         |
|-------------|-----------------------------------------|
| <b>H221</b> | Flammable gas                           |
| <b>H331</b> | Toxic if inhaled                        |
| <b>H314</b> | Causes severe skin burns and eye damage |
| <b>H400</b> | Very toxic to aquatic life              |

### Full text of P statements

|                       |                                                                                                       |
|-----------------------|-------------------------------------------------------------------------------------------------------|
| <b>P260</b>           | Do not breathe dust/fume/gas/mist/vapours/spray                                                       |
| <b>P264</b>           | Wash thoroughly after handling                                                                        |
| <b>P271</b>           | Use only outdoors or in a well-ventilated area                                                        |
| <b>P273</b>           | Avoid release to the environment                                                                      |
| <b>P280</b>           | Wear protective gloves/protective clothing/eye protection/face protection                             |
| <b>P301+P330+P331</b> | IF SWALLOWED: Rinse mouth; Do NOT induce vomiting                                                     |
| <b>P303+P361+P353</b> | IF ON SKIN (or hair): Take off immediately all contaminated clothing; Rinse skin with water or shower |
| <b>P304+P340</b>      | IF INHALED: Remove person to fresh air and keep comfortable for breathing                             |

|                       |                                                                                                                                 |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------|
| <b>P305+P351+P338</b> | IF IN EYES: Rinse cautiously with water for several minutes; Remove contact lenses, if present and easy to do. Continue rinsing |
| <b>P310</b>           | Immediately call a POISON CENTER or doctor/physician                                                                            |
| <b>P311</b>           | Call a POISON CENTER or doctor/physician                                                                                        |
| <b>P321</b>           | Specific treatment                                                                                                              |
| <b>P363</b>           | Wash contaminated clothing before reuse                                                                                         |
| <b>P391</b>           | Collect spillage                                                                                                                |
| <b>P403+P233</b>      | Store in a well-ventilated place: Keep container tightly closed                                                                 |
| <b>P405</b>           | Store locked up                                                                                                                 |
| <b>P501</b>           | Dispose of contents/container to an approved waste collection point                                                             |

## Abbreviations

|              |                                                                                            |
|--------------|--------------------------------------------------------------------------------------------|
| <b>ADR</b>   | European Agreement concerning the International Carriage of Dangerous Goods by Road        |
| <b>ATE</b>   | Acute Toxicity Estimate                                                                    |
| <b>CAS</b>   | Chemical Abstracts Service                                                                 |
| <b>CLP</b>   | Classification, Labelling and Packaging (Reg. (EC) 1272/2008)                              |
| <b>CMR</b>   | Carcinogenic, Mutagenic, toxic to Reproduction                                             |
| <b>DNEL</b>  | Derived No-Effect Level                                                                    |
| <b>EC</b>    | European Community number                                                                  |
| <b>EPI</b>   | Personal protective equipment                                                              |
| <b>GHS</b>   | Globally Harmonized System                                                                 |
| <b>IATA</b>  | International Air Transport Association                                                    |
| <b>IMDG</b>  | International Maritime Dangerous Goods Code                                                |
| <b>SDS</b>   | Safety Data Sheet                                                                          |
| <b>LC50</b>  | Lethal Concentration, 50%                                                                  |
| <b>LD50</b>  | Lethal Dose, 50%                                                                           |
| <b>NDS</b>   | Maximum admissible concentration (workplace, PL)                                           |
| <b>NDSch</b> | Short-term exposure limit (PL)                                                             |
| <b>OEL</b>   | Occupational Exposure Limit                                                                |
| <b>PBT</b>   | Persistent, Bioaccumulative and Toxic                                                      |
| <b>PNEC</b>  | Predicted No-Effect Concentration                                                          |
| <b>REACH</b> | Registration, Evaluation, Authorisation and Restriction of Chemicals (Reg. (EC) 1907/2006) |
| <b>STOT</b>  | Specific Target Organ Toxicity                                                             |
| <b>SVHC</b>  | Substance of Very High Concern                                                             |
| <b>TPSA</b>  | Topological Polar Surface Area                                                             |
| <b>vPvB</b>  | very Persistent and very Bioaccumulative                                                   |

## Version history

|                        |                                                                    |
|------------------------|--------------------------------------------------------------------|
| <b>v5 (08.09.2026)</b> | Based on ECHA harmonised classification (Annex VI to CLP, ATP 23). |
|------------------------|--------------------------------------------------------------------|

## References

- [1] EP and Council. Reg.(EC) No 1907/2006 (REACH). Art.31, Annex II. OJ EU L 396/2006. URL: <https://eur-lex.europa.eu/eli/reg/2006/1907/oj> Accessed: 2026-09-08.
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## External links

NIST: <https://webbook.nist.gov/cgi/cbook.cgi?ID=7664-41-7>

Wikidata: <https://www.wikidata.org/wiki/Q4087>

ChEMBL: [https://www.ebi.ac.uk/chembl/compound\\_report\\_card/CHEMBL1160819](https://www.ebi.ac.uk/chembl/compound_report_card/CHEMBL1160819)

**NFPA 704** (supplementary information — NFPA/USA system; not a required element of an EU safety data sheet under REACH Annex II)



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