

## SAFETY DATA SHEET (SDS)

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

Date: 03.09.2026 | Version: 1 | EN

## furan

furan

CAS 110-00-9

C<sub>4</sub>H<sub>4</sub>O

EC 203-727-3

MOLAR MASS  
68.07LOGP  
1.3

## HAZARD CLASSIFICATION (GHS / CLP)



Danger

H224 H350 H341 H332 H302 H373 H315 H412 EUH019

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    | furan                                          |
| 1.1 IUPAC name        | furan                                          |
| 1.1 CAS number        | 110-00-9                                       |
| 1.1 EC number         | 203-727-3                                      |
| 1.1 PubChem CID       | 8029                                           |
| 1.1 InChIKey          | YLQBMQCUJZJEEH-UHFFFAOYSA-N                    |
| 1.1 SMILES            | C1=COC=C1                                      |
| 1.1 Molecular formula | C <sub>4</sub> H <sub>4</sub> O <sup>[7]</sup> |
| 1.1 Molar mass        | 68.07 g/mol <sup>[7]</sup>                     |
| 1.1 Exact mass        | 68.0262 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)

## 2. Hazards identification



**Danger**

### Hazard statements (H) <sup>[3][4][10]</sup>

|               |                                                                   |
|---------------|-------------------------------------------------------------------|
| <b>H224</b>   | Extremely flammable liquid and vapour                             |
| <b>H350</b>   | May cause cancer                                                  |
| <b>H341</b>   | Suspected of causing genetic defects                              |
| <b>H332</b>   | Harmful if inhaled                                                |
| <b>H302</b>   | Harmful if swallowed                                              |
| <b>H373</b>   | May cause damage to organs through prolonged or repeated exposure |
| <b>H315</b>   | Causes skin irritation                                            |
| <b>H412</b>   | Harmful to aquatic life with long lasting effects                 |
| <b>EUH019</b> | May form explosive peroxides.                                     |

### Precautionary statements (P) <sup>[3][4][10]</sup>

|                       |                                                                                                       |
|-----------------------|-------------------------------------------------------------------------------------------------------|
| <b>P201</b>           | Obtain special instructions before use                                                                |
| <b>P202</b>           | Do not handle until all safety precautions have been read and understood                              |
| <b>P210</b>           | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking         |
| <b>P233</b>           | Keep container tightly closed                                                                         |
| <b>P240</b>           | Ground and bond container and receiving equipment                                                     |
| <b>P260</b>           | Do not breathe dust/fume/gas/mist/vapours/spray                                                       |
| <b>P264</b>           | Wash thoroughly after handling                                                                        |
| <b>P270</b>           | Do not eat, drink or smoke when using this product                                                    |
| <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+P312</b>      | IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell                             |
| <b>P302+P352</b>      | IF ON SKIN: Wash with plenty of water                                                                 |
| <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>P308+P313</b>      | IF exposed or concerned: Get medical advice/attention                                                 |
| <b>P312</b>           | Call a POISON CENTER or doctor/physician if you feel unwell                                           |

|                  |                                                                     |
|------------------|---------------------------------------------------------------------|
| <b>P314</b>      | Get medical advice/attention if you feel unwell                     |
| <b>P330</b>      | Rinse mouth                                                         |
| <b>P332+P313</b> | If skin irritation occurs: Get medical advice/attention             |
| <b>P370+P378</b> | In case of fire: Use appropriate media to extinguish                |
| <b>P391</b>      | Collect spillage                                                    |
| <b>P403+P235</b> | Store in a well-ventilated place: Keep cool                         |
| <b>P405</b>      | Store locked up                                                     |
| <b>P501</b>      | Dispose of contents/container to an approved waste collection point |

**NOTE: CMR substance — employment of pregnant and breastfeeding women in work harmful to health is prohibited (Polish Labour Code Art. 176 § 1; Council of Ministers Regulation of 3 April 2017, Journal of Laws 2017 item 796).** <sup>[15][16]</sup>

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

|                          |                                                                                       |
|--------------------------|---------------------------------------------------------------------------------------|
| <b>Substance type</b>    | pure substance                                                                        |
| <b>CAS Number</b>        | 110-00-9                                                                              |
| <b>EC number</b>         | 203-727-3                                                                             |
| <b>Molecular formula</b> | C <sub>4</sub> H <sub>4</sub> O                                                       |
| <b>Concentration</b>     | ≥99% (typical reagent-grade purity — to be confirmed by the supplier's specification) |
| <b>Clp index no</b>      | 603-105-00-5                                                                          |

### 4. First aid measures



#### Inhalation

Move the affected person to fresh air. Keep at rest. If not breathing: artificial respiration (qualified personnel only). <sup>[1][2][13]</sup>

#### Skin contact

Remove contaminated clothing. Rinse skin with soap and water (min. 15 minutes). <sup>[1][2][13]</sup>

#### Eye contact

Rinse eyes with running water (min. 15 minutes). Remove contact lenses if possible. If irritation persists — consult an ophthalmologist. <sup>[1][2][13]</sup>

#### Ingestion

Do NOT induce vomiting (unless directed by a physician). Rinse mouth with water. Never give anything by mouth to an unconscious person. Poison Centre Łódź: +48 42 631 47 24 (24/7). Emergency number: 112. <sup>[1][2][13]</sup>

#### Symptoms and effects

nausea, vomiting, diarrhoea; cough, shortness of breath, headache, dizziness; skin redness and irritation. <sup>[3][10]</sup>

#### Notes for physician

Requires verification

**Emergency numbers: CIT Łódź: +48 42 631 47 24 (24/7) | Emergency: 112**

## 5. Firefighting measures

|                                       |                                                                                                                                                                |
|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Suitable extinguishing media</b>   | Alcohol-resistant foam, carbon dioxide (CO <sub>2</sub> ), dry chemical powder, water spray/mist. <a href="#">[1]</a> <a href="#">[2]</a> <a href="#">[13]</a> |
| <b>Unsuitable extinguishing media</b> | Full/compact water jet (splashes and spreads the burning liquid, which floats on water). <a href="#">[1]</a> <a href="#">[2]</a> <a href="#">[13]</a>          |
| <b>Specific hazards</b>               | Thermal decomposition products:CO, CO <sub>2</sub> . <a href="#">[14]</a>                                                                                      |
| <b>Advice for firefighters</b>        | Use self-contained breathing apparatus (SCBA). Full protective suit. <a href="#">[1]</a> <a href="#">[2]</a> <a href="#">[13]</a>                              |
| <b>Flash Point</b>                    | -35.6°C <a href="#">[7]</a>                                                                                                                                    |
| <b>Auto-ignition temperature</b>      | 390°C <a href="#">[7]</a>                                                                                                                                      |

## 6. Accidental release measures

|                                                |                                                                                                                                                                                                                                                                                           |
|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Personal precautions</b>                    | Use personal protective equipment (see Section 8). Avoid breathing vapours. <a href="#">[1]</a> <a href="#">[2]</a> <a href="#">[13]</a>                                                                                                                                                  |
| <b>Environmental precautions</b>               | Prevent entry into sewers, groundwater and surface water. <a href="#">[1]</a> <a href="#">[2]</a> <a href="#">[13]</a>                                                                                                                                                                    |
| <b>Methods for containment and cleaning up</b> | Contain the spill with a barrier. Absorb with inert material (sand, vermiculite, diatomaceous earth). Collect into sealed, labelled containers. Do not release into drains. Remove ignition sources; use non-sparking tools. <a href="#">[1]</a> <a href="#">[2]</a> <a href="#">[13]</a> |
| <b>Related sections</b>                        | 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. <a href="#">[1]</a> <a href="#">[2]</a> <a href="#">[13]</a> |
| <b>Storage temperature</b>    | Store at room temperature (15-25°C) or as indicated on the label. <a href="#">[1]</a> <a href="#">[2]</a> <a href="#">[13]</a>                                  |
| <b>Humidity</b>               | Store in a dry place (<60% RH). <a href="#">[1]</a> <a href="#">[2]</a> <a href="#">[13]</a>                                                                    |
| <b>Light</b>                  | Protect from direct sunlight. <a href="#">[1]</a> <a href="#">[2]</a> <a href="#">[13]</a>                                                                      |
| <b>Incompatible materials</b> | Strong oxidizers, Ignition sources, open flames. <a href="#">[14]</a>                                                                                           |

## 8. Exposure controls/personal protection

### 8.1 Control parameters

|                           |                                                                                                                                                    |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>OEL — NDS (Poland)</b> | No NDS (OEL) value in the available working list — verify in the current MRPiPS regulation before use; do not assume the absence of a limit value. |
| <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) [\[5\]](#)[\[6\]](#)[\[17\]](#)



**Chemical-resistant protective gloves**  
EN ISO 374-1:2016+A1:2018  
nitrile (min. 0.11 mm)



**Closed safety spectacles or goggles**  
EN ISO 16321-1:2022 / EN 166:2001



**Respiratory protection**  
EN 14387:2004+A1:2008  
type AX filter (low-boiling organic vapours)



**Closed safety footwear with toe protection**  
EN ISO 20345:2022 (S2/S3)

## 9. Physical and chemical properties

| Property (item 9.1)   | Value  | Source |
|-----------------------|--------|--------|
| <b>Physical state</b> | Liquid |        |

| Property (item 9.1)                               | Value                                               | Source |
|---------------------------------------------------|-----------------------------------------------------|--------|
| Colour                                            | No data available.                                  |        |
| Odour                                             | No data available.                                  |        |
| pH (1% aqueous solution)                          | No data available.                                  |        |
| Melting point                                     | -85.6706°C [8] [7]                                  |        |
| Boiling point                                     | 31.5673°C [8] [7]                                   |        |
| Flash point                                       | -35.6°C (experimental data) [7]                     |        |
| Flammability                                      | Flam. Liq. 1 (H224) [3][10]                         |        |
| Lower and upper explosion limit                   | No data available.                                  |        |
| Density (20°C)                                    | 0.9438 g/cm <sup>3</sup> [7]                        |        |
| Vapour pressure                                   | 65.728 kPa (493 mmHg, 20°C) (experimental data) [7] |        |
| Relative vapour density                           | 2.35 [22]                                           |        |
| Dynamic viscosity                                 | 0.38 mPa·s [7]                                      |        |
| Kinematic viscosity                               | No data available.                                  |        |
| Refractive index nD <sup>20</sup>                 | 1.4214 (experimental data) [7]                      |        |
| Auto-ignition temperature                         | 390°C (experimental data) [7]                       |        |
| Decomposition temperature                         | Not applicable                                      |        |
| Rozpuszcz. w wodzie                               | 10 g/L, 25°C [7]                                    |        |
| Particle characteristics                          | Not applicable (REACH 9.1(r))                       |        |
| Partition coefficient n-octanol/water (log value) | 1.3 [9]                                             |        |
| Molar mass                                        | 68.07 g/mol [7]                                     |        |
| Molecular formula                                 | C <sub>4</sub> H <sub>4</sub> O [7]                 |        |
| 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             | Reaktywny — tworzy nadtlutki (patrz niebezpieczne reakcje). [14]                                                                                                                                                                                       |
| Chemical stability     | May form unstable, explosive organic peroxides during storage (contact with air/light, after opening the container). [14]                                                                                                                              |
| Hazardous reactions    | Formation of explosive peroxides (EUH019). Concentration of peroxides during distillation/evaporation to dryness risks explosion. Check for the presence of peroxides before use/distillation; store under inhibitor, protect from light and air. [14] |
| Conditions to avoid    | Contact with air and light, prolonged storage, evaporation to dryness. [14]                                                                                                                                                                            |
| Incompatible materials | Strong oxidizers, Ignition sources, open flames.                                                                                                                                                                                                       |
| Decomposition products | Thermal decomposition products: CO, CO <sub>2</sub> .                                                                                                                                                                                                  |

## 11. Toxicological information

|               |                    |
|---------------|--------------------|
| LD50 (oral)   | No data available. |
| LD50 (dermal) | No data available. |

|                                              |                                                                                                                                                             |
|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>LC50 (inhalation)</b>                     | LC50 3398 ppm (1 h) (rat) <sup>[7]</sup>                                                                                                                    |
| <b>Skin irritation</b>                       | Category 2 — skin irritation.                                                                                                                               |
| <b>Eye irritation</b>                        | Not classified for this hazard (outside the scope of the harmonised classification in CLP Annex VI; verify supplier self-classification) <sup>[3][10]</sup> |
| <b>Sensitisation</b>                         | Not classified for this hazard (outside the scope of the harmonised classification in CLP Annex VI; verify supplier self-classification) <sup>[3][10]</sup> |
| <b>Mutagenicity</b>                          | Category 2 (harmonised classification, Annex VI to CLP).                                                                                                    |
| <b>Carcinogenicity</b>                       | Category 1A/1B (harmonised classification, Annex VI to CLP).                                                                                                |
| <b>IARC classification (carcinogenicity)</b> | IARC Group 2B — possibly carcinogenic to humans. [local snapshot — not verified against the current IARC list] <sup>[20]</sup>                              |
| <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][10]</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][10]</sup> |
| <b>STOT — repeated exposure</b>              | Category 2 (H373): May cause damage to organs through prolonged or repeated exposure. <sup>[3][10]</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][10]</sup> |

## 12. Ecological information

|                                        |                                                                                                                                                                                                      |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Aquatic toxicity</b>                | Harmonised classification (CLP Annex VI): H412 — Harmful to aquatic life with long lasting effects (Aquatic Chronic 3). LC <sub>50</sub> (fish): 61 mg/L (Pimephales promelas, 96 h) <sup>[21]</sup> |
| <b>Persistence / biodegradability</b>  | No data available.                                                                                                                                                                                   |
| <b>Bioaccumulative potential</b>       | log Kow = 1.3 <sup>[9]</sup> . Low bioaccumulation potential (log Kow < 4.5 — PBT/vPvB screening criterion per ECHA Guidance R.11). <sup>[18][19]</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> | No information.                                                                                                                                                                                      |

## 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>[12]</sup> |
| <b>Packaging</b>        | Cleaned packaging may be recycled. Contaminated packaging must be treated as hazardous waste.                                                                 |

## 14. Transport information



Class 3 — Flammable liquids

|                               |                                                                                                                                                 |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UN number</b>              | UN 2389 <sup>[7]</sup>                                                                                                                          |
| <b>Transport hazard class</b> | Suggested from GHS classification — VERIFICATION REQUIRED.                                                                                      |
| <b>Environmental hazard</b>   | Not classified as environmentally hazardous for transport (no H400/H410/H411 in CLP Annex VI; no marine pollutant mark required) <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.                                                                        |

## 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>                      | Subject to general entries 28–30 of REACH Annex XVII (CMR substance cat. 1A/1B): sale to the general public prohibited — supply to professional users only. <sup>[1]</sup> |
| <b>IARC classification (carcinogenicity)</b> | IARC Group 2B — possibly carcinogenic to humans.                                                                                                                           |

## 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 03.09.2026 were omitted as future (not yet applicable).

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

### Scientific citations (10)

Toxicology and Carcinogenesis Studies of Furan (CAS No. 110-00-9) in F344 Rats and B6C3F1 Mice (Gavage Studies).. (1993).  
 Immediately dangerous to life or health (IDLH) value profile: furan (CAS no.110-00-9).. (2016). DOI: 10.26616/nioshpub2016171  
 Cheng B. Syntheses of furan natural products.. Natural product reports (2026). DOI: 10.1039/d6np00005c  
 Tian M, Peng Y, Zheng J. Metabolic Activation and Hepatotoxicity of Furan-Containing Compounds.. Drug metabolism and disposition: the biological fate of chemicals (2022). DOI: 10.1124/dmd.121.000458  
 Mariotti MS, Granby K, Rozowski J et al.. Furan: a critical heat induced dietary contaminant.. Food & function (2013). DOI: 10.1039/c3fo30375f

### Full text of H statements

|               |                                                                   |
|---------------|-------------------------------------------------------------------|
| <b>H224</b>   | Extremely flammable liquid and vapour                             |
| <b>H350</b>   | May cause cancer                                                  |
| <b>H341</b>   | Suspected of causing genetic defects                              |
| <b>H332</b>   | Harmful if inhaled                                                |
| <b>H302</b>   | Harmful if swallowed                                              |
| <b>H373</b>   | May cause damage to organs through prolonged or repeated exposure |
| <b>H315</b>   | Causes skin irritation                                            |
| <b>H412</b>   | Harmful to aquatic life with long lasting effects                 |
| <b>EUH019</b> | May form explosive peroxides.                                     |

### Full text of P statements

|             |                                                                                               |
|-------------|-----------------------------------------------------------------------------------------------|
| <b>P201</b> | Obtain special instructions before use                                                        |
| <b>P202</b> | Do not handle until all safety precautions have been read and understood                      |
| <b>P210</b> | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking |
| <b>P233</b> | Keep container tightly closed                                                                 |
| <b>P240</b> | Ground and bond container and receiving equipment                                             |
| <b>P260</b> | Do not breathe dust/fume/gas/mist/vapours/spray                                               |
| <b>P264</b> | Wash thoroughly after handling                                                                |
| <b>P270</b> | Do not eat, drink or smoke when using this product                                            |
| <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+P312</b>      | IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell                             |
| <b>P302+P352</b>      | IF ON SKIN: Wash with plenty of water                                                                 |
| <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>P308+P313</b>      | IF exposed or concerned: Get medical advice/attention                                                 |
| <b>P312</b>           | Call a POISON CENTER or doctor/physician if you feel unwell                                           |
| <b>P314</b>           | Get medical advice/attention if you feel unwell                                                       |
| <b>P330</b>           | Rinse mouth                                                                                           |
| <b>P332+P313</b>      | If skin irritation occurs: Get medical advice/attention                                               |
| <b>P370+P378</b>      | In case of fire: Use appropriate media to extinguish                                                  |
| <b>P391</b>           | Collect spillage                                                                                      |
| <b>P403+P235</b>      | Store in a well-ventilated place: Keep cool                                                           |
| <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>v1 (03.09.2026)</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: 2026-09-03.
- [2] European Commission. Reg.(EU) 2020/878 — amending Annex II REACH. OJ EU L 203/2020. From 01.01.2023. URL: <https://eur-lex.europa.eu/eli/reg/2020/878/oj> Accessed: 2026-09-03.
- [3] EP and Council. Reg.(EC) 1272/2008 (CLP) + ATP 23. OJ EU L 353/2008. (2026-07-07) URL: <https://eur-lex.europa.eu/eli/reg/2008/1272/oj> Accessed: 2026-09-03.
- [4] United Nations. GHS Rev.9. ST/SG/AC.10/30/Rev.9. New York and Geneva: United Nations, 2021. URL: <https://unece.org/transport/dangerous-goods/ghs-rev9-2021> Accessed: 2026-09-03.
- [5] ISO. ISO 7010:2019 — Graphical symbols. Safety signs. URL: <https://www.iso.org/standard/72424.html> Accessed: 2026-09-03.
- [6] ISO. ISO 3864-1:2011 — Safety colours and safety signs. URL: <https://www.iso.org/standard/51021.html> Accessed: 2026-09-03.
- [7] PubChem. National Center for Biotechnology Information (NIH/NLM), chemical compound database. URL: <https://pubchem.ncbi.nlm.nih.gov/compound/8029>
- [8] NIST. Chemistry WebBook, SRD 69. National Institute of Standards and Technology. URL: <https://webbook.nist.gov/cgi/cbook.cgi?ID=110-00-9>
- [9] Rumble, J.R., ed. CRC Handbook of Chemistry and Physics. 105th ed. Boca Raton: CRC Press, 2024. URL: <https://hbcpc.chemnetbase.com>
- [10] ECHA. European Chemicals Agency — harmonised classification inventory (CLP Annex VI). URL: <https://echa.europa.eu>
- [11] ECHA. REACH Registration Dossier (registered substance, acute toxicity study record). Helsinki: European Chemicals Agency. URL: <https://echa.europa.eu/registration-dossier>
- [12] European Commission. Decision 2000/532/EC establishing a list of wastes (European Waste Catalogue). OJ EU L 226/3. URL: <https://eur-lex.europa.eu/eli/dec/2000/532/oj>
- [13] European Chemicals Agency (ECHA). Guidance on the Compilation of Safety Data Sheets. Version 4.0. Helsinki: European Chemicals Agency, 2020. URL: [https://echa.europa.eu/documents/10162/2324906/sds\\_en.pdf](https://echa.europa.eu/documents/10162/2324906/sds_en.pdf)
- [14] Urban, P.G., ed. Bretherick's Handbook of Reactive Chemical Hazards. 8th ed. Oxford: Academic Press.
- [15] Act of 26 June 1974 — Labour Code (Poland), Art. 176 § 1. Journal of Laws 2023 item 1465. URL: <https://isap.sejm.gov.pl>
- [16] Council of Ministers of the Republic of Poland. Regulation of 3 April 2017 on the list of arduous, hazardous or health-harmful work for pregnant and breastfeeding women. Journal of Laws 2017 item 796. URL: <https://isap.sejm.gov.pl/isap.nsf/DocDetails.xsp?id=WDU20170000796>
- [17] CEN. Personal protective equipment standards (EN ISO 374-1, EN 166, EN 149, EN 14387, EN ISO 20345). Brussels: European Committee for Standardization.
- [18] ECHA. Guidance on Information Requirements and Chemical Safety Assessment, Chapter R.11: PBT/vPvB Assessment. Helsinki: European Chemicals Agency. URL: <https://echa.europa.eu/guidance-documents/guidance-on-information-requirements-and-chemical-safety-assessment>
- [19] European Parliament and Council. Regulation (EC) No 1907/2006 (REACH), Annex XIII — Criteria for the identification of PBT and vPvB substances. OJ EU L 396/2006 (consolidated). URL: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02006R1907-20140410>
- [20] IARC. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans. Lyon: International Agency for Research on Cancer. URL: <https://monographs.iarc.who.int>
- [21] U.S. EPA. ECOTOX Knowledgebase. Washington, DC: U.S. Environmental Protection Agency. URL: <https://cfpub.epa.gov/ecotox/>
- [22] MOL-GOD. Value obtained by calculation from the molecular formula/molecular weight (the specific quantity and its formula are indicated at the respective field). Calculated value, not an experimental measurement. URL: <https://www.nist.gov/pml/atomic-weights-and-isotopic-compositions-relative-atomic-masses>
- [23] MRIPS Regulation of 12.06.2018 — NDS/NDN. Journal of Laws 2024 item 1017. URL: <https://isap.sejm.gov.pl/isap.nsf/DocDetails.xsp?id=WDU20240001017> Accessed: 2026-09-03.

## External links

NIST: <https://webbook.nist.gov/cgi/cbook.cgi?ID=110-00-9>

**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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