

According to Regulation (EC) No 1907/2006

According to Regulation (EC) No 2020/878

4-Aminopyridine

Version number: 2
 Issued: 2024-04-03
 Replaces SDS: 2019-07-18



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

1.1. Product identifier

Trade name

4-Aminopyridine

CAS number

504-24-5

EC number

207-987-9

Synonyms

4-pyridylamine; Dalfampridine

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

Relevant identified uses

Research and development. Laboratory Chemicals. Manufacture of substances.

Not suitable for use in

Not suitable for human consumption or veterinary purposes.

1.3. Details of the supplier of the safety data sheet

Supplier

Molekula Group

Address

Molekula Ltd, Lingfield Way, Darlington,
 DL1 4XX Darlington
 United Kingdom

Telephone

+44 (0) 3302 000 333

Email

info@molekula.com

Web site

www.molekula.com

Contact person

Kevin Banks

Email

+44 (0) 7769276927

1.4. Emergency telephone number

Poison center/Additional emergency number

0344 892 0111 - National Poisons Information Service (Newcastle Centre)

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SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

Classification

Serious eye damage, hazard category 1
 Hazardous to the aquatic environment — Chronic hazard category 2
 Skin corrosion, hazard category 1B
 Acute toxicity, oral, hazard category 1
 Acute toxicity, dermal, hazard category 3
 Acute toxicity, inhalation, hazard category 3

Hazard statements

H300, H311, H314, H318, H331, H411

2.2. Label elements

Labelling according to Regulation (EC) No 1272/2008

Hazard pictograms



Signal word

Danger

Hazard statements

H300 Fatal if swallowed.
 H311 Toxic in contact with skin.
 H314 Causes severe skin burns and eye damage.
 H331 Toxic if inhaled.
 H411 Toxic to aquatic life with long lasting effects.

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Precautionary statements

P202 Do not handle until all safety precautions have been read and understood.
 P260 Do not breathe dust/fumes/gas/mist/vapours/spray.
 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 should not be allowed out of the workplace.
 P273 Avoid release to the environment.
 P280 Wear protective gloves/protective clothing/eye protection/face protection.
 P301 + P330 + P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
 P302 + P352 IF ON SKIN: Wash with plenty of water/.
 P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
 P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
 P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P312 Call a POISON CENTER/doctor if you feel unwell.
 P361 + P364 Take off immediately all contaminated clothing and wash it before reuse.
 P391 Collect spillage.
 P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
 P405 Store locked up.
 P501 Dispose of contents/container to local regulations.

2.3. Other hazards

No data available

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Chemical name	CAS No. EC No. REACH No. Index No.	Concentration	Classification	H-phrases M factor acute M factor chronic	Note
4-Aminopyridine	504-24-5 207-987-9 - -	100%	Acute Tox. 2 - oral, Acute Tox. 3 - dermal, Skin Corr. 1B, Acute Tox. 3 - inhalation, Aquatic Chronic 2, Eye Dam. 1	H300, H311, H314, H331, H411 - -	-

Molecular weight

94.11

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Substance additional information

For the complete text of H- / EUH-statements mentioned in this section, see section 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

IF exposed or concerned: Get medical advice/attention. First aiders/ medical personnel need to protect themselves. Show this Safety Data Sheet (SDS) to medical personnel.

Inhalation

Toxic if inhaled. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor. If breathing stops, provide artificial respiration. For breathing difficulties oxygen may be necessary.

Skin contact

In case of skin contact: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]. Immediately call a POISON CENTER/doctor. The casualty should be transferred to hospital for further treatment.

Eye contact

Remove contact lenses if present. Rinse eyes with water. Continue to rinse for at least 15 minutes and seek medical attention.

Ingestion

IF SWALLOWED: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only if the persons are fully conscious and awake). Administer activated charcoal (20 - 40g in a 10% slurry) and consult a doctor as quickly as possible. Do not attempt to neutralise.

Information for doctors

No data available.

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

The severity of the symptoms described will vary dependant of the concentration and the length of exposure. Corrosive. Immediate first aid is necessary. See section 11 for more detailed information on health effects and symptoms.

Inhalation

Single exposure may cause the following adverse effects: Difficulty in breathing. Unconsciousness, possibly death. Causes burns by all exposure routes.

Skin contact

Single exposure may cause the following adverse effects: Unconsciousness, possibly death. Causes burns by all exposure routes.

Eye contact

Single exposure may cause the following adverse effects: Severe irritation. Unconsciousness, possibly death. Causes burns by all exposure routes.

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Ingestion

Single exposure may cause the following adverse effects: Severe abdominal pain. May cause severe internal injury. Unconsciousness, possibly death. Causes burns by all exposure routes.

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

Treat symptomatically. No special treatment requirement.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

In case of fire: Use foam, carbon dioxide, dry powder or water fog to extinguish.

Unsuitable extinguishing media

No specific fire fighting procedure given.

5.2. Special hazards arising from the substance or mixture

Specific hazards: Toxic. Corrosive.

Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapours.

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

Carbon monoxide (CO). Carbon dioxide (CO₂).

Nitrous gases (NO_x).

5.3. Advice for firefighters

Special protective equipment for fire-fighters

Evacuate area. Avoid breathing gas, fume, vapours or spray. Cool containers exposed to heat with water spray and remove container, if no risk is involved.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Avoid breathing dust/fume/gas/mist/vapours/spray. Provide adequate ventilation. Avoid contact with skin and eyes. Avoid dust formation. For personal protection, see section 8.

6.2. Environmental precautions

Avoid discharge into drains, water courses or onto the ground.

6.3. Methods and material for containment and cleaning up

Collect spillage with shovel, broom or the like and reuse, if possible. Dispose of large amounts of spillage/waste according to agreement with local authorities.

6.4. Reference to other sections

For personal protection, see section 8. For waste disposal, see section 13.

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SECTION 7: Handling and storage

7.1. Precautions for safe handling

Preventive handling precautions

For precautions see section 2.2. Do not handle until all safety precautions have been read and understood. Do not handle broken packages without protective equipment. This product is toxic. Work under hood. Keep containers tightly closed. Immediate first aid is necessary. Wear protective clothing, gloves, eye and face protection. Avoid contact with skin and eyes. Do not breathe dust/fume/gas/mist/vapours/spray. Avoid ingestion and inhalation. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Do not reuse empty containers.

General hygiene

Observe good chemical hygiene practices. Remove contaminated clothing immediately and wash skin with soap and water. Remove contaminated clothing and launder thoroughly before re-use. Wash skin thoroughly after handling.

7.2. Conditions for safe storage, including any incompatibilities

Store at room temperature. Store in a dry place. Store in a closed container.

Storage class : Toxic storage.

Hygroscopic.

7.3. Specific end use(s)

No specific usage precautions noted.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No data available

8.2. Exposure controls

Personal Protective Equipment Symbols



Eye / face protection

Wear eye protection.

Hand protection

Wear protective gloves. Recommended gloves: Nitrile.

Glove Thickness: 0.11mm

Breakthrough time: 8 hours

Always inspect gloves before use. If signs of wear and tear are noticed then the gloves should be replaced.

No specific hygiene procedures noted, but good personal hygiene practices are always advisable, especially when working with chemicals. Wash contaminated skin thoroughly after handling.

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Other skin protection

Wash skin thoroughly after handling.

Respiratory protection

Provide adequate ventilation. If ventilation is insufficient, suitable respiratory protection must be provided.

Environmental exposure controls

Avoid discharge into drains.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state

Solid

Colour

White / off-white.

Odour

No data available

Melting point / freezing point

155 - 158 °C

Boiling point or initial boiling point and boiling range

273 °C

Flammability

No data available

Lower and upper explosion limit

No data available

Flash point

156 °C

Auto-ignition temperature

640 °C

Decomposition temperature

No data available

pH

11

Kinematic viscosity

No data available

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Solubility

No data available

Partition coefficient n-octanol/water

No data available

Vapour pressure

No data available

Density and/or relative density

No data available

Relative vapour density

No data available

Particle characteristics

No data available

9.2. Other information

No data available

SECTION 10: Stability and reactivity

10.1. Reactivity

15 (approx) Kelvin below the flash point is to be rated as critical.

Forms explosive mixtures with air on intense heating.

10.2. Chemical stability

Stable under normal temperature conditions. Stable under the prescribed storage conditions.

10.3. Possibility of hazardous reactions

Violent reactions possible with:

oxidising agents

acid halides

Acid anhydrides.

Acids.

10.4. Conditions to avoid

strong heating

10.5. Incompatible materials

Strong oxidising agents. Strong acids. Acid chlorides Acid anhydrides. various plastics

10.6. Hazardous decomposition products

See section 5.

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SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity

Product / Substance name CAS / EC no.	Dose descriptor	Value / Dose	Exposure route	Duration of exposure	Test animals
4-Aminopyridine 504-24-5 / 207-987-9	LD50	20 mg/kg	Oral	-	Rat
4-Aminopyridine 504-24-5 / 207-987-9	LC50	0.53 mg/l (dust/mist)	Inhalation.	4 hours	Rat
4-Aminopyridine 504-24-5 / 207-987-9	LD50	327 mg/kg	Dermal	-	Rabbit

Skin corrosion/irritation

Product / Substance name CAS / EC no.	Result	Species
4-Aminopyridine 504-24-5 / 207-987-9	CAUSES BURNS.	reconstructed human epidermis (RhE)

Serious eye damage/irritation

Product / Substance name CAS / EC no.	Result	Duration of exposure	Method / Guideline
4-Aminopyridine 504-24-5 / 207-987-9	Irreversible effects on the eye	6 hours	In vitro study

Germ cell mutagenicity

Product / Substance name CAS / EC no.	Result	Metabolic activation / Exposure	Species	Method / Guideline
4-Aminopyridine 504-24-5 / 207-987-9	Negative.	with and without metabolic activation	S. typhimurium	Ames test

Aspiration hazard

Based on available data, the classification criteria are not met.

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11.2. Information on other hazards

No data available

SECTION 12: Ecological information

12.1. Toxicity

Acute fish toxicity

Product / Substance name CAS / EC no.	Measurement type	Value / Result	Duration of exposure	Species
4-Aminopyridine 504-24-5 / 207-987-9	LC50	3.43 mg/l	96 hours	Oryzias latipes (Red killifish)

Acute algae toxicity

Product / Substance name CAS / EC no.	Measurement type	Value / Result	Duration of exposure	Species
4-Aminopyridine 504-24-5 / 207-987-9	ErC50	30 mg/l	72 hours	Pseudokirchneriella subcapitata

Acute crustacean toxicity

Product / Substance name CAS / EC no.	Measurement type	Value / Result	Duration of exposure	Species
4-Aminopyridine 504-24-5 / 207-987-9	EC50	14.5 mg/l	48 hours	Daphnia magna

12.2. Persistence and degradability

Persistence and degradability

Product / Substance name CAS / EC no.	Result	Degradation
4-Aminopyridine 504-24-5 / 207-987-9	0%	The product is not readily biodegradable.

12.3. Bioaccumulative potential

No data available

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12.4. Mobility in soil

No data available

12.5. Results of PBT and vPvB assessment

No data available

12.6. Endocrine disrupting properties

This product does not contain any known or suspected endocrine disruptors.

12.7. Other adverse effects

No data available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Disposal considerations

Dispose of contents/container in accordance with local/regional/national/international regulations.

SECTION 14: Transport information

14.1. UN number

2671

14.2. UN proper shipping name

ADR / RID / ADN proper shipping name

AMINOPYRIDINES (o-, m-, p-)

IMDG proper shipping name

AMINOPYRIDINES (o-, m-, p-)

IATA proper shipping name

Aminopyridines (o-, m-, p-)

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14.3. Transport hazard class(es)

Label

ADR/RID/ADN



6.1



8

Environmental hazard



IMDG



6.1



Environmental hazard



8

IATA



6.1



8

Environmental hazard



ADR / RID Class

6.1

ADR / RID Classification code

T2

ADR / RID hazard identification number

60

IMDG Class

6.1

IATA Class

6.1

ADN Class

6.1

ADN Class Code

T2

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14.4. Packing group

ADR / RID / ADN: II

IMDG: II

IATA: II

14.5. Environmental hazards

Not applicable

14.6. Special precautions for user

Special precautions for user

Tunnel restriction code: D/E

Transport category: 2

IMDG EmS

F-A, S-A

14.7. Maritime transport in bulk according to IMO instruments

IBC Instruction: IBC08

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

EU regulations

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

This material safety data sheet complies with the requirements of Regulation (EU) 2020/878.

National regulations

Directive: 2012/18/EU:

H2 ACUTE TOXIC

E2 ENVIRONMENTAL HAZARDS

15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

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SECTION 16: Other information

Phrase meaning

Eye Dam. 1 - Serious eye damage, hazard category 1

Aquatic Chronic 2 - Hazardous to the aquatic environment — Chronic hazard category 2

Skin Corr. 1B - Skin corrosion, hazard category 1B

Acute Tox. 1 - oral - Acute toxicity, oral, hazard category 1

Acute Tox. 3 - dermal - Acute toxicity, dermal, hazard category 3

Acute Tox. 3 - inhalation - Acute toxicity, inhalation, hazard category 3

Acute Tox. 2 - oral - Acute toxicity, oral, hazard category 2

H300 Fatal if swallowed.

H311 Toxic in contact with skin.

H314 Causes severe skin burns and eye damage.

H318 Causes serious eye damage.

H331 Toxic if inhaled.

H411 Toxic to aquatic life with long lasting effects.