

# Safety data sheet

Page: 1/12

BASF Safety data sheet according to UN GHS 4th rev.

Date / Revised: 16.12.2022

Version: 3.1

Product: **Ammonium carbamate crystals**

(ID no. 30041205/SDS\_GEN\_00/EN)

Date of print 14.10.2025

## 1. Identification

### Product identifier

## Ammonium carbamate crystals

Chemical name: ammonium carbamate

CAS Number: 1111-78-0

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

Relevant identified uses: Chemical

Recommended use: Raw material, propellant

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

#### Company:

BASF SE

67056 Ludwigshafen

GERMANY

Division Monomers

Telephone: +49 621 60 42737

E-mail address: pss.monomers@basf.com

### Emergency telephone number

International emergency number:

Telephone: +49 180 2273-112

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## 2. Hazards Identification

### Classification of the substance or mixture

According to UN GHS criteria

Safety data sheet according to UN GHS 4th rev.

Date / Revised: 16.12.2022

Version: 3.1

Product: **Ammonium carbamate crystals**

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Date of print 14.10.2025

Acute Tox. 4 (oral)

Eye Dam./Irrit. 1

Aquatic Acute 3

For the classifications not written out in full in this section the full text can be found in section 16.

## Label elements

### Globally Harmonized System (GHS)

Pictogram:



Signal Word:

Danger

Hazard Statement:

H318 Causes serious eye damage.

H302 Harmful if swallowed.

H402 Harmful to aquatic life.

Precautionary Statements (Prevention):

P280 Wear eye and face protection.

P273 Avoid release to the environment.

P270 Do not eat, drink or smoke when using this product.

P264 Wash contaminated body parts thoroughly after handling.

Precautionary Statements (Response):

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310 Immediately call a POISON CENTER or physician.

P330 Rinse mouth

Precautionary Statements (Disposal):

P501 Dispose of contents and container to hazardous or special waste collection point.

### According to UN GHS criteria

Hazard determining component(s) for labelling: Ammonium carbamate

## Other hazards

### According to UN GHS criteria

If applicable information is provided in this section on other hazards which do not result in classification but which may contribute to the overall hazards of the substance or mixture.

No specific dangers known, if the regulations/notes for storage and handling are considered.

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Safety data sheet according to UN GHS 4th rev.

Date / Revised: 16.12.2022

Version: 3.1

Product: **Ammonium carbamate crystals**

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### 3. Composition/Information on Ingredients

#### Substances

##### Chemical nature

Ammonium carbamate

CAS Number: 1111-78-0

EC-Number: 214-185-2

For the classifications not written out in full in this section the full text can be found in section 16.

#### Mixtures

Not applicable

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### 4. First-Aid Measures

#### Description of first aid measures

If inhaled:

After inhalation of decomposition products: Keep patient calm, remove to fresh air, seek medical attention.

On skin contact:

Wash thoroughly with soap and water

On contact with eyes:

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

On ingestion:

Immediately rinse mouth and then drink 200-300 ml of water, seek medical attention.

#### Most important symptoms and effects, both acute and delayed

Symptoms: Eye irritation, respiratory disorders, Information, i.e. additional information on symptoms and effects may be included in the GHS labeling phrases available in Section 2 and in the Toxicological assessments available in Section 11.

#### Indication of any immediate medical attention and special treatment needed

Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

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### 5. Fire-Fighting Measures

#### Extinguishing media

Suitable extinguishing media:

water spray, carbon dioxide, foam

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

Ammonia, anhydrous, Carbon dioxide

The substances/groups of substances mentioned can be released in case of fire.

**Advice for fire-fighters**

Further information:

Product itself is non-combustible; fire extinguishing method of surrounding areas must be considered.

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**6. Accidental Release Measures****Personal precautions, protective equipment and emergency procedures**

Breathing protection required. Handle in accordance with good industrial hygiene and safety practice.

**Environmental precautions**

Prevent entry into drains and surface waters. Ensure compliance with local regulations before discharging into effluent treatment plants.

**Methods and material for containment and cleaning up**

For residues: Sweep/shovel up.

Dispose of absorbed material in accordance with regulations.

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**7. Handling and Storage****Precautions for safe handling**

Avoid dust formation.

Protection against fire and explosion:

Store in a cool place. If heated the drums can burst due to pressure build-up.

**Conditions for safe storage, including any incompatibilities**

Segregate from nitrites and alkaline substances.

Do not store with: Sodium nitrate

Suitable materials for containers: High density polyethylene (HDPE), Low density polyethylene (LDPE), Stainless steel 1.4541, Stainless steel 1.4571

Further information on storage conditions: Store in unopened original containers in a cool and dry place.

Protect from temperatures above: 30 °C

Changes in the properties of the product may occur if substance/product is stored above indicated temperature for extended periods of time.

**Specific end use(s)**

See exposure scenario(s) in the attachment to this safety data sheet.

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**8. Exposure Controls/Personal Protection****Control parameters**

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Safety data sheet according to UN GHS 4th rev.

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#### Components with occupational exposure limits

When the product is handled at elevated temperature, the following occupational exposure limit should be noted:

124-38-9: Carbon dioxide

1111-78-0: Ammonium carbamate

7664-41-7: Ammonia, anhydrous

### **Exposure controls**

#### Personal protective equipment

Respiratory protection:

Suitable respiratory protection for lower concentrations or short-term effect: Gas filter for gases/vapours of alkaline compounds such as ammonia, amines (e.g. EN 14387 Type K).

Combination filter for gases/vapours of organic, inorganic, acid inorganic, alkaline compounds and toxic particles (e. g. EN 14387 Type ABEK-P3) Suitable respiratory protection for higher concentrations or long-term effect: Self-contained breathing apparatus.

Hand protection:

Suitable chemical resistant safety gloves (EN ISO 374-1) also with prolonged, direct contact (Recommended: Protective index 6, corresponding > 480 minutes of permeation time according to EN ISO 374-1): E.g. nitrile rubber (0.4 mm), chloroprene rubber (0.5 mm), butyl rubber (0.7 mm) etc. Supplementary note: The specifications are based on tests, literature data and information of glove manufacturers or are derived from similar substances by analogy. Due to many conditions (e.g. temperature) it must be considered, that the practical usage of a chemical-protective glove in practice may be much shorter than the permeation time determined through testing.

Manufacturer's directions for use should be observed because of great diversity of types.

Eye protection:

Safety glasses with side-shields (frame goggles) (e.g. EN 166)

#### General safety and hygiene measures

Do not breathe dust. At the end of the shift the skin should be cleaned and skin-care agents applied.

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## **9. Physical and Chemical Properties**

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

Form:	crystalline, powder	
Colour:	white	
Odour:	ammonia-like	
Odour threshold:	Not determined due to potential health hazard by inhalation.	
pH value:	10,0 (100 g/l, 20 °C)	(pH Meter)
decomposition point:	Unspecified	(DTA)
Melting point:	none	(OECD Guideline 102)

Safety data sheet according to UN GHS 4th rev.

Date / Revised: 16.12.2022

Version: 3.1

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Date of print 14.10.2025

boiling temperature:	(1.013,25 hPa) The substance / product decomposes therefore not determined.	
Flash point:	not applicable	
Evaporation rate:	negligible, Value can be approximated from Henry's Law Constant or vapor pressure.	
Flammability:	not highly flammable	(other)
Lower explosion limit:	For solids not relevant for classification and labelling.	
Upper explosion limit:	For solids not relevant for classification and labelling.	
Ignition temperature:	not applicable	
Vapour pressure:	82 mbar (20 °C) Literature data. 442 mbar (45 °C) Literature data.	
Density:	1,37 g/cm3 (19,9 °C, 1.013 hPa) Literature data.	(other)
Solubility in water:	490 - 580 g/l (20 °C)	(other)
Solubility (quantitative) solvent(s):	Water approx. 423 g/kg (0 °C)	
Partitioning coefficient n-octanol/water (log Kow):	The substance / product decomposes therefore not determined.	(other)
Self ignition:	not self-igniting	Test type: Spontaneous self-ignition at room-temperature.
	not self-igniting	Test type: Self-ignition at high temperatures. (Method: other)
Thermal decomposition:	35 °C (internal method) To avoid thermal decomposition, do not overheat.	
Viscosity, dynamic:	not applicable	
Explosion hazard:	not explosive	(other)
Fire promoting properties:	Based on its structural properties the product is not classified as oxidizing.	(other)

**Other information**

Safety data sheet according to UN GHS 4th rev.

Date / Revised: 16.12.2022

Version: 3.1

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(ID no. 30041205/SDS\_GEN\_00/EN)

Date of print 14.10.2025

Self heating ability:	It is not a substance capable of spontaneous heating.	
Minimum ignition energy:	(1 bar, 25 °C) Grain size distribution: 63 µm The product is not capable of a dust explosion.	(VDI 2263, sheet 1, 2.1.2)
Bulk density:	780 - 850 kg/m <sup>3</sup>	(other)
pKA:	not applicable	
Hygroscopy:	Non-hygroscopic	
Adsorption/water - soil:	KOC: 9,25; log KOC: 0,966	(calculated)
Surface tension:	Based on chemical structure, surface activity is not to be expected.	
Grain size distribution	500 - 710 µm	(D50, other (measured))

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## 10. Stability and Reactivity

### Reactivity

Formation of flammable gases:	Remarks:	Forms no flammable gases in the presence of water.
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### Possibility of hazardous reactions

Exothermic reaction. Reacts with alkalis and nitrites. Reacts with nitrates. Incompatible with bases.

### Conditions to avoid

Avoid heat. Avoid moisture. See SDS section 7 - Handling and storage.

### Incompatible materials

Substances to avoid:  
bases, acids

### Hazardous decomposition products

Hazardous decomposition products:  
Ammonia, anhydrous, Carbon dioxide

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## 11. Toxicological Information

### Information on toxicological effects

#### Acute toxicity

Assessment of acute toxicity:

Of moderate toxicity after single ingestion. In animal studies the substance is virtually nontoxic after short-term inhalation. In animal studies the substance is virtually nontoxic after a single skin contact.

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Date of print 14.10.2025

The product has not been fully tested. The statements have been derived in parts from products of a similar structure or composition.

Experimental/calculated data:

LD50 rat (oral): > 681 mg/kg (OECD Guideline 401)

LC50 rat (by inhalation): 6,6 mg/l 4 h (OECD Guideline 403)

The product has not been tested. The statement has been derived from substances/products of a similar structure or composition. Product not examined: Value is calculated from the data of the components.

LD50 rat (dermal): > 2.000 mg/kg

The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

#### Irritation

Assessment of irritating effects:

May cause severe damage to the eyes. Not irritating to the skin.

Experimental/calculated data:

Skin corrosion/irritation rabbit: non-irritant (OECD Guideline 404)

Serious eye damage/irritation rabbit: irreversible damage (OECD Guideline 405)

#### Respiratory/Skin sensitization

Assessment of sensitization:

Skin sensitizing effects were not observed in animal studies.

Experimental/calculated data:

mouse: Non-sensitizing. (similar to OECD guideline 429)

#### Germ cell mutagenicity

Assessment of mutagenicity:

Mutagenicity tests revealed no genotoxic potential. The product has not been fully tested. The statements have been derived in parts from products of a similar structure or composition.

#### Carcinogenicity

Assessment of carcinogenicity:

Did not show carcinogenic effects in animal experiments. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

#### Reproductive toxicity

Assessment of reproduction toxicity:

Study scientifically not justified.

#### Developmental toxicity

Assessment of teratogenicity:



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Date of print 14.10.2025

No indications of a developmental toxic / teratogenic effect were seen in animal studies. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

#### Specific target organ toxicity (single exposure)

Assessment of STOT single:

Based on the available information there is no specific target organ toxicity to be expected after a single exposure.

#### Repeated dose toxicity and Specific target organ toxicity (repeated exposure)

Assessment of repeated dose toxicity:

No substance-specific organotoxicity was observed after repeated administration to animals. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

#### Aspiration hazard

not applicable

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## 12. Ecological Information

### **Toxicity**

Assessment of aquatic toxicity:

Acutely harmful for aquatic organisms. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.

Toxicity to fish:

LC50 (96 h) 37,0 mg/l, Pimephales promelas (EPA 72-1, static)

Aquatic invertebrates:

EC50 (48 h) 63,7 mg/l, Daphnia magna (OECD Guideline 202, part 1, static)

Aquatic plants:

EC50 (72 h) 129,13 mg/l (growth rate), Scenedesmus subspicatus (DIN 38412 Part 9, static)

Microorganisms/Effect on activated sludge:

EC20 (0,5 h) 1.000 mg/l, activated sludge, domestic (OECD Guideline 209, aerobic)

EC50 (17 h) 1.180 mg/l, Pseudomonas putida (DIN 38412 Part 8, aquatic)

Chronic toxicity to fish:

Study scientifically not justified.

EC10 (28 d) 4,18 mg/l, Pimephales promelas (other, Flow through.)

The product has not been tested. The statement has been derived from the properties of the hydrolysis products.

Chronic toxicity to aquatic invertebrates:

EC10 (21 d) 4,81 mg/l, Daphnia magna (OECD Guideline 211, semistatic)

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Date of print 14.10.2025

The product has not been tested. The statement has been derived from the properties of the hydrolysis products.

Assessment of terrestrial toxicity:  
No data available concerning terrestrial toxicity.  
Study scientifically not justified.

### **Persistence and degradability**

Assessment biodegradation and elimination (H<sub>2</sub>O):  
Readily biodegradable (according to OECD criteria).

Elimination information:  
> 80 % CO<sub>2</sub> formation relative to the theoretical value (28 d) (OECD 301B; ISO 9439; 92/69/EEC, C.4-C) (aerobic, activated sludge, domestic) Readily biodegradable (according to OECD criteria).

Assessment of stability in water:  
In contact with water the substance will hydrolyse rapidly.

### **Bioaccumulative potential**

Assessment bioaccumulation potential:  
Because of the n-octanol/water distribution coefficient (log Pow) accumulation in organisms is not to be expected.

Bioaccumulation potential:  
Study scientifically not justified.

### **Mobility in soil**

Assessment transport between environmental compartments:  
Volatility: The substance will slowly evaporate into the atmosphere from the water surface.  
Adsorption in soil: Adsorption to solid soil phase is not expected.

### **Other adverse effects**

The substance is not listed in Regulation (EC) 1005/2009 on substances that deplete the ozone layer.

### **Additional information**

Other ecotoxicological advice:  
Do not release untreated into natural waters. Decomposition to non-hazardous substances takes place in water.

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## **13. Disposal Considerations**

### **Waste treatment methods**

Test for use in agriculture.

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Date / Revised: 16.12.2022

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Date of print 14.10.2025

## 14. Transport Information

### Land transport

#### ADR

Not classified as a dangerous good under transport regulations

UN number or ID number: Not applicable

UN proper shipping name: Not applicable

Transport hazard class(es): Not applicable

Packing group: Not applicable

Environmental hazards: Not applicable

Special precautions for user: None known

#### RID

Not classified as a dangerous good under transport regulations

UN number or ID number: Not applicable

UN proper shipping name: Not applicable

Transport hazard class(es): Not applicable

Packing group: Not applicable

Environmental hazards: Not applicable

Special precautions for user: None known

### Inland waterway transport

#### ADN

Not classified as a dangerous good under transport regulations

UN number or ID number: Not applicable

UN proper shipping name: Not applicable

Transport hazard class(es): Not applicable

Packing group: Not applicable

Environmental hazards: Not applicable

Special precautions for user: None known

### Transport in inland waterway vessel

Not evaluated

### Sea transport

#### IMDG

Not classified as a dangerous good under transport regulations

UN number or ID number: Not applicable

UN proper shipping name: Not applicable

Transport hazard class(es): Not applicable

Packing group: Not applicable

Environmental hazards: Not applicable

Special precautions for user: None known

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Date / Revised: 16.12.2022

Version: 3.1

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(ID no. 30041205/SDS\_GEN\_00/EN)

Date of print 14.10.2025

user

**Air transport**

IATA/ICAO

	Not classified as a dangerous good under transport regulations
UN number or ID number	Not applicable
UN proper shipping name:	Not applicable
Transport hazard class(es):	Not applicable
Packing group:	Not applicable
Environmental hazards:	Not applicable
Special precautions for user	None known

**Maritime transport in bulk according to IMO instruments**

Maritime transport in bulk is not intended.

**Further information**

Specific national features of transport regulations must be observed. They are to be found in the shipping documents.

**15. Regulatory Information****Safety, health and environmental regulations/legislation specific for the substance or mixture**

Not applicable

**16. Other Information**

This product is of industrial quality and unless otherwise specified or agreed intended exclusively for industrial use.

Full text of classifications, hazard symbols and hazard statements, if mentioned in section 2 or 3:

Acute Tox.	Acute toxicity
Eye Dam./Irrit.	Serious eye damage/eye irritation
Aquatic Acute	Hazardous to the aquatic environment - acute

The data contained in this safety data sheet are based on our current knowledge and experience and describe the product only with regard to safety requirements. This safety data sheet is neither a Certificate of Analysis (CoA) nor technical data sheet and shall not be mistaken for a specification agreement. Identified uses in this safety data sheet do neither represent an agreement on the corresponding contractual quality of the substance/mixture nor a contractually designated use. It is the responsibility of the recipient of the product to ensure any proprietary rights and existing laws and legislation are observed.

Vertical lines in the left hand margin indicate an amendment from the previous version.