We create chemistry

Safety data sheet

BASF Safety data sheet according to UN GHS 4th rev.
Date / Revised: 16.12.2022 Version: 3.1
Product: **Ammonium carbonate Food Grade (E503i)**
(ID no. 30042216/SDS_GEN_00/EN)
Date of print 19.10.2025

1. Identification

Product identifier

Ammonium carbonate Food Grade (E503i)

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

Relevant identified uses: food additive(s)
Recommended use: food additive(s), Raw material

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

2. Hazards Identification

Classification of the substance or mixture

According to UN GHS criteria

Acute Tox. 4 (oral)
Eye Dam./Irrit. 2A

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:
Warning

Hazard Statement:

H319	Causes serious eye irritation.
H302	Harmful if swallowed.
H402	Harmful to aquatic life.

Precautionary Statements (Prevention):

P280	Wear eye 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.
P301 + P312	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P330	Rinse mouth
P337 + P313	If eye irritation persists: Get medical attention.

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, Ammonium hydrogencarbonate

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.

Irritating to eyes, respiratory system and skin (dust).

3. Composition/Information on Ingredients

Substances

Not applicable

Mixtures

Chemical nature

Preparation based on: Ammonium carbamate, Ammonium hydrogencarbonate
H_2CO_3 . x NH_3
CAS: 10361-29-2 EINECS: 233-786-0

Hazardous ingredients (GHS)
According to UN GHS criteria

Ammonium carbamate

Content (W/W): 50 %	Acute Tox. 4 (oral)
CAS Number: 1111-78-0	Eye Dam./Irrit. 1
EC-Number: 214-185-2	Aquatic Acute 3
	H318, H302, H402

Ammonium hydrogencarbonate

Content (W/W): 50 %	Acute Tox. 4 (oral)
CAS Number: 1066-33-7	Aquatic Acute 3
EC-Number: 213-911-5	H302, H402

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

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:
Wash affected eyes for at least 15 minutes under running water with eyelids held open.

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: Overexposure may cause:, vomiting, dyspnea, nausea, coughing

Indication of any immediate medical attention and special treatment needed
Treatment: After inhalation of decomposition products: Pulmonary odema prophylaxis. Treat according to symptoms (decontamination, vital functions), no known specific antidote, administer corticosteroid dose aerosol to prevent pulmonary odema.

5. Fire-Fighting Measures

Extinguishing media
Suitable extinguishing media:
water spray, carbon dioxide, foam

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.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures
Breathing protection required. Ensure suitable air extract/ventilation during cleaning/emptying of process machinery.

Environmental precautions
Do not discharge into drains/surface waters/groundwater.

Methods and material for containment and cleaning up
For residues: Sweep/shovel up.
Avoid raising dust.

7. Handling and Storage

Precautions for safe handling
Breathing must be protected when large quantities are decanted without local exhaust ventilation. Processing machines must be fitted with local exhaust ventilation. 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. Storage and transport only combined with food materials or food additives. Separate from flavoring agents.
Do not store with: Sodium nitrate, Sodium nitrite

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

Further information on storage conditions: Keep container in a well-ventilated place. Keep container dry.

Storage stability:
Storage temperature: < 30 °C
The stated storage temperature should be noted.

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)
For the relevant identified use(s) listed in Section 1 the advice mentioned in this section 7 is to be observed.

8. Exposure Controls/Personal Protection

Control parameters

Components with occupational exposure limits

124-38-9: Carbon dioxide
1066-33-7: Ammonium hydrogencarbonate
7664-41-7: Ammonia, anhydrous

Exposure controls

Personal protective equipment

Respiratory protection:
Suitable respiratory protection for lower concentrations or short-term effect: Particle filter with low efficiency for solid particles (e.g. EN 143 or 149, Type P1or FFP1) Suitable respiratory protection for higher concentrations or long-term effect: Self-contained breathing apparatus.

Hand protection:
Chemical resistant protective gloves (EN ISO 374-1)
Suitable materials also with prolonged, direct contact (Recommended: Protective index 6, corresponding > 480 minutes of permeation time according to EN ISO 374-1):
polyvinylchloride (PVC) - 0.7 mm coating thickness
chloroprene rubber (CR) - 0.5 mm coating thickness
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)

Body protection:
Body protection must be chosen based on level of activity and exposure.

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.

9. Physical and Chemical Properties

Information on basic physical and chemical properties

Form:	crystalline, powder	
Colour:	white	
Odour:	strong, ammonia-like	
Odour threshold:	No data available., not determined	
pH value:	9 (100 g/l, 20 °C)	(pH Meter)
Melting point:	not applicable The substance / product decomposes.	
Boiling range:	Study technically not feasible., The substance / product decomposes therefore not determined.	
Flash point:	not applicable, the product is a solid	
Evaporation rate:	negligible, The product is a non-volatile solid.	
Flammability:	not highly flammable	(Regulation 440/2008/EC, A.10)
Lower explosion limit:	For solids not relevant for classification and labelling.	
Upper explosion limit:	For solids not relevant for classification and labelling.	
Ignition temperature:	The substance / product decomposes therefore not determined.	
Vapour pressure:	69 mbar (20 °C) Literature data. 188 mbar (30 °C) Literature data.	
Density:	approx. 1,6 g/cm3 (20 °C)	(OECD Guideline 109)
Solubility in water:	320 g/l (20 °C)	(internal method)
Partitioning coefficient n-octanol/water (log Kow):	-2,4 - -0,47	
Self ignition:	not self-igniting	
Thermal decomposition:	> 59 °C (internal method) To avoid thermal decomposition, do not overheat.	

Viscosity, dynamic:
not applicable, the product is a solid
Viscosity, kinematic:
not applicable, the product is a solid
Explosion hazard: not explosive
Fire promoting properties: not fire-propagating

Other information

Self heating ability: It is not a substance capable of spontaneous heating.

Bulk density: 780 - 830 kg/m3 (other)
Grain size distribution 300 - 400 µm (D50, other (measured))

10. Stability and Reactivity

Possibility of hazardous reactions
Exothermic reaction. Reacts with nitrites. Reacts with nitrates.

Conditions to avoid
Avoid heat. See SDS section 7 - Handling and storage.

Incompatible materials

Substances to avoid:
strong bases

Hazardous decomposition products

Hazardous decomposition products:
Ammonia, anhydrous, Carbon dioxide

11. Toxicological Information

Information on toxicological effects

Acute toxicity

Assessment of acute toxicity:
Of moderate toxicity after single ingestion.

Experimental/calculated data:
LD50 rat (oral): > 1.800 - < 2.150 mg/kg (BASF-Test)

LD50 rat (dermal): > 2.000 mg/kg
No mortality was observed.

Information on: Ammonium hydrogencarbonate
Experimental/calculated data:
LC50 rat (by inhalation): > 4,74 mg/l 4,5 h (other)

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

Information on: Ammonium carbamate
Experimental/calculated data:
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.

Irritation

Assessment of irritating effects:
Not irritating to the skin. Eye contact causes irritation.

Experimental/calculated data:
Skin corrosion/irritation rabbit: non-irritant
The product has not been tested. The statement has been derived from the properties of the individual components.

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

Information on: Ammonium carbamate
Assessment of irritating effects:
May cause severe damage to the eyes. Not irritating to the skin.

Information on: Ammonium hydrogencarbonate
Assessment of irritating effects:
Not irritating to the eyes. Not irritating to the skin. The product has not been fully tested. The statements have been derived in parts from products of a similar structure or composition.

Respiratory/Skin sensitization

Assessment of sensitization:
The chemical structure does not suggest a sensitizing effect.

Germ cell mutagenicity

Assessment of mutagenicity:
No data available concerning mutagenic effects. The chemical structure does not suggest a specific alert for such an effect.

Information on: Ammonium hydrogencarbonate
Assessment of mutagenicity:
The substance was not mutagenic in bacteria. The substance was not mutagenic in mammalian cell culture.

Information on: Ammonium carbamate
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

Information on: Ammonium hydrogencarbonate
Assessment of carcinogenicity:
The whole of the information assessable provides no indication of a carcinogenic effect. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Information on: Ammonium carbamate
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

Information on: Ammonium hydrogencarbonate
Assessment of reproduction toxicity:
Study scientifically not justified.

Information on: Ammonium carbamate
Assessment of reproduction toxicity:
Study scientifically not justified.

Aspiration hazard

No data available.

12. Ecological Information

Toxicity

Assessment of aquatic toxicity:
Acutely harmful for aquatic organisms.
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. The product has not been tested. The statement has been derived from the properties of the individual components.

Toxicity to fish:
LC50 (96 h) 61 mg/l, Oncorhynchus mykiss (Flow through.)
Literature data.

Aquatic invertebrates:
EC50 (48 h) 63,7 mg/l, Daphnia magna (OECD Guideline 202, part 1, static)
Nominal concentration.

Aquatic plants:
EC50 (72 h) 75,9 mg/l (biomass), Desmodesmus subspicatus (DIN 38412 Part 9, static)

Microorganisms/Effect on activated sludge:
EC20 (0,5 h) 1.000 mg/l, activated sludge, domestic, non-adapted (OECD Guideline 209, aquatic)

Persistence and degradability

Assessment biodegradation and elimination (H2O):
Inorganic product which cannot be eliminated from water by biological purification processes. Can be oxidized to nitrate, or be reduced to nitrogen, by microorganisms.

Bioaccumulative potential

Bioaccumulation potential:
Accumulation in organisms is not to be expected.

Mobility in soil

Assessment transport between environmental compartments:
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:
Inhibition of degradation activity in activated sludge is not to be anticipated during correct introduction of low concentrations.

13. Disposal Considerations

Waste treatment methods

Test for use in agriculture.

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

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

If other regulatory information applies that is not already provided elsewhere in this safety data sheet, then it is described in this subsection.

16. Other Information

Any other intended applications should be discussed with the manufacturer.

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
H318	Causes serious eye damage.
H302	Harmful if swallowed.
H402	Harmful to aquatic life.

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.