

# Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH)

Revision date: 15.01.2025

Version: 1.1

Print date: 15.01.2025

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

### 1.1 Product identifier

Trade name/designation:	Total hardness indicator tablets
Product No.:	16024
CAS No.:	Not applicable
Index No.:	Not applicable
EU REACH No.:	This product is a mixture. See section 3 for EU REACH registration numbers when applicable.
Other means of identification:	none

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

Relevant identified uses:	Scientific research and development
Uses advised against:	All uses other than scientific research and development

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

*United Kingdom*

#### **VWR International Ltd.**

Street	Hunter Boulevard, Magna Park
Postal code/City	Lutterworth, LE17 4XN, UK
Telephone	0800 22 33 44
Telefax	01455 55 85 86
E-mail (competent person)	SDS@avantorsciences.com

### 1.4 Emergency phone number

Telephone	+44 (0) 1270 502894 (CareChem24)
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## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

#### 2.1.1 Classification according to Regulation (EC) No 1272/2008 [CLP]

Hazard classes and hazard categories	Hazard statements
Acute toxicity, category 4, oral	H302
Skin sensitization, category 1	H317
Eye irritation, category 2	H319

### 2.2 Label elements

#### 2.2.1 Labelling according to Regulation (EC) No. 1272/2008 [CLP]

##### Hazard pictograms



**Signal word:** Warning

Hazard statements	
H302	Harmful if swallowed.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.

Precautionary statements	
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P264	Wash hands thoroughly after handling.
P301+P312	IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
P302+P352	IF ON SKIN: Wash with plenty of water.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313	If eye irritation persists: Get medical advice/attention.

### 2.3 Other hazards

The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.

This product does not contain a substance that has endocrine disrupting properties.

## SECTION 3: Composition/information on ingredients

### 3.1 Substances

not applicable

### 3.2 Mixtures

Hazardous ingredients Classification according to Regulation (EC) No 1272/2008 [CLP]

Substance name	Concentration	Identifier	Hazard classes and hazard categories	ATE, SCL and/or M-factor
Ammonium chloride	70 - 90%	CAS No.: 12125-02-9 EC No.: 235-186-4 EU REACH No.: 01-2119489385-24-XXXX	Acute Tox. 4 - H302 Eye Irrit. 2 - H319	none
Methenamine	1 - 10%	CAS No.: 100-97-0 EC No.: 202-905-8 EU REACH No.: 01-2119474895-20-XXXX	Flam. Sol. 2 - H228 Skin Sens. 1 - H317	none

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

#### General information

Do not leave affected person unattended. Take off immediately all contaminated clothing. Wash contaminated clothing before reuse. When in doubt or if symptoms are observed, get medical advice.

#### After inhalation

Remove casualty to fresh air and keep warm and at rest. If unconscious but breathing normally, place in recovery position and seek medical advice. Seek medical advice immediately.

#### In case of skin contact

Wash off any skin contamination immediately. When in doubt or if symptoms are observed, get medical advice.

#### After eye contact:

Rinse immediately carefully and thoroughly with eye-bath or water. Remove contact lenses, if present and easy to do. Continue rinsing. Consult an ophthalmologist.

#### In case of ingestion

Do NOT induce vomiting. Rinse mouth thoroughly with water. Spit out all liquid. Let 1 glass of water be drunken in little sips (dilution effect). Call a POISON CENTRE/doctor.

#### Self-protection of the first aider

First aider: Pay attention to self-protection! Wear personal protection equipment (refer to section 8). Avoid contact with skin, eyes and clothes.

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

After inhalation: Cough. Lung irritation Irritation to respiratory tract Pulmonary oedema. After skin contact: Minor irritation. Erythema (Redness). After eye contact: Conjunctival redness. Irritation to eyes Conjunctival oedema (chemosis). After ingestion: Aspiration hazard. Nausea. Vomiting. Gastrointestinal complaints.

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

No special information on medical attention and special treatment available. Treat symptomatically.

### SECTION 5: Firefighting measures

#### 5.1 Extinguishing media

##### Suitable extinguishing media

ABC-powder  
Carbon dioxide (CO<sub>2</sub>).  
Dry sand  
Nitrogen

##### Extinguishing media which must not be used for safety reasons

Water spray.  
Full water jet

#### 5.2 Special hazards arising from the substance or mixture

Non-combustible solids.  
Causes eye irritation.  
Toxic if swallowed.  
Substance is non-flammable. Adapt fire and explosion protection measures to the combustible substances in the area.  
Fire may produce irritating, corrosive and/or toxic gases.  
In case of fire may be liberated:  
Pyrolysis products, toxic

#### 5.3 Advice for firefighters

In case of fire and/or explosion do not breathe fumes.  
Special protective equipment for firefighters:  
Wear a self-contained breathing apparatus and chemical protective clothing.  
Co-ordinate fire-fighting measures to the fire surroundings.  
In case of fire: Evacuate area.

### SECTION 6: Accidental release measures

#### 6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel: Remove victim out of the danger area. First Aid, decontamination, treatment of symptoms. For emergency responders: Wear a self-contained breathing apparatus and chemical protective clothing. Product is non-flammable. Adapt fire and explosion protection measures to the combustible substances in the area. In case of major fire and release of large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

#### 6.2 Environmental precautions

No special environmental measures are necessary.

### 6.3 Methods and material for containment and cleaning up

Take up mechanically, placing in appropriate containers for disposal. Dispose according to local legislation.

### 6.4 Reference to other sections

Personal protection equipment: see section 8 Disposal information: see section 13

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

Advices on safe handling

Use personal protective equipment as required.

Obtain, read and follow all safety instructions before use.

Avoid substance contact.

Use extractor hood (laboratory).

Use of small quantities within laboratory settings, including material transfers and equipment cleaning.

Measures to prevent fire, aerosol and dust generation

Usual measures for fire prevention.

Use extractor hood (laboratory).

Measures required to protect the environment

Do not empty into drains.

Collect spillage.

Cover drains.

Wash hands before breaks and after work. Avoid contact with eyes and skin. When using do not eat, drink or smoke. Provide eye shower and label its location conspicuously.

### 7.2 Conditions for safe storage, including any incompatibilities

Recommended storage temperature: no data available

Storage class: no data available

Storage: Keep locked up. Keep container tightly closed in a cool, well-ventilated place. Store in a dry place. Keep/Store only in original container. Keep the packing dry and well sealed to prevent contamination and absorption of humidity. Packaging

materials: Glass High density polyethylene (HDPE) Unsuitable materials and coatings of containers/equipment: No information available.

### 7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

Ingredient (Designation)	Source	Country	parameter	Limit value	Remark
Ammonium chloride	DNEL	EU	Worker, Dermal, long-term, systemic	128.9 mg/kg bw/day	
Ammonium chloride	DNEL	EU	Worker, Inhalation, long-term, systemic	43.97 mg/m <sup>3</sup>	
Ammonium chloride	PNEC	EU	aquatic, freshwater	0.25 mg/l	Assessment factor: 10
Ammonium chloride	PNEC	EU	aquatic, marine water	0.025 mg/l	Assessment factor: 100
Ammonium chloride	PNEC	EU	soil	50.7 mg/kg	soil dw
Ammonium chloride	EH40/2005 - Fourth Edition 2020	UK	LTV	10 mg/m <sup>3</sup>	
Ammonium chloride	EH40/2005 - Fourth Edition 2020	UK	STV	20 mg/m <sup>3</sup>	
Methenamine	DNEL	EU	Worker, Dermal, long-term, systemic	6.4 mg/kg bw/day	
Methenamine	DNEL	EU	Worker, Inhalation, long-term, systemic	5.6 mg/m <sup>3</sup>	
Methenamine	PNEC	EU	aquatic, freshwater	3 mg/l	Assessment factor: 1000
Methenamine	PNEC	EU	aquatic, marine water	0.3 mg/l	Assessment factor: 10000
Methenamine	PNEC	EU	sediment, freshwater	10.2 mg/kg	sediment dw
Methenamine	PNEC	EU	sediment, marine water	1.02 mg/kg	sediment dw
Methenamine	PNEC	EU	Sewage treatment plant	100 mg/l	Assessment factor: 1
Methenamine	PNEC	EU	soil	0.28 mg/kg	soil dw

#### Recommended monitoring procedures:

European Standard EN 14042 (Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents)

European Standard EN 482 (Workplace exposure. Procedures for the determination of the concentration of chemical agents - Basic performance requirements)

### 8.2 Exposure controls

#### 8.2.1 Appropriate engineering controls

Technical measures and the application of suitable work processes have priority over personal protection equipment. If handled uncovered, arrangements with local exhaust ventilation have to be used.

### 8.2.2 Personal protection equipment

Wear suitable protective clothing. When handling with chemical substances, protective clothing with CE-labels including the four control digits must be worn.

#### *Eye/face protection*

Eye glasses with side protection DIN-/EN-Norms EN 166

Recommendation: VWR 111-0432

#### *Skin protection*

When handling with chemical substances, protective gloves must be worn with the CE-label including the four control digits. Recommended glove articles DIN-/EN-Norms EN ISO 374 In the case of wanting to use the gloves again, clean them before taking off and air them well.

#### By short-term hand contact

Suitable material:	NBR (Nitrile rubber)
Thickness of the glove material:	0,12 mm
Breakthrough time:	480 min min
Recommended glove articles:	VWR 112-0998

#### By long-term hand contact

Suitable material:	NBR (Nitrile rubber)
Thickness of the glove material:	0,12 mm
Breakthrough time:	480 min min
Recommended glove articles:	VWR 112-0998

#### *Respiratory protection*

Usually no personal respirative protection necessary. Required when dusts are generated. Generation/formation of dust

Suitable respiratory protection apparatus:	Filtering Half-face mask (EN 149)
Recommendation:	VWR 111-0451
Suitable material:	P3
Recommendation:	VWR 111-0244

#### *Additional information*

Wash hands before breaks and after work. Avoid contact with eyes and skin. When using do not eat, drink or smoke. Provide eye shower and label its location conspicuously.

### 8.2.3 Environmental exposure controls

no data available

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

Appearance	
Physical state:	solid
Colour:	dark green
Odour:	odourless

#### Safety relevant basic data

pH:	no data available
Melting point/freezing point:	no data available
Initial boiling point and boiling range:	no data available
Flash point:	no data available
Flammability:	Not applicable
Lower and upper explosion limit	
Lower explosion limit:	no data available
Upper explosion limit:	no data available
Vapour pressure:	no data available
Relative vapour density:	no data available
Density and/or relative density	
Density:	no data available
Solubility(ies)	
Water solubility:	soluble (20°C)
Partition coefficient: n-octanol/water:	no data available
Auto-ignition temperature:	no data available
Decomposition temperature:	Not applicable
Viscosity	
Kinematic viscosity:	no data available
Dynamic viscosity:	no data available
Particle characteristics:	no nanoform

### 9.2 Other information

Evaporation rate:	no data available
Explosive properties:	no data available
Oxidising properties:	Not applicable
Bulk density:	no data available
Refraction index:	no data available
Dissociation constant:	no data available
Surface tension:	no data available
Henry's Law Constant:	no data available

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

This material is non-reactive under normal conditions.



## 10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature).

## 10.3 Possibility of hazardous reactions

Violent reactions possible with:

Strong acids and strong bases, strong oxidizing agents.

## 10.4 Conditions to avoid

Heat

Protect from sunlight.

Humidity

## 10.5 Incompatible materials:

No further relevant information available.

## 10.6 Hazardous decomposition products

no data available

# SECTION 11: Toxicological information

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

### Acute effects

#### *Acute oral toxicity:*

Harmful if swallowed.

Ammonium chloride - LD50: < 1410 mg/kg (14 d) - Rat - (OECD 401)

Methenamine - LD50: > 9200 mg/kg - Rat - (Merck KGaA)

#### *Acute dermal toxicity:*

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

Ammonium chloride - LC50: < 2000 mg/kg (24 h) - Rat - (European Food Safety Authority)

Methenamine - LD50: 2000 mg/kg - Rat - (IUCLID)

#### *Acute inhalation toxicity:*

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

**Irritant and corrosive effects:**

*Primary irritation to the skin:*

Not applicable

*Irritation to eyes:*

Causes serious eye irritation.

*Irritation to respiratory tract:*

Not applicable

**Respiratory or skin sensitisation**

In case of skin contact: sensitising

After inhalation: not sensitising

**STOT-single exposure**

Not applicable

**STOT-repeated exposure**

Not applicable

**CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)****Carcinogenicity**

No indication of human carcinogenicity.

**Germ cell mutagenicity**

No indications of human germ cell mutagenicity exist.

**Reproductive toxicity**

No indications of human reproductive toxicity exist.

**Aspiration hazard**

Not applicable

**Other adverse effects**

no data available

**Additional information**

no data available

**11.2 Information on other hazards**

This product does not contain a substance that has endocrine disrupting properties with respect to humans as no components meet the criteria.

## SECTION 12: Ecological information

### 12.1 Toxicity

**Fish toxicity:**

Ammonium chloride - LC50: 209 mg/l (96 h) - IUCLID

Methenamine - LC50: 49000 - 49800 mg/l (96 h) - Walton, J.R., and E.M. Davis 1980. Toxicology and Fate of Selected Industrial Chemicals in Aquatic Ecosystems. University of Texas, School of Public Health, Inst.of Environ.Health, Houston, TX :91

**Daphnia toxicity:**

no data available

**Algae toxicity:**

no data available

**Bacteria toxicity:**

no data available

### 12.2 Persistence and degradability

no data available

### 12.3 Bioaccumulative potential

Partition coefficient: n-octanol/water: no data available

### 12.4 Mobility in soil:

no data available

### 12.5 Results of PBT/vPvB assessment

The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.

### 12.6 Endocrine disrupting properties

This product does not contain a substance that has endocrine disrupting properties with respect to the environment.

### 12.7 Other adverse effects

no data available

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

**Appropriate disposal / Product**

Dispose according to local legislation. Consult the appropriate local waste disposal expert about waste disposal.

Waste code product: no data available

#### Appropriate disposal / Package

Dispose according to local legislation. Handle contaminated packages in the same way as the substance itself.

#### Additional information

European waste management legislation

Directive 2008/98/EC (Waste Framework Directive)

National waste management legislation

The Waste (England & Wales) Regulations 2011

Hazardous Waste (England & Wales) Regulations 2005

## SECTION 14: Transport information

### Land transport (ADR/RID)

14.1	UN number or ID number:	No dangerous good in sense of this transport regulation.
14.2	UN proper shipping name:	not assigned
14.3	Transport hazard class(es):	none
14.4	Packing group:	not assigned
14.5	Environmental hazards:	none
14.6	Special precautions for user:	none

### Sea transport (IMDG)

14.1	UN number or ID number:	No dangerous good in sense of this transport regulation.
14.2	UN proper shipping name:	not assigned
14.3	Transport hazard class(es):	none
14.4	Packing group:	not assigned
14.5	Environmental hazards:	none
14.6	Special precautions for user:	none
14.7	Maritime transport in bulk according to IMO instruments	not relevant

### Air transport (ICAO-TI / IATA-DGR)

14.1	UN number or ID number:	No dangerous good in sense of this transport regulation.
14.2	UN proper shipping name:	not assigned
14.3	Transport hazard class(es):	none
14.4	Packing group:	not assigned
14.5	Special precautions for user:	none

## SECTION 15: Regulatory information

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

#### EU legislation

- Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC (Text with EEA relevance)
- Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 (Text with EEA relevance)
- Commission Regulation (EU) 2020/878 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

#### National regulations

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Water hazard class: no data available

### 15.2 Chemical Safety Assessment

Chemical safety assessments for substances in this mixture were not carried out.

## SECTION 16: Other information

### Abbreviations and acronyms

ACGIH - American Conference of Governmental Industrial Hygienists

ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road

AGS - Committee on Hazardous Substances (Ausschuss für Gefahrstoffe)

CLP - Regulation on Classification, Labelling and Packaging of Substances and Mixtures

DFG - German Research Foundation (Deutsche Forschungsgemeinschaft)

DNEL - Derived No Effect Level

Gestis - Information system on hazardous substances of the German Social Accident Insurance (Gefahrstoffinformationssystem der Deutschen Gesetzlichen Unfallversicherung)

IATA-DGR - International Air Transport Association-Dangerous Goods Regulations

ICAO-TI - International Civil Aviation Organization-Technical Instructions

IMDG - International Maritime Code for Dangerous Goods

KOSHA - Korea Occupational Safety and Health Agency

LTV - Long Term Value

NIOSH - National Institute for Occupational Safety and Health

OSHA - Occupational Safety & Health Administration

PBT - Persistent, Bioaccumulative and Toxic

PNEC - Predicted No Effect Concentration

RID - Regulation concerning the International Carriage of Dangerous Goods by Rail

STV - Short Term Value

SVHC - Substances of Very High Concern

vPvB - very Persistent, very Bioaccumulative

H228 - Flammable solid.

H302 - Harmful if swallowed.

H317 - May cause an allergic skin reaction.

H319 - Causes serious eye irritation.

Training advice: Provide adequate information, instruction and training for operators.

### Key literature references and sources for data

This Safety Data Sheet has been prepared based on information available for public as TOXNET information, European Chemicals Agency (ECHA) substance dossier, papers from international cancer research institutes (IARC Monographs), U.S. National Toxicology Program data, U.S. Agency for Toxic Substances and Disease Control (ATSDR), PubChem websites and SDS from our raw material manufacturers.

**Classification according to Regulation (EC) No 1272/2008 [CLP] - Classification procedure**

Hazard statements	Hazard classes and hazard categories	Classification procedure
H302	Acute Tox. 4	Calculation method.
H319	Eye Irrit. 2	Calculation method.
H317	Skin Sens. 1	Calculation method.

**Additional information**

Indication of changes

Section 11

If you need an explanation of the change, contact the supplier (SDS@avantorsciences.com).

*The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.*