

# Safety data sheet

acc. to Safe Work Australia - Code of Practice



## Hexamethylene tetramine ≥99%, extra pure

article number: **4484**  
Version: **GHS 3.0 en**  
Replaces version of: 2019-08-30  
Version: (GHS 2)

date of compilation: 2016-04-12  
Revision: 2022-09-12

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

### 1.1 Product identifier

Identification of the substance **Hexamethylene tetramine ≥99%, extra pure**  
Article number 4484  
CAS number 100-97-0

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

Relevant identified uses: Laboratory chemical  
Laboratory and analytical use  
Uses advised against: Do not use for products which come into contact with foodstuffs. Do not use for private purposes (household).

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

Carl Roth GmbH + Co KG  
Schoemperlenstr. 3-5  
D-76185 Karlsruhe  
Germany

**Telephone:** +49 (0) 721 - 56 06 0  
**Telefax:** +49 (0) 721 - 56 06 149  
**e-mail:** [sicherheit@carlroth.de](mailto:sicherheit@carlroth.de)  
**Website:** [www.carlroth.de](http://www.carlroth.de)

Competent person responsible for the safety data sheet: Department Health, Safety and Environment

**e-mail (competent person):** [sicherheit@carlroth.de](mailto:sicherheit@carlroth.de)

### 1.4 Emergency telephone number

Name	Street	Postal code/city	Telephone	Website
NSW Poisons Information Centre Childrens Hospital	Hawkesbury Road	2145 Westmead, NSW	131126	

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

#### Classification acc. to GHS

Section	Hazard class	Cat-egory	Hazard class and category	Hazard statement
2.7	Flammable solid	2	Flam. Sol. 2	H228
3.4S	Skin sensitisation	1	Skin Sens. 1	H317

For full text of abbreviations: see SECTION 16

### 2.2 Label elements

# Safety data sheet

acc. to Safe Work Australia - Code of Practice



## Hexamethylene tetramine ≥99%, extra pure

article number: 4484

### Labelling

#### Signal word

Warning

#### Pictograms

GHS02, GHS07



#### Hazard statements

H228 Flammable solid  
H317 May cause an allergic skin reaction

#### Precautionary statements

##### Precautionary statements - prevention

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking  
P261 Avoid breathing dust/fume/gas/mist/vapours/spray  
P280 Wear protective gloves/protective clothing/eye protection/face protection

##### Precautionary statements - response

P302+P352 IF ON SKIN: Wash with plenty of soap and water  
P333+P313 If skin irritation or rash occurs: Get medical advice/attention  
P370+P378 In case of fire: Use sand, carbon dioxide or powder extinguisher for extinction

##### Precautionary statements - disposal

P501 Dispose of contents/container to industrial combustion plant

### 2.3 Other hazards

#### Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

## SECTION 3: Composition/information on ingredients

### 3.1 Substances

Name of substance	Hexamethylene tetramine
Molecular formula	$C_6H_{12}N_4$
Molar mass	140.2 g/mol
CAS No	100-97-0

## SECTION 4: First aid measures

### 4.1 Description of first aid measures



#### General notes

# Safety data sheet

acc. to Safe Work Australia - Code of Practice



## Hexamethylene tetramine $\geq 99\%$ , extra pure

article number: 4484

Take off contaminated clothing.

### Following inhalation

Provide fresh air. In all cases of doubt, or when symptoms persist, seek medical advice.

### Following skin contact

After contact with skin, wash immediately with plenty of water. In case of skin reactions, consult a physician.

### Following eye contact

Rinse cautiously with water for several minutes. In all cases of doubt, or when symptoms persist, seek medical advice.

### Following ingestion

Rinse mouth. Call a doctor if you feel unwell.

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

Allergic reactions, Irritant effects, Gastrointestinal complaints, Nausea, Vomiting, Cough, Cough, pain, choking, and breathing difficulties

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

none

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media



#### Suitable extinguishing media

co-ordinate firefighting measures to the fire surroundings  
water, foam, alcohol resistant foam, dry extinguishing powder, ABC-powder

#### Unsuitable extinguishing media

water jet

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

Combustible.

#### Hazardous combustion products

In case of fire may be liberated: Nitrogen oxides (NO<sub>x</sub>), Carbon monoxide (CO), Carbon dioxide (CO<sub>2</sub>)

### 5.3 Advice for firefighters

In case of fire and/or explosion do not breathe fumes. Fight fire with normal precautions from a reasonable distance. Wear self-contained breathing apparatus.

## Hexamethylene tetramine $\geq 99\%$ , extra pure

article number: 4484

### SECTION 6: Accidental release measures

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



##### For non-emergency personnel

Avoid contact with skin, eyes and clothes. Do not breathe dust.

#### 6.2 Environmental precautions

Keep away from drains, surface and ground water.

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

##### Advice on how to contain a spill

Covering of drains. Take up mechanically.

##### Advice on how to clean up a spill

Take up mechanically. Control of dust.

##### Other information relating to spills and releases

Place in appropriate containers for disposal. Ventilate affected area.

#### 6.4 Reference to other sections

Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

### SECTION 7: Handling and storage

#### 7.1 Precautions for safe handling

Provision of sufficient ventilation. Avoid dust formation.

##### Advice on general occupational hygiene

Wash hands before breaks and after work. Keep away from food, drink and animal feedingstuffs. When using do not smoke.

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

Store in a dry place. Hygroscopic solid.

##### Incompatible substances or mixtures

Observe hints for combined storage.

##### Consideration of other advice:

##### Specific designs for storage rooms or vessels

Recommended storage temperature: 15 - 25 °C

#### 7.3 Specific end use(s)

No information available.

## Hexamethylene tetramine ≥99%, extra pure

article number: 4484

### SECTION 8: Exposure controls/personal protection

#### 8.1 Control parameters

##### National limit values

##### Occupational exposure limit values (Workplace Exposure Limits)

This information is not available.

##### Human health values

Relevant DNELs and other threshold levels				
Endpoint	Threshold level	Protection goal, route of exposure	Used in	Exposure time
DNEL	5.6 mg/m <sup>3</sup>	human, inhalatory	worker (industry)	chronic - systemic effects
DNEL	6.4 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects

##### Environmental values

Relevant PNECs and other threshold levels				
End-point	Threshold level	Organism	Environmental compartment	Exposure time
PNEC	3 mg/l	aquatic organisms	freshwater	short-term (single instance)
PNEC	0.3 mg/l	aquatic organisms	marine water	short-term (single instance)
PNEC	100 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
PNEC	10.2 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
PNEC	1.02 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
PNEC	0.28 mg/kg	terrestrial organisms	soil	short-term (single instance)

#### 8.2 Exposure controls

##### Individual protection measures (personal protective equipment)

##### Eye/face protection



Use safety goggle with side protection.

##### Skin protection



# Safety data sheet

acc. to Safe Work Australia - Code of Practice



## Hexamethylene tetramine ≥99%, extra pure

article number: 4484

### • hand protection

Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves. The times are approximate values from measurements at 22 ° C and permanent contact. Increased temperatures due to heated substances, body heat etc. and a reduction of the effective layer thickness by stretching can lead to a considerable reduction of the breakthrough time. If in doubt, contact manufacturer. At an approx. 1.5 times larger / smaller layer thickness, the respective breakthrough time is doubled / halved. The data apply only to the pure substance. When transferred to substance mixtures, they may only be considered as a guide.

### • type of material

PVC: polyvinyl chloride, NR: natural rubber, latex, Butyl caoutchouc (butyl rubber)

### • material thickness

0,5 mm

### • breakthrough times of the glove material

>480 minutes (permeation: level 6)

### • other protection measures

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended.

### Respiratory protection



Respiratory protection necessary at: Dust formation. Particulate filter device (EN 143). P1 (filters at least 80 % of airborne particles, colour code: White).

### Environmental exposure controls

Keep away from drains, surface and ground water.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

Physical state	solid
Form	crystalline
Colour	white
Odour	like ammonia
Melting point/freezing point	260 – 295 °C (ECHA)
Boiling point or initial boiling point and boiling range	not determined
Flammability	flammable solid in accordance with GHS criteria
Lower and upper explosion limit	20 g/m <sup>3</sup> (LEL)
Flash point	250 °C (o.c.)
Auto-ignition temperature	not determined
Decomposition temperature	>263 °C

# Safety data sheet

acc. to Safe Work Australia - Code of Practice



## Hexamethylene tetramine ≥99%, extra pure

article number: 4484

pH (value)	8.5 – 9.5 (in aqueous solution: 100 g/l, 20 °C)
Kinematic viscosity	not relevant
<u>Solubility(ies)</u>	
Water solubility	895 g/l at 20 °C
<u>Partition coefficient</u>	
Partition coefficient n-octanol/water (log value):	-2.18 (20 °C) (ECHA)
Vapour pressure	0.001 hPa at 20 °C
<u>Density and/or relative density</u>	
Density	1.33 g/cm <sup>3</sup> at 20 °C
Relative vapour density	information on this property is not available
Bulk density	~600 kg/m <sup>3</sup>
Particle characteristics	No data available.
<u>Other safety parameters</u>	
Oxidising properties	none
<b>9.2 Other information</b>	
Information with regard to physical hazard classes:	There is no additional information.
Other safety characteristics:	
Surface tension	70.4 mN/m (20 °C) (ECHA)

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

It's a reactive substance. Risk of ignition. The product in the delivered form is not dust explosion capable; the enrichment of fine dust however leads to the danger of dust explosion.

#### If heated

Risk of ignition.

### 10.2 Chemical stability

Hygroscopic solid.

### 10.3 Possibility of hazardous reactions

**Violent reaction with:** strong oxidiser, Peroxides, Acid,

**Danger of explosion:** Nitric acid, Iodine, Acetic anhydride, Halogenated hydrocarbons

# Safety data sheet

acc. to Safe Work Australia - Code of Practice



## Hexamethylene tetramine ≥99%, extra pure

article number: 4484

### 10.4 Conditions to avoid

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep away from heat. Decomposition takes place from temperatures above: >263 °C. Protect from moisture.

### 10.5 Incompatible materials

There is no additional information.

### 10.6 Hazardous decomposition products

Hazardous combustion products: see section 5.

## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

#### Classification acc. to GHS

#### Acute toxicity

Shall not be classified as acutely toxic.

Acute toxicity					
Exposure route	Endpoint	Value	Species	Method	Source
oral	LD50	>20,000 mg/kg	rat		ECHA
dermal	LD50	>2,000 mg/kg	rat		ECHA

#### Skin corrosion/irritation

Shall not be classified as corrosive/irritant to skin.

#### Serious eye damage/eye irritation

Shall not be classified as seriously damaging to the eye or eye irritant.

#### Respiratory or skin sensitisation

May cause an allergic skin reaction.

#### Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.

#### Carcinogenicity

Shall not be classified as carcinogenic.

#### Reproductive toxicity

Shall not be classified as a reproductive toxicant.

#### Specific target organ toxicity - single exposure

Shall not be classified as a specific target organ toxicant (single exposure).

#### Specific target organ toxicity - repeated exposure

Shall not be classified as a specific target organ toxicant (repeated exposure).

#### Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

#### Symptoms related to the physical, chemical and toxicological characteristics

##### • If swallowed

vomiting, nausea, gastrointestinal complaints



# Safety data sheet

acc. to Safe Work Australia - Code of Practice



## Hexamethylene tetramine ≥99%, extra pure

article number: 4484

- **If in eyes**

essentially non-irritating

- **If inhaled**

Irritation to respiratory tract, Respiratory complaints, Dyspnoea

- **If on skin**

May produce an allergic reaction, pruritis, localised redness

- **Other information**

none

### 11.2 Endocrine disrupting properties

Not listed.

## SECTION 12: Ecological information

### 12.1 Toxicity

Harmful to aquatic life.

Aquatic toxicity (acute)				
Endpoint	Value	Species	Source	Exposure time
EC50	36 mg/l	daphnia magna		48 h
LC50	41 g/l	fish	ECHA	96 h

Aquatic toxicity (chronic)				
Endpoint	Value	Species	Source	Exposure time
ErC50	3 g/l	algae	ECHA	14 d
EC50	>5,000 mg/l	microorganisms	ECHA	30 min

### Biodegradation

Not readily biodegradable.

### 12.2 Process of degradability

Theoretical Oxygen Demand with nitrification: 2.126 mg/mg

Theoretical Oxygen Demand: 1.369 mg/mg

Theoretical Carbon Dioxide: 1.884 mg/mg

Process of degradability		
Process	Degradation rate	Time
biotic/abiotic	45 %	28 d
oxygen depletion	35 %	28 d
DOC removal	39 %	28 d

### 12.3 Bioaccumulative potential

Does not significantly accumulate in organisms.

# Safety data sheet

acc. to Safe Work Australia - Code of Practice



## Hexamethylene tetramine ≥99%, extra pure

article number: 4484

n-octanol/water (log KOW)	-2.18 (20 °C) (ECHA)
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### 12.4 Mobility in soil

Data are not available.

### 12.5 Results of PBT and vPvB assessment

Data are not available.

### 12.6 Endocrine disrupting properties

Not listed.

### 12.7 Other adverse effects

Data are not available.

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods



This material and its container must be disposed of as hazardous waste. Dispose of contents/container in accordance with local/regional/national/international regulations.

#### Sewage disposal-relevant information

Do not empty into drains.

#### Waste treatment of containers/packagings

Only packagings which are approved (e.g. acc. to the Dangerous Goods Regulations) may be used.

#### Relevant provisions relating to waste(Basel Convention)

#### Properties of waste which render it hazardous

**H4.1** Flammable solids

### 13.3 Remarks

Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities. Please consider the relevant national or regional provisions.

## SECTION 14: Transport information

### 14.1 UN number

<b>UN RTDG</b>	UN 1328
IMDG-Code	UN 1328
ICAO-TI	UN 1328

### 14.2 UN proper shipping name

<b>UN RTDG</b>	HEXAMETHYLENETETRAMINE
IMDG-Code	HEXAMETHYLENETETRAMINE
ICAO-TI	Hexamethylenetetramine

### 14.3 Transport hazard class(es)

<b>UN RTDG</b>	4.1
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# Safety data sheet

acc. to Safe Work Australia - Code of Practice



## Hexamethylene tetramine ≥99%, extra pure

article number: 4484

IMDG-Code	4.1
ICAO-TI	4.1
<b>14.4 Packing group</b>	
<b>UN RTDG</b>	III
IMDG-Code	III
ICAO-TI	III
<b>14.5 Environmental hazards</b>	non-environmentally hazardous acc. to the dangerous goods regulations
<b>14.6 Special precautions for user</b>	
There is no additional information.	
<b>14.7 Transport in bulk according to IMO instruments</b>	
The cargo is not intended to be carried in bulk.	
<b>14.8 Information for each of the UN Model Regulations</b>	
<b>Transport information National regulations Additional information (UN RTDG)</b>	
UN number	1328
Class	4.1
Packing group	III
Danger label(s)	4.1
	
Special provisions (SP)	- UN RTDG
Excepted quantities (EQ)	E1 UN RTDG
Limited quantities (LQ)	5 kg UN RTDG
<b>International Maritime Dangerous Goods Code (IMDG) - Additional information</b>	
Proper shipping name	HEXAMETHYLENETETRAMINE
Particulars in the shipper's declaration	UN1328, HEXAMETHYLENETETRAMINE, 4.1, III
Marine pollutant	-
Danger label(s)	4.1
	
Special provisions (SP)	-
Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 kg
EmS	F-A, S-G
Stowage category	A

# Safety data sheet

acc. to Safe Work Australia - Code of Practice



## Hexamethylene tetramine ≥99%, extra pure

article number: 4484

### International Civil Aviation Organization (ICAO-IATA/DGR) - Additional information

Proper shipping name	Hexamethylenetetramine
Particulars in the shipper's declaration	UN1328, Hexamethylenetetramine, 4.1, III
Danger label(s)	4.1



Excepted quantities (EQ)	E1
Limited quantities (LQ)	10 kg

## SECTION 15: Regulatory information

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

There is no additional information.

#### National regulations(Australia)

##### Australian Inventory of Chemical Substances(AICS)

Substance is listed.

#### Other information

Directive 94/33/EC on the protection of young people at work. Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers.

#### National inventories

Country	Inventory	Status
AU	AIIC	substance is listed
CA	DSL	substance is listed
CN	IECSC	substance is listed
EU	ECSI	substance is listed
EU	REACH Reg.	substance is listed
JP	CSCL-ENCS	substance is listed
KR	KECI	substance is listed
MX	INSQ	substance is listed
NZ	NZIoC	substance is listed
PH	PICCS	substance is listed
TR	CICR	substance is listed
TW	TCSI	substance is listed
US	TSCA	substance is listed

#### Legend

AIIC	Australian Inventory of Industrial Chemicals
CICR	Chemical Inventory and Control Regulation
CSCL-ENCS	List of Existing and New Chemical Substances (CSCL-ENCS)
DSL	Domestic Substances List (DSL)
ECSI	EC Substance Inventory (EINECS, ELINCS, NLP)
IECSC	Inventory of Existing Chemical Substances Produced or Imported in China
INSQ	National Inventory of Chemical Substances
KECI	Korea Existing Chemicals Inventory

# Safety data sheet

acc. to Safe Work Australia - Code of Practice



## Hexamethylene tetramine ≥99%, extra pure

article number: 4484

### Legend

NZIoC	New Zealand Inventory of Chemicals
PICCS	Philippine Inventory of Chemicals and Chemical Substances (PICCS)
REACH Reg.	REACH registered substances
TCSI	Taiwan Chemical Substance Inventory
TSCA	Toxic Substance Control Act

## 15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out for this substance.

## SECTION 16: Other information

### Indication of changes (revised safety data sheet)

Alignment to regulation: Globally Harmonized System of Classification and Labelling of Chemicals ("Purple book").

Restructuring: section 9, section 14

Section	Former entry (text/value)	Actual entry (text/value)	Safety-relevant
2.1		Classification acc. to GHS: change in the listing (table)	yes
2.2	Signal word: Danger	Signal word: Warning	yes
2.2		Pictograms: change in the listing (table)	yes
2.2		Hazard statements: change in the listing (table)	yes
2.2		Precautionary statements - prevention: change in the listing (table)	yes
2.2		Precautionary statements - response: change in the listing (table)	yes
2.2	Labelling of packages where the contents do not exceed 125 ml: Signal word: Danger		yes
2.2		Labelling of packages where the contents do not exceed 125 ml: change in the listing (table)	yes
2.2		Labelling of packages where the contents do not exceed 125 ml: change in the listing (table)	yes
2.2		Labelling of packages where the contents do not exceed 125 ml: change in the listing (table)	yes
2.2		Precautionary statements - disposal	yes
2.2		Precautionary statements - disposal: change in the listing (table)	yes
2.3	Other hazards: There is no additional information.	Other hazards	yes
2.3		Results of PBT and vPvB assessment: According to the results of its assessment, this substance is not a PBT or a vPvB.	yes

# Safety data sheet

acc. to Safe Work Australia - Code of Practice



## Hexamethylene tetramine ≥99%, extra pure

article number: 4484

### Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
DGR	Dangerous Goods Regulations (see IATA/DGR)
DNEL	Derived No-Effect Level
EC50	Effective Concentration 50 %. The EC50 corresponds to the concentration of a tested substance causing 50 % changes in response (e.g. on growth) during a specified time interval
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
EmS	Emergency Schedule
ErC50	≡ EC50: in this method, that concentration of test substance which results in a 50 % reduction in either growth (EbC50) or growth rate (ErC50) relative to the control
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
IATA	International Air Transport Association
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
ICAO	International Civil Aviation Organization
ICAO-TI	Technical instructions for the safe transport of dangerous goods by air
IMDG	International Maritime Dangerous Goods Code
IMDG-Code	International Maritime Dangerous Goods Code
LC50	Lethal Concentration 50%: the LC50 corresponds to the concentration of a tested substance causing 50 % lethality during a specified time interval
LD50	Lethal Dose 50 %: the LD50 corresponds to the dose of a tested substance causing 50 % lethality during a specified time interval
LEL	Lower explosion limit (LEL)
NLP	No-Longer Polymer
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No-Effect Concentration
UN RTDG	UN Recommendations on the Transport of Dangerous Good
vPvB	Very Persistent and very Bioaccumulative

### Key literature references and sources for data

Safe Work Australia's Code of Practice for Labelling of Workplace Hazardous Chemicals (under WHS Regulations).

UN Recommendations on the Transport of Dangerous Good. International Maritime Dangerous Goods Code (IMDG). Dangerous Goods Regulations (DGR) for the air transport (IATA).

### List of relevant phrases (code and full text as stated in section 2 and 3)

Code	Text
H228	Flammable solid.
H317	May cause an allergic skin reaction.

# Safety data sheet

acc. to Safe Work Australia - Code of Practice



## Hexamethylene tetramine $\geq 99\%$ , extra pure

article number: **4484**

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### **Disclaimer**

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product.