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

1.1. Product identifier

Product form	Substance
Product name	Methyl-1H-benzotriazole
EC-No.	249-596-6
CAS-No.	29385-43-1
REACH registration No	01-2119979081-35
Molecular formula	C7H7N3
Molecular weight range	133.151

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

Use of the substance/mixture
It is mainly used as antitrust and corrosion inhibitor for metals (such as silver, copper, zinc, lead, nickel, etc.), and for antitrust oil (tallow) products, the gas phase corrosion inhibitor of copper and aldary, lubricant additive, cycle water treating compound and auto antifreeze. It also can be concernedly used with manifold sterilization algaecide and has a very fine corrosion mitigation effect on close cycle cooling water system.

Uses advised against
No information available.

1.3. Details of the supplier of the safety data sheet

Company
SysKem Chemie GmbH
Rosenthalstrasse 22
D-42369 Wuppertal

Telephone	+49 (0) 202-317559-0
E-mail address	info@syskem.de

Prepared by / E-mail address of person responsible for the SDS
info@syskem.de

1.4. Emergency telephone number

Vergiftungs-Informations-Zentrale Freiburg, Tel. +49 761 19240.

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Acute toxicity (oral), Category 4	H302
Reproductive toxicity, Category 2	H361d
Hazardous to the aquatic environment – Chronic Hazard, Category 2	H411

Full text of H- and EUH-statements: see section 16

Adverse physicochemical, human health and environmental effects
Suspected of damaging fertility or the unborn child.
Harmful if swallowed.
Toxic to aquatic life with long lasting effects.

2.2. Label elements

Hazard pictograms (CLP)

GHS07 GHS08 GHS09

Signal word (CLP)
Warning

Hazard statements (CLP)
H302 - Harmful if swallowed.
H361d - Suspected of damaging the unborn child.
H411 - Toxic to aquatic life with long lasting effects.

Precautionary statements (CLP)
P264 - Wash hands, forearms and face thoroughly after handling.
P273 - Avoid release to the environment.
P280 - Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.
P308+P313 - IF exposed or concerned: Get medical advice/attention.
P405 - Store locked up.
P501 - Dispose of contents/container to hazardous or special waste collection point in accordance with local/regional/national/international regulations.

EUH-statements
None

2.3. Other hazards

Other hazards which do not result in classification:
No information available.

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII.
This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII.
Contains no PBT/vPvB substances ≥ 0.1% assessed in accordance with REACH Annex XIII.

The substance is not included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605

SECTION 3: Composition/information on ingredients

3.1. Substances

Name Methyl-1H-benzotriazole
CAS-No. 29385-43-1
EC-No. 249-596-6

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Methyl-1H-benzotriazole	CAS-No.: 29385-43-1 EC-No.: 249-596-6	100	Acute Tox. 4 (oral), H302 Repr. 2, H361d Aquatic Chronic 2, H411

3.2 Mixtures

Not applicable.

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general: Immediately remove any clothing contaminated by the product. Take affected persons out of danger area and instruct to lie down. Remove breathing apparatus only after soiled clothing has been completely removed. In case of irregular breathing or respiratory arrest provide artificial respiration. Do not leave affected persons unsupervised. Personal protection for the person providing first aid.

First-aid measures after inhalation: Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist. Do not use mouth to mouth or mouth to nose resuscitation. In case of unconsciousness bring patient into stable side position for transport.

First-aid measures after skin contact: Wash with soap and water. Consult doctor in case of symptoms.

First-aid measures after eye contact: Remove contact lenses, if present and easy to do. Rinse opened eye for several minutes under running water. If symptoms persist, consult doctor.

First-aid measures after ingestion: Rinse out mouth and then drink plenty of water. Instantly call for doctor.

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

No additional information available.

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

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	Carbondioxide (CO2), extinguishing powder or water spray/fog. Fight larger fires with water spray/fog or alcohol-resistant foam.
Unsuitable extinguishing media	High volume water jet.

5.2. Special hazards arising from the substance or mixture

Fire hazard	Non-flammable.
Explosive hazard	Risk of dust explosion if enriched with fine dust in presence of air.
Hazardous decomposition products in case of fire	Toxic fumes may be released. Nitrogen oxides (NOx), Hydrogen cyanide (HCN), Carbon monoxide (CO) and Carbon dioxide (CO2).

5.3. Advice for firefighters

Firefighting instructions	Approach from upwind. Appropriate self-contained breathing apparatus may be required. Avoid all unnecessary exposure. Cool containers / tanks with spray water if possible.
Protection during firefighting	Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel Emergency procedures	Ensure adequate ventilation. Remove all ignition sources. Avoid causing dust. Do not breathe dust. Use breathing protection against the effects of fumes/dust/aerosol. Avoid contact with skin and eyes. Wear protective equipment. Keep unprotected persons away.
For emergency responders Protective equipment	Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

For containment	Collect spillage. Ensure adequate ventilation.
Methods for cleaning up	Mechanically recover the product. Notify authorities if product enters sewers or public waters. Send for recovery or disposal in suitable containers.
Other information	Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	Ensure good ventilation/exhaustion at the workplace. Prevent formation of dust. Any deposit of dust which cannot be avoided must be removed regularly. If dust/smoke is developed, avoid breathing dust/smoke. Avoid contact with eyes. Avoid prolonged or repeated skin contact.
Hygiene measures	Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures	Keep away from open flames, hot surfaces and sources of ignition. Use adequate general or local explosion proof ventilation to keep airborne levels to acceptable level. Keep storage area clear of combustible materials. Ground all equipment containing material. Store in locked cabinet or with access restricted to technical experts or their assistants.
Storage conditions	Store locked up. Store in a well-ventilated place. Keep cool. Store in cool, dry conditions in well sealed containers. Protect from humidity and keep away from water.
Incompatible materials	Oxidizing and acidic materials, alkalis (caustic solutions).

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

National occupational exposure and biological limit values
No additional information available

Recommended monitoring procedures
No additional information available

Air contaminants formed
No additional information available

DNEL and PNEC
Methyl-1H-benzotriazole (29385-43-1)
DNEL/DMEL (Workers)

Long-term - systemic effects, dermal	0.3mg/kg bw/day
Long-term - systemic effects, inhalation	21.2mg/m3

DNEL/DMEL (General population)

Long-term - systemic effects, oral	0.01mg/kg bw/day
Long-term - systemic effects, dermal	350µg/m3
Long-term - systemic effects, inhalation	0.01mg/kg bw/day

PNEC (Water)

PNEC aqua (freshwater)	0.008mg/L
PNEC aqua (marine water)	20µg/L

PNEC (Sediment)

PNEC sediment (freshwater)	0.117mg/kg sediment dw
PNEC sediment (marine water)	0.292mg/kg sediment dw

PNEC (Soil)

PNEC (soil)	18.7µg/kg soil dw

PNEC (STP)

PNEC sewage treatment plant	39.4mg/L

Control banding
No additional information available

8.2. Exposure controls

Appropriate engineering controls
Keep away from foodstuffs, beverages and food. Instantly remove any contaminated garments. Do not eat, drink or smoke while working.

Personal protection equipment
Eye/face protection
Tightly sealed safety glasses.

Skin protection
Skin and body protection:
Protective work clothing. Body protection must be chosen depending on activity and possible exposure.

Hand protection:
Protective gloves. The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation. Check the permeability prior to each renewed use of the glove. To avoid skin problems reduce the wearing of gloves to the required minimum.
Material of gloves: Nitrile rubber – NBR. Recommended thickness of the material: ≥ 0.11 mm.
Poly vinyl chloride – PVC. Polychloroprene.

Respiratory protection
Dust proof mask - particle filter mask. Recommended filter device for short term use: Partikelfilter EN 143 Type P2 or P3.

Thermal hazards
No additional information available

Environmental exposure controls:
Avoid release to the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Solid
Colour	Not available
Odour	Not available
Odour threshold	Not available
Melting point	76 °C @101.3kPa
Freezing point	Not applicable.
Boiling point	Not available
Flammability	Non flammable.
Explosive properties	Non explosive.
Oxidising properties	Non oxidizing.
Explosive limits	Not applicable.
Lower explosion limit	Not applicable.
Upper explosion limit	Not applicable.
Flash point	190 °C at 1013 hPa
Auto-ignition temperature	Not applicable.
Decomposition temperature	Not available
pH	Not available
pH solution	Not available
Viscosity, kinematic	Not applicable.
Solubility	Water: 4049.4 mg/l at 20°C
Partition coefficient n-octanol/water (Log Kow)	1.081 at 25°C
Henry's law constant (in Pa m3/mol)	1.3E-4 at 25 °C
Vapour pressure	0.014 kPa at 25°C
Vapour pressure at 50 °C	Not available
Density	Not available
Relative density	1.266 at 20°C
Relative vapour density at 20 °C	Not applicable.
Particle size	> 1400 µm
Particle size distribution	Not available
Particle shape	Not available
Particle aspect ratio	Not available
Particle aggregation state	Not available
Particle agglomeration state	Not available
Particle specific surface area	Not available
Particle dustiness	Not available

9.2 Other information

Information with regard to physical hazard classes
No additional information available

Other safety characteristics
No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Risk of dust explosion if enriched with fine dust in presence of air.
Reacts with acids, alkalis and oxidizing agents.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Risk of dust explosion if enriched with fine dust in presence of air.
Reacts with acids, alkalis and oxidizing agents.

10.4. Conditions to avoid

Avoid impact, friction, heat, sparks, electrostatic charges.
To avoid thermal decomposition do not overheat.
Temperature over 150 °C.

10.5. Incompatible materials

Strong oxidizing agents, strong acids, alkaline materials.

10.6. Hazardous decomposition products

Nitrogen oxides (NOx), hydrogen cyanide (HCN), carbon monoxide (CO) and Carbon dioxide (CO2), danger of toxic pyrolysis products.

SECTION 11: Toxicological information

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

Acute toxicity (oral)	Harmful if swallowed.
Acute toxicity (dermal)	Not classified
Acute toxicity (inhalation)	Not classified

Methyl-1H-benzotriazole (29385-43-1)

LD50 oral	720 mg/kg
Skin corrosion/irritation	Not classified
Serious eye damage/irritation	Not classified
Respiratory or skin sensitisation	Not classified
Germ cell mutagenicity	Not classified
Carcinogenicity	Not classified
Reproductive toxicity	Suspected of damaging the unborn child.

Methyl-1H-benzotriazole (29385-43-1)

LOAEL (oral)	30mg/kg bw/day
STOT-single exposure	Not classified
STOT-repeated exposure	Not classified

Methyl-1H-benzotriazole (29385-43-1)

NOAEL (oral, systemic effects)	150mg/kg bw/day
Aspiration hazard	Not classified

Information on other hazards
Endocrine disrupting properties

Adverse health effects caused by endocrine disrupting properties	The substance is not included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605.

Other information
No additional information available

SECTION 12: Ecological information

12.1 Toxicity

Ecology – general	Toxic to aquatic life with long lasting effects.
Hazardous to the aquatic environment, short–term (acute)	Not classified
Hazardous to the aquatic environment, long–term (chronic)	Toxic to aquatic life with long lasting effects.

Methyl-1H-benzotriazole (29385-43-1)

EC50 - freshwater algae	75 mg/l
EC50 - marine water algae	53 mg/l
EC10/LC10 or NOEC - freshwater algae	1.18 mg/l
EC10/LC10 or NOEC - marine water algae	30 mg/l
EC50/LC50 - aquatic micro-organisms	1060 mg/l

2.2 Persistence and degradability

Methyl-1H-benzotriazole (29385-43-1)

Half-life for hydrolysis	365d at 20°C
Half-life in air	3.9d
Biodegradation in water	under test conditions no biodegradation observed
Half-life in soil	180d at 20°C

12.3 Bioaccumulative potential

Methyl-1H-benzotriazole (29385-43-1)

BCF	2.4L/kg ww
Bioaccumulation potential	Low bioaccumulation potential Absorption rate - oral (%): 100 Absorption rate - dermal (%): 100 Absorption rate - inhalation (%): 10
Partition coefficient n-octanol/water (Log Pow)	1.081 at 25°C

12.4 Mobility in soil

Methyl-1H-benzotriazole (29385-43-1)

Organic Carbon Normalized Adsorption Coefficient (Log Koc)	110 @20°C
Half-life in soil	180d at 20°C

12.5 Results of PBT and vPvB assessment

Methyl-1H-benzotriazole (29385-43-1)

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII.

This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII.

12.6 Endocrine disrupting properties

The substance/mixture does not contain any components believed to have endocrine disrupting properties, according to REACH Article 57(f) or Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at level 0.1% or higher.

12.7 Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Waste treatment methods	Dispose of contents/container in accordance with licensed collector's sorting instructions.
Contaminated packaging	Dispose of contents/container in accordance with licensed collector's sorting instructions.

SECTION 14: Transport information

14.1. UN-Number

ADR/RID, ADN, IMDG, IATA	3077

14.2. UN proper shipping name

ADR/RID	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Methyl-1H-benzotriazole)
ADN	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Methyl-1H-benzotriazole)
IMDG	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Methyl-1H-benzotriazole)
IATA	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Methyl-1H-benzotriazole)

14.3. Transport hazard class(es)

ADR/RID, ADN, IMDG, IATA Class 9

14.4. Packing group

ADR/RID, ADN, IMDG, IATA	III

14.5. Environmental hazards:

ADR/RID, ADN, IMDG, IATA	Yes
Marine pollutant	Yes

14.6. Special precautions for user

Overland transport

Classification code (ADR)	M7
Special provisions (ADR)	274, 335, 375, 601
Limited quantities (ADR)	5kg
Excepted quantities (ADR)	E1
Packing instructions (ADR)	P002, IBC08, LP02, R001
Special packing provisions (ADR)	PP12, B3
Mixed packing provisions (ADR)	MP10
Portable tank and bulk container instructions (ADR)	T1, BK1, BK2, BK3
Portable tank and bulk container special provisions (ADR)	TP33
Tank code (ADR)	SGAV, LGBV
Vehicle for tank carriage	AT
Transport category (ADR)	3
Special provisions for carriage - Packages (ADR)	V13
Special provisions for carriage - Bulk (ADR)	VC1, VC2
Special provisions for carriage - Loading, unloading and handling (ADR)	CV13
Hazard identification number (Kemler No.)	90
Orange plates	90/3077
Tunnel restriction code (ADR)	-
EAC code	2Z

Transport by sea

Special provisions (IMDG)	274, 335, 966, 967, 969
Limited quantities (IMDG)	5 kg
Excepted quantities (IMDG)	E1
Packing instructions (IMDG)	LP02, P002
Special packing provisions (IMDG)	PP12
IBC packing instructions (IMDG)	IBC08
IBC special provisions (IMDG)	B3
Tank instructions (IMDG)	BK1, BK2, BK3, T1
Tank special provisions (IMDG)	TP33
EmS-No. (Fire)	F-A
EmS-No. (Spillage)	S-F
Stowage category (IMDG)	A
Stowage and handling (IMDG)	SW23

Air transport

PCA Excepted quantities (IATA)	E1
PCA Limited quantities (IATA)	Y956
PCA limited quantity max net quantity (IATA)	30kgG
PCA packing instructions (IATA)	956
PCA max net quantity (IATA)	400kg
CAO packing instructions (IATA)	956
CAO max net quantity (IATA)	400kg
Special provisions (IATA)	A97, A158, A179, A197, A215
ERG code (IATA)	9L

Inland waterway transport

Classification code (ADN)	M7
Special provisions (ADN)	274, 335, 375, 601
Limited quantities (ADN)	5 kg
Excepted quantities (ADN)	E1
Carriage permitted (ADN)	T* B**
Equipment required (ADN)	PP, A***
Number of blue cones/lights (ADN)	0
Additional requirements/Remarks (ADN)	* Only in the molten state. ** For carriage in bulk see also 7.1.4.1. ** * Only in the case of transport in bulk.

Rail transport

Classification code (RID)	M7
Special provisions (RID)	274, 335, 375, 601
Limited quantities (RID)	5kg
Excepted quantities (RID)	E1
Packing instructions (RID)	P002, IBC08, LP02, R001
Special packing provisions (RID)	PP12, B3
Mixed packing provisions (RID)	MP10
Portable tank and bulk container instructions (RID)	T1, BK1, BK2, BK3
Portable tank and bulk container special provisions (RID)	TP33
Tank codes for RID tanks (RID)	SGAV, LGBV
Transport category (RID)	3
Special provisions for carriage – Packages (RID)	W13
Special provisions for carriage – Bulk (RID)	VC1, VC2
Special provisions for carriage - Loading, unloading and handling (RID)	CW13, CW31
Colis express (express parcels) (RID)	CE11
Hazard identification number (RID)	90

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable.

SECTION 15: Regulatory information

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

EU Regulations
REACH Candidate List (SVHC)
SysKem TT 1000 is not on the REACH Candidate List

PIC Regulation (Prior Informed Consent)
SysKem TT 1000 is not subject to Regulation (EU) No 649/2012 of the European Parliament and of the Council of 4 july 2012 concerning the export and import of hazardous chemicals.

POP Regulation (Persistent Organic Pollutants)
SysKem TT 1000 is not subject to Regulation (EU) No 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants

Ozone Regulation (1005/2009)
SysKem TT 1000 is not subject to REGULATION (EU) No 1005/2009 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16. September 2009 on substances that deplete the ozone layer.

Explosives Precursors Regulation (2019/1148)
Contains no substance subject to Regulation (EU) 2019/1148 of the European Parliament and of the Council of 20 June 2019 on the marketing and use of explosives precursors.

Drug Precursors Regulation (273/2004)
Contains no substance(s) listed on the Drug Precursors list (Regulation EC 273/2004 on drug precursors)

15.2 Chemical safety assessment:

A chemical safety assessment has been carried out.

SECTION 16: Other information

Abbreviations and acronyms

ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	Agreement concerning the International Carriage of Dangerous Goods by Road
ATE	Acute Toxicity Estimate
BCF	Bioconcentration factor
BLV	Biological limit value
BOD	Biochemical oxygen demand (BOD)
CAS-No.	Chemical Abstract Service number
COD	Chemical oxygen demand (COD)
DMEL	Derived Minimal Effect level
DNEL	Derived-No Effect Level
EC-No.	European Community number
EC50	Median effective concentration
ED	Endocrine disrupting properties
EN	European Standard
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Median lethal concentration
LD50	Median lethal dose
LOAEL	Lowest Observed Adverse Effect Level
NOAEC	No-Observed Adverse Effect Concentration
NOAEL	No-Observed Adverse Effect Level
NOEC	No-Observed Effect Concentration
N.O.S.	Not Otherwise Specified
OECD	Organisation for Economic Co-operation and Development
OEL	Occupational Exposure Limit
PBT	Persistent Bioaccumulative Toxic
PNEC	Predicted No-Effect Concentration
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
SDS	Safety Data Sheet
STP	Sewage treatment plant
ThOD	Theoretical oxygen demand (ThOD)
TLM	Median Tolerance Limit
VOC	Volatile Organic Compounds
vPvB	Very Persistent and Very Bioaccumulative

Full text of abbreviated H statements

H302	Harmful if swallowed.
H361d	Suspected of damaging the unborn child.
H411	Toxic to aquatic life with long lasting effects.

Notice to reader
To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Data sheet issuing department:
SysKem Chemie GmbH
Product Safety Department
Telephone number +49 (0) 0202-317559-0

Training instructions:
Instruction on hazards and protective measures on the basis of operating instructions.
The instructions must be given before the start of employment and at least once a year thereafter.

Reasons for changes:
Section 1
Section 16
Editorial changes