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

### 1.1 Product identifier

| | | |
|---|---|---|
| Trade name | : | Thiamine Hydrochloride |
| Substance name | : | 3-[(4-Amino-2-methyl-5-pyrimidinyl)-methyl]-5-(2-hydroxy-ethyl)-4-methylthiazolium chloride hydrochloride |
| REACH Registration Number | : | 01-2120773699-31-0000 |
| CAS-No. | : | 67-03-8 |

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

| | | |
|---|---|---|
| Use of the Substance/Mixture | : | Ingredient/additive for dietary supplements, For the fortification of foods, For use in fermentation |

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

| | | |
|---|---|---|
| Company | : | DSM Nutritional Products Europe Ltd<br>PO Box 2676<br>4002 Basel |
| Telephone | : | +41618157777 |
| Telefax | : | +41618157770 |
| E-mail address of person responsible for the SDS | : | sds.nutritionalproducts@dsm.com |

### 1.4 Emergency telephone number

+41 848 00 11 77 (Carechem 24 International)

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

**Classification (REGULATION (EC) No 1272/2008) as amended by The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use) (Amendment etc.) (EU Exit) Regulations 2019)**

| | |
|---|---|
| Eye irritation, Category 2 | H319: Causes serious eye irritation. |

### 2.2 Label elements

**Labelling (REGULATION (EC) No 1272/2008) as amended by The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use) (Amendment etc.) (EU Exit) Regulations 2019)**

Hazard pictograms :

Signal word : Warning

Hazard statements : H319 Causes serious eye irritation.

Precautionary statements :

**Prevention:**

P264 Wash skin thoroughly after handling.
P280 Wear eye protection/ face protection.

**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.
P337 + P313 If eye irritation persists: Get medical advice/ attention.

### 2.3 Other hazards

The substance does not fulfill the PBT criteria.
The substance does not fulfill the vPvB criteria.
Risk of dust explosion.
Corrosive to many metals when in contact with water or humidity.

## SECTION 3: Composition/information on ingredients

Brief description of the product : Substance
Formula : C12-H17-N4-O-S .Cl-H .Cl

CAS-No. : 67-03-8

### 3.1 Substances

**Hazardous components**

| Chemical name | CAS-No.<br>EC-No. | Concentration (% w/w) |
|---|---|---|
| thiamine hydrochloride (Vitamin B1) | 67-03-8<br>200-641-8 | >= 90 - <= 100 |

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

General advice : Move out of dangerous area.
Show this safety data sheet to the doctor in attendance.

If inhaled : Move to fresh air.
Consult a physician after significant exposure.

In case of skin contact : Take off contaminated clothing and shoes immediately.
Wash off with soap and plenty of water.
If symptoms persist, call a physician.

In case of eye contact : Immediately flush eye(s) with plenty of water.
Remove contact lenses.
Protect unharmed eye.

Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.

If swallowed : Rinse mouth with water.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.
Obtain medical attention.

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

Symptoms : No specific symptoms known.

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

Treatment : Treat symptomatically.

## SECTION 5: Firefighting measures

**5.1 Extinguishing media**

Suitable extinguishing media : Water
Foam

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

Specific hazards during fire-fighting : Formation of corrosive gases by combustion.

**5.3 Advice for firefighters**

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.

Further information : Consider dust explosion hazard.

## SECTION 6: Accidental release measures

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

Personal precautions : Use personal protective equipment.
Ensure adequate ventilation.
Avoid dust formation.
Avoid breathing dust.

**6.2 Environmental precautions**

Environmental precautions : Try to prevent the material from entering drains or water courses.

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

Methods for cleaning up : Pick up and arrange disposal without creating dust.

**6.4 Reference to other sections**

For personal protection see section 8., For disposal considerations see section 13.

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

Advice on safe handling : Avoid contact with skin and eyes.
For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.

Advice on protection against fire and explosion : Avoid dust formation. Provide appropriate exhaust ventilation at places where dust is formed. Take precautionary measures against static discharges.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

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

Requirements for storage areas and containers : To maintain product quality, do not store in heat or direct sunlight.

Keep container tightly closed and dry.

Corrosive to many metals when in contact with water or humidity.

### 7.3 Specific end use(s)

Specific use(s) : Not applicable

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

**Occupational Exposure Limits**

| Components | CAS-No. | Value type (Form of exposure) | Control parameters | Basis |
|---|---|---|---|---|
| thiamine hydrochloride | 67-03-8 | TWA | 2 mg/m3 | DSM Internal Limit |

### 8.2 Exposure controls

**Personal protective equipment**

Eye protection : Safety glasses with side-shields

Hand protection : Consider the hazard characteristics of this product and any special workplace conditions when selecting the appropriate type of protective gloves.
Glove material: for example nitrile rubber

Skin and body protection : Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Respiratory protection : In the case of dust or aerosol formation use respirator with an approved filter.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

| | | |
|---|---|---|
| Appearance | : | powder |
| Colour | : | white - off-white |
| Odour | : | slight, characteristic |
| Odour Threshold | : | No information available. |
| pH | : | 2.7 - 3.3 (2.5%)<br>(as aqueous solution) |
| Melting point/range | : | 248 - 250 °C<br>with decomposition |
| Boiling point/boiling range | : | not determined |
| Flash point | : | Not applicable |
| Flammability (solid, gas) | : | May form combustible dust concentrations in air. |
| Relative vapour density | : | Not applicable |
| Density | : | not determined |
| Water solubility | : | 500 g/l (20 °C, pH 2.1; OECD Test Guideline 105)<br>easily soluble |
| Solubility in other solvents | : | Glycerol: ca.56 g/l |
| | | Ethanol 95%: ca.10 g/l |
| | | Ethanol: ca.3 g/l |
| | | Methanol: moderately soluble |
| | | Diethylether: practically insoluble |
| | | Hexane: practically insoluble |
| | | Acetone: practically insoluble |
| Partition coefficient: n-octanol/water | : | log Pow < -3.04 (22.5 °C; OECD Test Guideline 107) |
| Auto-ignition temperature | : | No self ignition observed in the Grewer oven at temperatures below melting point. |
| Thermal decomposition | : | Decomposes on heating.<br>Potential for exothermic hazard<br>Heating can release hazardous gases. |
| Explosive properties | : | Not explosive |
| Oxidizing properties | : | No data available |

### 9.2 Other information

| | | |
|---|---|---|
| Combustibility index for deposited dust | : | 3 ( 22 °C) |
| | : | 4 ( 100 °C) |
| Dust explosion class | : | St(H)1 (Product sample, Median value of the tested sample 0.05 mm, Loss on drying 2.9 %; The value was determined in |

| | | |
|---|---|---|
| | | the modified Hartmann tube.) |
| Minimum ignition energy | : | 30 - 100 mJ (Median value of the tested sample 0.05 mm, Loss on drying 2.9 %)<br>The Minimum ignition energy (MIE) of a dust/air mix depends on the particle size the water content and the temperature of the dust. The finer and the dryer the dust the lower the MIE. |
| | : | General remark: The indicated dust explosion characteristics are only valid for this product and are sensitive to the sample's parameters. |
| Powder volume resistivity | : | 5E+10 Ohmm (Product sample , Loss on drying 2.9 %)<br>The material can accumulate static charge and can therefore cause electrical ignition. |
| Minimum ignition temperature of a dust/air mix | : | 400 °C (Median value of the tested sample 0.05 mm) determined in the BAM oven |
| Molecular weight | : | 337.27 g/mol |
| Bulk density | : | ca. 0.4 g/cm3 |
| Further information | : | hygroscopic |

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

No hazards to be specially mentioned.

### 10.2 Chemical stability

Stable under recommended storage conditions.

### 10.3 Possibility of hazardous reactions

Hazardous reactions : Dust may form explosive mixture in air.

Corrosive to many metals when in contact with water or humidity.

### 10.4 Conditions to avoid

Conditions to avoid : Heat

### 10.5 Incompatible materials

Materials to avoid : Bases
Strong oxidizing agents

Aluminium

### 10.6 Hazardous decomposition products

Hydrogen chloride gas
Nitrogen oxides (NOx)
Sulphur oxides
Carbon monoxide, carbon dioxide and unburned hydrocarbons (smoke).

## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

| | | |
|---|---|---|
| Acute oral toxicity | : | LD50 (Rat): > 10,000 mg/kg |
| | : | LD50 (Mouse): > 10,000 mg/kg |
| Skin irritation | : | No skin irritation (In vitro study, OECD Test Guideline 439) |
| Eye irritation | : | Irritating to eyes. (In vitro study, in vitro eye irritation test, Pure substance) |
| | : | No eye irritation (In vitro study, OECD Test Guideline 492, 50% solution) |
| Sensitisation | : | Not a skin sensitizer. (In vitro study) |
| Genotoxicity in vitro | : | not mutagenic, not genotoxic (Various test systems) |
| Carcinogenicity | : | No indication for carcinogenicity known. |
| Reproductive toxicity | : | NOAEL: >= 1,000 mg/kg bw/d (Rat, Oral, OECD Test Guideline 422) |
| Teratogenicity | : | NOAEL: >= 1,000 mg/kg bw/d (Rat, Oral, OECD Test Guideline 422) |
| STOT - single exposure (Acute exposure) | : | The substance or mixture is not classified as specific target organ toxicant, single exposure. |
| STOT - repeated exposure | : | No observed adverse effect level (Oral, Rat) : >= 1000 mg/kg bw/d<br>Subacute toxicity study (28 days)<br>(OECD Test Guideline 422) |
| Aspiration toxicity | : | No aspiration toxicity classification |

**Experience with human exposure**

**Product:**

| | | |
|---|---|---|
| | : | Cases of anaphylactic shock after parenteral application of Thiamin have been recorded. |
| | : | RDA (Recommended Daily Allowance) ca. 1.2 mg |

**Further information**

**Product:**

| | | |
|---|---|---|
| Remarks | : | May cause irritation of respiratory tract. |

## SECTION 12: Ecological information

### 12.1 Toxicity

| | | |
|---|---|---|
| Toxicity to fish | : | Oncorhynchus mykiss (rainbow trout)<br>LC50 (96 h) > 100 mg/l<br>(OECD Test Guideline 203) |
| Toxicity to daphnia and other aquatic invertebrates | : | Daphnia magna (Water flea)<br>EC50 (48 h) > 100 mg/l<br>(OECD Test Guideline 202) |
| | : | EC0 (48 h) 58 mg/l |
| Toxicity to algae | : | Desmodesmus subspicatus (green algae)<br>EbC50 (72 h) > 100 mg/l<br>(OECD Test Guideline 201) |
| Toxicity to bacteria | : | activated sludge<br>Concentration of the substance (7 d) 1,000 mg/l<br>No inhibition was observed under the biodegradation test conditions.<br>(OECD Test Guideline 302B) |

### 12.2 Persistence and degradability

| | | |
|---|---|---|
| Biodegradability | : | Readily biodegradable.<br>100 % (28 d)<br>(OECD Test Guideline 301B) |
| | : | Well inherently biodegradable.<br>74 % (7 d)<br>(OECD Test Guideline 302B) |

### 12.3 Bioaccumulative potential

| | | |
|---|---|---|
| Partition coefficient: n-octanol/water | : | log Pow < -3.04 ( 22.5 °C ; OECD Test Guideline 107) |

### 12.4 Mobility in soil

| | | |
|---|---|---|
| Distribution among environmental compartments | : | No data available |

### 12.5 Results of PBT and vPvB assessment

| | | |
|---|---|---|
| Assessment | : | The substance does not fulfill the PBT criteria. |
| | : | The substance does not fulfill the vPvB criteria. |

### 12.6 Other adverse effects

**Product:**

| | | |
|---|---|---|
| Additional ecological information | : | There is no data available for this product. |

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

| | | |
|---|---|---|
| Product | : | Do not contaminate ponds, waterways or ditches with chemical or used container.<br>Do not dispose of waste into sewer.<br>Offer surplus and non-recyclable solutions to a licensed disposal company. |
| Contaminated packaging | : | Dispose of as unused product.<br>Do not re-use empty containers. |

## SECTION 14: Transport information

### 14.1 UN number

| | | |
|---|---|---|
| **ADR** | : | Not regulated as a dangerous good |
| **RID** | : | Not regulated as a dangerous good |
| **IMDG** | : | Not regulated as a dangerous good |
| **IATA** | : | Not regulated as a dangerous good |

### 14.2 UN proper shipping name

| | | |
|---|---|---|
| **ADR** | : | Not regulated as a dangerous good |
| **RID** | : | Not regulated as a dangerous good |
| **IMDG** | : | Not regulated as a dangerous good |
| **IATA** | : | Not regulated as a dangerous good |

### 14.3 Transport hazard class(es)

| | | |
|---|---|---|
| **ADR** | : | Not regulated as a dangerous good |
| **RID** | : | Not regulated as a dangerous good |
| **IMDG** | : | Not regulated as a dangerous good |
| **IATA** | : | Not regulated as a dangerous good |

### 14.4 Packing group

| | | |
|---|---|---|
| **ADR** | : | Not regulated as a dangerous good |
| **RID** | : | Not regulated as a dangerous good |
| **IMDG** | : | Not regulated as a dangerous good |
| **IATA (Cargo)** | : | Not regulated as a dangerous good |
| **IATA (Passenger)** | : | Not regulated as a dangerous good |

### 14.5 Environmental hazards

Not regulated as a dangerous good

### 14.6 Special precautions for user

| | | |
|---|---|---|
| Remarks | : | Not classified as dangerous in the meaning of transport regulations. |

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

Not applicable for product as supplied.

## SECTION 15: Regulatory information

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

Relevant EU provisions transposed through retained EU law

| | | |
|---|---|---|
| UK REACH List of restrictions (Annex 17) | : | Not applicable |
| GB Export and import of hazardous chemicals - Prior Informed Consent (PIC) Regulation | : | Not applicable |
| Control of Major Accident Hazards Regulations 2015 (COMAH) | | Not applicable |
| Volatile organic compounds | : | Directive 2010/75/EU of 24 November 2010 on industrial emissions (integrated pollution prevention and control)<br>Not applicable |

**The components of this product are reported in the following inventories:**

| | | |
|---|---|---|
| TCSI | : | On the inventory, or in compliance with the inventory |
| TSCA | : | All substances listed as active on the TSCA inventory |
| AIIC | : | On the inventory, or in compliance with the inventory |
| DSL | : | All components of this product are on the Canadian DSL |
| ENCS | : | On the inventory, or in compliance with the inventory |
| ISHL | : | On the inventory, or in compliance with the inventory |
| KECI | : | On the inventory, or in compliance with the inventory |
| PICCS | : | On the inventory, or in compliance with the inventory |
| IECSC | : | On the inventory, or in compliance with the inventory |
| NZIoC | : | On the inventory, or in compliance with the inventory |
| TECI | : | Not in compliance with the inventory |

**15.2 Chemical safety assessment**

A Chemical Safety Assessment has been carried out for this substance.

## SECTION 16: Other information

**Full text of other abbreviations**

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Test-

ing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of very high concern; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

DNEL - Derived No-Effect Level; NFPA - National Fire Protection Association (USA); PNEC - Predicted No-Effect Concentration; STEL - Short term exposure limit; TLV-C - Ceiling Limit Value; TWA - Time Weighted Average; WEL - Workplace Exposure Limit.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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