

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006



Thiamine Mononitrate

0418943

Version 1.1

Revision Date 14.08.2012

Print Date 23.06.2014

1. Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Trade name : Thiamine Mononitrate

Substance name : thiamine nitrate
CAS-No. : 532-43-4

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

Use of the Substance/Mixture : For the fortification of foods, Ingredient for pharmaceutical products

1.3 Details of the supplier of the safety data sheet

Company : DSM Nutritional Products (UK) Ltd.
Heanor Gate
αGB061EI0017
Delves Road
GB-DE75 7SG Heanor
Telephone : +441773536500
Telefax : +441773536600
E-mail address : sds.nutritionalproducts@dsm.com
Responsible/issuing person

1.4 Emergency telephone number

+441773536623 / +41628662314

2. Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.

Classification (67/548/EEC, 1999/45/EC)

Not a hazardous substance or mixture according to EC-directives 67/548/EEC or 1999/45/EC.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.

2.3 Other hazards

Risk of dust explosion.

3. Composition/information on ingredients

Synonyms : Vitamin B1
Brief description of the product : Substance
Molecular formula : C12-H17-N4-O-S .N-O3

3.1 Substances

Remarks : No dangerous ingredients according to Regulation (EC) No. 1907/2006

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Further ingredients

Chemical Name	CAS-No. EC-No. Registration number	Classification	GHS Classification	Concentration [%]
thiamine nitrate	532-43-4 208-537-4			>= 98 - <= 100

4. First aid measures**4.1 Description of first aid measures**

- General advice : No hazards which require special first aid measures.
- If inhaled : Move to fresh air in case of accidental inhalation of dust or fumes from overheating or combustion.
If symptoms persist, call a physician.
- In case of skin contact : Take off contaminated clothing and shoes immediately.
Wash off with soap and plenty of water.
- In case of eye contact : Flush eyes with water as a precaution.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
- If swallowed : Clean mouth with water and drink afterwards plenty of water.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.

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.

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 firefighting : None known.

5.3 Advice for firefighters

- Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.
- Further information : Collect contaminated fire extinguishing water separately. This

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must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Consider dust explosion hazard.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment.
Avoid dust formation.

6.2 Environmental precautions

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

6.3 Methods and materials for containment and cleaning up

Sweep up and shovel.

6.4 Reference to other sections

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

7. Handling and storage

7.1 Precautions for safe handling

Advice on safe handling : For personal protection see section 8.
No special handling advice required.

Advice on protection against fire and explosion : Avoid dust formation.
Provide appropriate exhaust ventilation at places where dust is formed.
Take necessary action to avoid static electricity discharge.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Protect against light.
: Keep container tightly closed and dry.
Storage temperature : < 25 °C

7.3 Specific end use(s)

Specific use(s) : not applicable

8. Exposure controls/personal protection

8.1 Control parameters

Components	CAS-No.	Value (Form of exposure)	Control parameters	Update	Basis
thiamine nitrate	532-43-4	TWA	3 mg/m ³		DSM Internal Limit

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8.2 Exposure controls

Personal protective equipment

- Respiratory protection : No personal respiratory protective equipment normally required.
In case of high dust concentration use a dust mask applicable to local conditions.
- Hand protection : Glove material: for example nitrile rubber
Break through time: > 480 min
Glove thickness: 0,4 mm
- Eye protection : Safety glasses
- Skin and body protection : Protective suit
- Hygiene measures : General industrial hygiene practice.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

- Appearance : powder
- Colour : white
- Odour : characteristic
- Odour Threshold : No information available.
- pH : 6,8 - 7,5 (2%)
(as aqueous solution)
- Melting point/range : ca. 190 - 200 °C
with decomposition
- Boiling point/boiling range : not determined
- Flash point : not applicable
- Relative vapor density : not applicable
- Water solubility : ca. 27 g/l (25 °C)
ca. 300 g/l (100 °C)
- Solubility in other solvents : Alcohol: slightly soluble
Methanol: slightly soluble
- Partition coefficient: n-octanol/water : log Pow -3,43 (calculated (citation from literature))
- Auto-ignition temperature : no data available
- Thermal decomposition : Decomposes on heating.
Potential for exothermic hazard
- Explosive properties : no data available
- Oxidizing properties : no data available

9.2 Other information

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Combustibility index for deposited dust	: 5 (23 °C)
Dust explosion properties	: KSt value: 287 m.bar/s (Product sample, Median value of the tested sample 0,011 mm; ISO 6184)
Dust explosion class	: St2 (Product sample, Median value of the tested sample 0,011 mm; ISO 6184)
Maximum explosion overpressure	: 9,1 bar (Product sample, Median value of the tested sample 0,011 mm; ISO 6184)
Minimum ignition energy	: 3 - 10 mJ (Product sample, Median value of the tested sample 0,034 mm, Loss on drying 0,2 %, EN 13821) 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	: ca. 1E+09 Ohmm (Product sample, Median value of the tested sample 0,034 mm, Loss on drying 0,2 %) The material can accumulate static charge and can therefore cause electrical ignition.
Minimum ignition temperature of a dust/air mix	: >= 260 °C (Median value of the tested sample 0,034 mm) determined in the BAM oven
Molecular Weight	: 327,36 g/mol
Dissociation constant	: pKa 4,8
Bulk density	: ca. 450 kg/m ³

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

An extremely violent decomposition reaction can be triggered by:
Heating in air.

Dust may form explosive mixture in air.

10.4 Conditions to avoid

Heat.

10.5 Incompatible materials

Strong acids and strong bases

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Strong oxidizing agents

10.6 Hazardous decomposition products

Sulphur oxides
nitrogen oxides (NO_x)

11. Toxicological information

11.1 Information on toxicological effects

- Acute oral toxicity : LD50 (mouse): > 5 000 mg/kg
: LD50 (rat): 15 900 mg/kg
- Skin corrosion/irritation : No skin irritation (rabbit)
- Serious eye damage/eye irritation : No eye irritation (rabbit, Draize Test)
temporary redness
- Germ cell mutagenicity
Genotoxicity in vitro : not mutagenic (Various test systems)
- Carcinogenicity : This information is not available.
- Reproductive toxicity : This information is not available.
- Teratogenicity : not teratogenic
not embryotoxic
NOAEL: 300 mg/kg bw/d (rat)
- STOT - single exposure : The substance or mixture is not classified as specific target organ toxicant, single exposure.
- STOT - repeated exposure : This information is not available.
- Aspiration toxicity : No aspiration toxicity classification
- Further information : May cause irritation of the mucous membranes.
- Experience with human exposure : A hypervitaminosis B1 is currently unknown.
: RDA (Recommended Daily Allowance) ca. 1,2 mg
: Cases of anaphylactic shock after parenteral application of Thiamin have been recorded.

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12. Ecological information

12.1 Toxicity

- Toxicity to fish : Oncorhynchus mykiss (rainbow trout)
LC50 (96 h) > 100 mg/l
(OECD Test Guideline 203)
- Toxicity to daphnia and other aquatic invertebrates : Daphnia magna (Water flea)
EC50 (48 h) 97 mg/l
(OECD Test Guideline 202)
- Toxicity to algae : Desmodesmus subspicatus (green algae)
EbC50 (72 h) > 100 mg/l
(OECD Test Guideline 201)

12.2 Persistence and degradability

- Biodegradability : Readily biodegradable.
85 % (28 d)
(OECD Test Guideline 301E)

12.3 Bioaccumulative potential

- Partition coefficient: n-octanol/water : log Pow -3,43 (calculated (citation from literature))

12.4 Mobility in soil

- Distribution among environmental compartments : no data available

12.5 Results of PBT and vPvB assessment

- Assessment : This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).
: This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

12.6 Other adverse effects

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

13. Disposal considerations

13.1 Waste treatment methods

- Product : Offer surplus and non-recyclable solutions to a licensed disposal company.
- Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

14.1 UN number

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ADR

Not dangerous goods

RID

Not dangerous goods

IMDG

Not dangerous goods

IATA

Not dangerous goods

14.2 Proper shipping name

ADR

Not dangerous goods

RID

Not dangerous goods

IMDG

Not dangerous goods

IATA

Not dangerous goods

14.3 Transport hazard class

ADR

Not dangerous goods

RID

Not dangerous goods

IMDG

Not dangerous goods

IATA

Not dangerous goods

14.4 Packing group

ADR

Not dangerous goods

RID

Not dangerous goods

IMDG

Not dangerous goods

IATA

Not dangerous goods

14.5 Environmental hazards

ADR

Not dangerous goods

RID

Not dangerous goods

IMDG

Not dangerous goods

IATA

Not dangerous goods

14.6 Special precautions for user

Not classified as dangerous in the meaning of transport regulations.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

no data available

15. Regulatory information

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

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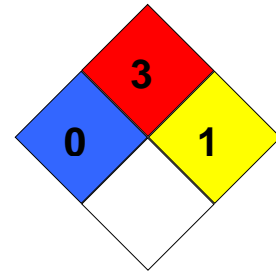
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mixture

NFPA Classification : Health hazard: 0
Fire Hazard: 3
Reactivity Hazard: 1



15.2 Chemical Safety Assessment

A Chemical Safety Assessment is not required for this substance when it is used in the specified applications.

16. Other information

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.

Abbreviations: 67/548/EEC= Dangerous Substances Directive. 1999/45/EC= Dangerous Preparations Directive. Regulation (EC) No. 1272/2008= Regulation on classification, labelling and packaging of substances and mixtures. DNEL= Derived No-Effect Level. PNEC= Predicted No-Effect Concentration. NFPA= National Fire Protection Association (USA). IATA= International Air Transport Association. IMDG= International Maritime Dangerous Goods. RID= International Rule for Transport of Dangerous Substances by Railway; ADR= European Agreement concerning the International Carriage of Dangerous Goods by Road. TWA= Time Weighted Average. STEL= Short term exposure limit.