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Safety Data Sheet
Natupulse® TS

1. Identification

Product identifier used on the label

Natupulse® TS

Recommended use of the chemical and restriction on use

Recommended use*: feed additive(s)
Unsuitable for use: Not intended for sale to or use by the general public.

* The “Recommended use” identified for this product is provided solely to comply with a Federal requirement and is not part of the seller's published specification. The terms of this Safety Data Sheet (SDS) do not create or infer any warranty, express or implied, including by incorporation into or reference in the seller's sales agreement.

Details of the supplier of the safety data sheet

Company:
BASF CORPORATION
100 Park Avenue
Florham Park, NJ 07932, USA

Telephone: +1 973 245-6000

Emergency telephone number

24 Hour Emergency Response Information
CHEMTREC: 1-800-424-9300
BASF HOTLINE: 1-800-832-HELP (4357)

Other means of identification

Synonyms: Preparation based on: Weizenkleie

2. Hazards Identification

According to Regulation 2024 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

Classification of the product

Resp. Sens.	1	Respiratory sensitization
Combustible Dust	Combustible Dust (1)	Combustible Dust

Label elements

Pictogram:

Signal Word:
Danger

Hazard Statement:

	May form combustible dust concentration in air.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Precautionary Statements (Prevention):

P261	Avoid breathing dust or fume.
P284	In case of inadequate ventilation wear respiratory protection.

Precautionary Statements (Response):

P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.

Precautionary Statements (Disposal):

P501	Dispose of contents/container in accordance with local regulations.

Hazards not otherwise classified

The product is under certain conditions capable of dust explosion.

3. Composition / Information on Ingredients

According to Regulation 2024 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

Endo-β-1,4-mannanase
CAS Number: 37288-54-3
Content (W/W): 1.0 - 7.0%
Synonym: No data available.

The actual concentration is withheld as a trade secret.

4. First-Aid Measures

Description of first aid measures

General advice:
First aid personnel should pay attention to their own safety. If the patient is likely to become unconscious, place and transport in stable sideways position (recovery position). Immediately remove contaminated clothing.

If inhaled:
Keep patient calm, remove to fresh air, seek medical attention.

If on skin:
Immediately wash thoroughly with soap and water, seek medical attention.

If in eyes:
Wash affected eyes for at least 15 minutes under running water with eyelids held open.

If swallowed:
Immediately rinse mouth and then drink 200-300 ml of water, seek medical attention.

Most important symptoms and effects, both acute and delayed

Symptoms: rhinitis, wheezing, tightness in the chest, dyspnea, coughing

Indication of any immediate medical attention and special treatment needed

Note to physician

Treatment:	Treat according to symptoms (decontamination, vital functions), no known specific antidote.

5. Fire-Fighting Measures

Extinguishing media

Suitable extinguishing media:
water spray, foam, dry powder, carbon dioxide

Unsuitable extinguishing media for safety reasons:
water jet

Additional information:
Avoid whirling up the material/product because of the danger of dust explosion.

Special hazards arising from the substance or mixture

Hazards during fire-fighting:
harmful vapours, carbon oxides, nitrogen oxides
The substances/groups of substances mentioned can be released in case of fire. Generation of fumes/fog. Burning produces harmful and toxic fumes. Dust explosion hazard. The product is combustible.

Advice for fire-fighters

Protective equipment for fire-fighting:
Wear a self-contained breathing apparatus.

Further information:
Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.
Cool endangered containers with water-spray.

Dusty conditions may ignite explosively in the presence of an ignition source causing flash fire.

6. Accidental release measures

Further accidental release measures:
Avoid dispersal of dust in the air (e.g. by clearing dusty surfaces with compressed air). Avoid the formation and build-up of dust - danger of dust explosion. Dust in sufficient concentration can result in an explosive mixture in air. Handle to minimize dusting and eliminate open flame and other sources of ignition.

Personal precautions, protective equipment and emergency procedures
Information regarding personal protective measures, see section 8. Use personal protective clothing. Use breathing apparatus if exposed to vapours/dust/aerosol. Avoid dust formation. Ensure adequate ventilation. Do not breathe dust.

Environmental precautions
Do not discharge into drains/surface waters/groundwater.

Methods and material for containment and cleaning up
For small amounts: Contain with dust binding material and dispose of.
For large amounts: Sweep/shovel up. Collect waste in suitable containers, which can be labeled and sealed.
Dispose of absorbed material in accordance with regulations. Avoid raising dust. Cleaning operations should be carried out only while wearing breathing apparatus.

Nonsparking tools should be used.

7. Handling and Storage

Precautions for safe handling
Avoid dust formation. Provide exhaust ventilation if dust is formed.

Protection against fire and explosion:
Avoid dust formation. Dust in sufficient concentration can result in an explosive mixture in air. Handle to minimize dusting and eliminate open flame and other sources of ignition. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres. Refer to NFPA 660 (2025) Standard for Combustible Dust and Particulate Solids. NFPA 660 is a combination of Standards NFPA 61 (Agriculture and Food), NFPA 484 (Metals), NFPA 652 (Fundamentals of Combustible Dusts), NFPA 654 (Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids), NFPA 65 (Sulfur), and NFPA 664 (Woodworking/Processing). Consult NFPA 660 standard for relevant commodity-specific and general safety information.

Dust explosion class: Dust explosion class 1 (Kst-value >0 up to 200 bar m s-1).

Conditions for safe storage, including any incompatibilities

Suitable materials for containers: High density polyethylene (HDPE), Low density polyethylene (LDPE), glass, Stainless steel 1.4541, Stainless steel 1.4571, Polyethylenetherephtalate (PET), Paper/Fibreboard

Further information on storage conditions: Keep container tightly closed and dry; store in a cool place.

8. Exposure Controls/Personal Protection

No substance specific occupational exposure limits known.

Advice on system design:
It is recommended that all dust control equipment such as local exhaust ventilation and material transport systems involved in handling of this product contain explosion relief vents or an explosion suppression system or an oxygen deficient environment. Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment). Use only appropriately classified electrical equipment and powered industrial trucks.

Personal protective equipment

Respiratory protection:
Wear a NIOSH-certified (or equivalent) respirator as necessary.

Hand protection:
Wear chemical resistant protective gloves.

Eye protection:
Wear safety goggles (chemical goggles) if there is potential for airborne dust exposures.

Body protection:
Body protection must be chosen based on level of activity and exposure.

General safety and hygiene measures:
Handle in accordance with good industrial hygiene and safety practice. Wearing of closed work clothing is required additionally to the stated personal protection equipment. Do not breathe dust. No eating, drinking, smoking or tobacco use at the place of work. Hands and/or face should be washed before breaks and at the end of the shift. Store work clothing separately.

9. Physical and Chemical Properties

Physical state:	solid
Form:	powder
Odour:	almost odourless
Odour threshold:	Not determined due to respiratory tract sensitizing properties.
Colour:	yellow to brown
pH value:	5.3 - 8.3 (50 g/kg)
Melting point:	The substance / product decomposes therefore not determined.
Freezing point:	No data available.
Boiling point:	The substance / product decomposes therefore not determined.
Flash point:	not applicable, the product is a solid

Flammability:	not highly flammable	(UN Test N.1 (ready combustible solids))
Lower explosion limit:	For solids not relevant for classification and labelling.	
Upper explosion limit:	For solids not relevant for classification and labelling.	
SADT:	> 75 °C Heat accumulation / Dewar 500 ml (SADT, UN-Test H.4, 28.4.4)	
Vapour pressure:	negligible	
Density:	No information is available for the absolute density. Instead the bulk density was determined as a more relevant value.	
Bulk density:	330 kg/m3 (25 °C)	
Relative vapour density:	The product is a non-volatile solid.	
Partitioning coefficient n-octanol/water (log Pow):	not applicable for mixtures	
Thermal decomposition:	>= 135 °C (DSC (DIN 51007))	
Viscosity, dynamic:	not applicable, the product is a solid	
Viscosity, kinematic:	not applicable, the product is a solid	
Solubility in water:	sparingly soluble	
Molecular weight:	No data available.	
Evaporation rate:	The product is a non-volatile solid.	

Particle characteristics

Particle size distribution:	typically > 400 µm	(D50, Volumetric Distribution, ISO 13320-1)

10. Stability and Reactivity

Reactivity
No hazardous reactions if stored and handled as prescribed/indicated.

Corrosion to metals:
No corrosive effect on metal.

Oxidizing properties:
Based on its structural properties the product is not classified as oxidizing.

Dust explosivity characteristics:
Kst: 79 m.bar/s

Dust explosion class:
Dust explosion class 1 (Kst-value >0 up to 200 bar m s-1) (St 1)

Minimum ignition energy:
30 - 100 mJ, 1,013 hPa, approx. 20 °C, Inductivity: 1 mH (VDI 2263, sheet 1, 2.1.1 (May 1990))
The product is capable of dust explosion.

Chemical stability
The product is stable if stored and handled as prescribed/indicated.

Possibility of hazardous reactions
Dust explosion hazard. Accumulation of fine dust may entail the risk of a dust explosion in the presence of air.

Conditions to avoid
Avoid dust formation. Avoid all sources of ignition: heat, sparks, open flame. Avoid electro-static discharge.

Incompatible materials
None known during use and storage if used according to instructions.

Hazardous decomposition products

Decomposition products:
Hazardous decomposition products: No hazardous decomposition products if stored and handled as prescribed/indicated.

Thermal decomposition:
>= 135 °C (DSC (DIN 51007))

11. Toxicological information

Primary routes of exposure

Routes of entry for solids and liquids are ingestion and inhalation, but may include eye or skin contact. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.

Acute Toxicity/Effects

Acute toxicity
Assessment of acute toxicity: Virtually nontoxic after a single ingestion.

Oral

Information on: Endo-β-1,4-mannanase
Type of value: LD50
Species: rat (male/female)
Value: > 5,000 mg/kg (Directive 84/449/EEC, B.1)

Inhalation

Information on: Endo-β-1,4-mannanase
Type of value: LC50
Species: rat (male/female)
Value: > 5.1 mg/l (OECD Guideline 403)
Exposure time: 4 h
An aerosol was tested.

Dermal
No data available.

Assessment other acute effects
Based on available data, the classification criteria are not met.

Irritation / corrosion
Assessment of irritating effects: Not irritating to eyes and skin.

Skin

Information on: Endo-β-1,4-mannanase
Species: In vitro assay
Result: non-irritant
Method: OECD Guideline 439

Eye

Information on: Endo-β-1,4-mannanase
Species: In vitro assay
Result: non-irritant
Method: OECD Guideline 492

Sensitization
Assessment of sensitization: The substance may cause sensitization of the respiratory tract.

Information on: Endo-β-1,4-mannanase
Assessment of sensitization:
Exposure to respirable aerosols and dusts of various enzymes may cause sensitization of the respiratory tract in predisposed individuals.

Aspiration Hazard
No aspiration hazard expected.

Chronic Toxicity/Effects

Repeated dose toxicity
Assessment of repeated dose toxicity: Based on available data, the classification criteria are not met.

Genetic toxicity
Assessment of mutagenicity: Based on available data, the classification criteria are not met.

Carcinogenicity
Assessment of carcinogenicity: Based on available data, the classification criteria are not met.

Reproductive toxicity
Assessment of reproduction toxicity: Based on available data, the classification criteria are not met.

Teratogenicity
Assessment of teratogenicity: Based on available data, the classification criteria are not met.

Other Information
The product has not been tested. The statement has been derived from the properties of the individual components.

12. Ecological Information

Toxicity

Aquatic toxicity
Assessment of aquatic toxicity:
There is a high probability that the product is not acutely harmful to aquatic organisms.

Toxicity to fish

Information on: Endo-β-1,4-mannanase
LC50 (96 h) > 55.5 mg/l, Salmo gairdneri, syn. O. mykiss (OECD Guideline 203, semistatic)
The details of the toxic effect relate to the nominal concentration.

Aquatic invertebrates

Information on: Endo-β-1,4-mannanase
EC50 (48 h) > 55.5 mg/l, Daphnia magna (OECD Guideline 202, part 1, semistatic)
The details of the toxic effect relate to the nominal concentration.

Aquatic plants

Information on: Endo-β-1,4-mannanase
EC50 (72 h) > 55.5 mg/l (growth rate), Pseudokirchneriella subcapitata (OECD Guideline 201, static)
The details of the toxic effect relate to the nominal concentration.
No observed effect concentration (72 h) 13.9 mg/l (growth rate), Pseudokirchneriella subcapitata (OECD Guideline 201, static)
The details of the toxic effect relate to the nominal concentration.

Assessment of terrestrial toxicity
No data available.

Soil living organisms

Toxicity to soil dwelling organisms:
No data available.

Toxicity to terrestrial plants

No data available.

Persistence and degradability

Assessment biodegradation and elimination (H2O)
Readily biodegradable (according to OECD criteria).

Elimination information

Information on: Endo-β-1,4-mannanase

70 - 80 % CO2 formation relative to the theoretical value (29 d) (OECD 301B; ISO 9439; 92/69/EWG, C.4-C) (activated sludge, domestic)

Bioaccumulative potential

Assessment bioaccumulation potential
Significant accumulation in organisms is not to be expected.

Assessment bioaccumulation potential

Information on: Endo-β-1,4-mannanase

Because of the n-octanol/water distribution coefficient (log Pow) accumulation in organisms is not to be expected.

Mobility in soil

Assessment transport between environmental compartments
No data available.
No data available.

Additional information

Add. remarks environm. fate & pathway:
The product has not been tested. The statements on environmental fate and pathway have been derived from the properties of the individual components.

Other ecotoxicological advice:
The product has not been tested. The statement has been derived from the properties of the individual components.

13. Disposal considerations

Waste disposal of substance:
Observe national and local legal requirements.

Container disposal:
No data available.

14. Transport Information

Land transport
USDOT
Not classified as a dangerous good under transport regulations

Sea transport
IMDG
Not classified as a dangerous good under transport regulations

Air transport
IATA/ICAO
Not classified as a dangerous good under transport regulations

15. Regulatory Information

Federal Regulations

Registration status:

Feed	TSCA, US	released / exempt
Chemical	TSCA, US	blocked / not listed
Chemical	TSCA, US	

Contains non-registered, non-listed substance.
Individual registration may be required.

EPCRA 311/312 (Hazard categories): Refer to SDS section 2 for GHS hazard classes applicable for this product.

NFPA Hazard codes:
Health: 2 Fire: 1 Reactivity: 0 Special:

HMIS III rating
Health: 2¤ Flammability: 1 Physical hazard: 0

Assessment of the hazard classes according to UN GHS criteria (most recent version):

Resp. Sens.	1	Respiratory sensitization

16. Other Information

SDS Prepared by:
BASF NA Product Regulations
SDS Prepared on: 2025/10/13

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Any other intended applications should be discussed with the manufacturer.
Corresponding occupational protection measurements must be followed.

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END OF DATA SHEET