

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product identifier

Product Name **Betafin® S4**

Other means of identification

Product Code M54

Recommended use of the chemical and restrictions on use

Recommended Use Animal feed

Details of the supplier of the safety data sheet

Supplier Address

Danisco US Inc.
Genencor, a Danisco Division
3490 Winton Place
Rochester, New York 14623
USA
+1 (585) 256-5200
+1 (800) 847-5311

E-mail address

SDS.Genencor@DuPont.com

Emergency Telephone Number

+1 (319) 368-7657. For a Distribution incident - Spill, Leak, or Accident
CALL CHEMTREC - 800-424-9300 (within US)
DuPont registration number 671983

2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.122).

Not a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Label Elements

Emergency Overview

Emergency Overview The product contains no substances which at their given concentration, are considered to be hazardous to health.

Hazards not otherwise classified (HNOC)

Other Hazards. Risk which are not included in the classification criteria (e.g. dust explosion hazard)

May form combustible dust concentrations in air

3. COMPOSITION/INFORMATION ON INGREDIENTS

Description

Preparation

Chemical Name	CAS No.	Weight-%
Betaine Anhydrous	107-43-7	min 93 d.s.

Only components that require disclosure according to OSHA Hazard Communication Standard 2012 are listed

*The exact percentage (concentration) of composition has been withheld as a trade secret

4. FIRST AID MEASURES

First Aid Measures

Eye Contact	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
Skin Contact:	IF ON SKIN: Wash with plenty of water and soap. If skin irritation occurs: Get medical advice/ attention.
Inhalation	IF INHALED: Remove person to fresh air and keep comfortable for breathing. If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
Ingestion	Rinse mouth thoroughly with water. IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

Most important symptoms and effects, both acute and delayed

None known.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Extinguish with alcohol-resistant foam, fire extinguishing powder or water spray.

Unsuitable Extinguishing Media Keep product and empty container away from heat and sources of ignition.

Special hazard

May form combustible dust concentrations in air. Decomposes on heating. Decomposition products: Trimethylamine, Carbon dioxide (CO₂), Esters.

Explosion Data

Sensitivity to Mechanical Impact Yes.

Sensitivity to Static Discharge Yes.

Protective Equipment and Precautions for Firefighters

Positive pressure self-contained breathing apparatus (SCBA) and structural firefighters' protective clothing will provide adequate protection.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Use personal protection recommended in Section 8.

Environmental precautions and protective procedures

Contain spill.

Methods and material for containment and cleaning up

Methods for Containment Cover with absorbent or contain. Collect and dispose.

Methods for Cleaning Up Avoid dust formation. Use industrial vacuum cleaners approved for combustible dust and area electrical classification.

7. HANDLING AND STORAGE

Precautions for safe handling

Avoid generation of dust and aerosols. Avoid contact with eyes, skin and clothing. Minimize dust generation and accumulation. Combustible dust clouds may be created where operations produce fine material (dust). Avoid significant deposits of material, especially on horizontal surfaces, which may become airborne and form combustible dust clouds and may contribute to secondary explosions. Handling and processing operations should be conducted in accordance with 'best practices' (e.g. NFPA- 654).

Conditions for safe storage, including any incompatibilities

Conditions for safe storage, including any incompatibilities Keep container tightly closed in a dry and well-ventilated place. Protect from light. Keep/store only in original container.

Incompatible Products Keep away from heat, flames and sparks.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines Based on data available for ingredients.

Chemical Name	ACGIH TLV	OSHA 8 Hr. TWA:	NIOSH IDLH
Betaine Anhydrous 107-43-7	None known	None known	None known

Appropriate engineering controls

Engineering Measures Transfer via enclosed lines. Formulate in enclosed or ventilated mixing vessels. Carefully handle the substance to minimize releases. Avoid generation of dust and aerosols.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice. Regular cleaning of equipment, work area and clothing is recommended. Avoid contact with eyes, skin and clothing. Wear suitable gloves and eye/face protection.

Individual protection measures, such as personal protective equipment

Eye/Face Protection Wear safety glasses with side shields (or goggles).

Skin and Body Protection Wear protective gloves and protective clothing.

Respiratory Protection If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Physical State Crystalline solid

Color Light brown

Odor Characteristic

Odor Threshold	No data available
pH	7-10
Melting point / freezing point	No data available
Boiling point / boiling range	Not applicable
Flash Point	No data available
Evaporation rate	No data available
Flammability (solid, gas)	No data available
Upper/lower flammability or explosive limits	
Upper Flammability Limit	No data available
Upper explosive limits	No data available
Lower Flammability Limit	No data available
Lower explosive limits	No data available
Vapor Pressure	Not applicable
Vapor Density	No data available
Bulk Density	No data available
Specific Gravity	No data available
Water Solubility	Soluble
Partition Coefficient (n-octanol/water)	No data available
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Dynamic viscosity	Not applicable

10. STABILITY AND REACTIVITY

Reactivity

Not expected.

Chemical stability

Stable under normal conditions.

Possibility of Hazardous Reactions

None under normal processing.

Conditions to avoid

Very hygroscopic; protect from moisture. Heat, flames and sparks. May form combustible dust concentrations in air.

Incompatible Materials

Keep away from heat, flames and sparks.

Hazardous decomposition products

Decomposes on heating. Decomposition products: Trimethylamine.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Acute Toxicity

Inhalation	No data available.
Eye Contact	If applicable: Classification is shown in section 2 of this SDS
Skin Contact	If applicable: Classification is shown in section 2 of this SDS
Ingestion	Toxicity Not expected

Information on toxicological effects

Symptoms No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization	Not expected.
Germ cell mutagenicity	No data available.
Carcinogenicity	No data available.
Reproductive effects	No data available.
STOT - single exposure	No data available.
STOT - repeated exposure	No data available.
Aspiration hazard	Not expected.

Numerical measures of toxicity

Component Information Classification based on data available for ingredients

Betaine Anhydrous

Oral	LD50/oral/rat 11179 mg/kg
Eye irritation	Non-irritant
Sensitization	Non-irritant.
Mutagenic effects	Negative in Ames assay with and without metabolic activation up to 5000 µg/plate Negative in chromosomal aberration using human lymphocytes No increases in micronuclei were noted in the bone marrow of mice dosed up to 2 gm/kg by the oral route.
Systemic Toxicity	Groups of male and female rats were administered 0, 0.5, 0.75, 1.0, and 5.0% betaine in the diet for 90 days. Based on this study, it was concluded that betaine is nontoxic
Carcinogenicity	Not Carcinogenic

Chemical Name	ACGIH	IARC	NTP	OSHA
Betaine Anhydrous 107-43-7	None known	None known	None known	None known

The following values are calculated based on chapter 3.1 of the GHS document (ATE)

Not applicable.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Classification based on data available for ingredients

Contains 0 % of components with unknown hazards to the aquatic environment

Chemical Name	Toxicity to Algae	Toxicity to Fish	Toxicity to daphnia
Betaine Anhydrous 107-43-7	EC50/72h/algae 1199 mg/l (Desmodesmus subspicatus)	-	No data

Persistence and Degradability

Based on data available for ingredients

Chemical Name	Biodegradation
Betaine Anhydrous 107-43-7	Readily biodegradable (88 % after 28 days)

Bioaccumulation/Accumulation

No bioaccumulation potential

Mobility

Soluble

Other Adverse Effects

None known

13. DISPOSAL CONSIDERATIONS

Waste treatment methods**Disposal Methods**

Dispose of wastes in an approved waste disposal facility. Dispose of contents/containers in accordance with local regulations.

Contaminated Packaging

Dispose of empty containers and wastes safely. Dispose of waste product or used containers according to local regulations.

14. TRANSPORT INFORMATION**Harmonized system code**

3507.90.7000 (for enzymes)

Dangerous Goods Class

Not dangerous goods in the meaning of ADR/RID, ADNR, IMDG-Code, ICAO/IATA-DGR

15. REGULATORY INFORMATION**US Federal Regulations**

Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications

Chemical Name	SARA 313 - Threshold Values %	CERCLA/SARA - Section 302 Extremely Haz
Betaine Anhydrous	Not listed	Not listed

16. OTHER INFORMATION**Prepared By**

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SDS sections updated

First edition in this format.

Disclaimer

The information provided in this Material 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.

End of Safety Data Sheet