

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

Product Identifier

Product Name **Betafin® S4**

Other means of identification

Material Number M54E0CA

Synonyms Betaine
1-Carboxy-N,N,N-trimethylmethan-aminium hydroxide inner salt.
Trimethylglycine.

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

Combustible dust	yes
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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 information
May form combustible dust concentrations in air

3. COMPOSITION/INFORMATION ON INGREDIENTS

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

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

Fine dust dispersed in air, in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

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

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 cleaner 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.
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Appropriate engineering controls

Engineering Measures	Transfer via enclosed lines. Formulate in enclosed or ventilated mixing vessels. Carefully handle the substance to minimize releases of dust/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, NIOSH/MSHA approved respiratory protection should be worn.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical State	Crystalline Solid
Color	Light brown
Odor	slight odor
Odor Threshold	No data available
pH	7-10 (5% soluble)
Melting point/freezing point	No data available
Boiling point / boiling range	No data available
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	No data available
Vapor Density	No data available
Relative 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
Viscosity	No data available

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	There is no data available for this product.
Eye Contact	Not expected to cause eye irritation.
Skin Contact	Not expected to cause irritation.
Ingestion	Toxicity Not expected

Information on toxicological effects.

Symptoms	No information available.
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Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization	Not expected.
Mutagenic effects	There is no data available for this product.
Carcinogenicity	There is no data available for this product.
Reproductive effects	There is no data available for this product.
STOT - single exposure	There is no data available for this product.
STOT - repeated exposure	There is no data available for this product.
Aspiration hazard	Not expected.

Numerical measures of toxicity*Betaine Anhydrous*

Oral	LD50/oral/rat 11179 mg/kg.
Eye irritation	Not an irritant.
Sensitization	Not a sensitizer in guinea pig sensitization studies.
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.

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)

ATEmix (oral) 250250 mg/kg.

12. ECOLOGICAL INFORMATION**Ecotoxicity**

Classification based on data available for ingredients

0% of the mixture consists of components(s) of unknown hazards to the aquatic environment.

Chemical Name	Toxicity to algae	Toxicity to fish
Betaine Anhydrous 107-43-7	EC50/72h/algae 1199 mg/l. (Desmodesmus subspicatus).	-

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 in water

Other Adverse Effects

None Known

13. DISPOSAL CONSIDERATIONS**Waste treatment methods****Waste 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 Tariff Code**

Not Applicable

DEPT. OF TRANSPORTATION UN OR NA NUMBER

Not regulated

15. REGULATORY INFORMATION**U.S. Federal Regulations**

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

16. OTHER INFORMATION**Recommended use and restrictions:**

Reference sources: NFPA 654, Standard for the Prevention of Fire and Dust Explosion from the Manufacturing, Processing, and Handling of Combustible Particulate Solids, 2006 edition

Prepared By SDS.Genencor@DuPont.com

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END OF SDS