

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 |
|------------------|-----|

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 |
|--------------------|-------------|

| 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.

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. |
|-----------------|---------------------------|

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 INFORMATIONEcotoxicity

Classification based on data available for ingredients

0% of the mixture consists of component(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 CONSIDERATIONSWaste 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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Disclaimer

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END OF SDS