



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

1.1. Product identifier

Product Name Betafin® BT
Product Code C01E0
Pure substance/mixture Substance

1.2. Relevant identified uses of the substance or mixture and uses advised against
Recommended Use Animal feed

1.3. Details of the supplier of the safety data sheet

Company/undertaking identification	Manufacturer Address
Genencor (China) Bio-Products Co., Ltd.	Danisco Animal Nutrition
102 Mei Li Road	PO Box 777
Wuxi New District	Marlborough, Wiltshire, SN8 1XN
Wuxi 214028	United Kingdom
Jiangsu, PR China	Telephone Number: +44 (0)1672
Tel: +86 510 83709751	517777
Fax: +86 510 88557788.	Fax Number: +44 (0)1672 517778

E-mail address
 SDS.Genencor@DuPont.com

1.4. Emergency telephone number
 +86 510 8855 7739.

2. HAZARDS IDENTIFICATION

Classification of the substance or mixture

This mixture is classified as not hazardous according to regulation (EC) 1272/2008 [GHS]

Label Elements

This product is not classified as hazardous according to the UN GHS guideline and labeling is not required

Signal Word None

Other Hazards

None known.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Description Preparation

Chemical Name	%	CAS No	IUB Code
Betaine Anhydrous	min 97% d.s.	107-43-7	

4. FIRST AID MEASURES

4.1. Description of 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.

Ingestion Rinse mouth thoroughly with water. IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

Inhalation IF INHALED: Remove person to fresh air and keep comfortable for breathing. If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.

4.2. Most important symptoms and effects, both acute and delayed

None known

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically

5. FIRE-FIGHTING MEASURES

5.1. Extinguishing media

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

5.2. Special hazards arising from the substance or mixture

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

5.3. Advice for firefighters

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

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Avoid generation of dust and aerosols. Avoid breathing dust or spray mist.

6.2. Environmental precautions

Contain spill.

6.3. Methods and material for containment and cleaning up

Cover with absorbent or contain. Collect and dispose Use appropriate personal protective equipment (PPE). Contain and/or absorb spill with inert material, then place in suitable container. Prevent runoff from entering drains, sewers or waterways

7. HANDLING AND STORAGE

7.1. Precautions for safe handling

Avoid contact with eyes, skin and clothing. Avoid generation of dust and aerosols. Avoid breathing dust or spray mist.

7.2. 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.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Exposure Limits Based on data available for ingredients.

8.2. Exposure 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.

Personal protective equipment

Eye/Face Protection

Wear safety glasses with side shields (or goggles).

Hand Protection

Wear protective natural rubber, nitrile rubber, Neoprene™ or PVC gloves.

Respiratory Protection

If exposure limits are exceeded or irritation is experienced, approved respiratory protection should be worn.

Skin and Body Protection

Wear protective gloves and protective clothing.

Environmental exposure controls Avoid release to the environment.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Physical State

Crystalline Powder

Color

Light brown

Odor

Faint molasses odour.

Odor Threshold

No data available

pH

6-10

Melting point / freezing point

No data available

Boiling point / boiling range

No data available

Flash Point

Not applicable

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

160 g / 100 g (in water, 25°C)

Partition Coefficient

No data available

(n-octanol/water)

Autoignition Temperature

No data available

Decomposition Temperature

No data available

Viscosity

No data available

10. STABILITY AND REACTIVITY

10.1. Reactivity

Not expected.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

None under normal processing.

10.4. Conditions to avoid

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

10.5. Incompatible materials

None known.

10.6. Hazardous decomposition products

Decomposes on heating. Decomposition products: Trimethylamine.

11. TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Product Information

Ingestion	Toxicity Not expected
Inhalation	No data available
Skin Contact:	Not expected to cause irritation
Eye Contact	Not expected to cause eye irritation
Sensitization	Not expected.
Mutagenic effects	No data available
Systemic Toxicity	No data available
Carcinogenicity	There are no known carcinogenic chemicals in this product
Reproductive effects	No data available

Component Information

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.

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

Not applicable.

12. ECOLOGICAL INFORMATION

12.1. Toxicity

Classification based on data available for ingredients

Chemical Name	Toxicity to Algae	Toxicity to Fish	Toxicity to daphnia
Betaine Anhydrous	EC50/72h/algae 1199 mg/l. (Desmodesmus subspicatus).	-	EC50/48hr/daphnia 4335 mg/L.

12.2. Persistence and degradability

Based on data available for ingredients

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

12.3. Bioaccumulative potential

No bioaccumulation potential

Chemical Name	Log Pow	Chemical Oxygen Demand (COD)	Biochemical Oxygen Demand (BOD)	Bioconcentration factor (BCF)	Dissolved organic carbon (DOC)
Betaine Anhydrous	-3.1 (@ 20°C)	14 mg/g (Cr).	BOD5 ATU: 720 mg/g.	No data	300 mg/g.

12.4. Mobility in soil

Soluble in water

12.5. Results of PBT and vPvB assessment

Not applicable

12.6. Other adverse effects

None known

13. DISPOSAL CONSIDERATIONS

13.1. 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

14.1. UN number	Not regulated
14.2. UN proper shipping name	Not regulated
14.3. Transport hazard class(es)	Not regulated
14.4. Packing group	Not regulated
14.5. Environmental hazards	Not regulated
14.6. Special precautions for user	Not regulated.
14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not regulated

15. REGULATORY INFORMATION

International Inventories

China (IECSC): Complies

Legend

IECSC - China Inventory of Existing Chemical Substances

16. OTHER INFORMATION

Prepared By SDS.Genencor@DuPont.com

Issuing Date 10/24/2015

Revision Date 10/24/2015

Revision Number 1

SDS sections updated First edition in this format.

Training Advice Details on the safe handling of enzymes can be found in the 'AMFEP Guide to the Safe Handling of Enzymes' (www.amfep.org)

Disclaimer

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End of Safety Data Sheet