

## MATERIAL SAFETY DATA SHEET

Date: January 9, 2012

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### Alimet<sup>®</sup>

### METHIONINE HYDROXY ANALOGUE

#### 1. PRODUCT IDENTIFICATION

**Synonyms:** Butanoic acid, 2-hydroxy-4-(methylthio)-DL-Methionine Hydroxy Analogue

**Chemical Formula:** CH<sub>3</sub>S(CH<sub>2</sub>)<sub>2</sub>CHOHCOO

**CAS Reg. No.:** 583-91-5

**Product Use:** Liquid Animal Feed Supplement

*For Emergencies: CHEMTREC: 800-424-9300: Outside the US: 703-527-3887*

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#### 2. HAZARDS IDENTIFICATION

##### Emergency Overview

Appearance: Light brown to brown liquid with characteristic sulfur odor.

**DANGER**  
**CAUSES EYE BURNS**  
**CAUSES SKIN IRRITATION**

##### Potential Health Effects

**EYE CONTACT:** Corrosive. Causes severe eye burns.

**SKIN CONTACT:** Practically non-toxic by skin absorption; causes skin irritation.

**INHALATION:** Vapors have a strong offensive odor, which may cause nausea, especially when exposures occur in situations without adequate ventilation or breathing protection.

**INGESTION:** May be harmful if swallowed; irritating to mouth, throat, and digestive tract

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**CHRONIC EFFECTS:** No long-term effects noted.

This product is considered hazardous under the criteria of the OSHA Hazard Communication Standard (29 CFR 1910.1200)

This product contains no carcinogens or potential carcinogens listed by OSHA, IARC or NTP.

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

<u>Chemical Ingredients:</u>	<u>CAS Number</u>	<u>% by weight</u>
Methionine hydroxy analogue	583-91-5	>88%
Water	7732-18-5	<12%

**4. FIRST AID PROCEDURES**

<b>IF IN EYES:</b>	Immediately flush eyes with plenty of water for at least 15 minutes. Get immediate medical attention
<b>IF ON SKIN:</b>	Immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse.
<b>IF INHALED:</b>	Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Seek immediate medical attention.
<b>IF SWALLOWED:</b>	Do NOT induce vomiting. Give victim a glass of water or milk. Get immediate medical attention. Careful evacuation of stomach by medical personnel imperative. Never give anything by mouth to an unconscious person.

**5. FIRE FIGHTING MEASURES**

**FLAMMABLE PROPERTIES:** Methionine hydroxy analogue contains approximately 12% water and presents no fire hazard until the water is driven off; and only a mild or non-violent fire hazard potential after water content has evaporated. Product meets NFPA-30 Code definition of Class IIIB combustible liquid after water content driven off.

**FLASH POINT:** No flash point observed using Pensky-Martens Closed Cup Method up to boil-over temperature of ~116°C (240°F).

Simultaneous flash/fire point observed using Cleveland Open Cup Method at ~202°C (395°F). Boiling first observed at ~121°C (250°F) and continued until moisture driven off before temperature rise to fire point.

Combustion generates toxic fumes of sulfur oxides, carbon monoxide and carbon dioxide.



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NFPA Hazard Identification Label: Health-3; Flammability-1; Reactivity-0;  
Special Precautions--none.

**EXTINGUISHING MEDIA:**

Water spray, foam, dry chemical, carbon dioxide or any Class B extinguishing agent.

**PROTECTION OF  
FIREFIGHTERS:**

As in any fire, wear self-contained breathing apparatus (pressure-demand, MSHA/NIOSH approved or equivalent) and full protective gear. Equipment should be thoroughly decontaminated after use.

**6. ACCIDENTAL RELEASE MEASURES**

**PERSONAL PRECAUTIONS:**

Wear appropriate personal protective equipment as specified in Section 8. Keep people away. Remove all sources of ignition. Ventilate the area of the leak or spill.

**ENVIRONMENTAL PRECAUTIONS:**

Prevent all spills from entering waterways. Minimize the use of water to prevent environmental contamination.

**METHOD OF CONTAINMENT:**

**GENERAL NOTE:** If product is to be reclaimed for use, avoid contamination of any material not spilled from original product containers. Use only equipment known to be clean and suitable for food-grade product service in handling any product for potential salvage.

**SMALL SPILLS:** Absorb spills on floor or other impervious surfaces with lime, clays, or other non-biodegradable materials.

**LARGE SPILLS:** Contain spilled liquid with sand or earthen dikes where possible to prevent runoff from entering storm sewers and ditches that lead to waterways.

**SPILLS THAT ENTER WATERWAYS:** Methionine hydroxy analogue readily mixes with water. If containment and cleanup is not possible, natural dilution will reduce acidity. Do not intentionally dilute.

**METHODS FOR CLEANUP:**

**SMALL SPILLS:** Collect contaminated sorbent and place in a plastic lined drum.

**LARGE SPILLS:** Pick up by suction or vacuum truck using clean, suitable equipment. Neutralize remaining spilled product on the ground with lime if possible.

Dig up all contaminated soil and isolate from uncontaminated materials in a plastic lined drum or other suitable container.

After removing all possible material, wash contaminated hard surface with industrial detergent solution and rinse with water. The cleaned surface can be deodorized if necessary with a weak (5%) sodium hypochlorite solution. DO NOT mix sodium hypochlorite solutions with methionine hydroxy analogue.

Dispose of in accordance with federal, state or local regulations.

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**7. HANDLING AND STORAGE**

**HANDLING:**

Avoid contact with eyes, skin or clothing. Avoid breathing vapor or mist. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.

Follow all MSDS and label precautions until container is cleaned, reconditioned or destroyed as container may retain vapor and product residues.

**STORAGE:**

Store under sanitary conditions with other feed ingredients.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**EXPOSURE GUIDELINES:**

<u>COMPONENT</u>	<u>OSHA</u>		<u>ACGIH</u>	
	<u>TWA</u>	<u>STEL</u>	<u>TWA</u>	<u>STEL</u>
Methionine hydroxy analogue	None Established	None Established	None Established	None Established

**ENGINEERING CONTROLS:** Vapors of methionine hydroxy analogue have a strong offensive odor. Provide good ventilation to minimize exposure. Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

**PERSONAL PROTECTIVE EQUIPMENT:**

**EYE PROTECTION:** Wear chemical safety goggles. Have eye flushing equipment immediately available.

**SKIN PROTECTION:** Wear chemical-resistant gloves and protective clothing to prevent skin contact. A safety shower should be located in the area where product is handled.

**PERSONAL RESPIRATORY:** Use approved full-face respiratory protection equipment when airborne exposure causes discomfort. Consult the respirator manufacturer to determine the appropriate type of equipment for a given application. Observe respirator use limitations established by the manufacturer.

**GENERAL HYGIENE CONSIDERATIONS:** Launder contaminated clothing and clean protective equipment before reuse. Wash thoroughly after handling product.



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**9. PHYSICAL AND CHEMICAL PROPERTIES**

Appearance:	Light brown to brown liquid
Odor:	Characteristic sulfur odor
Density:	1.22 g/cc (10.16 lbs./gal) @ 25°C 1.24 g/cc (10.33 lbs./gal) @ 0°C
Vapor Pressure:	16 mmHg @ 25°C
Solubility in Water:	Completely soluble
Viscosity:	105 cs @ 20°C 500 cs @ 0°C
Boiling Point:	121°C (250°F)
pH:	<1
Freezing Point:	Not available – for quality purposes, product should be protected from exposure to temperatures below 0°C (32°F)
Vapor Density:	Not available
Evaporation Rate:	Not available

**10. STABILITY AND REACTIVITY**

<b>CHEMICAL STABILITY:</b>	Stable under expected and reasonable conditions of storage or use.
<b>CONDITIONS TO AVOID:</b>	Keep away from heat, sparks and flames
<b>INCOMPATIBILITIES:</b>	Strong oxidizing agents
<b>HAZARDOUS DECOMPOSITION PRODUCTS:</b>	Product decomposition with evolution of gaseous sulfur containing compounds can occur upon exposure to temperatures exceeding 160°C (320°F)
<b>HAZARDOUS POLYMERIZATION or OTHER REACTIONS:</b>	None expected

**11. TOXICOLOGICAL INFORMATION**

<b>Methionine hydroxy analogue</b>	<p>Oral - Practically Nontoxic (Rat LD<sub>50</sub> - 2501 mg/kg)                      (Mouse LD<sub>50</sub> – male 3196 mg/kg)                      (Mouse LD<sub>50</sub> – female &gt;3125 mg/kg)                      (Chicken LD<sub>50</sub> – 4232 mg/kg)</p> <p>Dermal - Practically Nontoxic (Rabbit LD<sub>50</sub> - &gt;2000 mg/kg)                      (Mouse LD<sub>50</sub> - &gt;5000 mg/kg)</p> <p>Eye Irritation - Corrosive (Rabbit)                      Skin Irritation – Slightly irritating (Rabbit, 4-hr exposure, 1.5/8.0)                      Moderately irritating (Rabbit, 24-hr exposure, 4.1/8.0)</p> <p>Product has produced no genetic changes in standard tests using bacterial cells.</p>
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**12. ECOLOGICAL INFORMATION****ASSESSMENT:**Slightly toxic for algae  
Practically non-toxic for water flea and fish  
Readily Biodegradable**TEST RESULTS:**96 hr LC<sub>50</sub> Fish (Brachydania rerio): 386 mg/l  
72 hr EC<sub>50</sub> Algae (Scenedesmus subspicatus): 82 mg/l  
72 hr EC<sub>50</sub> Algae (Selenastrum capricornutum): 58 mg/l  
48 hr EC<sub>50</sub> Water flea (Daphnia magna): 200 mg/lBiodegradation (% after 28 days): 50 mg/l: 88%  
100 mg/l: 91%Activated sludge respiration inhibition test: 3 hr EC<sub>50</sub> > 1000 mg/l

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**13. DISPOSAL CONSIDERATIONS**

This product, when discarded, may meet the USEPA hazardous waste characteristic of corrosivity, as that term is defined at 40 CFR 261.22 (Code D002). Dispose of all empty containers, contaminated products, debris and other spill clean-up materials in accordance with applicable Federal, state or local procedures.

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**14. TRANSPORTATION INFORMATION**

Not hazardous for transportation.

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**15. REGULATORY INFORMATION**SARA Hazard Notification: Physical & Health Hazard Categories, 40 CFR Part 370:

- Immediate (acute):  
 Delayed (chronic):  
 Fire hazard:  
 Reactive hazard:  
 Sudden Release of Pressure

Section 313 Toxic Chemical(s): Not listedSection 302 Extremely Hazardous Substances: Not listedCERCLA RQ: NoneCanada WHMIS Classification:  
Class D(2)B – eye corrosivity  
This product has been classified according to the hazard criteria of the Canadian Controlled Products Regulation (CPR) and the MSDS contains all the information required by the CPR.

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FDA & AAFCO Citations:

Methionine hydroxy analogue

21CFR582.5477; AAFCO 6.8

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**16. OTHER INFORMATION**HMIS® Hazard Identification Label:

Health-3; Flammability-1; Physical Hazard-0; Personal Protection-H

Supersedes MSDS Number: AL001.8Revision Information: Mexico Address

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