1. Identification

1.1. Product identifier

Trade name: MetAMINO® DL-Methionine, Feed Grade 99%

CAS-No.: 59-51-8

1.2. Recommended use of the chemical and restrictions on use

Relevant applications identified: Feed additive

1.3. Details of the supplier of the safety data sheet

Company: Evonik Corporation USA
299 Jefferson Road
Parsippany, NJ 07054-0677
USA

Telephone: 973-929-8000

Telefax: 973-929-8040

Email address: Product-Regulatory-Services@Evonik.com

1.4. 24 HOUR EMERGENCY TELEPHONE NUMBERS:

CHEMTREC - US & CANADA: 800-424-9300

CHEMTREC MEXICO: 01-800-681-9531

CHEMTREC INTERNATIONAL: +1 703-527-3887 (collect calls accepted)

Product Regulatory Services: 973-929-8060

2. Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation 29CFR 1910.1200

Remarks: Not a hazardous substance or mixture.

2.2. Label elements

Statutory basis: Classification according to Regulation 29CFR 1910.1200

Remarks: Not a hazardous substance or mixture.

Contains DL-Methionine

The following percentage of the mixture consists of ingredient(s) with unknown acute toxicity: 99 %

2.3. Other hazards

Dust may form explosive mixture in air.

Inhalation: No hazard expected in normal use.

Skin: No hazard expected in normal use.

Eyes: No hazard expected in normal use.
3. Composition/information on ingredients

- DL-Methionine \(\geq 99\%\)
  - CAS-No. 59-51-8
  - Remarks Not a hazardous substance or mixture.

Other information
This material is classified as not hazardous under OSHA regulations.
This product is intended for FDA regulated uses only.

4. First aid measures

4.1. Description of first aid measures

**Inhalation**
In case product dust is released:
Possible discomfort: cough, sneezing
Move victims into fresh air.

**Skin contact**
No hazards which require special first aid measures.

**Eye contact**
Possible discomfort is due to foreign substance effect.
Rinse thoroughly with plenty of water keeping eyelid open.
In case of persistent discomfort: Consult an ophthalmologist.

**Ingestion**
Have the mouth rinsed with water.
After absorbing large amounts of substance:
Consult a physician.

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

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

After absorbing large amounts of substance:
Possible discomfort: nausea, vomiting
Treatment of symptoms, administration of activated charcoal, acceleration of the gastro-intestinal tract.

5. Fire-fighting measures

5.1. Extinguishing media

- Suitable extinguishing media: Water, Foam, mist
- Unsuitable extinguishing media: Carbon dioxide (CO₂)

5.2. Special hazards arising from the substance or mixture

May be released in case of fire: hydrocyanic acid, flammable smouldering gases, NOX.
sulphur oxides, carbon monoxide, carbon dioxide.

5.3. Advice for firefighters

Contaminated fire-extinguishing water must be disposed of in accordance with the regulations issued by the appropriate local authorities.
Fire residues should be disposed of in accordance with the regulations.
6. **Accidental release measures**

6.1. **Personal precautions, protective equipment and emergency procedures**
Wear personal protective equipment. Keep unauthorized persons away.

6.2. **Environmental precautions**
Obey relevant local, state, provincial and federal laws and regulations. Do not contaminate any lakes, streams, ponds, groundwater or soil.

6.3. **Methods and material for containment and cleaning up**
Absorb mechanically avoiding production of dust.

7. **Handling and storage**

7.1. **Precautions for safe handling**
Handle in accordance with good industrial hygiene and safety practice.

7.2. **Conditions for safe storage, including any incompatibilities**

<table>
<thead>
<tr>
<th>Advice on protection against fire and explosion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Take precautionary measures against static charges, keep away from sources of ignition.</td>
</tr>
<tr>
<td>Avoid dust formation.</td>
</tr>
<tr>
<td>Combustible</td>
</tr>
</tbody>
</table>

**Storage**

Store in a cool and shaded area.
Keep containers dry and tightly closed to avoid moisture absorption and contamination.

**German storage class**
11 - Combustible Solids

**Dust explosion class**
St1

<table>
<thead>
<tr>
<th>Method</th>
<th>VDI Guideline 2263 sheet 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum rate of pressure rise</td>
<td>88 bar/s</td>
</tr>
</tbody>
</table>

Standardized max. rate of pressure increase, KSt: 85bar·m/s

8. **Exposure controls/personal protection**

8.1. **Control parameters**

<table>
<thead>
<tr>
<th>Exposure limit for dust</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS-No.</td>
</tr>
<tr>
<td>type of exposure</td>
</tr>
<tr>
<td>Control parameters</td>
</tr>
<tr>
<td>type of exposure</td>
</tr>
<tr>
<td>Control parameters</td>
</tr>
</tbody>
</table>
type of exposure
Respirable fraction.
Suitable measuring processes are:
NIOSH method 0500
NIOSH method 0600

DNEL/DMEL values
Remarks
No substance-related safety assessment is necessary / has been conducted for this product.

PNEC values
Remarks
No substance-related safety assessment is necessary / has been conducted for this product.

8.2. Exposure controls

Engineering measures
Use process enclosures, local exhaust ventilation or other engineering controls to control airborne exposure.
Take measures to prevent the build up of electrostatic charge.

Personal protective equipment

Respiratory protection
A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 or applicable federal/provincial requirements must be followed whenever workplace conditions warrant respirator use.
NIOSH’s “Respirator Decision Logic” may be useful in determining the suitability of various types of respirators.

Hand protection
Glove material
Nitrile, for example, Dermatril 740, Kächele-Cama Latex GmbH (KCL), Germany
Material thickness
0.11 mm
Break through time
8 h
Method
DIN EN 374
Glove material
Natural rubber (NR), for example, Cama Clean 708, Kächele-Cama Latex GmbH (KCL), Germany
Material thickness
0.5 mm
Break through time
8 h
Method
DIN EN 374

The above mentioned hand protection is based on knowledge of the chemistry and anticipated uses of this product but it may not be appropriate for all workplaces. A hazard assessment should be conducted prior to use to ensure suitability of gloves for specific work environments and processes prior to use.

Eye protection
Safety glasses with side-shields
If dust occurs: basket-shaped glasses

Skin and body protection
No special protective equipment required.

Hygiene measures
Wash face and/or hands before break and end of work.
Cleanse and apply cream to skin after work.

Protective measures
Handle in accordance with good industrial hygiene and safety practice.
If there is the possibility of skin/eye contact, the indicated hand/eye/body protection should be used.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties
physical state: solid
Colour: white to light brown
Form: solid
Odour: characteristic
Odour Threshold: <1 ppb
pH: 5.6 - 6.1 (10 g/l) (25 °C)
Melting point/range: 281 °C decomposition
Boiling point/range: not applicable
Flash point: not applicable
Evaporation rate: solid
Flammability (solid, gas): not highly flammable
Method: UN method N.1
Lower explosion limit: dust: 30 g/m³
Upper explosion limit: No data available
Vapour pressure: < 0.0000001 hPa
Method: calculated
Modified Grain Method
Vapour density: No data available
Relative vapour density: no data available
Relative density: No data available
Water solubility: 33.5 g/l (25 °C)
Related to substance: pure substance
Partition coefficient: n-octanol/water: log Pow: -1.87
Related to substance: pure substance
Autoignition temperature: 330 °C
Method: VDI Guideline 2263 sheet 1 (BAM-furnace)
Standard commercial product with characteristic grain size distribution is normally flammable.
Thermal decomposition: 215 °C
TG (thermal gravimetric analysis)
Viscosity, dynamic: not applicable

9.2. Other information
Explosiveness  
Not to be expected in view of the structure

Carbonisation point  
210 °C

Bulk density  
610 - 750 kg/m³

Glow temperature  
> 400 °C
Method: VDI 2263

Minimum ignition energy  
> 10 mJ (140 °C)
Classification: Normal combustibility
Method: VDI Guideline 2263 sheet 1
Mean grain size:  
48 µm
Sieve fraction:  
without inductance

Maximum absolute explosive pressure  
7.8 bar

Metal corrosion  
no data available

Speed of hydrolysis  
half-life period:  1 years  (25 °C)

Burning number  
BZ 5 - burns out with flames or shower of sparks.
Method: VDI 2263

10. Stability and reactivity

10.1. Reactivity  
No further information available

10.2. Chemical stability  
Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions  
Possibility of hazardous reactions  
Dust can form an explosive mixture in air.

10.4. Conditions to avoid  
See chapter 7.2. Conditions for safe storage, including any incompatibilities

10.5. Incompatible materials  
No further information available

10.6. Hazardous decomposition products  
No hazardous decomposition products known.

11. Toxicological information

11.1. Information on toxicological effects  
Acute oral toxicity  
NOEL Rat: 10000 mg/kg

Acute inhalation toxicity  
NOAEL Rat: 5.25 mg/l / 4 h  
Method: OECD Test Guideline 403
Acute dermal toxicity  no data available

Skin irritation  
Rabbit: 500 mg / 4 h  
No skin irritation  
Method: OECD Test Guideline 404

Eye irritation  
Rabbit: 100 mg  
No eye irritation  
Method: OECD Test Guideline 405

Sensitization  
Buehler Test Guinea pig: Does not cause skin sensitisation.  
Method: OECD Test Guideline 406

Repeated dose toxicity  Oral Rat  
Testing period: 9 month  
NOAEL: 700 mg/kg  
Method: literature  
Reversible effects during the application period on liver, spleen, pancreas,

Assessment of STOT single exposure  Assessment: no data available

Assessment of STOT repeat exposure  Assessment: no data available

Risk of aspiration toxicity  no data available

Gentoxicity in vitro  
Microorganisms, cell cultures  
none mutagenic / genotoxic effects  
Method: literature  
Ames test Salmonella typhimurium  
negative  
Method: OECD TG 471

Carcinogenicity  no data available

carcinogenicity assessment  Contains no carcinogenic substances as defined by NTP, IARC and/or OSHA.

Toxicity to reproduction  1 generation pharyngal probe Rat: in maternally non-toxic doses  
NOEL (No Observed Effect Level) of parents: 300 mg/kg  
NOEL F1: 300 mg/kg  
Method: OECD Test Guideline 415

Human experience  gastro-intestinal symptoms: nausea, vomiting  
Side-effects were observed in the event of higher dosage (10 g)

Toxicological information on components

DL-Methionine  

Acute oral toxicity  LD50 Rat: > 10000 mg/kg  
Method: literature  
No signs of toxicity occurred

Acute inhalation toxicity  LC0 Rat(male/female): > 5.25 mg/l / 4 h
Method: OECD Test Guideline 403
limit test (maximum concentration attainable in experiments) - No deaths occurred.

Acute dermal toxicity
Assessment: no data available

Skin irritation
Rabbit: 500 mg / 4 h
No skin irritation
Method: OECD Test Guideline 404

Eye irritation
Rabbit: 100 mg
No eye irritation
Method: OECD Test Guideline 405

Sensitization
Buehler Test Guinea pig: Does not cause skin sensitisation.
Method: OECD Test Guideline 406

Repeated dose toxicity
Oral Rat
Testing period: 9 month
NOAEL: 700 mg/kg
Method: literature
Reversible effects during the application period on liver, spleen, pancreas, 

Genotoxicity in vitro
Microorganisms, cell cultures
none mutagenic / genotoxic effects
Method: literature

Ames test Salmonella typhimurium
negative
Method: OECD TG 471

Toxicity to reproduction
1 generation pharyngal probe Rat: in maternally non-toxic doses
NOEL (No Observed Effect) 300 mg/kg
Level) of parents:
NOEL F1: 300 mg/kg
Method: OECD Test Guideline 415

Human experience
gastro-intestinal symptoms: nausea, vomiting
Side-effects were observed in the event of higher dosage (10 g)

12. Ecological information

12.1. Toxicity

Toxicity to fish
LC50 (Brachydanio rerio): > 3200 mg/l / 96 h
Method: OECD 203

NOEC (Brachydanio rerio): 3200 mg/l / 96 h
Method: OECD 203

Toxicity in aquatic invertebrates
NOEC Daphnia magna: 220 mg/l / 48 h
Method: OECD TG 202

EC50 Daphnia magna: 324 mg/l / 48 h
Method: OECD TG 202

Toxicity to algae
EC50 static test Desmodesmus subspicatus: > 1000 mg/l / 72 h
End point: Biomass
Analytical monitoring: yes
Method: OECD TG 201

EC50 static test Desmodesmus subspicatus: > 1000 mg/l / 72 h
End point: growth rate
Analytical monitoring: yes
Method: OECD TG 201

Toxicity to bacteria
EC10 Pseudomonas putida: 2000 mg/l / 18 h
Method: UBA method

12.2. Persistence and degradability
Biodegradability
Result: rapidly biodegradable
Method: OECD TG 301 A

Biochemical Oxygen Demand (BOD)
Concentration: 480 mg/g
(BOD5)

12.3. Bioaccumulative potential
Bioaccumulation
low
log Pow: see chapter 9

12.4. Mobility in soil
Mobility
No data available

12.5. Other adverse effects
Further Information
No further information available

13. Disposal considerations
13.1. Waste treatment methods
Product
Waste must be disposed of in accordance with federal, provincial and local regulations.

Uncleaned packaging
Packaging material should be recycled or disposed of in accordance with federal, state and local regulations.

14. Transport information
Not dangerous according to transport regulations.

14.1. UN number: --
14.2. UN proper shipping name: --
14.3. Transport hazard class(es): --
14.4. Packing group: --
14.5. Environmental hazards (Marine pollutant): --
14.6. Special precautions for user: Yes

Not dangerous according to transport regulations.

15. Regulatory information

US Federal Regulations

OSHA
If listed below, chemical specific standards apply to the product or components:

- None listed

Clean Air Act Section (112)
If listed below, components present at or above the de minimus level are hazardous air pollutants:

- None listed

CERCLA Reportable Quantities
If listed below, a reportable quantity (RQ) applies to the product based on the percent of the named component:

- None listed

SARA Title III Section 311/312 Hazard Categories
The product meets the criteria only for the listed hazard classes:

- No SARA Hazards

SARA Title III Section 313 Reportable Substances
If listed below, components are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

- None listed

Toxic Substances Control Act (TSCA)
If listed below, non-proprietary substances are subject to export notification under Section 12 (b) of TSCA:

- None listed
Other US Federal Regulatory Information
Observe national regulations.

State Regulations

California Proposition 65

A warning under the California Drinking Water Act is required only if listed below:

- None listed

International Chemical Inventory Status

Unless otherwise noted, this product is in compliance with the inventory listing of the countries shown below. For information on listing for countries not shown, contact the Product Regulatory Services Department.

Europe (EINECS/ELINCS) listed/registered
USA (TSCA) listed/registered
Canada (DSL) listed/registered
Australia (AICS) listed/registered
Japan (MITI) listed/registered
Philippines (PICCS) listed/registered
China listed/registered
Switzerland not listed/registered

An employer using HMIS/NFPA labeling must through training ensure that its employees are fully aware of the hazards of the chemicals used.

HMIS Ratings

Health : 0
Flammability : 1
Physical Hazard : 0

16. Other information

Further information

Revision date 04/22/2015

Changes since the last version are highlighted in the margin. This version replaces all previous versions.
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### SAFETY DATA SHEET

**MetAMINO® DL-Methionine, Feed Grade 99%**

<table>
<thead>
<tr>
<th>Material no.</th>
<th>Specification</th>
<th>Order Number</th>
<th>Version</th>
<th>Revision date</th>
<th>Print Date</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>101612</td>
<td></td>
<td>3.0 / US</td>
<td>04/22/2015</td>
<td>04/22/2015</td>
<td>14 / 14</td>
</tr>
</tbody>
</table>

- **voc**: volatile organic compounds
- **WHMIS**: Workplace Hazardous Materials Information System
- **WHO**: World Health Organization