



**SAFETY DATA SHEET****MetAmino® DL-Methionine, Feed Grade 99%**

Material no. 99002368  
Specification 189619  
Order Number 04959850

Version 1.0 / US  
Revision date 06/11/2016  
Print Date 06/25/2016  
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**3. Composition/information on ingredients****3.1. Substances****• DL-Methionine** > 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.

**3.2. Mixtures****not applicable**

No hazardous ingredients

**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****Symptoms**

None known

**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.

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**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.

In the event of fire, wear self-contained breathing apparatus.

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**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.

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**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****Advice on protection against fire and explosion**

Take precautionary measures against static charges, keep away from sources of ignition.

Avoid dust formation.

Combustible

**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

Method: VDI Guideline 2263 sheet 1

Maximum rate of pressure rise: 88 bar/s

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

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**8. Exposure controls/personal protection****8.1. Control parameters****• exposure limit for dust**

CAS-No.		
Control parameters	3 mg/m <sup>3</sup>	Time Weighted Average (TWA):(ACGIH)
type of exposure	Respirable fraction.	
	Suitable measuring processes are:	
	NIOSH method 0500	
	NIOSH method 0600	
Control parameters	10 mg/m <sup>3</sup>	Time Weighted Average (TWA):(ACGIH)
type of exposure	Inhalable particulate.	

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Control parameters	15 mg/m <sup>3</sup>	Time Weighted Average (TWA) Permissible Exposure Limit (PEL)(OSHA Z1)
type of exposure	Total dust.	
Control parameters	5 mg/m <sup>3</sup>	Time Weighted Average (TWA) Permissible Exposure Limit (PEL)(OSHA Z1)
type of exposure	Respirable fraction. Suitable measuring processes are: NIOSH method 0500 NIOSH method 0600	

**Other information**

Contains no substances with occupational exposure limit values.

**DNEL/DMEL values**

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

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

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**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 solid
Evaporation rate	No data available
Flammability (solid, gas)	1200 s Method: UN method N.1 Burning Time
Lower explosion limit	dust: 30 g/m <sup>3</sup>
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

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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/m<sup>3</sup>

glow temperature > 400 °C  
Method: VDI 2263

Minimum ignition energy > 10 mJ (140 °C)  
Classification: Normal combustability  
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

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**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

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**10.6. Hazardous decomposition products**

No hazardous decomposition products known.

**11. Toxicological information****11.1. Information on toxicological effects**

Acute oral toxicity	LD50 Rat: > 10000 mg/kg
Acute inhalation toxicity	LC0 Rat: 5.25 mg/l / 4 h Method: OECD Test Guideline 403
Acute dermal toxicity	No data available
Skin irritation	Rabbit No skin irritation Method: OECD Test Guideline 404
Eye irritation	Rabbit slightly eye irritation Method: OECD Test Guideline 405
Sensitization	Guinea pig: Does not cause skin sensitisation. Method: OECD Test Guideline 406
Repeated dose toxicity	Oral Rat(male) / 90-day NOAEL: 1253 mg/kg Method: OECD TG 408 Test substance: comparable product
	Oral Rat(female) / 90-day NOAEL: 1423 mg/kg Method: OECD TG 408 Test substance: comparable product
Assessment of STOT single exposure	Assessment: No data available
Assessment of STOT repeat exposure	Assessment: The classification criteria are not met based on the available data.
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

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OSHA.

Toxicity to reproduction	Rat NOEL (No Observed Effect Level) of parents: Method: 300 mg/kg OECD Test Guideline 415 No evidence of effects of reproductive / developmental toxicity.
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)	480 mg/g Concentration: (BOD5)

**12.3. Bioaccumulative potential**

Bioaccumulation	low log Pow: see chapter 9
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**12.4. Mobility in soil**

Mobility No data available

**12.5. Other adverse effects**

Further Information No further information available

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**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.

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**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.

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**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

**US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 302 Extremely Hazardous Substance (40 CFR 355, Appendix A)**

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Remarks This material does not contain any components with a SARA 302 RQ.

**SARA 304 - Emergency Release Notification**

Remarks This material does not contain any components with a section 304 EHS RQ.

**US. EPA CERCLA Hazardous Substances (40 CFR 302)**

Remarks This material does not contain any components with a CERCLA RQ.

**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**

US. California Safe Drinking Water & Toxic Enforcement Act (Proposition 65)

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

**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

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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 06/11/2016

Changes since the last version are highlighted in the margin. This version replaces all previous versions.

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**Legend**

ACC	American Chemistry Council
ACGIH	American Conference of Governmental Industrial Hygienists
ACS	Advisory Committee on Sustainability
ADI	Acceptable Daily Intake
ASTM	American Society for Testing and Materials
ATP	Adaptation to Technical Progress
BCF	Bioconcentration factor
BOD	Biochemical oxygen demand
c.c.	closed cup
CAO	Cargo Aircraft Only
Carc	Carcinogen
CAS	Chemical Abstract Services
CDN	Canada
CEPA	Canadian Environmental Protection Act
CERCLA	Comprehensive Environmental Response – Compensation and Liability Act
CFR	Code of Federal Regulations
CMR	carcinogenic-mutagenic-toxic for reproduction

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COD	Chemical oxygen demand
DIN	German Institute for Standardization
DMEL	Derived minimum effect level
DNEL	Derived no effect level
DOT	Department of Transportation
EC50	half maximal effective concentration
EPA	Environmental Protection Agency
ErC50	Reduction of Growth Rate
ERG	Emergency Response Guide Book
FDA	Food and Drug Administration
GHS	Globally Harmonized System of Classification and Labelling of Chemicals (GHS)
GLP	Good Laboratory Practice
GMO	Genetic Modified Organism
HCS	Hazard Communication Standard
HMIS	Hazardous Materials Identification System
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IBC	Intermediate Bulk Container
ICAO-TI	International Civil Aviation Organization- Technical Instructions
ICCA	International Council of Chemical Association
ID	Identification number
IMDG	International Maritime Dangerous Goods
IUPAC	International Union of Pure and Applied Chemistry
ISO	International Organization For Standardization
LC50	50 % Lethal Concentration
LD50	50 % Lethal Dose
L(E)C50	LC50 or EC50
LOAEL	Lowest observed adverse effect level
LOEL	Lowest observed effect level
MARPOL	International Convention for the Prevention of Pollution from Ships
NFPA	National Fire Protection Association
NOAEL	No observed adverse effect level
NOEC	no observed effect concentration
NOEL	no observed effect level
o. c.	open cup
OECD	Organisation for Economic Cooperation and Development
OEL	Occupational Exposure Limit
OSHA	Occupational Safety and Health Administration
PBT	Persistent, bioaccumulative, toxic
PEC	Predicted effect concentration
PNEC	Predicted no effect concentration
RQ	Reportable Quantity
SDS	Safety Data Sheet
STOT	Specific Target Organ Toxicity
UN	United Nations
vPvB	very persistent, very bioaccumulative
voc	volatile organic compounds
WHMIS	Workplace Hazardous Materials Information System
WHO	World Health Organization