First issued: 1995/12/15
Revised: 2012/12/03

SUMITOMO CHEMICAL Co., Ltd.

SAFETY DATA SHEET

1 PRODUCT AND COMPANY IDENTIFICATION

Product name: DL-METHIONINE FEED GRADE
General Use: Feed Additives

Supplier:
SUMITOMO CHEMICAL COMPANY, LIMITED

Contact Department / Section:
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2 HAZARDS IDENTIFICATION

GHS classification:

Physical hazards	Explosives	Not applicable
	Flammable gas.	Not applicable
	Flammable aerosol.	Not applicable
	Oxidizing gases	Not applicable
	Gases under pressure	Not applicable
	Flammable liquids	Not applicable
	Flammable solid.	Classification not possible
	Self-reactive substances and mixtures	Not applicable
	Pyrophoric liquids	Not applicable
	Pyrophoric solids	Not classified
	Self-heating substances and mixtures	Classification not possible
	Substances and mixtures, which in contact with water, emit flammable gases	Not applicable
	Oxidizing liquids	Not applicable
	Oxidizing solids	Not applicable
	Organic peroxides	Not applicable
	Corrosive to metals	Classification not possible
Health hazards	Acute toxicity (Oral)	Not classified
	Acute toxicity (Dermal)	Classification not possible
	Acute toxicity (Inhalation - gas)	Not applicable
	Acute toxicity (Inhalation - vapour)	Classification not possible
	Acute toxicity (Inhalation - dust and mist)	Classification not possible

	Skin corrosion/irritation	Not classified
	Serious eye damage/eye irritation	Not classified
	Respiratory sensitizer	Classification not possible
	Skin sensitizer	Classification not possible
	Germ cell mutagenicity	Not classified
	Carcinogenicity	Classification not possible
	Toxic to reproduction	Classification not possible
	Specific target organ toxicity - single exposure	Classification not possible
	Specific target organ toxicity - repeated exposure	Classification not possible
	Aspiration hazard	Not applicable
Environmental hazards	Acute hazards to the aquatic environment	Not classified
	Chronic hazards to the aquatic environment	Not classified

GHS label elements: Not Applicable

Hazardous statements: The product may form flammable or explosive dust-air mixtures.

3 COMPOSITION / INFORMATION ON INGREDIENTS

Substance or Mixture: Substance
Chemical Name: DL-Methionine , DL-2-amino-4-methylthio butanoic acid
Formula: C5H11NO2S

Chemical name	Concentration	CAS-number
DL-Methionine	99% min.	59-51-8

4 FIRST AID MEASURES

Inhalation:
Rinse mouth thoroughly with water.
Remove victim to fresh air and keep at rest in a position comfortable for breathing.
Administer oxygen if breathing is difficult.
Apply artificial respiration if victim is not breathing.
Keep victim warm with a blanket etc.
Get immediate medical advice/attention.

Skin contact:
Remove/ take off immediately contaminated clothing and shoes.
Gently wash with plenty of soap and water.
If skin irritation or rash occurs: Get medical advice/attention.

Eye contact:
Do not rub eye.
Hold eyelids apart.
Begin to rinse with water as soon as possible and rinse cautiously for at least 15 minutes.
Remove contact lenses, if present and easy to do. Continue rinsing.
Get immediate medical advice/attention.

Ingestion	Rinse mouth thoroughly with water. Give large quantities of water and/or induce vomiting. Remove victim to fresh air and keep at rest in a position comfortable for breathing. Keep victim warm with a blanket etc. Get immediate medical advice/attention. Administer oxygen if breathing is difficult. Apply artificial respiration if victim is not breathing. Do not give victim anything to drink if he is unconscious. Effect of exposure to substance may be delayed. Medical observation is indicated.

5 FIRE-FIGHTING MEASURES

Extinguishing media:	Small fires: Dry chemical powder, Carbon dioxide, Dry sand Large fires: Regular foam, Water spray, Fog.
Unsuitable extinguishing media:	Straight streams
Unusual Fire & Explosion Hazards:	Will be easily ignited by ignition sources such as heat, mechanical sparks, static discharge or open flames. When heated, decomposition gases may form explosive mixtures with air. Fire may produce flammable and/or harmful gases (See "10. Stability and reactivity"). Powders or dusts may explode or burn with explosive violence. Risk of fire and explosion on contact with incompatible material(s).
Special Fire Fighting Procedures:	If possible, fight fire from protected position. Keep upwind. Keep unauthorized personnel away. If possible, remove containers exposed to heat or cool with water. Do not scatter spilled material with high pressure water streams. Dike fire water for later disposal; do not spread the material.
Protective Measures:	Wear regional, national, and local standards approved fire fighting turnout gear and positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection from heat, and may not provide adequate protection from the harmful vapors or liquids.

6 ACCIDENTAL RELEASE MEASURES

Personal precautions and Protective equipment :	Wear appropriate protective equipment. Use personal protection recommended in "8. Exposure control/personal protection". Isolate spill or leak area for proper distance in all directions. Do not touch or walk through spilled material.
Emergency measures	Keep all unauthorized personnel upwind away. Consult an expert. Warn habitants surroundings. Block navigation on waterways. Form large safety zone.
Environmental precautions:	Prevent entry spilled material and runoff from spillage control into waterways, sewers, basements or confined areas. Avoid release to the environment.
Spill Cleanup Methods:	For small spill, collect spilled solid/particle solid into sealable containers. Use clean non-sparking tools. Collect fine substance by dust explosion-proof cleaner to prevent scatter. For large spill, wet down with water and dike for the later disposal. See "13. Disposal considerations".
Prevention of second disaster:	Eliminate all ignition sources such as heat/sparks/open flames/hot surfaces/static discharges. Use explosion-proof electrical equipment and lighting. Prevent from accumulation of static electricity by grounding and bonding of all equipment, and by wearing work clothings made of appropriate material. Prepare appropriate extinguishing agent. （See "5. Fire-fighting measures") Prevent dust cloud or/and dust accumulation. For large spill, consider initial downwind evacuation for proper distance.

7 HANDLING AND STORAGE

Handling and technical measures :

Use only outdoors or in a well-ventilated area.
Eliminate all ignition sources.
Handle dust in closed system.
Prevent dust cloud and dust accumulation.
Do not breath powder or dust.
As precautions for electrostatic discharge, inerting closed systems and explosion pressure venting of confined spaces are recommended.
Use only metal or electrically conductive plant units (pipelines, ducts, silos, etc.) and ground/bond all of them. Do not use insulating equipment and conductive equipment with insulating inner lining or coating, unless taking precautionary measures of inerting with nitrogen or inert gas.
If dust generates, use dust explosion-proof electrical/ventilating/lighting/equipment.
Take precautionary measures against static discharge.
Ground person by means of antistatic shoes with antistatic clothing and conductive floors.
Consult an expert about further precautionary measures for dust explosion.

precautions:

Ventilate by appropriate method. (See "8. Exposure control/personal protection")
Install appropriate equipment and wear appropriate protective clothing. (See "8. Exposure control/personal protection")
Wash hands and face thoroughly after handling.
Eating, drinking and smoking in work areas is prohibited.
Contaminated work clothing should not be allowed out of the workplace.
Keep away from heat/sparks/open flames/hot surfaces.
No smoking.
Keep containers tightly closed.

Storage:

Well ventilate by proper manner according to regional, national and local regulations.
Protect against direct sunlight.
Keep in a fire-proof designed place.
Separate form incompatible materials. See "10. Stability and reactivity".

Recommended packaging material:

Use package or container with anti-static discharge liner.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Permissible concentration :

Japan Society for Occupational Health (2010)
8 mg/m3 (Class3 / Total dust)
2 mg/m3 (Class3 / Respirable dust)
ACGIH (2010)
Particles not otherwise specified
10 mg/m3 (Inhalable particles)
3 mg/m3 (Respirable particles)

Engineering control :

Use closed system and equipment, or local and/or general exhaust to maintain product dust concentrations in air below occupational exposure standards.
Wear personal protective equipment (PPE) for handling the product.
Wear positive pressure self-contained breathing apparatus (SCBA) in circumstance above occupational exposure standards for dust including emergency procedures and cleaning for accidental release.
Personal protective equipment (PPE) should be chosen only according to specific regulatory requirements.
Maintain eye wash fountain and quick-drench facilities in work area.
Control equipment and handling to prevent dust explosion hazards.
See ”7. Handling and storage".

Hygiene control :

Avoid inhalation of dust.
Do not eat, drink or smoke during work.
Wash thoroughly after handling and before eating or drinking.

Respiratory Protection:

Breathing protective equipment should be chosen only according to specific regulatory requirements.
Wear positive pressure self-contained breathing apparatus (SCBA) in circumstance above occupational exposure standards for dust including emergency procedures and cleaning for accidental release.

Hand protection:

Impervious gloves.

Eye protection:

Eye protective equipment should be chosen only according to specific regulatory requirements.
Chemical safety goggles.

Skin protection:

Personal protective equipment (PPE) should be chosen only according to specific regulatory requirements.
Suitable impervious protective clothing, including protective footwear, gloves, lab coat, apron or coveralls.

9 PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Crystalline powder

Color: White or pale yellow

Odor: Characteristic

pH:	5.2 – 6.1 (1% aqueous solution)
Melting Point:	Not available. (decomposition : > 250℃) (EEC A.1 OECD102)
Boiling Point:	Not applicable
Flash Point:	Not applicable
Autoignition Temperature:	No data available
Flammability Limit - Upper (%)–:	No data available
Flammability Limit - Lower (%)–:	No data available
Flammability:	Not considered as highly flammable (EC A. 16)
Lower Limit of Dust Explosion :	60 g/m3 (particle size < 75 μ m) (JIS Z 8118(2002))
Vapor pressure:	< 8.40 X 10^{-7} Pa (20℃) (EEC A. 4 OECD104)
Vapor density (air=1):	No data available
Relative density:	1.32 g/cm3 (EC A. 3 OECD 109)
Bulk density:	0.50 - 0.80 g/cm3 (CIPAC MT159)
Solubility in Water:	31.6 g/l (20℃) (EC A. 6 OECD105)
Solubility (other):	Soluble in diluted acids, alkalis. Very slightly soluble in 95% ethyl alcohol. Insoluble in diethyl ether.
Partition coefficient (n-octanol/water):	log Pow : -3.5 (EC A. 8 OECD107)
Decomposition Temperature:	> 250℃ (EEC A. 1 OECD102)

10 STABILITY AND REACTIVITY

Stability:	Stable at normal conditions. May form explosive dust cloud.
Condition to avoid	Ignition sources (open flame, spark, heat, hot surface, static discharge etc.), incompatibles.
Incompatible Materials	Strong oxidizers
Decomposition Products	Carbon monoxide, Carbon dioxide, Hydrocarbons, Sulfuric oxides, Nitrogen oxides

11 TOXICOLOGICAL INFORMATION

Acute Toxicity:

Oral:	LD50 : > 5000 mg/kg (rats, mice)
Dermal:	LD50 : > 2000 mg/kg (mice)
Inhalation - gas:	Not applicable
Inhalation - dust and mist:	Classification not possible
Inhalation - vapour:	Classification not possible
Skin corrosion/irritation:	Not irritating (rabbit)
Serious eye damage/eye irritation:	Mildly Irritating (rabbit)
Respiratory sensitizer/Skin sensitizer:	No data available

Germ cell mutagenicity:

In vitro:	Negative (Ames test)
In vivo:	No data available

Sub-acute Toxicity :	No adverse effects were found in rats orally treated at the dose level of 25 - 200 mg/kg/day for 90 days.
Carcinogenicity:	No data available
Reproductive toxicity:	No data available
Specific target organ toxicity following single exposure:	No specific target organs noted
Specific target organ toxicity following repeated exposure:	No specific target organs noted
Aspiration hazard:	No data available
Other Effects:	No data available

12 ECOLOGICAL INFORMATION

Acute toxicity:

Fish:	LC50 (96hr) : > 100 mg/L (*Oryzias latipes*)
Aquatic invertebrates:	EC50 (48hr) : > 1000 mg/L (*Daphnia magna*)
Aquatic Plants:	ErC50 (72hr) : > 1000 mg/L (*Pseudokirchneriella subcapitata*)

Chronic Toxicity:

Fish:	No data available
Aquatic invertebrates:	NOEC (21d) : 32 mg/L （Water flea reproductive test）
Aquatic Plants:	No data available
Persistence and Degradability:	No data available
Bioaccumulative potential:	log Pow = - 3.5 (low bioaccumulation potential)
Mobility:	No data available

13 DISPOSAL CONSIDERATIONS

Waste disposal: Disposal must be in accordance with local regulations.

Container disposal: Disposal must be in accordance with local regulations.

14 TRANSPORT INFORMATION

International standards: Hazard Class: Not regulated
UN number: none

Domestic Standard: In compliance with domestic law.

15 REGULATORY INFORMATION

This product complies with the competent regulations in an applicable country or region.

Inventory Status

Australia AICS:	On or in compliance with the inventory
Canada DSL Inventory List:	On or in compliance with the inventory
EU EINECS List:	On or in compliance with the inventory
EU ELINCS List:	Not in compliance with the inventory.
Japan (ENCS) List:	On or in compliance with the inventory
EU No Longer Polymers List:	Not in compliance with the inventory.
China Inv. Existing Chemical Substances:	On or in compliance with the inventory
New Zealand Interim Inventory of Chems.:	Not in compliance with the inventory.
Korea Existing Chemicals Inv. (KECI):	Not in compliance with the inventory.
Canada NDSL Inventory:	Not in compliance with the inventory.
Philippines PICCS:	On or in compliance with the inventory
US TSCA Inventory:	On or in compliance with the inventory
New Zealand Inventory of Chemicals:	On or in compliance with the inventory
Switzerland Consolidated Inventory:	Not in compliance with the inventory.
Japan ISHL Listing:	On or in compliance with the inventory
Japan Pharmacopoeia Listing:	Not in compliance with the inventory.

16 OTHER INFORMATION

Disclaimer: The provided information is based on currently available law, materials, information, and data; however, information regarding concentration, physical and chemical properties, and hazard identification is not guaranteed. Precautions for safe handling are intended for a normal condition. In case of specific condition, please handle a product with appropriate safety measures that are compatible to the product usage.