1 PRODUCT AND COMPANY IDENTIFICATION

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

**Supplier:** SUMITOMO CHEMICAL COMPANY, LIMITED

**Contact Department / Section:** Marketing Department, Animal Nutrition Division  
Tokyo Sumitomo Twin Building (East), 27-1, Shinkawa 2-chome, Chuo-ku, Tokyo, 104-8260 Japan

**Telephone:** +81-3-5543-5740  
**Fax:** +81-3-5543-5758

**Emergency telephone:**  
Asia Pacific except China: +65-3158-1074 (CARECHEM24, Singapore)  
China: +86-10-5100-3039 (CARECHEM24, Beijing, China)  
Europe, Israel & Americas except USA: +44-1235-239-670 (CARECHEM24, UK)  
Middle East & Africa: +44-1235-239-671 (CARECHEM24, UK)  
USA: +1-800-424-9300 (CHEMTREC, USA )

2 HAZARDS IDENTIFICATION

**GHS classification:**

<table>
<thead>
<tr>
<th>Physical hazards</th>
<th>Explosives</th>
<th>Flammable gas.</th>
<th>Flammable aerosol.</th>
<th>Oxidizing gases</th>
<th>Gases under pressure</th>
<th>Flammable liquids</th>
<th>Flammable solid.</th>
<th>Self-reactive substances and mixtures</th>
<th>Pyrophoric liquids</th>
<th>Pyrophoric solids</th>
<th>Self-heating substances and mixtures</th>
<th>Substances and mixtures, which in contact with water, emit flammable gases</th>
<th>Oxidizing liquids</th>
<th>Oxidizing solids</th>
<th>Organic peroxides</th>
<th>Corrosive to metals</th>
<th>Health hazards</th>
<th>Acute toxicity (Oral)</th>
<th>Acute toxicity (Dermal)</th>
<th>Acute toxicity (Inhalation - gas)</th>
<th>Acute toxicity (Inhalation - vapour)</th>
<th>Acute toxicity (Inhalation - dust and mist)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Substance or Mixture:</th>
<th>Substance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Name:</td>
<td>DL-Methionine, DL-2-amino-4-methylthio butanoic acid</td>
</tr>
<tr>
<td>Formula:</td>
<td>C5H11NO2S</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Concentration</th>
<th>CAS-number</th>
</tr>
</thead>
<tbody>
<tr>
<td>DL-Methionine</td>
<td>99% min.</td>
<td>59-51-8</td>
</tr>
</tbody>
</table>

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.
## ACCIDENTAL RELEASE MEASURES

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal precautions and Protective equipment</td>
<td>Wear appropriate protective equipment. Use personal protection recommended in &quot;8. Exposure control/personal protection&quot;. Isolate spill or leak area for proper distance in all directions. Do not touch or walk through spilled material.</td>
</tr>
<tr>
<td>Environmental precautions:</td>
<td>Prevent entry spilled material and runoff from spillage control into waterways, sewers, basements or confined areas. Avoid release to the environment.</td>
</tr>
<tr>
<td>Spill Cleanup Methods:</td>
<td>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 &quot;13. Disposal considerations&quot;.</td>
</tr>
<tr>
<td>Prevention of second disaster:</td>
<td>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 &quot;5. Fire-fighting measures&quot;) Prevent dust cloud or/dust accumulation. For large spill, consider initial downwind evacuation for proper distance.</td>
</tr>
</tbody>
</table>
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°C) (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 μm) (JIS Z 8118(2002))

Vapor pressure: < 8.40 × 10⁻⁷ Pa (20°C) (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°C) (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°C (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 NDRL 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.