

## SAFETY DATA SHEET

Date of issue : JAN 5, 2015

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Version 02

◎ Product : **MIWON<sup>®</sup> brand NAMINO**

Description : White or pale yellow color powder, characteristic taste  
Synonyms : Mixtures of L-Lysine and L-Glutamic acid  
Chemical name : Mixtures of L-Lysine(49~53%) and L-Glutamic acid (47~51%)  
Chemical formula : C<sub>6</sub>H<sub>14</sub>N<sub>2</sub>O<sub>2</sub> (LYS) and C<sub>5</sub>H<sub>9</sub>NO<sub>4</sub> (GLU)  
Reference : CAS NO. / LYS:56-87-1 & GLU:56-86-0

### 1. Identification of the Substance and of the Company

Product Name	<b>MIWON<sup>®</sup> brand NAMINO</b>
Supplier/Manufacturer	<b>Daesang Corporation</b> 26, Cheonho-daero, Dongdaemun-gu, Seoul, South Korea Tel: +82 2 2657 5371 & Fax: +82 2 2657 5333
Emergency Telephone	1) +1 201 488 4010 for USA & Canada 2) +82 2 2657 5374 for the rest countries

### 2. Composition/Information on Ingredients

Component	L-Lysine(LYS) 49~53%, L-Glutamic acid(GLU) 47~51%
Description	White or Pale yellow color powder, Odorless
Chemical name	Mixture of L-Lysine and L-Glutamic acid
CAS No.	LYS:56-87-1, GLU:56-86-0
EINECS No. (EC #)	LYS:200-294-2, GLU:200-293-7
Chemical Formula	LYS:C <sub>6</sub> H <sub>14</sub> N <sub>2</sub> O <sub>2</sub> , GLU:C <sub>5</sub> H <sub>9</sub> NO <sub>4</sub>
Molecular weight	LYS:146.19 g/mol, GLU: 147.13 g/mol

### 3. Hazards Identification

Not hazardous according to EU Directive 67/548/EEC (LYS &amp; GLU)

### 4. First Aid Measures

Swallowing	Wash out mouth with water provided person is conscious. Call a physician.
Inhalation	Remove to fresh air. If breathing becomes difficult, call a physician.
Skin contact	Immediately wash skin with soap and flush with water.
Eye contact	Flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers.

### 5. Fire Fighting Measures

Extinguishing media	Water spray, Carbon dioxide, dry chemical powder or foam
Special firefighting procedure	Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes
Unusual fire and explosion hazard	Wear self-contained breathing apparatus. Equipment should be thoroughly decontaminated after use.
<b>6. Accidental Release Measures</b>	
Wear respirator, chemical safety goggles, rubber boots and heavy rubber gloves Sweep up, place in a bag and hold for waste disposal. Avoid raising dust Ventilate area and wash spill site after material pickup is complete	
<b>7. Handling and Storage</b>	
Refer to Section 8	
<b>8. Exposure Controls / Personal Protection</b>	
Safety shower and eye bath Mechanical exhaust required Avoid inhalation Avoid contact with eyes, skin and clothing Avoid prolonged or repeated exposure Respiratory protection required Compatible chemical-resistant gloves Chemical safety goggles Keep tightly closed and store in a cool dry place Wash thoroughly after handling	
<b>9. Physical and Chemical Properties</b>	
Appearance	White or pale yellow powder
pH(1g in10ml)	6.5 ~7.5
Boiling point	N/A
Flash point	N/A
Melting point	N/A
Solubility	Approx. 61.0% in water (20 °C)
pH explosion limit	N/A
<b>10. Stability and Reactivity</b>	
Stability	Stable at ambient room temperature storage conditions (Typically 15~30 °C; 35~60% relative humidity)
Conditions to avoid	Humidity and high temperature
Material to avoid	Storing oxidizers
Hazardous decomposition	Carbon monoxide, Carbon dioxide, Nitrogen oxides
Hazardous polymerization	Will not occur
<b>11. Toxicological Information</b>	

Route of exposure	<p>May cause skin irritation          May be harmful if absorbed through the skin          May cause eye irritation          May be harmful if inhaled          May be irritating to mucous membranes and upper respiratory tract          May be harmful if swallowed.</p>
Special Remarks on Toxicity to Animals:	Not available.
Special Remarks on Chronic Effects on Humans:	Not available.
RTECS NO.	CF OL5540000 (LYS) / CF LZ9700000 (GLU)
JECFA NO.	1439 (LYS) / JECFA No. 1420 (GLU)
<p>* RTECS : Registry of Toxic Effects of Chemical Substances          * JECFA : The Joint FAO/WHO Expert Committee on Food Additives</p>	
<b>12. Ecological Information</b>	
Data not available	
<b>13. Disposal Considerations</b>	
<p>Contact a licensed professional waste disposal service to dispose of this material          Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all environmental regulations</p>	
<b>14. Transport Information</b>	
No special requirements for transport according to international regulations	
<b>15. Regulatory Information</b>	
<p>L-Lysine (FEMA-GRAS No. 3847)          Federal and State Regulations: TSCA 8(b) inventory: L-Lysine          Other Regulations: Not available.</p> <p>L-Glutamic acid(FEMA-GRAS No. 3285)/          Federal and State Regulations: TSCA 8(b) inventory: L-Glutamic acid          Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).</p> <p>* FEMA : Flavor and Extract Manufacturing Association of the United State          * GRAS : generally recognized as safe</p>	
<b>16. Other Information</b>	
<p>The information contained herein is based upon our current knowledge. It does not represent a guarantee of the properties of the product. In any event, Daesang Corp. or its affiliates will not be responsible for damages of any nature whatsoever resulting from the use of or reliance on information</p>	