MATERIALS SAFETY DATA SHEET
ASPARTAME

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

<table>
<thead>
<tr>
<th>Produce name</th>
<th>Aspartame</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical name</td>
<td>Aspartame</td>
</tr>
<tr>
<td>Synonyms</td>
<td>L-Phenylalanine, N-L-aspartyl-, 1-methyl-ester</td>
</tr>
<tr>
<td>Molecular</td>
<td>C14H18N2O5</td>
</tr>
<tr>
<td>Molecular weight</td>
<td>294.3</td>
</tr>
<tr>
<td>Substance/preparation</td>
<td>This product is a pure substance</td>
</tr>
<tr>
<td>Use of the</td>
<td>This substance is used as a sweetener and flavor enhancer (food ingredient)</td>
</tr>
<tr>
<td>Substance/ preparation</td>
<td></td>
</tr>
<tr>
<td>Company/undertaking identification</td>
<td>Changzhou Niutang Chemical Co., Ltd.</td>
</tr>
<tr>
<td>Emergence telephone</td>
<td>Tel: 0519-6391141</td>
</tr>
<tr>
<td></td>
<td>Fax: 0519-6391145</td>
</tr>
</tbody>
</table>

2. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS no.</th>
<th>EC No./EC-index-No</th>
<th>Classification R</th>
<th>Phrase %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspartame</td>
<td>22839-47-0</td>
<td>245-261-3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For the complete text of the R-phrases 16.
Occupational Exposure Limit(s), if available, are listed in section 8.

3. HAZARD IDENTIFICATION

Physical/chemical hazards: Finely dispersed particles are sensitive to dust explosion.
Environmental hazards: Generally no water pollutant (see section 12).
Human health hazards: The substance is not toxic.
Symptoms of (over)exposure: See section 4.

4. FIRST AID MEASURES

Inhalation
Effects: Exposure to high concentrations may result in irritation.
Symptoms: No specific symptoms are known.
First aid: Remove victim to fresh air. Keep victim at rest. Consult a doctor in...
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Skin

Effects: Aspartame is hygroscopic and its drying character is believed to be responsible for most reported skin irritation. Repeated or prolonged exposure may in rare cases cause allergic reactions, these persons must receive medical attention from an occupational health specialist.

Symptoms: No specific symptoms are known.

First aid: Remove contaminated clothing. Wash off affected skin with plenty of water and soap. Consult a doctor in event of any complaints.

Eyes

Effects: Exposure to high concentrations may result in irritation.

Symptoms: Redness

First aid: Wash out with plenty of water with the eyelid held wide open. consult a doctor in event of any complaints.

Ingestion

Effects: Is unlikely to be dangerous (Aspartame is a food ingredient). excessive ingestion is unlikely (Aspartame is intensely sweet), however, if this is suspected contact a medical doctor as precaution.

Symptoms: No specific symptoms are known.

First aid: Wash out mouth with water. Consult a doctor.

5. FIRE-FIGHTING MEASURES

Extinguishing

Measures Suitable: Water spray, carbon dioxide snow(CO2), foam, dry chemical.

Not suitable: -

Thermal decomposition: Aspartame can emit toxic fumes under fire conditions.

Products

Protective equipment: Self-contained breathing apparatus.

Specific hazards: Finely dispersed particles are sensitive to dust explosion. aspartame dust deposits cannot be ignited by hot surfaces (the aspartame melts and will not continue to burn or smoulder).

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Use appropriate personal protection. Prevent forming of dust clouds.

Environmental precautions: Do not allow to enter natural waters or soil.

Methods for cleaning up: Use appropriate protection. Collect spilled material. Remove all kinds of dust layers. Prevent forming of dust clouds. Finely dispersed particles are sensitive to dust
explosion. Clean up affected
with water.

See section 8 and 13

7. HANDLING AND STORAGE

Handling: Use appropriate personal protection. Appropriate
measures should be taken to minimize dust
generation(potential hazard of dust explosion).local
exhaust recommended.

Storage: keep in a cool, dry place. store away from other
chemicals. storage temperature<20°C. Keep unused
product sealed. Do not leave unsealed product exposed
to relative humidity greater than 45%.

Packaging materials: Well sealed moisture-barrier packaging.

Specific use(s): See section1: use of the substance/preparation.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Avoid exposure first of by technical and/or organizational measures

Occupational exposure limit

MAC value: Not established.

Other exposure limits: No specific exposure limit has been established for
aspartame , but Niutang Chemical recommends that
personal exposure is kept below the general limits for
dusts established by OSHA,ACGIH and COSHH, for use
where no specific limit has been set of: 10mg/m3-hour
TWA\(a\) of "total inhalable dust"\(b\) and 5mg/m3-hour TWA\(a\)
of "respirable dust"\(c\)

a) TWA=time weighted average;
b) Total inhalable dust is all the dust which can enter the
   nose and mouth during breathing;
c) Respirable dusts are dust particles which can be
   inhaled into the depths of the lungs.

Respiratory protection: Although not a substitute for effective dust control
measures, dust masks should be worn during short-term
operations where dust control by other means is not
possible. Type to be selected depends on local
circumstances and degree of exposure. Normally a half
mask to European std.prEN140 or equivalent is sufficient.
Seek expert advice.

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Hand protection : Rubber gloves.
Breakthrough time : Replace damaged gloves.
Eye protection : Safety goggles.
Skin protection : No special requirements, but avoid prolonged exposure of
unprotected skin to aspartame, as the powder is
hygroscopic and can cause skin irritation.

Environmental exposure : Avoid release to the environment.
Controls

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Powder</td>
</tr>
<tr>
<td>Colour</td>
<td>White</td>
</tr>
<tr>
<td>Odour</td>
<td>Odourless</td>
</tr>
<tr>
<td>PH</td>
<td>Between 4.5 and 6.0(0.8%(w/w)in water).</td>
</tr>
<tr>
<td>Boiling point/range</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>
| Melting point/range            | No reproducible melting point. aspartame cyclizes to produce
                                    diketopiperazin (DKP)and methanol before melting. DKP
                                    melts at 206°C                                                      |
| Flash point                    | Information not available.                                           |
| Flammability                   | BZ 1(brenzzahl or 'burn value').                                     |
| Explosive properties           | Kst=180bar.m/s                                                       |
|                                | Max. explosion overpressure=9.3 bar gauge                            |
|                                | Dust explosion class:1                                                |
| Min. ignition temperature      | 400°C                                                                |
| Min. ignition energy           | 10MJ/20°C for fine powder. Higher for coarser powders.               |
| Lower explosion limit          | 13g/m² in air.                                                       |
| Upper explosion limit          | Information not available.                                           |
| Autoignition temperature       | Information not available.                                           |
| Oxidizing properties           | Information not available.                                           |
| Vapour pressure                | Not applicable                                                       |
| Relative density               | 1.33(water=1)                                                        |
| Bulk density                   | 200-650kg/m³                                                        |
| Solubility in water            | 1%(weight/weight)(20°C)                                              |
| Soluble in                     | Information not available.                                           |
| Partition coefficient          | Log Pow=0.07(calculated).                                            |
| Viscosity                      | Not applicable                                                       |
| Vapour density(air=1)          | Not applicable                                                       |
| Conductivity                   | Specific resistance 3.7x10¹⁰Ohm.m                                    |
| Critical pressure              | Not applicable                                                       |
| Critical temperature           | Not applicable                                                       |

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10. STABILITY AND REACTIVITY

General: Stable under storage condition (see section 7)
Conditions to avoid: Exposure to sources of heat, prevent forming of dust clouds.
Materials to avoid: Information not available.
Hazardous: Normally none, can emit toxic fumes under fire conditions.
Decomposition Products:

11. TOXICOLOGICAL INFORMATION

Irritation
Eyes: Exposure to large amounts may be irritating.
Skin: Exposure to large amounts may be irritating.
Respiratory system: Exposure to large amounts may be irritating.

Acute toxicity
Oral: LD50rat:>4000mg/kg, the substance is not toxic.
Dermal:
Inhalation: LD504hours rat:>5mg/l(dust).

Chronic toxicity
Oral: Regulation authorities all over the world, including the EC scientific committee on Food(SCF), the joint expert committee on food additives(FDA) and the health protection branch(HPB) in Canada, have concluded that aspartame’s usage as a high intensity sweetener is safe aspartame has been assigned an ADI of 50 mg/kg body weight by the US FDA and of 40 mg/kg body weight by the WHO and regulatory authorities in Europe and Canada.

Dermal: Information not available.
Inhalation: Information not available.
Other information: Long term exposure may be irritating to respiratory tract, eyes and skin. the substance is not sensitizing (see section 4)
Carcinogenicity: Not carcinogenic.
Mutagenicity: Not mutagenic.
Reproduction: No reprotoxicity.

12. ECOLOGICAL INFORMATION
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Ecotoxicity: None; aspartame lacks specific since it consists of amino acids. when aspartame enters the aquatic environment in high amount due to an accident, it may cause oxygen depletion due other food component.

Mobility: Information not available.
Persistence-Degradability: The substance is readily biodegradable.
Bioaccumulative Potential: Bioaccumulation in aquatic organisms is not expected.
Other adverse: Information not available.

13. DISPOSAL CONSIDERATIONS

Please check the consequences of nation regulations on this produce yourself

Methods of disposal: Wash into approved sewage system(aspartame) or, in compliance with local laws, incinerate or place in approved landfill.
Contaminated Packaging Danger(s): Treat as industrial garbage. Finely dispersed particles are sensitive to explosion.

14. TRANSPORT INFORMATION

Special precautions: -
Proper shipping: No dangerous good according to transport regulations

15. REGULATORY INFORMATION

Please check the consequences of national regulations on produce yourself labeling according to direct 67/548/EC.
CONTAINS: Aspartame

16. OTHER INFORMATION

Aspartame contains phenylalanine, therefore phenylketonurics should control their intake. The above information has been compiled by HSC form published sources considered reliable, but not all the information has been independently by HSC. In addition, the exact conditions of use are beyond HSC’ control. Accordingly, HSC cannot guarantee the accuracy of the above, although it is given in good faith.