Product Specification
MONOSODIUM L - GLUTAMATE

1. Product and Company Information
Monosodium L- Glutamate contains approximately one molecule of water of crystallization. It occurs as white, practically odorless, free-flowing crystals or crystalline powder. It is freely soluble in water, and is sparingly soluble in alcohol. It may have either a slightly sweet or a slightly salty taste. The pH of a 1 in 20 solution is between 6.7 and 7.2.

Chemical Formula : C₅H₈O₄NNa·H₂O
Formula Weight : 187.13 g/mol
CAS Number : 6106-04-3
EINECS Number : 205-538-1
RTECS Number : MA1578000
Chemical Family : Amino Acid
Functional Use in Foods : Flavor enhancer
Manufacturer Name : PT. CJ Indonesia
Manufacturer Address : Jl. Raya Brantas Km 3.5, Jatigedong-Ploso, Jombang 61453 Indonesia

2. Chemical / Analytical Information

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Specification</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assay</td>
<td>Not less than 99%</td>
<td>HPLC analysis</td>
</tr>
<tr>
<td>pH (5% solution)</td>
<td>6.7 ~ 7.2</td>
<td>pH meter</td>
</tr>
<tr>
<td>Loss on Drying</td>
<td>Not more than 0.5%</td>
<td>Moisture meter</td>
</tr>
<tr>
<td>Specific Rotation</td>
<td>Between +24.8° ~ +25.3°</td>
<td>Polari meter</td>
</tr>
<tr>
<td>Chloride</td>
<td>Not more than 0.04%</td>
<td>IC analysis</td>
</tr>
<tr>
<td>Pyrrolidone carboxylic acid</td>
<td>Not more than 0.2%</td>
<td>HPLC analysis</td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>Not more than 1.0 mg/kg</td>
<td>ICP</td>
</tr>
<tr>
<td>Arsenic (As)</td>
<td>Not more than 1.0 mg/kg</td>
<td>ICP</td>
</tr>
<tr>
<td>Cadmium (Cd)</td>
<td>Not more than 1.0 mg/kg</td>
<td>ICP</td>
</tr>
<tr>
<td>Mercury (Hg)</td>
<td>Not more than 0.1 mg/kg</td>
<td>ICP</td>
</tr>
<tr>
<td>Particle Size</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium Crystal</td>
<td>+45</td>
<td>Mesh range (70% min): ASTM E-11</td>
</tr>
<tr>
<td>Regular Crystal</td>
<td>-25 ~ +60</td>
<td>Mesh range (70% min): ASTM E-11</td>
</tr>
<tr>
<td>Small Crystal</td>
<td>-45 ~ +100</td>
<td>Mesh range (70% min): ASTM E-11</td>
</tr>
<tr>
<td>Fine Crystal</td>
<td>-60 ~ +120</td>
<td>Mesh range (70% min): ASTM E-11</td>
</tr>
<tr>
<td>Powder</td>
<td>-100</td>
<td>Mesh range (60% min): ASTM E-11</td>
</tr>
</tbody>
</table>

3. Microbiological Information

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Limit</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total viable count</td>
<td>Not more than 1,000 cfu / g</td>
<td>Every microorganism is identified by cell morphology in their selective media &amp; tested by biochemical test</td>
</tr>
<tr>
<td>Yeast &amp; mould</td>
<td>Not more than 50 cfu / g</td>
<td></td>
</tr>
<tr>
<td>Coliform bacteria</td>
<td>Negative / g</td>
<td></td>
</tr>
<tr>
<td>E. coli</td>
<td>Negative / g</td>
<td></td>
</tr>
<tr>
<td>Pathogenic microorganism (Salmonella sp.)</td>
<td>Negative / 25g</td>
<td></td>
</tr>
</tbody>
</table>

Plant: Jl. Raya Brantas Km 3.5 Jatigedong – Ploso, Jombang 61453 – Indonesia
Tel.: +62 321 887700, Fax.: +62 321 887711–2
4. Nutritional Information

<table>
<thead>
<tr>
<th>Item</th>
<th>Per 100 g</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy (kJ) [Energy (Cal)]</td>
<td>1,205 kJ [288 Cal]</td>
</tr>
<tr>
<td>Protein</td>
<td></td>
</tr>
<tr>
<td>- Crude protein (g)</td>
<td>0*</td>
</tr>
<tr>
<td>- Single amino acid (glutamic acid) (g)</td>
<td>78.6 (78.6%)</td>
</tr>
<tr>
<td>Fat</td>
<td></td>
</tr>
<tr>
<td>- Total (g)</td>
<td>0</td>
</tr>
<tr>
<td>- Trans fatty acid (g)</td>
<td>0</td>
</tr>
<tr>
<td>- Saturated (g)</td>
<td>0</td>
</tr>
<tr>
<td>Carbohydrates</td>
<td></td>
</tr>
<tr>
<td>- Total (g)</td>
<td>0</td>
</tr>
<tr>
<td>- Sugars (g)</td>
<td>0</td>
</tr>
<tr>
<td>Dietary Fibre (g)</td>
<td>0</td>
</tr>
<tr>
<td>Sodium (mg)</td>
<td>12,300 (12.3%)</td>
</tr>
<tr>
<td>Potassium (mg)</td>
<td>0</td>
</tr>
<tr>
<td>Cholesterol (mg)</td>
<td>0</td>
</tr>
</tbody>
</table>

MSG contains a single amino acid from glutamic acid and not considered as crude protein content. MSG has its own energy level based on the chemical composition. Total energy information is grounded in the actual analysis test, not just energy calculation equation.

5. Allergens Information

<table>
<thead>
<tr>
<th>No</th>
<th>Item</th>
<th>Present/absent</th>
<th>No</th>
<th>Item</th>
<th>Present/absent</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Cow’s milk protein*</td>
<td>Absent</td>
<td>22</td>
<td>Sesame</td>
<td>Absent</td>
</tr>
<tr>
<td>02</td>
<td>Lactose*</td>
<td>Absent</td>
<td>23</td>
<td>Sesame oil</td>
<td>Absent</td>
</tr>
<tr>
<td>03</td>
<td>Chicken's egg*</td>
<td>Absent</td>
<td>24</td>
<td>Glutamate (E620, E622-E625)</td>
<td>Absent</td>
</tr>
<tr>
<td>04</td>
<td>Soy protein*</td>
<td>Absent</td>
<td>25</td>
<td>Sulphite (E220-E228)²</td>
<td>Absent</td>
</tr>
<tr>
<td>05</td>
<td>Soy oil*</td>
<td>Absent</td>
<td>26</td>
<td>Coriander</td>
<td>Absent</td>
</tr>
<tr>
<td>06</td>
<td>Gluten*</td>
<td>Absent</td>
<td>27</td>
<td>Celery</td>
<td>Absent</td>
</tr>
<tr>
<td>07</td>
<td>Wheat*</td>
<td>Absent</td>
<td>28</td>
<td>Carrot</td>
<td>Absent</td>
</tr>
<tr>
<td>08</td>
<td>Rye</td>
<td>Absent</td>
<td>29</td>
<td>Lupine</td>
<td>Absent</td>
</tr>
<tr>
<td>09</td>
<td>Beef</td>
<td>Absent</td>
<td>30</td>
<td>Mustard</td>
<td>Absent</td>
</tr>
<tr>
<td>10</td>
<td>Pork</td>
<td>Absent</td>
<td>31</td>
<td>Milk constituents</td>
<td>Absent</td>
</tr>
<tr>
<td>11</td>
<td>Chicken</td>
<td>Absent</td>
<td>32</td>
<td>Milk powder</td>
<td>Absent</td>
</tr>
<tr>
<td>12</td>
<td>Fish</td>
<td>Absent</td>
<td>33</td>
<td>Soy lecithin</td>
<td>Absent</td>
</tr>
<tr>
<td>13</td>
<td>Shellfish and Crustaceans</td>
<td>Absent</td>
<td>34</td>
<td>Soy flour</td>
<td>Absent</td>
</tr>
<tr>
<td>14</td>
<td>Maize</td>
<td>Absent</td>
<td>35</td>
<td>Soy meal</td>
<td>Absent</td>
</tr>
<tr>
<td>15</td>
<td>Cocoa</td>
<td>Absent</td>
<td>36</td>
<td>Wheat flour</td>
<td>Absent</td>
</tr>
<tr>
<td>16</td>
<td>Legumes / Pulses</td>
<td>Absent</td>
<td>37</td>
<td>Wheat meal</td>
<td>Absent</td>
</tr>
<tr>
<td>17</td>
<td>Nuts¹</td>
<td>Absent</td>
<td>38</td>
<td>Wheat starch</td>
<td>Absent</td>
</tr>
<tr>
<td>18</td>
<td>Nut oil</td>
<td>Absent</td>
<td>39</td>
<td>Bread crumb</td>
<td>Absent</td>
</tr>
<tr>
<td>19</td>
<td>Peanuts</td>
<td>Absent</td>
<td>40</td>
<td>Egg yolk</td>
<td>Absent</td>
</tr>
<tr>
<td>20</td>
<td>Peanut oil</td>
<td>Absent</td>
<td>41</td>
<td>Sulphite¹</td>
<td>Absent</td>
</tr>
<tr>
<td>21</td>
<td>Gluten</td>
<td>Absent</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The products are mentioned in the Dutch Databank ALBA, TNO VOEDING, and revision August 2003.

1. This group comprises: walnuts, pecans, almonds, cashew nuts, ginko, hazel nuts, hickory, macadamia nuts, keloewek, kemiry nuts, kola nut, melinjo nut, Brazil nuts, pingang nut, pistachio nuts, Spanish chest nuts.

2. A product is free from sulphite if the concentration in the product is not higher than 10 mg/kg (ppm).

6. Allergen Control Policy

1) We do not use any materials known as allergens.

Therefore, allergens could not be present as a minor ingredient in raw materials used on site and there is no possibility of cross contamination relating to contact with other materials that contain any of the protein from food allergen materials.

2) We do not share the equipments in producing different products.

Therefore, there is no possibility of cross contamination relating to shared equipments.
3) We also apply fermentation & Refinery tech. in producing MSG. In fermentation, we sterilize the raw materials. In refinery, we use thermal processes (Concentration, drying etc.). Therefore, if any, all the active allergens will be inactivated and is eliminated.

In conclusion, we assure that as long as packaging material's entity is effective, there is no possibility of cross contamination.

7. Lot Identification
1) Products are identified by production date. We define production date as lot No. We also keep the Lot identification records according to customer’s P.O.
2) Lot identification records should be kept and maintained.
3) All products are printed lot no. according to each lot. With this lot no., we can easily trace all the relevant information.
4) Lot (Batch) No: **BMXZYYMMDD**
5) Production date: **YYMMDD**
   Expired date: **YYMMDD**

Explanation for lot number
- **B**: Indonesia, Jombang Plant
- **M**: MSG
- **X**: MSG type (M = Medium Crystal, R = Regular Crystal, S = Small Crystal, F = Fine Crystal, P = Powder)
- **Z**: Packaging weight code (Q = 250 g, A = 1 LB, R = 500 g, B = 1 Kg, Y = 3 Kg, D = 20 Kg, E = 50 LB, F = 25 Kg, K = 900 Kg, L = 1000 Kg)
- **YYMMDD**: Production date (year / month / date)
- **YYMMDD**: Expired date (year / month / date)

Example: **BMMF180818**
MSG Medium Crystal 25 Kg with production date 18 August 2018, produced by Indonesian Jombang Plant

8. Special consumer requirements

<table>
<thead>
<tr>
<th>Is the material suitable for?</th>
<th>Yes / No?</th>
<th>Is the material Certified? (Yes / No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kosher</td>
<td>Yes</td>
<td>Yes (Kosher Pareve)</td>
</tr>
<tr>
<td>Halal</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Vegan</td>
<td>Yes</td>
<td>No, but we can provide a signed manufacturer's declaration.</td>
</tr>
<tr>
<td>Vegetarian</td>
<td>Yes</td>
<td>No, but we can provide a signed manufacturer's declaration.</td>
</tr>
</tbody>
</table>

9. Storage Conditions & Shelf life

**MSG** does not require any special storage and handling conditions. But, we recommend avoiding direct ray of light and store in a cool and dry place.

**Shelf life**: Although **MSG** can be use for more than 3 years, we recommend the usage within 3 years.

10. Certification of System
1) Our Quality Management System is certified ISO 9001:2015
2) Our Food Safety Management System is certified ISO 22000:2005 and BRC Food issue 7
11. Regulatory Status & Safety Information

1) Regulatory status
a) In United States, MSG has been included in the Food and Drug Administration (FDA)'s list of substance known as "Generally Recognized as Safe" or "GRAS". Food designated as GRAS list include other common food ingredients, such as salt, sugar, vinegar and baking powder whose safety has been affirmed through common use in food and/or through extensive life.

b) The European Commission's Scientific Committee for Food (SCF) have reviewed the most advanced and up-to-date research on glutamate in 1990, designated as "ADI not specified" for glutamate.


2) Safety Information
a) In 1987, the Joint FAO/WHO Expert Committee on Food Additives (JECFA) reviewed the scientific literature and found the evidence of safety on glutamate so convincing that it allocated an "ADI" for glutamate is "Not Specified". This means glutamate is placed in the safest category of food additive.

12. Packaging Information

1) Small : 250 g, 1 lb (16 oz), 500 g, 1 Kg, 3 Kg (O.P.P./P.E. tube bag packed in carton box)
2) Standard : 20 Kg, 22.5 Kg, 50 LB, 25 Kg (3-ply kraft paper bag with 1-ply inner P.E. tube)
3) Bulk : 900 Kg, 1000 Kg (P.P. woven bag with 1-ply inner P.E. tube)

18 January 2018
Authorized by

Fabiyan Bani Adam
Quality Control Manager