FUMARIC ACID - FOOD GRADE

Chemical Formula : C₄H₄O₄
Molecular weight : 116.1
CAS Registry Number : 110-17-8
E. Number : 297
Molecular Structure :

\[
\text{HO} \quad \text{C} \quad \text{O} \quad \text{C} \quad \text{HO}
\]

Description: Fumaric Acid is found abundantly in nature. Fumaric Acid has a slight acid taste. It is free flowing, stable and non-hygroscopic.

Reach Registration Number: 01-2119485492-31-0003
License under FSSA Act, 2006 Number: 10012042000166

Grades of Granularity:

Powder:
99 % Min. Passing through USS 20 mesh
60 % Max. Passing through USS 120 mesh

SPECIFICATIONS: (Conform to FCC9)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Unit</th>
<th>Guaranteed</th>
<th>Typical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td></td>
<td>White Crystalline Powder</td>
<td></td>
</tr>
<tr>
<td>Odour</td>
<td></td>
<td>No odour</td>
<td>No odour</td>
</tr>
<tr>
<td>Assay on dry basis</td>
<td>Wt. %</td>
<td>Min 99.5</td>
<td>99.7</td>
</tr>
<tr>
<td>Maleic acid</td>
<td>Wt. %</td>
<td>Max 0.05</td>
<td>0.03</td>
</tr>
<tr>
<td>Residue on Ignition (Sulfated Ash)</td>
<td>Wt. %</td>
<td>Max 0.05</td>
<td>0.02</td>
</tr>
<tr>
<td>Loss on Drying</td>
<td>Wt. %</td>
<td>Max 0.25</td>
<td>0.20</td>
</tr>
<tr>
<td>Colour (5% Alcohol Solution)</td>
<td>APHA</td>
<td>Max 20</td>
<td>15</td>
</tr>
<tr>
<td>Heavy metals (pb)</td>
<td>PPM</td>
<td>Max 5</td>
<td>&lt;5</td>
</tr>
<tr>
<td>Lead (as pb)</td>
<td>PPM</td>
<td>Max 2</td>
<td>&lt;2</td>
</tr>
<tr>
<td>Arsenic (as As)</td>
<td>PPM</td>
<td>Max 1</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Solubility in Water at 30°C, (g/ 100 ml)</td>
<td></td>
<td>0.7</td>
<td>0.7</td>
</tr>
</tbody>
</table>

PACKAGING:

1. PE lined, PE laminated HDPE bag - 25 Kg
2. PP laminated 4 ply Paper Bag - 25 Kg
3. Bulk Bags - 1000 / 675 / 500 Kg
4. Bulk Bags - Antistatic

Full Container Load (FCL):

Palletised and Stretch Wrapped
1. Packed in 25 Kg HDPE / Paper Bags
   - 1.0 MT X 4 Pallets and 1.125 MT X 16 Pallets = 22 MT / FCL
2. Packed in Bulk Bags
   a. 1000 Kg X 20 bulk bags = 20 MT / FCL
   b. 500 Kg X 40 bulk bags = 20 MT / FCL
   c. 675 Kg X 30 bulk bags = 20.25 MT / FCL

Full Container Load (FCL): Palletised and Stretch Wrapped

1. Packed in 25 Kg HDPE / Paper Bags
   - 1.0 MT X 4 Pallets
   - 1.125 MT X 16 Pallets = 22 MT / FCL

2. Packed in Bulk Bags
   a. 1000 Kg X 20 bulk bags = 20 MT / FCL
   b. 500 Kg X 40 bulk bags = 20 MT / FCL
   c. 675 Kg X 30 bulk bags = 20.25 MT / FCL
Legislation:
1. Fumaric Acid has been approved by the Food and Drug Administration of India for use in the food products under Food Safety and Standards Act, 2006.
2. Fumaric Acid has been accorded Generally Recognised As Safe (GRAS) status by Food & Drug Administration of USA.
3. Joint Expert Committee on Food Additives of FAO, Rome and WHO, Geneva has given approval for use of Fumaric acid in Food Products.
4. Various tests conducted by different health bodies have cleared Fumaric acid as being safe for human beings.

Storage & Handling:
1. Fumaric Acid is slightly inflammable. It should be stored away from sources of ignition. The packed bags shall be kept under shade, dry, and protected from rain. While handling Fumaric acid Safety Goggles, Dust Respirator and Rubber Gloves are recommended.
2. Shelf Life: 24 months from the date of production under recommended storage conditions.

Intended Use:
1. Fumaric Acid can replace traditional acidulants in the preparation of fruit juice drinks at substantial material and cost savings.
2. In Pharmaceutical industry, Fumaric Acid finds a major use for Ferrous Fumarate. Fumaric acid is used extensively in the feed to pigs.

For further details please contact
Thirumalai Chemicals Limited

Factory:
25-A, Sipcot Industrial Complex
Ranipet - 632 403
Tamil Nadu, India.
Phone: +91-4172-244441 /2/6/8
Fax : +91-4172-244308
e-mail: nair.pmc@thirumalaichemicals.com
Contact: Mr. P.M.C.Nair

Mumbai Office:
“Thirumalai House”
Plot No.101-102,
Road No.29, Sion (East)
Mumbai-400 022, Maharashtra, India.
Phone :+91-22-43686200
Fax : +91-22-2401-1699 / 7869
e-mail : foodingredients@thirumalaichemicals.com

Chennai Office:
3rd Floor, RR Tower - IV,
T. V. K. Industrial Estate, Guindy
Chennai - 600 032
Tamil Nadu, India.
Phone:+91-44-40123333
e-mail : joseph.r@thirumalaichemicals.com
Contact: Mr. S. Venkatraghavan
Mr. Joseph Rajkumar

Website: http://www.thirumalaichemicals.com

The present product data sheet has the purpose of inform the clients on the quality of our product. The data herein is based on our present best knowledge. For a better suitability of the product for your particular purpose, tests are recommended prior product use. Our clients must be sure that the present data sheet hasn’t been changed or replaced by a newer edition.