SAFETY DATA SHEET
F20 Electrolyte

Section 1. Identification

GHS product identifier : F20 Electrolyte
Chemical name : Basic solution
Other means of identification : Not available.
Product type : Liquid.

Material uses : Electrolyte solution.

Manufacturer : Marking Methods, Inc.
301 S. Raymond Avenue
Alhambra, CA 91803-1531
Tel: (626)282-8823

Emergency telephone number (with hours of operation) : CHEMTREC, U.S. : 1-800-424-9300 International: +1-703-527-3887 24/7

Section 2. Hazards identification

OSHA/HCS status : While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

Classification of the substance or mixture : Not classified.

GHS label elements

Signal word : No signal word.
Hazard statements : No known significant effects or critical hazards.

Precautionary statements

Prevention : Not applicable.
Response : Not applicable.
Storage : Not applicable.
Disposal : Not applicable.

Hazards not otherwise classified (HNOC)

Physical hazards not otherwise classified (PHNOC) : None known.
Health hazards not otherwise classified (HHNOC) : None known.
Section 3. Composition/information on ingredients

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>%</th>
<th>CAS number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium nitrate</td>
<td>1 - 5</td>
<td>7631-99-4</td>
</tr>
<tr>
<td>Sodium etasulfate</td>
<td>0.1 - 1</td>
<td>126-92-1</td>
</tr>
</tbody>
</table>

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Section 4. First aid measures

Inhalation

Immediate flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

Ingestion

Flush contaminated skin with plenty of water. Get medical attention if symptoms occur.

Ingestion

Move person to fresh air.

Smell for and remove any contact lenses. Get medical attention if irritation occurs.

Skin contact

Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Potential acute health effects

No known significant effects or critical hazards.

Over-exposure signs/symptoms

No known significant effects or critical hazards.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician

Treat symptomatically.

Specific treatments

No specific treatment.

Protection of first-aiders

No special protection is required.
Section 5. Fire-fighting measures

**Extinguishing media**

**Suitable extinguishing media**: Use an extinguishing agent suitable for the surrounding fire.

**Unsuitable extinguishing media**: None known.

**Specific hazards arising from the chemical**

**Hazardous thermal decomposition products**: Decomposition products may include the following materials:
- carbon dioxide
- carbon monoxide
- nitrogen oxides
- sulfur oxides
- metal oxide/oxides

**No specific fire or explosion hazard.**

**Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.**

**Special protective actions for fire-fighters**: No special measures are required.

**Special protective equipment for fire-fighters**: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

**Personal precautions, protective equipment and emergency procedures**

**For non-emergency personnel**: Put on appropriate personal protective equipment.

**For emergency responders**: If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

**Environmental precautions**: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

**Methods and materials for containment and cleaning up**

**Spill**: Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

**Precautions for safe handling**

**Protective measures**: Put on appropriate personal protective equipment (see Section 8).

**Advice on general occupational hygiene**: Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. See also Section 8 for additional information on hygiene measures.
Section 7. Handling and storage

**Conditions for safe storage, including any incompatibilities**

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

**Control parameters**

**United States**

**Occupational exposure limits**

None.

**Canada**

**Occupational exposure limits**

None.

**Mexico**

None.

**Appropriate engineering controls**

Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

**Environmental exposure controls**

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

**Individual protection measures**

**Hygiene measures**

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Ensure that eyewash stations and safety showers are close to the workstation location.

**Eye/face protection**

Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts.

**Skin protection**

**Hand protection**

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

**Body protection**

Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

**Other skin protection**

Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

**Respiratory protection**

Not required under normal conditions of use. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
Section 9. Physical and chemical properties

**Appearance**
- **Physical state**: Liquid.
- **Color**: Clear.
- **Odor**: Not available.
- **Odor threshold**: Not available.
- **pH**: 8 to 8.5
- **Melting point**: 0°C (32°F)
- **Boiling point**: 100°C (212°F)
- **Flash point**: Not available.
- **Evaporation rate**: Not available.
- **Flammability (solid, gas)**: Not available.
- **Lower and upper explosive (flammable) limits**: Not available.
- **Vapor pressure**: Not available.
- **Vapor density**: >1 [Air = 1]
- **Relative density**: 1.04
- **Solubility**: Miscible in water.
- **Partition coefficient: n-octanol/water**: Not available.
- **Auto-ignition temperature**: Not available.
- **Decomposition temperature**: Not available.
- **Viscosity**: Not available.
- **VOL (w/w)**: 0% (v/v)
- **VOC (w/w)**: 1 % (w/w)

Section 10. Stability and reactivity

**Reactivity**: No specific test data related to reactivity available for this product or its ingredients.

**Chemical stability**: The product is stable.

**Possibility of hazardous reactions**: Under normal conditions of storage and use, hazardous reactions will not occur.

**Conditions to avoid**: No specific data.

**Incompatible materials**: Reactive or incompatible with the following materials: oxidizing materials, reducing materials, organic materials and acids. Slightly reactive or incompatible with the following materials: moisture.

**Hazardous decomposition products**: Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Dose</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium nitrate</td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>1267 mg/kg</td>
<td>-</td>
</tr>
<tr>
<td>Sodium etasulfate</td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>4 g/kg</td>
<td>-</td>
</tr>
</tbody>
</table>

Irritation/Corrosion

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Score</th>
<th>Exposure</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium etasulfate</td>
<td>Eyes - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>250 µg</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Skin - Moderate irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>500 mg</td>
<td>-</td>
</tr>
</tbody>
</table>

Sensitization

There is no data available.

Carcinogenicity

Classification

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>OSHA</th>
<th>IARC</th>
<th>NTP</th>
<th>ACGIH</th>
<th>EPA</th>
<th>NIOSH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium nitrate</td>
<td>-</td>
<td>2A</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>None.</td>
</tr>
</tbody>
</table>

Specific target organ toxicity (single exposure)

There is no data available.

Specific target organ toxicity (repeated exposure)

There is no data available.

Aspiration hazard

There is no data available.

Information on the likely routes of exposure

- Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects

- Eye contact: No known significant effects or critical hazards.
- Inhalation: Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
- Skin contact: No known significant effects or critical hazards.
- Ingestion: No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact: No known significant effects or critical hazards.
- Inhalation: No known significant effects or critical hazards.
- Skin contact: No known significant effects or critical hazards.
- Ingestion: No known significant effects or critical hazards.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

- Potential immediate effects: No known significant effects or critical hazards.
- Potential delayed effects: No known significant effects or critical hazards.

Long term exposure

There is no data available.
Section 11. Toxicological information

- **Potential immediate effects**: No known significant effects or critical hazards.
- **Potential delayed effects**: No known significant effects or critical hazards.
- **Potential chronic health effects**:
  - **General**: No known significant effects or critical hazards.
  - **Carcinogenicity**: No known significant effects or critical hazards.
  - **Mutagenicity**: No known significant effects or critical hazards.
  - **Teratogenicity**: No known significant effects or critical hazards.
  - **Developmental effects**: No known significant effects or critical hazards.
  - **Fertility effects**: No known significant effects or critical hazards.

Numerical measures of toxicity

**Acute toxicity estimates**

<table>
<thead>
<tr>
<th>Route</th>
<th>ATE value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>22041 mg/kg</td>
</tr>
</tbody>
</table>

Section 12. Ecological information

**Toxicity**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium nitrate</td>
<td>Acute EC50 522 mg/L Fresh water</td>
<td>Fish - Pimephales promelas</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 161 mg/L Fresh water</td>
<td>Crustaceans - Hyalella azteca - Adult</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 323 mg/L Fresh water</td>
<td>Daphnia - Daphnia magna - Neonate</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 1.6 mg/L Fresh water</td>
<td>Fish - Coregonus clupeaformis - Embryo</td>
<td>120 days</td>
</tr>
</tbody>
</table>

**Persistence and degradability**

There is no data available.

**Bioaccumulative potential**

There is no data available.

**Mobility in soil**

<table>
<thead>
<tr>
<th>Soil/water partition coefficient ($K_{oc}$)</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>There is no data available.</td>
</tr>
</tbody>
</table>

**Other adverse effects**: No known significant effects or critical hazards.

Section 13. Disposal considerations

**Disposal methods**: The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.
Section 14. Transport information

<table>
<thead>
<tr>
<th>UN number</th>
<th>DOT</th>
<th>TDG / NOM-003-SCT</th>
<th>IMDG</th>
<th>IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN proper shipping name</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Transport hazard class(es)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Packing group</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Environmental hazards</td>
<td>No.</td>
<td>No.</td>
<td>No.</td>
<td>No.</td>
</tr>
<tr>
<td>Additional information</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

AERG: Not applicable.

Special precautions for user: Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not available.

Section 15. Regulatory information

U.S. Federal regulations:
- United States inventory (TSCA 8b): All components are listed or exempted.
- Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs): Not listed
- Clean Air Act Section 602 Class I Substances: Not listed
- Clean Air Act Section 602 Class II Substances: Not listed
- DEA List I Chemicals (Precursor Chemicals): Not listed
- DEA List I Chemicals (Precursor Chemicals): Not listed

SARA 302/304 Composition/information on ingredients:
No products were found.

SARA 304 RQ: Not applicable.

SARA 311/312 Classification: Not applicable.

Composition/information on ingredients:
Section 15. Regulatory information

<table>
<thead>
<tr>
<th>Name</th>
<th>%</th>
<th>Fire hazard</th>
<th>Sudden release of pressure</th>
<th>Reactive</th>
<th>Immediate (acute) health hazard</th>
<th>Delayed (chronic) health hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium nitrate</td>
<td>1 - 5</td>
<td>Yes.</td>
<td>No.</td>
<td>No.</td>
<td>Yes.</td>
<td>Yes.</td>
</tr>
<tr>
<td>Sodium etasulfate</td>
<td>0.1 - 1</td>
<td>No.</td>
<td>No.</td>
<td>No.</td>
<td>No.</td>
<td>No.</td>
</tr>
</tbody>
</table>

SARA 313

<table>
<thead>
<tr>
<th>Product name</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium nitrate</td>
<td>7757-79-1</td>
<td>1 - 5</td>
</tr>
<tr>
<td>Sodium nitrate</td>
<td>7631-99-4</td>
<td>1 - 5</td>
</tr>
<tr>
<td>Potassium nitrate</td>
<td>7757-79-1</td>
<td>1 - 5</td>
</tr>
<tr>
<td>Sodium nitrate</td>
<td>7631-99-4</td>
<td>1 - 5</td>
</tr>
</tbody>
</table>

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts: The following components are listed: Potassium nitrate; Sodium nitrate
New York: None of the components are listed.
New Jersey: The following components are listed: Potassium nitrate
Pennsylvania: The following components are listed: Potassium nitrate; Sodium nitrate

California Prop. 65

No products were found.

Canada

Canadian lists

Canadian NPRI: The following components are listed: Potassium nitrate; Sodium nitrate
CEPA Toxic substances: None of the components are listed.

Canada inventory: All components are listed or exempted.

International lists

National inventory

Australia: All components are listed or exempted.
China: All components are listed or exempted.
Europe: All components are listed or exempted.
Japan: All components are listed or exempted.
Malaysia: Not determined.
New Zealand: All components are listed or exempted.
Philippines: All components are listed or exempted.
Republic of Korea: All components are listed or exempted.
Taiwan: Not determined.
Section 16. Other information

History

Date of issue mm/dd/yyyy : 06/01/2015
Date of previous issue : 05/15/2012
Version : 4
Prepared by : KMK Regulatory Services Inc.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.