1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Sodium Citrate Dihydrate
Cat No.: BP327-1; BP327-500; S466-3; S466-3LC; S467-3; S467SAM-1; XXBA163
Synonyms: Citric acid trisodium salt dihydrate (Granular/Powder/Certified/USP/FCC/EP/BP/JP)
Recommended Use: Laboratory chemicals

Company: Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number
CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

2. HAZARDS IDENTIFICATION

CAUTION

May cause eye, skin, and respiratory tract irritation. The toxicological properties have not been fully investigated.

Emergency Overview

Appearance: White
Physical State: Solid
Odor: Odorless

Target Organs: None known

Potential Health Effects

Acute Effects
Principle Routes of Exposure

Eyes: May cause irritation.
Skin: May cause irritation.
Inhalation: May cause irritation of respiratory tract.
Ingestion: Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Chronic Effects: None known
3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citrate, sodium, dihydrate</td>
<td>6132-04-3</td>
<td>100</td>
</tr>
<tr>
<td>Sodium citrate</td>
<td>68-04-2</td>
<td>-</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

Eye Contact
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention if symptoms occur.

Skin Contact
Rinse with plenty of water. Get medical attention if symptoms occur.

Inhalation
Move to fresh air. If breathing is difficult, give oxygen. Get medical attention if symptoms occur.

Ingestion
Do not induce vomiting. Obtain medical attention.

Notes to Physician
Treat symptomatically

5. FIRE-FIGHTING MEASURES

Flash Point
Method - No information available

Autoignition Temperature
345 °C / 653 °F

Explosion Limits
Upper No data available
Lower No data available

Unsuitable Extinguishing Media
No information available

Hazardous Combustion Products
None known.

Specific Hazards Arising from the Chemical
None known.

Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA
Health 0  Flammability 0  Instability 0  Physical hazards N/A

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions
Use personal protective equipment. Ensure adequate ventilation. Avoid dust formation.

Environmental Precautions
Should not be released into the environment. See Section 12 for additional ecological information.
Methods for Containment and Clean: Sweep up or vacuum up spillage and collect in suitable container for disposal. Avoid dust formation.

7. HANDLING AND STORAGE

Handling: Wear personal protective equipment. Ensure adequate ventilation. Avoid contact with skin and eyes. Avoid ingestion and inhalation. Avoid dust formation.

Storage: Keep containers tightly closed in a dry, cool and well-ventilated place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Measures: None under normal use conditions.

Exposure Guidelines: This product does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Personal Protective Equipment

Eye/face Protection: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection: Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Solid
Appearance: White
Odor: Odorless
Odor Threshold: No information available
pH: 7.5-9.5

5% aq. solution: No information available
Vapor Pressure: Not applicable
Vapor Density: Not applicable
Viscosity: Not applicable
Boiling Point/Range: 300 °C / 572 °F
Melting Point/Range: > 230°C
Decomposition Temperature: No information available
Flash Point: No information available
Evaporation Rate: Not applicable
Specific Gravity: No information available
Solubility: Soluble in water
log Pow: No data available
Molecular Weight: 294.09
Molecular Formula: C6 H5 Na3 O7 . 2 H2 O

10. STABILITY AND REACTIVITY

Stability: Stable under normal conditions.
Incompatible Materials  Strong oxidizing agents
Hazardous Decomposition Products  None under normal use conditions
Hazardous Polymerization  Hazardous polymerization does not occur.
Hazardous Reactions  None under normal processing.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity
Product Information  No acute toxicity information is available for this product
Component Information
Irritation  No information available
Toxicologically Synergistic Products  No information available

Chronic Toxicity
Carcinogenicity  There are no known carcinogenic chemicals in this product.
Sensitization  No information available
Mutagenic Effects  No information available
Reproductive Effects  No information available.
Developmental Effects  No information available.
Teratogenicity  No information available.
Other Adverse Effects  See actual entry in RTECS for complete information. The toxicological properties have not been fully investigated.
Endocrine Disruptor Information  No information available

12. ECOLOGICAL INFORMATION

Ecotoxicity  Do not empty into drains.

<table>
<thead>
<tr>
<th>Component</th>
<th>Freshwater Algae</th>
<th>Freshwater Fish</th>
<th>Microtox</th>
<th>Water Flea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium citrate</td>
<td>Not listed</td>
<td>18000 - 32000 mg/L LC50 96 h</td>
<td>EC50 1800 - 3200 mg/L 8 h</td>
<td>5600 - 10000 mg/L EC50 48 h</td>
</tr>
</tbody>
</table>

Persistence and Degradability  .
Bioaccumulation/ Accumulation  No information available.
Mobility  Will likely be mobile in the environment due to its water solubility.

13. DISPOSAL CONSIDERATIONS
Waste Disposal Methods

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. TRANSPORT INFORMATION

DOT
Not regulated

TDG
Not regulated

IATA
Not regulated

IMDG/IMO
Not regulated

15. REGULATORY INFORMATION

<table>
<thead>
<tr>
<th>Component</th>
<th>TSCA</th>
<th>DSL</th>
<th>NDSL</th>
<th>ELINCS</th>
<th>ENCS</th>
<th>AICS</th>
<th>IECS</th>
<th>KECL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citrate, sodium, dihydrate</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td>-</td>
</tr>
<tr>
<td>Sodium citrate</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>200-675-3</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

Legend:

X - Listed

E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.

F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.

N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.

P - Indicates a commenced PMN substance

R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.

S - Indicates a substance that is identified in a proposed or final Significant New Use Rule

T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.

XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B)).

Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.

Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b)  Not applicable

SARA 313
Not applicable

SARA 311/312 Hazardous Categorization

<table>
<thead>
<tr>
<th>Hazard Category</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Health Hazard</td>
<td>No</td>
</tr>
<tr>
<td>Chronic Health Hazard</td>
<td>No</td>
</tr>
</tbody>
</table>
Sodium Citrate Dihydrate

Revision Date 07-Mar-2013

- Fire Hazard: No
- Sudden Release of Pressure Hazard: No
- Reactive Hazard: No

Clean Water Act
Not applicable

Clean Air Act
Not applicable

OSHA Occupational Safety and Health Administration
Not applicable

CERCLA
Not applicable

California Proposition 65
This product does not contain any Proposition 65 chemicals

State Right-to-Know
Not applicable

U.S. Department of Transportation
Reportable Quantity (RQ): N
DOT Marine Pollutant: N
DOT Severe Marine Pollutant: N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade
No information available

Canada
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR

WHMIS Hazard Class
Non-controlled

16. OTHER INFORMATION

Prepared By
Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date
09-Dec-2009

Print Date
07-Mar-2013

Revision Summary
Update to Format
Disclaimer
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End of MSDS