

Monosodium Citrate Anhydrous Powder

1. Product and company identification

Product name	: Monosodium Citrate Anhydrous Powder
Synonym	: Citric acid, sodium salt; 1,2,3-Propanetricarboxylic acid, 2-hydroxy-, sodium salt (1:1); 1,2,3-Propanetricarboxylic acid, 2-hydroxy-, monosodium salt; Monosodium citrate
Material uses	: Other non-specified industry: Food additive. Manufacture of pharmaceutical products.
CAS number	: 18996-35-5
Code	: 412562
Supplier	: S.A. Citrique Belge N.V. Pastorijstraat 249 3300 TIENEN Belgium
Validation date	: 25/07/2011.
Prepared by	: Atrion Regulatory Services, Inc.
In case of emergency	: +32-16-806408

2. Hazards identification

Physical state	: Solid. [Crystalline powder.]
Color	: White.
Odor	: Odorless.
Emergency overview	
Signal word	: CAUTION!
Hazard statements	: MAY CAUSE EYE IRRITATION.
Precautions	: Keep away from heat, sparks and flame. Prevent dust accumulation. Avoid breathing dust. Avoid contact with eyes, skin and clothing. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling. Avoid the creation of dust when handling and avoid all possible sources of ignition (spark or flame).
OSHA/HCS status	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Routes of entry	: Dermal contact. Eye contact.
Potential acute health effects	
Inhalation	: Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.
Ingestion	: No known significant effects or critical hazards.
Skin	: No known significant effects or critical hazards.
Eyes	: Moderately irritating to eyes.
Potential chronic health effects	
Chronic effects	: Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation.
Carcinogenicity	: No known significant effects or critical hazards.No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC or OSHA or NTP or ACGIH
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.

2. Hazards identification

Over-exposure signs/symptoms

- Inhalation** : Adverse symptoms may include the following:
respiratory tract irritation
coughing
- Ingestion** : No specific data.
- Skin** : No specific data.
- Eyes** : Adverse symptoms may include the following:
irritation
watering
redness
- Medical conditions aggravated by over-exposure** : None known.

3. Composition/information on ingredients

Name	CAS number	%
sodium dihydrogen citrate	18996-35-5	60-100

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.

4. First aid measures

- Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
- Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
- Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
- Ingestion** : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately. Do not give milk or alcoholic beverages.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
- Notes to physician** : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

5. Fire-fighting measures

- Flammability of the product** : Fine dust clouds may form explosive mixtures with air.

Extinguishing media

- Suitable** : Water or Foam.
- Not suitable** : Do not use water jet.
- Special exposure hazards** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

5. Fire-fighting measures

- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
metal oxide/oxides
Corrosive gas.
- 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. Self-contained breathing apparatus (SCBA) should be used to avoid inhalation of the product.
- Special remarks on explosion hazards** : Collect contaminated fire-fighting water separately. It must not enter the sewage system. Contain and dispose of waste according to local regulations.

6. Accidental release measures

- Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing dust. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
- 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 for cleaning up**
- Small spill** : Move containers from spill area. Vacuum or sweep up material and place in a designated, labeled waste container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.
- Large spill** : Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labeled waste container. Avoid creating dusty conditions and prevent wind dispersal. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Note: see section 1 for emergency contact information and section 13 for waste disposal. Flush residual spill area with large quantity of water.

7. Handling and storage

- Handling** : Put on appropriate personal protective equipment (see Section 8). 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. Remove contaminated clothing and protective equipment before entering eating areas. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing dust. Avoid the creation of dust when handling and avoid all possible sources of ignition (spark or flame). Prevent dust accumulation. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Electrical equipment and lighting should be protected to appropriate standards to prevent dust coming into contact with hot surfaces, sparks or other ignition sources. Empty containers retain product residue and can be hazardous. Do not reuse container.

7. Handling and storage

- Storage** : Store between the following temperatures: 10 to 30°C (50 to 86°F). Store in accordance with local regulations. Store in a segregated and approved area. 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. Eliminate all ignition sources. Separate from oxidizing materials. 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. Do not reuse container.

8. Exposure controls/personal protection

United States

No exposure limit value known.

Consult local authorities for acceptable exposure limits.

- Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

- Engineering measures** : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

- 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. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protection

- Respiratory** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. 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.
- Hands** : 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. >8 hours (breakthrough time): nitrile rubber
- Eyes** : 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 or dusts. If operating conditions cause high dust concentrations to be produced, use dust goggles. Recommended: Safety glasses.
- Skin** : 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.
Recommended: chemical-resistant protective suit
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9. Physical and chemical properties

Physical state	: Solid. [Crystalline powder.]
Color	: White.
Odor	: Odorless.
pH	: 3.5 to 3.8 [Conc. (% w/w): 0.05%]
Melting/freezing point	: 212°C (413.6°F)
Density	: 1.5 g/cm ³ [20°C (68°F)]
VOC content	: 0 lbs/gal (0 g/l)
Viscosity	: Not available.
Solubility	: Soluble in the following materials: Water (1000 g/l at 25°C) Insoluble: Ethanol
LogK_{ow}	: -5.78
Physical/chemical properties comments	: Molecular weight: 214.11 g/mole

10. Stability and reactivity

Chemical stability	: The product is stable. Decomposes on heating.
Conditions to avoid	: Avoid the creation of dust when handling and avoid all possible sources of ignition (spark or flame). Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Prevent dust accumulation. heat
Incompatible materials	: Reactive or incompatible with the following materials: oxidizing materials, reducing materials, acids and alkalis. Reactive or incompatible with the following materials: oxidizing materials
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced. sodium oxides
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous polymerization will not occur.

11. Toxicological information

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
sodium dihydrogen citrate	LD50 Intraperitoneal	Mouse	1635 mg/kg	-
	LD50 Intraperitoneal	Mouse	1635 mg/kg	-
	LD50 Intraperitoneal	Rat	1348 mg/kg	-
	LD50 Intraperitoneal	Rat	1348 mg/kg	-
	LD50 Intravenous	Mouse	49 mg/kg	-
	LD50 Intravenous	Rabbit	379 mg/kg	-
	LD50 Oral	Rat	3000 mg/kg	-
	LD50 Subcutaneous	Mouse	2700 mg/kg	-
	LD50 Subcutaneous	Rat	5500 mg/kg	-

Conclusion/Summary : Not classified as dangerous

Chronic toxicity

Product/ingredient name	Result	Species	Dose	Exposure
sodium dihydrogen citrate	Chronic NOAEL Oral	Rat	1200 mg/kg	2 years

11. Toxicological information

Conclusion/Summary : Not classified as dangerous

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
sodium dihydrogen citrate	Eyes - Mild irritant	Rabbit	-	-	-
	Skin - Edema	Rabbit	0	-	-

Conclusion/Summary : Not available.

Skin : Non-irritant to skin.

Eyes : Non-irritating to the eyes.

Sensitizer

Product/ingredient name	Route of exposure	Species	Result
sodium dihydrogen citrate	skin	Guinea pig	Not sensitizing

Conclusion/Summary : Not available.

Skin : Non-sensitizer to skin.

Respiratory : No known significant effects or critical hazards.

Carcinogenicity

Conclusion/Summary : No known significant effects or critical hazards.

Classification

Not available.

Mutagenicity

Product/ingredient name	Test	Experiment	Result
sodium dihydrogen citrate	-	Experiment: In vivo Subject: Mammalian-Animal	Negative

Conclusion/Summary : No known significant effects or critical hazards.

Teratogenicity

Not available.

Reproductive toxicity

Not available.

Conclusion/Summary : No known significant effects or critical hazards.

12. Ecological information

Ecotoxicity : Readily biodegradable This product shows a low bioaccumulation potential.

Aquatic ecotoxicity

Product/ingredient name	Result	Species	Exposure
sodium dihydrogen citrate	Acute EC50 1044 mg/l	Daphnia - Daphnia pulex (Water flea)	72 hours
	Acute LC50 1516 mg/l	Fish - Lepomis macrochirus (Bluegill sunfish)	96 hours
	Acute LC50 833 mg/l	Fish - Salmo gairdneri (rainbow trout)	96 hours

Conclusion/Summary : Not classified as dangerous

Persistence/degradability

12. Ecological information

Product/ingredient name	Test	Result	Dose	Inoculum
sodium dihydrogen citrate	OECD 302B Inherent Biodegradability: Zahn- Wellens/EMPA Test	98 % - Readily - 2 days	600 mg/l	-

Conclusion/Summary : Readily biodegradable
Partition coefficient: n-octanol/water : -5.78
Bioconcentration factor : Not available.

13. Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. 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. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14. Transport information

DOT/IMDG/IATA : Not regulated.

15. Regulatory information

HCS Classification : Irritating material
U.S. Federal regulations : **TSCA 8(a) IUR**: Partial exemption
United States inventory (TSCA 8b): All components are listed or exempted.
SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: sodium dihydrogen citrate
SARA 311/312 MSDS distribution - chemical inventory - hazard identification:
sodium dihydrogen citrate: Immediate (acute) health hazard
Clean Air Act (CAA) 112 accidental release prevention: No products were found.

Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

15. Regulatory information

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 313

Form R - Reporting requirements : Not applicable.

Supplier notification : Not applicable.

State regulations

Massachusetts : None of the components are listed.

New York : None of the components are listed.

New Jersey : None of the components are listed.

Pennsylvania : None of the components are listed.

California Prop. 65

Not available.

United States inventory (TSCA 8b) : All components are listed or exempted.

Canada inventory : All components are listed or exempted.

International regulations

International lists :

- Australia inventory (AICS)**: All components are listed or exempted.
- China inventory (IECSC)**: All components are listed or exempted.
- Japan inventory**: All components are listed or exempted.
- Korea inventory**: All components are listed or exempted.
- New Zealand Inventory of Chemicals (NZIoC)**: All components are listed or exempted.
- Philippines inventory (PICCS)**: All components are listed or exempted.

Chemical Weapons Convention List Schedule I Chemicals : Not listed

Chemical Weapons Convention List Schedule II Chemicals : Not listed

Chemical Weapons Convention List Schedule III Chemicals : Not listed

16. Other information

Label requirements Hazardous Material Information System (U.S.A.) : MAY CAUSE EYE IRRITATION.

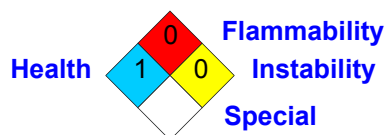
Health	1
Flammability	0
Physical hazards	0

16. Other information

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.) :



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Date of previous issue : No previous validation.
Version : 1

Indicates information that has changed from previously issued version.

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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.