Trisodium Citrate Dihydrate

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US / EN			

SECTION 1. IDENTIFICATION

Product name	:	Trisodium Citrate Dihydrate
Substance name	:	Trisodium Citrate Dihydrate
Molecular formula	:	C6H5O7Na3 · 2H2O
Chemical identity	:	Trisodium 2-hydroxypropane-1,2,3-tricarboxylate dihydrate
CAS-No.	:	6132-04-3
Chemical nature	:	Solid

Manufacturer or supplier's details

Details of the supplier of the safety data sheet

Company	:	Jungbunzlauer Inc. 7 Wells Avenue Newton Centre, Massachusetts 02459 USA www.jungbunzlauer.com
Telephone	:	+1 617 969-0900
Telefax	:	+1 617 964-2921
E-mail address Responsible/issuing person	:	msds@jungbunzlauer.com

Emergency telephone number

Emergency telephone number	:	National Chemical Emergency Centre (NCEC) +1 202 464 2554

Recommended use of the chemical and restrictions on use

Recommended use	:	Food/ feedstuff additives Cosmetic additive Medical aids Industrial use
Restrictions on use	:	None known.

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with 29 CFR 1910.1200

Not a dangerous substance or mixture according to the Globally Harmonised System (GHS).

GHS label elements

No labeling elements required.

Hazards Not Otherwise Classified

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture	:	Pure substance
Substance name	:	Trisodium Citrate Dihydrate
CAS-No.	:	6132-04-3
Chemical nature	:	Solid

Hazardous components

Chemical name	CAS-No.	Concentration (% w/w)
Non-hazardous ingredients		
Trisodium Citrate Dihydrate	6132-04-3	100

SECTION 4. FIRST AID MEASURES

General advice	:	No hazards which require special first aid measures.
If inhaled	:	If breathed in, move person into fresh air.
In case of skin contact	:	Immediately flush skin with large amounts of water.
In case of eye contact	:	In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice. If easy to do, remove contact lens, if worn.
If swallowed	:	Clean mouth with water and drink afterwards plenty of water.
Most important symptoms and effects, both acute and delayed	:	No information available. None known.
Notes to physician	:	Treat symptomatically.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Water spray Dry powder Carbon dioxide (CO2) Foam
Unsuitable extinguishing media	:	High volume water jet
Specific hazards during fire-fighting	:	Do not use a solid water stream as it may scatter and spread fire. Hazardous decomposition products formed under fire conditions.
Hazardous combustion products	:	Carbon dioxide (CO2) Carbon monoxide
Specific extinguishing meth-	:	Standard procedure for chemical fires.

ods

Further information	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. In the event of fire and/or explosion do not breathe fumes.
Special protective equipment for firefighters	:	In the event of fire, wear self-contained breathing apparatus. Wear fire resistant or flame retardant clothing.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Avoid breathing dust. Ensure adequate ventilation, especially in confined areas. Refer to protective measures listed in sections 7 and 8.
Environmental precautions	:	No special environmental precautions required.
Methods and materials for containment and cleaning up	:	Use mechanical handling equipment. Keep in suitable, closed containers for disposal. Clean contaminated surface thoroughly. Sections 13 and 15 of this SDS provide information regarding certain local or national requirements.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion	:	Normal measures for preventive fire protection.
Advice on safe handling	:	Do not breathe dust. Avoid contact with skin and eyes. For personal protection see section 8.
Conditions for safe storage	:	Keep container tightly closed in a dry and well-ventilated place.
Materials to avoid	:	No materials to be especially mentioned.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

Engineering measures	:	Provide adequate ventilation.

Personal protective equipment

Respiratory protection	:	In the case of dust or aerosol formation use respirator with an approved filter. Use NIOSH approved respiratory protection.
Hand protection Remarks	:	Choose gloves to protect hands against chemicals depending on the concentration and quantity of the hazardous sub-

stance and specific to place of work.
For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer.

Eye protection	:	Safety glasses
Skin and body protection	:	Choose body protection according to the amount and concentration of the dangerous substance at the work place.
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Crystalline product
Colour	:	white
Odour	:	odourless
Odour Threshold	:	Not relevant
pH	:	7.5 - 9.0 (77 °F) Concentration: 5 %
Melting point/range	:	> 302 °F Decomposition
Boiling point/boiling range	:	Not applicable
Flash point	:	Not applicable
Evaporation rate	:	Not applicable
Flammability (solid, gas)	:	does not ignite
Upper explosion limit	:	No data available
Lower explosion limit	:	No data available
Vapour pressure	:	Not applicable
Relative vapour density	:	Not applicable
Relative density	:	No data available
Density	:	1.86 g/cm3 (68 °F)
Solubility(ies)		

Water solubility	:	400 - 700 g/l (68 - 77 °F)
Partition coefficient: n-octanol/water	:	log Pow: -1.8 - -0.2 Calculation
Ignition temperature	:	No data available
Decomposition temperature	:	Decomposes before melting.
Viscosity		
Viscosity, dynamic	:	Not applicable
Viscosity, kinematic	:	Not applicable
Explosive properties	:	Not explosive
Oxidizing properties	:	No oxidising effect.
Molecular weight	:	294.1 g/mol
Dust explosion class	:	Not applicable

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	No decomposition if stored and applied as directed.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	No dangerous reaction known under conditions of normal use.
Conditions to avoid	:	Avoid dust formation.
Incompatible materials	:	No data available
Hazardous decomposition products	:	Build-up of dangerous/toxic fumes possible in cases of fire/high temperature. Carbon dioxide (CO_2) Carbon monoxide

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Components:

Trisodium Citrate Dihydrate:

Acute oral toxicity	:	LD50 Oral (Mouse): 5,400 mg/kg Method: OECD Test Guideline 401 Test substance: Non neutralised product LD50 Oral (Rat): 11,700 mg/kg Method: OECD Test Guideline 401 Test substance: Non neutralised product

Acute dermal toxicity : LD50 Dermal (Rat): > 2,000 mg/kg
Test substance: Non neutralised product

Skin corrosion/irritation

Components:

Trisodium Citrate Dihydrate:

Species: Rabbit
Method: OECD Test Guideline 404
Result: No skin irritation

Serious eye damage/eye irritation

Components:

Trisodium Citrate Dihydrate:

Species: Rabbit
Result: No eye irritation
Method: OECD Test Guideline 405

Respiratory or skin sensitisation

Components:

Trisodium Citrate Dihydrate:

Test Type: Maximisation Test
Species: Guinea pig
Method: OECD Test Guideline 406
Result: Does not cause skin sensitisation.
No human information is available.

Germ cell mutagenicity

Components:

Trisodium Citrate Dihydrate:

Genotoxicity in vitro : Test Type: Ames test
Species: Salmonella typhimurium
Concentration: 0.0 - 10 mg/plate
Method: Mutagenicity (Salmonella typhimurium - reverse mutation assay)
Result: negative
Information given is based on data obtained from similar substances.

Genotoxicity in vivo : Test Type: in vivo assay
Species: Rat
Application Route: Oral
Method: OECD Test Guideline 475
Result: negative
Test substance: Non neutralised product

Germ cell mutagenicity - Assessment : In vitro tests did not show mutagenic effects

Carcinogenicity

Components:

Trisodium Citrate Dihydrate:

Carcinogenicity - Assessment : Not classifiable as a human carcinogen.

Reproductive toxicity

Components:

Trisodium Citrate Dihydrate:

Reproductive toxicity - Assessment : No toxicity to reproduction

STOT - single exposure

Components:

Trisodium Citrate Dihydrate:

No data available

STOT - repeated exposure

Components:

Trisodium Citrate Dihydrate:

No data available

Repeated dose toxicity

Components:

Trisodium Citrate Dihydrate:

Species: Rat
NOAEL: 8,000 mg/kg
LOAEL: 16,000 mg/kg
Application Route: Oral
Exposure time: 10 d
Dose: 2, 4, 8, 16 g/kg bw/day

Aspiration toxicity

Components:

Trisodium Citrate Dihydrate:

No aspiration toxicity classification

Experience with human exposure

Product:

Inhalation : Target Organs: Respiratory system
Symptoms: No information available.

Skin contact	:	Target Organs: Skin Symptoms: No information available.
Eye contact	:	Target Organs: Eyes Symptoms: No information available.
Ingestion	:	Target Organs: Digestive organs Symptoms: No information available.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

Trisodium Citrate Dihydrate:

Toxicity to fish	:	LC50 (Oncorhynchus tshawytscha (chinook salmon)): > 10 mg/l Exposure time: 24 h Test Type: semi-static test LC50 (Leuciscus idus (Golden orfe)): 440 mg/l Exposure time: 48 h Test Type: static test Test substance: Non neutralised product
Toxicity to daphnia and other aquatic invertebrates	:	LC50 (Daphnia magna (Water flea)): 1,535 mg/l Exposure time: 24 h Test Type: static test Test substance: Non neutralised product Method: OECD Test Guideline 202 EC50 (Dreissena polymorpha): > 50 mg/l Exposure time: 48 h Test Type: static test
Toxicity to algae	:	NOEC (Scenedesmus quadricauda (Green algae)): 425 mg/l Exposure time: 8 d Test Type: static test Test substance: Non neutralised product
Toxicity to microorganisms	:	TT (Pseudomonas putida): > 10,000 mg/l Exposure time: 16 h Test substance: Non neutralised product

Persistence and degradability

Components:

Trisodium Citrate Dihydrate:

Biodegradability	:	Biodegradation: 97 % Testing period: 28 d Method: OECD Test Guideline 301B Test substance: Non neutralised product Readily biodegradable.

Biodegradation: 100 %
Information given is based on data obtained from similar substances.

Physico-chemical removability : Readily biodegradable.

Bioaccumulative potential

Product:

Partition coefficient: n-octanol/water : log Pow: -1.8 - -0.2
Calculation

Components:

Trisodium Citrate Dihydrate:

Bioaccumulation : The product is miscible in water and readily biodegradable in both water and soil. Accumulation is not expected.

Mobility in soil

No data available

Other adverse effects

Components:

Trisodium Citrate Dihydrate:

Results of PBT and vPvB assessment : This substance is not considered to be persistent, bioaccumulating and toxic (PBT).

Additional ecological information : This product has no known ecotoxicological effects.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : In accordance with local and national regulations.
Where possible recycling is preferred to disposal or incineration.

Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.
Dispose of as unused product.

SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA-DGR
Not regulated as a dangerous good

IMDG-Code
Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

National Regulations

DOT

Not regulated as a hazardous material

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know Act

SARA 311/312 Hazards : No SARA Hazards

SARA 302 : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Water Act

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

California Prop. 65 This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

The components of this product are reported in the following inventories:

EINECS : On the inventory, or in compliance with the inventory

TSCA : On TSCA Inventory

TSCA_12b : Not applicable

DSL : All components of this product are on the Canadian DSL

REACH : On the inventory, or in compliance with the inventory

SECTION 16. OTHER INFORMATION

Full text of other abbreviations

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil

Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

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