

Citric Acid

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 08/01/2015

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form	: Substance
Substance name	: citric acid
CAS No	: 77-92-9
Formula	: C ₆ H ₈ O ₇
Synonyms	: 1,2,3-propanetricarboxylic acid, 2-hydroxy- / 1,2,3-propanetricarboxylic acid, 2-hydroxy-, anhydrous / 2-hydroxy-1,2,3-propanetricarboxylic acid / 2-hydroxy-1,2,3-propanetricarboxylic acid / 2-hydroxy-1,2,3-propanetricarboxylic acid, anhydrous / 2-hydroxypropane-1,2,3-tricarboxylic acid / aciletten / anhydrous citric acid / beta-hydroxytricarballic acid / beta-hydroxytricarballic acid, anhydrous / beta-hydroxytricarboxylic acid / citretten / citric acid anhydrous fine granular 16/40 / citric acid anhydrous granular / citric acid anhydrous granular 5N / citric acid anhydrous medium granular / citric acid anhydrous powder / citro / E 330 / FEMA no 2306 / hydroxytricarballic acid / MC-1, acidic membrane cleaner / NSC 30279
BIG no	: 10299

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture	: Food industry: additive Adhesive: auxiliary substance Chemical intermediate Laboratory chemical
------------------------------	--

1.3. Details of the supplier of the safety data sheet

Five Star Chemicals & Supply Inc
 4915 E 52nd Ave
 Commerce City, CO 80022

1.4. Emergency telephone number

Emergency number	: 800-535-5053 INFOTRAC
------------------	----------------------------

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (GHS-US)

Eye Irrit. 2A H319
 Aquatic Acute 3 H402
 Full text of H-phrases: see section 16

2.2. Label elements

GHS-US labeling

Hazard pictograms (GHS-US)



GHS07

Signal word (GHS-US)	: Warning
Hazard statements (GHS-US)	: H319 - Causes serious eye irritation H402 - Harmful to aquatic life
Precautionary statements (GHS-US)	: P264 - Wash hands thoroughly after handling P273 - Avoid release to the environment P280 - Wear protective gloves, eye protection P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing P337+P313 - If eye irritation persists: Get medical advice/attention P501 - Dispose of contents/container to in accordance with local regulations

2.3. Other hazards

No additional information available

citric acid

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

2.4. Unknown acute toxicity (GHS-US)

Not applicable

SECTION 3: Composition/information on ingredients

3.1. Substance

Name	Product identifier	%	Classification (GHS-US)
citric acid (Main constituent)	(CAS No) 77-92-9	100	Eye Irrit. 2A, H319 Aquatic Acute 3, H402

Full text of H-phrases: see section 16

3.2. Mixture

Not applicable

4.1. Description of first aid measures

First-aid measures general	: Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with laboured breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital.
First-aid measures after inhalation	: Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.
First-aid measures after skin contact	: Rinse with water. Soap may be used. Do not apply (chemical) neutralizing agents. Take victim to a doctor if irritation persists.
First-aid measures after eye contact	: Rinse immediately with plenty of water. Do not apply neutralizing agents. Take victim to an ophthalmologist if irritation persists.
First-aid measures after ingestion	: Rinse mouth with water. Immediately after ingestion: give lots of water to drink. Call Poison Information Centre (www.big.be/antigif.htm). Consult a doctor/medical service if you feel unwell. Ingestion of large quantities: immediately to hospital.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation	: AFTER INHALATION OF DUST: Dry/sore throat. Coughing. Slight irritation. EXPOSURE TO HIGH CONCENTRATIONS: Irritation of the respiratory tract. Respiratory difficulties.
Symptoms/injuries after skin contact	: Red skin. ON CONTINUOUS EXPOSURE/CONTACT: Tingling/irritation of the skin.
Symptoms/injuries after eye contact	: Irritation of the eye tissue. ON CONTINUOUS EXPOSURE/CONTACT: Inflammation/damage of the eye tissue.
Symptoms/injuries after ingestion	: AFTER ABSORPTION OF HIGH QUANTITIES: Abdominal pain. Vomiting. Diarrhoea.
Chronic symptoms	: ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Affection/discolouration of the teeth.

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	: Water spray. Polyvalent foam. Alcohol-resistant foam. Polymer foam. ABC powder. Carbon dioxide.
------------------------------	---

5.2. Special hazards arising from the substance or mixture

Fire hazard	: DIRECT FIRE HAZARD. Not easily combustible. In finely divided state: increased fire hazard. INDIRECT FIRE HAZARD. Temperature above flashpoint: higher fire/explosion hazard. Reactions involving a fire hazard: see "Reactivity Hazard".
Explosion hazard	: DIRECT EXPLOSION HAZARD. Fine dust is explosive with air. INDIRECT EXPLOSION HAZARD. Dust cloud can be ignited by a spark. Reactions with explosion hazards: see "Reactivity Hazard".
Reactivity	: Upon combustion: CO and CO ₂ are formed. Reacts violently with (strong) oxidizers: (increased) risk of fire. Reacts with (strong) reducers. Reacts exothermically with (some) bases: (increased) risk of fire.

5.3. Advice for firefighters

Precautionary measures fire	: Exposure to fire/heat: keep upwind. Exposure to fire/heat: have neighbourhood close doors and windows.
Firefighting instructions	: Cool tanks/drums with water spray/remove them into safety.
Protection during firefighting	: Heat/fire exposure: compressed air/oxygen apparatus.

citric acid

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

- Protective equipment : Gloves. Safety glasses. Protective clothing. Dust cloud production: compressed air/oxygen apparatus. See "Material-Handling" to select protective clothing.
- Emergency procedures : Mark the danger area. Prevent dust cloud formation, e.g. by wetting. No naked flames. Wash contaminated clothes.
- Measures in case of dust release : In case of dust production: keep upwind. Dust production: have neighbourhood close doors and windows. Dust production: stop engines and no smoking. In case of dust production: no naked flames or sparks. Dust: spark-/explosionproof appliances/lighting equipment.

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

No additional information available

6.3. Methods and material for containment and cleaning up

- For containment : Contain released substance, pump into suitable containers. Consult "Material-handling" to select material of containers. Plug the leak, cut off the supply. Knock down/dilute dust cloud with water spray. Powdered form: no compressed air for pumping over spills.
- Methods for cleaning up : Prevent dust cloud formation. Scoop solid spill into closing containers. See "Material-handling" for suitable container materials. Powdered: do not use compressed air for pumping over spills. Clean contaminated surfaces with an excess of water. Wash clothing and equipment after handling.

6.4. Reference to other sections

No additional information available

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Comply with the legal requirements. Remove contaminated clothing immediately. Clean contaminated clothing. Thoroughly clean/dry the installation before use. Powdered form: no compressed air for pumping over. Avoid raising dust. Use earthed equipment. Keep away from naked flames/heat. Finely divided: spark- and explosionproof appliances. Finely divided: keep away from ignition sources/sparks. Observe normal hygiene standards. Keep container tightly closed. Carry operations in the open/under local exhaust/ventilation or with respiratory protection.

7.2. Conditions for safe storage, including any incompatibilities

- Storage temperature : 5 - 30 °C
- Heat-ignition : KEEP SUBSTANCE AWAY FROM: heat sources. ignition sources.
- Prohibitions on mixed storage : KEEP SUBSTANCE AWAY FROM: oxidizing agents. reducing agents. (strong) bases. water/moisture.
- Storage area : Store in a dry area. Keep container in a well-ventilated place. Store at ambient temperature. Keep only in the original container. Meet the legal requirements.
- Special rules on packaging : SPECIAL REQUIREMENTS: closing. watertight. dry. clean. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.
- Packaging materials : SUITABLE MATERIAL: stainless steel. polyethylene. polypropylene. MATERIAL TO AVOID: aluminium. copper. zinc. bronze. iron.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

citric acid (77-92-9)	
ACGIH	Not applicable
OSHA	Not applicable

citric acid

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

8.2. Exposure controls

Materials for protective clothing	: GIVE EXCELLENT RESISTANCE: butyl rubber. natural rubber. neoprene. PVC. nitrile rubber. viton. GIVE GOOD RESISTANCE: polyethylene. GIVE POOR RESISTANCE: PVA.
Hand protection	: Gloves.
Eye protection	: Safety glasses.
Skin and body protection	: Protective clothing.
Respiratory protection	: Dust production: dust mask with filter type P1.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Solid
Appearance	: Crystalline solid. Crystalline powder. Granular powder. Powder.
Molecular mass	: 192.13 g/mol
Color	: Colourless to white
Odor	: Odourless
Odor threshold	: No data available
pH	: 2.2 (1 %)
pH solution	: 1 %
Relative evaporation rate (butyl acetate=1)	: No data available
Melting point	: 153 °C
Freezing point	: No data available
Boiling point	: Not applicable
Flash point	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: 175 °C
Flammability (solid, gas)	: No data available
Vapor pressure	: < 0.1 hPa
Relative vapor density at 20 °C	: No data available
Relative density	: 1.7 (20 °C)
Specific gravity / density	: 1665 kg/m ³ (20 °C)
Solubility	: Soluble in water. Soluble in ethanol. Soluble in ethylacetate. Soluble in pentanol. Soluble in pentylacetate. Water: 59 g/100ml Ethanol: 62 g/100ml
Log Pow	: -1.72 (Experimental value)
Log Kow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available
Explosive limits	: No data available

9.2. Other information

VOC content	: 0 %
Other properties	: Translucent. Hygroscopic. Substance has acid reaction.

SECTION 10: Stability and reactivity

10.1. Reactivity

Upon combustion: CO and CO₂ are formed. Reacts violently with (strong) oxidizers: (increased) risk of fire. Reacts with (strong) reducers. Reacts exothermically with (some) bases: (increased) risk of fire.

10.2. Chemical stability

Hygroscopic.

10.3. Possibility of hazardous reactions

No additional information available

citric acid

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

10.4. Conditions to avoid

No additional information available

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

No additional information available

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

citric acid (77-92-9)	
LD50 oral rat	3000 mg/kg (Rat; OECD 401: Acute Oral Toxicity; Literature study; 11700 mg/kg bodyweight; Rat; Experimental value)
LD50 dermal rat	> 2000 mg/kg body weight (Rat; Experimental value; OECD 402: Acute Dermal Toxicity)
ATE US (oral)	3000.000 mg/kg body weight

Skin corrosion/irritation : Not classified

pH: 2.2 (1 %)

Serious eye damage/irritation : Causes serious eye irritation.

pH: 2.2 (1 %)

Respiratory or skin sensitization : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Not classified

Specific target organ toxicity (single exposure) : Not classified

Specific target organ toxicity (repeated exposure) : Not classified

Aspiration hazard : Not classified

Symptoms/injuries after inhalation : AFTER INHALATION OF DUST: Dry/sore throat. Coughing. Slight irritation. EXPOSURE TO HIGH CONCENTRATIONS: Irritation of the respiratory tract. Respiratory difficulties.

Symptoms/injuries after skin contact : Red skin. ON CONTINUOUS EXPOSURE/CONTACT: Tingling/irritation of the skin.

Symptoms/injuries after eye contact : Irritation of the eye tissue. ON CONTINUOUS EXPOSURE/CONTACT: Inflammation/damage of the eye tissue.

Symptoms/injuries after ingestion : AFTER ABSORPTION OF HIGH QUANTITIES: Abdominal pain. Vomiting. Diarrhoea.

Chronic symptoms : ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Affection/discolouration of the teeth.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : Classification concerning the environment: not applicable.

Ecology - air : Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009). TA-Luft Klasse 5.2.1.

Ecology - water : Not harmful to fishes (LC50(96h) >1000 mg/l). Slightly harmful to invertebrates (EC50: 100 - 1000 mg/l). Slightly harmful to algae. Not harmful to bacteria. pH shift.

citric acid (77-92-9)	
LC50 fish 1	2600 mg/l (48 h; Leuciscus idus; pH = 7)
EC50 Daphnia 1	120 mg/l (72 h; Daphnia magna; pH < 7)
LC50 fish 2	1516 mg/l (96 h; Lepomis macrochirus)
EC50 Daphnia 2	85 mg/l (Daphnia magna)
Threshold limit algae 1	80 mg/l (192 h; Microcystis aeruginosa; Reproduction)
Threshold limit algae 2	640 mg/l (168 h; Scenedesmus quadricauda)

12.2. Persistence and degradability

citric acid (77-92-9)	
Persistence and degradability	Readily biodegradable in water. Biodegradable in the soil.
Biochemical oxygen demand (BOD)	0.420 g O ₂ /g substance

citric acid

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

citric acid (77-92-9)	
Chemical oxygen demand (COD)	0.728 g O ₂ /g substance
ThOD	0.686 g O ₂ /g substance
BOD (% of ThOD)	(20 day(s)) 0.89

12.3. Bioaccumulative potential

citric acid (77-92-9)	
Log Pow	-1.72 (Experimental value)
Bioaccumulative potential	Bioaccumulation: not applicable.

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Effect on ozone layer :

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations : Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Recycle/reuse. Dissolve or mix with a combustible solvent. Remove to an authorized incinerator equipped with an afterburner and a flue gas scrubber with energy recovery. Treat using the best available techniques before discharge into drains or the aquatic environment.

Additional information : LWCA (the Netherlands): KGA category 03. Hazardous waste according to Directive 2008/98/EC.

SECTION 14: Transport information

In accordance with DOT

Not regulated for transport

Additional information

Other information : No supplementary information available.

ADR

No additional information available

Transport by sea

No additional information available

Air transport

No additional information available

SECTION 15: Regulatory information

15.1. US Federal regulations

citric acid (77-92-9)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	

15.2. International regulations

CANADA

No additional information available

EU-Regulations

No additional information available

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Eye Irrit. 2 H319

Full text of H-phrases: see section 16

citric acid

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]

Xi; R36

Full text of R-phrases: see section 16

15.2.2. National regulations

15.3. US State regulations

No additional information available

SECTION 16: Other information

Full text of H-phrases:

Aquatic Acute 3	Hazardous to the aquatic environment - Acute Hazard Category 3
Eye Irrit. 2A	Serious eye damage/eye irritation Category 2A
H319	Causes serious eye irritation
H402	Harmful to aquatic life

NFPA health hazard

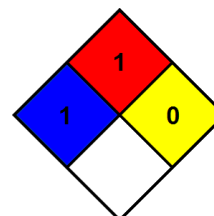
: 1 - Exposure could cause irritation but only minor residual injury even if no treatment is given.

NFPA fire hazard

: 1 - Must be preheated before ignition can occur.

NFPA reactivity

: 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



SDS US (GHS HazCom 2012)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product