TATE & LYLE

Safety Data Sheet

CITRIC ACID FINE

SECTION 1:IDENTIFICATION OF THE SUBSTANCE/ MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 PRODUCT IDENTIFIER

- Chemical name	Citric acid - Food grade
- REACH Registration Number	01-2119457026-42-0031

1.2 RELEVANT IDENTIFIED USES OF THE SUBSTANCE AND USES ADVISED AGAINST

Citric acid can be used in food as food additives and also in technical application as clarifying agent, water softener, buffer, foam booster and stabilizer, complexing agent and as an intermediate in production of organic chemicals.

1.3 DETAILS OF THE SUPPLIER

- Company identification

Americas:
Tate & Lyle Ingredients Americas LLC.
2200 E. Eldorado Street
Decatur, IL 62521

Europe:
Tate & Lyle Slovakia s.r.o.
Boleraz 114
919 08 boleraz
Slovakia

Asia-Pacific:
Tate & Lyle
3 Biopolis Drive, #05-11 Synapse
Singapore 138623

1.4 EMERGENCY PHONE NR.

CHEMTREC
Toll-Free: 1-800-424-9300 (USA and Canada)
Non Toll-Free +1-703-527-3887 (Global)

SECTION 2: HAZARDS IDENTIFICATION

2.1. CLASSIFICATION OF THE SUBSTANCE OR MIXTURE

According with the version of the Globally Harmonized system of Classification and labeling adopted in the United States and Regulation 1272/2008/EC [CLP]: Eyes irritant category 2(H319)

2.2 LABEL ELEMENTS

GHS07

Signal word:
Warning

Hazard Statement:
Causes serious eye irritation. H319

Precautionary Statement:
Wash hands thoroughly after handling. P264
Wear eye protection. P280

Precautionary Statement. IF IN EYES: P305
Response :
Rinse cautiously with water for several minutes. P351
Remove contact lenses, if present and easy to do Continue rinsing. P338
If eye irritation persists: P337
Get medical advice/attention. P313

2.3. OTHER HAZARDS
FIRE AND EXPLOSION HAZARD:
May form combustible dust concentrations in air. Possibility of dust explosion. it is recommended that all dust control equipment and material transport systems involved are engineered to prevent conditions contributing to dust explosions. Do not allow dust to accumulate on flat surfaces, on rafters or building structural components. Keep away from all ignition sources including heat, sparks and flame.

SECTION 3:COMPOSITION/INFORMATION OF INGREDIENTS

- Chemical name Citric acid - Food grade

- CAS number	77-92-9
- EINECS number	201-069-1
- Synonyms	2 - Hydroxy -1,2,3 propanetricarboxylic acid Acidulant - Citric acid - food additive E330.

SECTION 4:FIRST AID MEASURES

4.1 DESCRIPTION OF FIRST AID MEASURES

- General advice	Seek medical attention if irritation develops after first aid application
- Inhalation	Move people from the exposure to fresh air.
- Skin contact	Wash skin with soap and water.
- Eye contact	Remove particulates by irrigating with eye wash solution or clean water, holding eyelids apart.
- Ingestion	Wash mouth and flush throat upto the stomach.

4.2 MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED
ROUTE(S) OF ENTRY: Skin Contact; Eye Contact
HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE:
ACUTE SKIN CONTACT: This product is irritating to the skin resulting in reddening, stinging, and swelling.
ACUTE EYE CONTACT: This product is irritating to the eyes resulting in stinging, reddening, tearing, and swelling.
CHRONIC EFFECTS OF EXPOSURE: No applicable information was found concerning any adverse chronic health effects from overexposure to this product.
CARCINOGENICITY: The components of this product are not listed by NTP, IARC or regulated as a carcinogen by OSHA.
MEDICAL CONDITIONS
AGGRAVATED BY EXPOSURE: Persons with pre-existing eye or skin disorders may be more susceptible to the effects of this product.

4.3 INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED.
None Anticipated

SECTION 5: FIRE-FIGHTING MEASURES

5.1 EXTINGUISHING MEDIA
Water spray, dry powder, carbon dioxide or media appropriate for surrounding fire. Use of water jet may cause explosive dust conditions.

5.2 SPECIFIC HAZARDS
FIRE AND EXPLOSION HAZARD: Possibility of dust explosion. It is recommended that all dust control equipment and material transport systems involved are engineered to prevent conditions contributing to dust explosions. Do not allow dust to accumulate on flat surfaces, on rafters or building structural components. Use of water jet may cause explosive dust conditions.
SEE NFPA 61, Standard for the prevention of Fire and Dust Explosions in Agricultural and Food Processing Facilities, 2008 or later Edition, and other related standards.

5.3 SPECIFIC PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIRE-FIGHTERS
Wear self-contained breathing apparatus and full protective gear. Use water spray to cool fire exposed containers.

FLAMMABILITY CLASS (OSHA)
Not applicable

HAZARDOUS COMBUSTION PRODUCTS
Carbon dioxide and carbon monoxide

SECTION 6:ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS
Use personal protective equipment. Wear eye protection. Avoid contact with skin and eyes.

6.2 ENVIRONMENTAL PRECAUTIONS
Prevent further leakage or spillage if safe to do so. No special environmental precautions required

6.3 METHODS FOR CLEANING UP
Vacuum or sweep spills. Minimize dust generation.
If washing down spilled area is necessary, use copious amounts of water and control runoff.
Follow local, state and federal regulations for product disposal

6.4 REFERENCE TO OTHER SECTIONS
See Section 7 for information on safe handling
See Section 8 for information on personal protection equipment
See Section 13 for disposal information

SECTION 7: HANDLING AND STORAGE

7.1 PRECAUTIONS FOR SAFE HANDLING
See NFPA 61, Standard for the Prevention of Fire and Dust Explosions in Agricultural and Food Processing Facilities, 2008 Edition, and other related standards. Use with adequate ventilation. Minimize dust generation and accumulation; dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are disturbed.

All dust control equipment and material transport systems involved are engineered to prevent conditions contributing to dust explosions and may require explosion relief vents or an explosion suppression system or an oxygen-deficient environment. Bonding and grounding systems may be required.

Dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) should be designed to limit or prevent leakage of dust into the work area.

Do not allow dust to accumulate on flat surfaces, on rafters or building structural components. Routine housekeeping should be instituted to reduce dust accumulation. Use Avoid dispersal of dust in the air; use vacuum or wet sweeping methods. Do not use compressed air to clean surfaces.

Keep away from all ignition sources including heat, sparks, and flame. Where dust accumulations occur use non-sparking tools.

7.2 CONDITIONS OF SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES
Store in a cool dry place. Store in a tightly closed container/bag.
The packaging material should have reasonable moisture and air barriers and comply with food regulations.
7.3 SPECIFIC END USE(S)
See overview of the exposure scenario and summary of risk management measures in Appendix 1

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 CONTROL PARAMETERS
Exposure limits: Nuisance dust (also called particulate not otherwise regulated (PNOR)).
OSHA PEL: 15 mg/m3 Total dust
5 mg/m3 Respirable dust
ACGIH TLV: 10 mg/m3 Inhalable dust
5 mg/m3 Respirable dust
15 mg/m3 Total dust

8.2 EXPOSURE CONTROLS
APPROPRIATE ENGINEERING CONTROLS:
Ventilation: See NFPA 61, Standard for the Prevention of Fire and Dust Explosions in Agricultural and Food Processing Facilities, 2008 Edition, and National Fire Protection Association 650, Standard for Pneumatic Conveying Systems for Handling Combustible Materials, 1997 Edition and other related standards. Normal industrial hygiene measures should be sufficient for protection of employees from exposure to dusts. Local and mechanical exhaust is desirable when dumping bags.

APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT:
Eye protection: Safety glasses are recommended. Safety goggles are desirable when dumping bags.
Emergency wash facilities: Eye wash is recommended for conditions where dust generation is likely.
Special protective clothing: Not normally required.
Gloves: Not normally required. Use ordinary work gloves if dust dries skin.
Respirator: NIOSH approved N-95 dust respirator if working in situations that could generate large amounts of airborne dust.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:
See section 5.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

- Physical form	Solid
- Color	White to off-white
- Odor	Essentially odorless to very slight sugar odor
- pH (concentration)	1.8 at 50 g/L (25°C)
- Boiling point	>175°C
- Flash point	155°C
- Melting/freezing point	approx. 153°C at 1,013 hPa
- Decomposition temperature	NA
- Auto-ignition temperature	345°C
- Explosion properties	NA
- Oxidising properties	NA
- Vapour pressure	2.21*10-6 Pa at 25°C
- Vapor density	0.62 (Air = 1)
- Relative density	1.665at 20°C

- Bulk density	NA
- Specific gravity	1.542
- Viscosity	NA
- Water solubility	590 g/L at 20°C
- Solubility (non aqueous)	Methyl alcohol: completely miscible
- Partition coefficient	In OCTANOL/ WATER (log value): Log Kow: -0.2 to -1.8
- Dissociation constant	pKa: 3.13, 4.76 and 6.4 at 25°
- Evaporation rate	NA

9.2 OTHER INFORMATION

SECTION 10: STABILITY AND REACTIVITY

10.1 REACTIVITY
Stable

10.2 CHEMICAL STABILITY
Stable under normal conditions.
Polymerization will not occur.

10.3 POSSIBILITY OF HAZARDOUS REACTIONS
Not applicable

10.4 CONDITIONS TO AVOID
Practices which produce dust or disperse finely divided dust in air.
See NFPA 61. Standard for the Prevention of Fire and Dust Explosions in Agricultural and Food Processing Facilities, 2008 Edition, and other related standards.

10.5 INCOMPATIBLE MATERIALS
Oxidizing agents, strong acids

10.6 Hazardous decomposition products:
Nothing unusual

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 INFORMATION ON TOXICOLOGICAL EFFECTS

- Inhalation	ORAL: LD50: 5400 – 5790 mg/kg bw (mouse) / LD50: 11700 mg/kg bw (rat) DERMAL: LD50 >2000 mg/kg bw rat
- Ingestion	No effects known or anticipated.

- Skin irritation / corrosion	Sustained exposure in a dusty manufacturing environment may result in mechanical irritation in the creases of the skin, particularly at the fingers, or other drying effects. no health effects known or anticipated.
- Eye irritation	Irritating to eyes.
- Skin sensitisation	Not sensitizing
- Chronic toxicity	Not known or anticipated
- Genetic toxicity	Not known or anticipated
- Carcinogenicity	Not classifiable as Carcinogen.
- Reprotoxicity	Not known or anticipated
- Specific effects	Not applicable

SECTION 12: ECOLOGICAL INFORMATION

12.1 TOXICITY
LC50 for freshwater fish: 440 mg/l
EC50/LC50 for freshwater invertebrates: 1535 mg/l.

12.2 PERSISTENCE/DEGRADABILITY
Readily biodegradable

12.3 BIOACCUMULATIVE POTENTIAL
Log Kow <3, not bioaccumulative

12.4 MOBILITY IN SOIL
Not applicable

12.5 BPT, vPvB
The substance does not meet the criteria for PBT or vPvB.

12.6 OTHER ADVERSE EFFECTS
None known

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 WASTE TREATMENT METHODS
Follow local, state and federal regulations for product disposal. Not a hazardous waste unless contaminated with hazardous products.

SECTION 14: TRANSPORTATION INFORMATION

International regulations (RID/ADR; RTMDR; IMDG; IATA/OACI): Not classified as dangerous for transport.
DOT shipping label: Non-hazardous

SECTION 15: REGULATORY INFORMATION

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS
According with the version of the Globally Harmonized System of Classification and labeling adopted in the United States and Regulation 1272/2008/EC(CLP): Classified

15.2 CHEMICAL SAFETY ASSESSMENT
US FEDERAL REGULATIONS:
Clean Air Act:
ODS: Not applicable.
SARA (EPCRA) Section 313 (40 C.F.R. § 372.65): Not applicable.
TSCA Status: On TSCA inventory.

STATE REPORTING REQUIREMENTS:
California Proposition 65: Not applicable.

SECTION 16: OTHER INFORMATION

See Hazard Communication Guidance for Combustible Dusts, OSHA 3371-08 2009, U.S. Occupational Safety and Health Administration, https://www.osha.gov/Publications/3371combustible-dust.html (accessed 10/8/14)
And
NFPA 654, Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids, for general safe handling and design guidance.

Other classifications of the substance:
TSCA STATUS: On TSCA Inventory.
FDA STATUS: Citrus acid, Anhydrous complies with FDA Regulation 21 C.F.R. § 184.1033;
CALIFORNIA PROPOSITION 65: Not applicable.
HMIS rating:
Health: 1
Flammable: 0

Reactivity: 0
(0 = minimal ; 1 = slight ; 2 = moderate ; 3 = serious ; 4 = severe)

Safety Data Sheet according to Commission Regulation (EU) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)

DISCLAIMER OF LIABILITY

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Annex I

SUMMARY OF RISK MANAGEMENT MEASURES
Safe use has been demonstrated by calculation of risk characterisation ratios where appropriate, while qualitative considerations were stipulated where quantification was not possible. The risk characterisation is based on the following risk management measures: Exposure scenario; Description; General measures; Specific human health risk management measures; Specific environment risk management measures;
ES1 Production and intermediate use on production sites. Good working practices, containment and safe handling in line with industry best practice.
(i) Local Exhaust ventilation (LEV)
(ii) Personal Protective Equipment (PPE): Working clothing, protective gloves and safety glasses. Dust masks in areas where dust may be present. In case of open handling of larger quantities or accidental release, a particle mask or respirator with independent air supply is recommended.
(i) Treatment of effluent in waste water treatment plant.
ES2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17 Industrial use.
Good working practices, containment and safe handling in line with industry best practice. ,,(i) Local Exhaust ventilation (LEV) if
aerosol mists or dusts are present.
(ii) Personal Protective Equipment (PPE): Working clothing, protective gloves and safety

glasses. Dust masks in areas where dust may be present. In case of open handling of larger quantities or accidental release, a particle mask or respirator with independent air supply is recommended.
(i) Treatment of effluent in waste water treatment plant.
ES10 Textile industry. Good working practices, containment and safe handling in line with industry best practice.
(i) Local Exhaust ventilation (LEV) if aerosol mists or dusts are present.
(ii) Personal Protective Equipment (PPE): Working clothing,
(i) Treatment of effluent in waste water treatment plant.
(ii) No direct discharge into the marine environment.