Jungbunzlauer

Data Packet
Citric Acid Anhydrous

Attached documents:

- Product Information
- International Registry Numbers and Classifications
- Microbiological Data
- SDS
- Nutritional Data
- Description of Production Process
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- GMO Statement
- Halal Certificate
- ISO 9001 Certificate
- Kosher Certificate

Jungbunzlauer

Product Information

Citric Acid Anhydrous

General Information

Citric acid is a natural occurring fruit acid, produced commercially by microbial fermentation of a carbohydrate substrate. Citric acid is the most widely used organic acid and pH-control agent in foods, beverages, pharmaceuticals and technical applications.

Chemical Data

Chemical Nomenclature	2-hydroxypropane-1,2,3-tricarboxylic acid
Chem. Formula	$C_6H_8O_7$
Molecular Weight	192.12 g/mol
pH (5 %)	1.8
Melting point	about 153°C
REACH No.	01-2119457026-42-0000
EC No.	201-069-1
CAS No.	77-92-9
E-No.	E 330

Specification

Jungbunzlauer citric acid anhydrous is specified to meet the requirements of the latest editions of the European Pharmacopoeia (Ph. Eur.), the United States Pharmacopeia (USP), the Food Chemicals Codex (FCC), and of Commission Regulation (EU) No 231/2012.

Parameters	Jungbunzlauer Limits
Odour	typical, practically odourless
Identification	conforms
Appearance of solution	clear and colourless
Clarity of solution	conforms
Colour of solution	conforms
Readily carbonisable substances	conforms
Oxalic acid / oxalate	max. 100 mg/kg
Sulphate	max. 100 mg/kg
Arsenic	max. 1 mg/kg
Lead	max. 0.5 mg/kg
Mercury	max. 0.5 mg/kg
Calcium	max. 30 mg/kg
Iron	max. 3 mg/kg
Chloride	max. 5 mg/kg
Residue on ignition	max. 0.05 %
Sulphated ash	max. 0.05 %
Water	max. 0.50 %
Assay	99.7 – 100.3 %

Characteristics

Citric acid anhydrous occurs as colourless crystals or as white, crystalline powder with a strongly acidic taste. It is very soluble in water, freely soluble in ethanol (96%) and sparingly soluble in ether. Citric acid anhydrous is non-toxic and has a low reactivity. It is chemically stable if stored at ambient temperatures. Citric acid anhydrous is fully biodegradable.

Standard Granulations

Type	Particle size	Limits
N1560	> 1.25 mm	max. 5%
	< 0.40 mm	max. 10%
N1500	> 1.25 mm	max. 5%
	< 0.20 mm	max. 10%
F6000	> 0.63 mm	max. 10%
	< 0.20 mm	max. 10%

Special granulations of Jungbunzlauer citric acid anhydrous are available upon request.

Legal Aspects

In Europe, citric acid anhydrous is listed as generally permitted food additive (E 330) and may be added to all foodstuffs, following the “quantum satis“ principle, as long as no special regulation restricts the use.
The US Food and Drug Administration (FDA) has affirmed citric acid as GRAS (generally recognized as safe) and permitted the use in food according to current GMP (CFR § 184.1033), without setting an upper limit.

Citric acid is classified and labelled according to GHS (Globally Harmonized System), implemented by the European Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures (CLP Regulation) as follows:

Hazard Pictograms	Signal Word	Hazard Statements	Precautionary Statements
	Warning	H319: Causes serious eye irritation. H335: May cause respiratory irritation.	**Prevention:** P280: Wear protective gloves/ protective clothing/ eye protection/ face protection. P261: Avoid breathing dust. **Response:** 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. P304 + P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing. P312: Call a POISON CENTER/ doctor if you feel unwell.

Standard Packaging and Storage

Jungbunzlauer citric acid anhydrous is available in 25 kg net PE bags or in 1000 kg net big bags with inner PE lining.
Citric acid anhydrous may be stored for at least 3 years in original or tightly closed containers. Prolonged storage at temperatures higher than 30°C and/or humidity higher than 70% should be avoided in order to prevent caking.

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International Registry Numbers and Classifications

Citric Acid Anhydrous

Customs Tariff Number according to harmonised system	29181400
DUNS No.	
Jungbunzlauer Austria AG (Pernhofen)	300076861
Jungbunzlauer Canada Inc. (Port Colborne)	251464236

Chemicals Inventory Listing

EINECS No. (EC No.) European Inventory of Existing Chemical Substances	201-069-1
CAS No. Chemical Abstracts Service, USA	77-92-9
AICS Australian Inventory of Chemical Substances, Australia	listed
NZIoC New Zealand Inventory of Chemicals	listed
DSL Domestic Substances List, Canada	77-92-9
KECI Existing Chemicals List (ECL), Korea	KE-20831
ENCS No. (MITI No.) Existing and New Chemical Substances, Japan	2- 1318
PICCS Philippine Inventory of Chemicals and Chemical Substances, Philippines	listed
IECSC Inventory of Existing Chemical Substances in China	listed (=CAS No.)
REACH	
Registration number (plant Pernhofen)	01-2119457026-42-0000

Food Additive Listing

EU Food additive E 330

FDA (Food and Drug Administration, USA) 21 CFR § 184.1033
Code of Federal Regulations

Cosmetic Listing

PCPC, INCI listed as citric acid
Personal Care Products Council, USA
International Cosmetic Ingredients (INCI)

US Environmental Listing - Environmental Protection Agency (EPA)

TSCA No. 77-92-9 (= CAS No.)
Toxic Substances Control Act, USA

CERCLA not listed
Comprehensive Environmental Response, Compensation, and Liability Act

SARA not listed
Superfund Amendments and Reauthorization Act
Section 302 Extremely Hazardous Substances
Section 313 Toxic Chemical Release

California Proposition 65 not listed
Proposition 65 State Drinking Water and Toxic Enforcement Act

OSHA not considered highly hazardous by OSHA

EC Environmental Listing - European Environment Agency (EEA)

EC Pictograms

Signal word: Warning

EC Hazard and Precautionary Statements H319
P264, P280, P305+P351+P338, P337+P313

WGK 1 (identification number 57)
Water Hazard Classes, Germany

Jungbunzlauer

Microbiological Data

Citric Acid Anhydrous

Food & Pharmaceutical Grade

Product name	Citric acid anhydrous	$C_6H_8O_7$
EC No.	201-069-1	
CAS No.	77-92-9	
E-No.	E 330	

Total Aerobic Microbial Count (TAMC)	max. 10^3 CFU / g
Total Combined Yeasts / Moulds Count (TYMC)	max. 10^2 CFU / g
Staphylococcus Aureus	negative / 1 g
Escherichia Coli	negative / 5 g
Salmonella	negative / 10 g
Bile-Tolerant Gram-Negative Bacteria	negative / 5 g

Jungbunzlauer has voluntarily set a microbiological specification for citric acid anhydrous in order to comply with the Ph. Eur. Requirements on the Microbiological Quality of Non-Sterile Pharmaceutical Preparations and Substances for Pharmaceutical use. Jungbunzlauer guarantees to meet the limits of the corresponding Ph. Eur. Monograph 5.1.4. The test methods have been adopted and validated for our products according to Ph. Eur. 7.0:2011. The microbiological testing is performed once per quarter by an external accredited laboratory. However, these parameters are not release criteria and they do not appear on the Certificate of Analysis of our standard materials.

Citric Acid Anhydrous

Version 2.1	Revision Date:	SDS Number:	Date of last issue: 05/03/2022
US / EN	10/31/2022	100000000008	Date of first issue: 06/12/2017

SECTION 1. IDENTIFICATION

Product name	:	Citric Acid Anhydrous
Substance name	:	Citric acid
Molecular formula	:	C6-H8-O7
Chemical identity	:	2-hydroxypropane-1,2,3-tricarboxylic acid
CAS-No.	:	77-92-9
Chemical nature	:	Solid

Manufacturer or supplier's details

Details of the supplier of the safety data sheet

Company	:	Jungbunzlauer Inc. 95 Wells Avenue, Suite 150 Newton, 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

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

Recommended use of the chemical and restrictions on use

Recommended use	:	Manufacture of substances Formulation of preparations Formulation into solid matrix Industrial use Manufacture of chemical products Chemical intermediate Products such as pH-regulators, flocculants, precipitants, neutralization agents Washing and cleaning products Air care products Perfumes, fragrances Cosmetics, personal care products Manufacture of pulp, paper and paper products Manufacture of cement Polymer preparations and compounds Plastic articles Adhesives, sealants Manufacture of rubber products Extraction of crude petroleum Manufacture of textiles, leather, fur

Leather treatment products
Polishes and wax blends
Coatings and paints, thinners, paint removers
Photo-chemicals
Water treatment chemicals
Water softeners
Metal surface treatment products
Base metals and alloys
Laboratory chemicals
Fertilizers
Manufacture of basic pharmaceutical products
Food/ feedstuff additives

Restrictions on use : None known.

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Specific target organ toxicity - single exposure : Category 3 (Respiratory system)

Eye irritation : Category 2A

Combustible dust

GHS label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
May form combustible dust concentrations in air.

Precautionary statements :

Prevention:

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P261 Avoid breathing dust.

Response:

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.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312 Call a POISON CENTER/ doctor if you feel unwell.

Hazards Not Otherwise Classified

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture	:	Pure substance
Chemical nature	:	Solid
Substance name	:	Citric acid
CAS-No.	:	77-92-9

SECTION 4. FIRST AID MEASURES

General advice	:	Move out of dangerous area. Show this safety data sheet to the doctor in attendance. Do not leave the victim unattended.
If inhaled	:	If breathed in, move person into fresh air. If unconscious, place in recovery position and seek medical advice. If symptoms persist, call a physician.
In case of skin contact	:	In case of contact, immediately flush skin with plenty of water. Get medical attention if symptoms occur.
In case of eye contact	:	Immediately flush eye(s) with plenty of water. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.
If swallowed	:	Keep respiratory tract clear. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.
Most important symptoms and effects, both acute and	:	irritant effects Causes serious eye irritation.

delayed		May cause respiratory irritation.
Protection of first-aiders	:	Wear personal protective equipment.
Notes to physician	:	Treat symptomatically.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Water spray Dry powder Foam Carbon dioxide (CO2)
Unsuitable extinguishing media	:	High volume water jet
Specific hazards during firefighting	:	Exposure to decomposition products may be a hazard to health.
Hazardous combustion products	:	Carbon monoxide, carbon dioxide and unburned hydrocarbons (smoke).
Further information	:	Standard procedure for chemical fires. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Special protective equipment for firefighters	:	Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Use personal protective equipment. Avoid dust formation. Avoid breathing dust. Avoid contact with skin and eyes.
Environmental precautions	:	Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.
Methods and materials for containment and cleaning up	:	Neutralize with chalk, alkali solution or ammonia. Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion	:	Avoid dust formation. Provide appropriate exhaust ventilation at places where dust is formed.
Advice on safe handling	:	Avoid formation of respirable particles. Do not breathe vapours/dust. Avoid exposure - obtain special instructions before use.

Avoid contact with skin and eyes.
For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
Provide sufficient air exchange and/or exhaust in work rooms.
Dispose of rinse water in accordance with local and national regulations.

Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated place.
Electrical installations / working materials must comply with the technological safety standards.

Materials to avoid : Incompatible with strong bases and oxidizing agents.

Further information on storage stability : Keep in a dry place.
No decomposition if stored and applied as directed.

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 : No personal respiratory protective equipment normally required.

In the case of dust or aerosol formation use respirator with an approved filter.
Use NIOSH approved respiratory protection.

Hand protection
Remarks : Wear suitable gloves.

The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Eye protection : Eye wash bottle with pure water
Tightly fitting safety goggles
Wear face-shield and protective suit for abnormal processing problems.

Skin and body protection : Dust impervious protective suit
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures : When using do not eat or drink.
When using do not smoke.
Wash hands before breaks and at the end of workday.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	crystalline
Colour	:	white
Odour	:	odourless
Odour Threshold	:	Not relevant
pH	:	1.8 (77 °F / 25 °C) Concentration: 5 %
Melting point/freezing point	:	ca. 307 °F / 153 °C
Boiling point/boiling range	:	Decomposes below the boiling point.
Flash point	:	Not applicable
Flammability (solid, gas)	:	does not ignite
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Vapour pressure	:	0.0002 hPa (77 °F / 25 °C)
Relative vapour density	:	Not applicable
Relative density	:	1.665 (68 °F / 20 °C)
Density	:	No data available
Solubility(ies)		
Water solubility	:	ca. 1,450 g/l (68 °F / 20 °C)
Partition coefficient: n-octanol/water	:	log Pow: -1.8 - -0.2 Calculation
Auto-ignition temperature	:	Not applicable
Decomposition temperature	:	Not applicable
Viscosity		
Viscosity, kinematic	:	Not applicable
Explosive properties	:	Not explosive
Oxidizing properties	:	No oxidising effect.
Molecular weight	:	192.12 g/mol

Dust explosion class	:	St1
Particle size	:	ca. 0.075 - 2.8 mm

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	No decomposition if stored and applied as directed.
Chemical stability	:	No decomposition if stored and applied as directed.
Possibility of hazardous reactions	:	No decomposition if stored and applied as directed. Dust may form explosive mixture in air.
Conditions to avoid	:	Avoid dust formation.
Incompatible materials	:	Strong bases Oxidizing agents
Hazardous decomposition products	:	Build-up of dangerous/toxic fumes possible in cases of fire/high temperature. Carbon monoxide, carbon dioxide and unburned hydrocarbons (smoke).

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Not classified based on available information.

Components:

citric acid:

Acute oral toxicity	:	LD50 Oral (Mouse): 5,400 mg/kg Method: OECD Test Guideline 401 Assessment: The substance or mixture has no acute oral toxicity
Acute inhalation toxicity	:	(Guinea pig): ca. 75 mg/l Exposure time: 3 min Test atmosphere: dust/mist Target Organs: Respiratory Tract Symptoms: Cough
Acute dermal toxicity	:	LD50 Dermal (Rat): > 2,000 mg/kg Assessment: The substance or mixture has no acute dermal toxicity

Skin corrosion/irritation

Not classified based on available information.

Product:

Remarks	:	May cause skin irritation in susceptible persons.

Components:

citric acid:

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

Serious eye damage/eye irritation

Causes serious eye irritation.

Product:

Remarks	:	May cause irreversible eye damage.

Components:

citric acid:

Species	:	Rabbit
Result	:	Eye irritation
Method	:	OECD Test Guideline 405

Respiratory or skin sensitisation

Skin sensitisation

Not classified based on available information.

Respiratory sensitisation

Not classified based on available information.

Components:

citric acid:

Remarks	:	No known sensitising effect.

Germ cell mutagenicity

Not classified based on available information.

Components:

citric acid:

Genotoxicity in vitro	:	Test Type: reverse mutation assay Test system: Salmonella typhimurium Concentration: 0 - 5000 µg/plate Method: Mutagenicity (Salmonella typhimurium - reverse mutation assay) Result: negative Test Type: Micronucleus test Test system: Human lymphocytes Concentration: 50, 100, 200, 3000 µg/ml Method: Mutagenicity (in vitro mammalian cytogenetic test) Result: positive
Genotoxicity in vivo	:	Test Type: Chromosomal aberration

Species: Rat
Cell type: Bone marrow
Application Route: Oral
Dose: 0,3 mg/kg bw
Method: OECD Test Guideline 475
Result: negative

Carcinogenicity

Not classified based on available information.

Components:

citric acid:

Carcinogenicity - Assessment : Not classifiable as a human carcinogen.

IARC 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.

OSHA No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity

Not classified based on available information.

Components:

citric acid:

Reproductive toxicity - Assessment : No toxicity to reproduction

STOT - single exposure

May cause respiratory irritation.

Components:

citric acid:

Exposure routes : Inhalation
Target Organs : Respiratory Tract
Assessment : The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.

STOT - repeated exposure

Not classified based on available information.

Components:

citric acid:

Remarks : No data available

Repeated dose toxicity

Components:

citric acid:

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

Aspiration toxicity

Not classified based on available information.

Components:

citric acid:

No aspiration toxicity classification

Further information

Product:

Remarks	:	No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

citric acid:

Toxicity to fish	:	LC50 (Leuciscus idus (Golden orfe)): 440 mg/l Exposure time: 48 h Test Type: static test Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	:	LC50 (Daphnia magna (Water flea)): 1,535 mg/l Exposure time: 24 h Test Type: static test Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	:	NOEC (Scenedesmus quadricauda (Green algae)): 425 mg/l Exposure time: 8 d Test Type: static test
Toxicity to microorganisms	:	TT (Pseudomonas putida): > 10,000 mg/l Exposure time: 16 h

Persistence and degradability

Components:

citric acid:

Biodegradability	:	Biodegradation: 97 % Exposure time: 28 d Method: OECD Test Guideline 301B Remarks: Readily biodegradable. Biodegradation: 100 % Exposure time: 19 d Method: OECD Test Guideline 301E Remarks: Readily biodegradable.
Physico-chemical removability	:	Readily biodegradable.

Bioaccumulative potential

Components:

citric acid:

Bioaccumulation	:	Remarks: The product is miscible in water and readily biodegradable in both water and soil. Accumulation is not expected.
Partition coefficient: n-octanol/water	:	log Pow: -1.8 - -0.2

Mobility in soil

Components:

citric acid:

Stability in soil	:	Remarks: Readily biodegradable.

Other adverse effects

Product:

Ozone-Depletion Potential	:	Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).
Additional ecological information	:	No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : In accordance with local and national regulations.

Do not dispose of waste into sewer.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Do not re-use empty containers.

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

TDG
Not regulated as a dangerous good

Special precautions for user
Not applicable

SECTION 15. REGULATORY INFORMATION

CERCLA Reportable Quantity
This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity
This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity
This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Combustible dust
Serious eye damage or eye irritation
Specific target organ toxicity (single or repeated exposure)

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 Air Act

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).
This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).
This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).
This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489).

Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.
This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.
This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307
This product does not contain any priority pollutants related to the U.S. Clean Water Act

US State Regulations

Massachusetts Right To Know

No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know

citric acid 77-92-9

Maine Chemicals of High Concern

Product does not contain any listed chemicals

Vermont Chemicals of High Concern

Product does not contain any listed chemicals

Washington Chemicals of High Concern

Product does not contain any listed chemicals

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:

REACH	:	This substance has been registered according to Regulation (EC) No. 1907/2006 (REACH).
TSCA	:	All substances listed as active on the TSCA inventory
AIIC	:	On the inventory, or in compliance with the inventory
DSL	:	All components of this product are on the Canadian DSL
ENCS	:	On the inventory, or in compliance with the inventory
ISHL	:	On the inventory, or in compliance with the inventory
KECI	:	On the inventory, or in compliance with the inventory
PICCS	:	On the inventory, or in compliance with the inventory
IECSC	:	On the inventory, or in compliance with the inventory

NZIoC	:	On the inventory, or in compliance with the inventory
TCSI	:	On the inventory, or in compliance with the inventory

TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

SECTION 16. OTHER INFORMATION

Full text of other abbreviations

AIIC - Australian Inventory of Industrial Chemicals; 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; TECI - Thailand Existing Chemicals 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

Items where relevant changes have been made to the previous version are highlighted in the body of this document by two vertical lines, red letters and grey shading.

Revision Date	:	10/31/2022

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

US / EN

Jungbunzlauer

Nutritional Data
Citric Acid Anhydrous

Product name	Citric acid anhydrous	$C_6H_8O_7$
EC No.	201-069-1	
CAS No.	77-92-9	
E-No.	E 330	

Nutrition declaration according Regulation (EU) No. 1169/2011
Typical values based on 100 g of Citric Acid Anhydrous

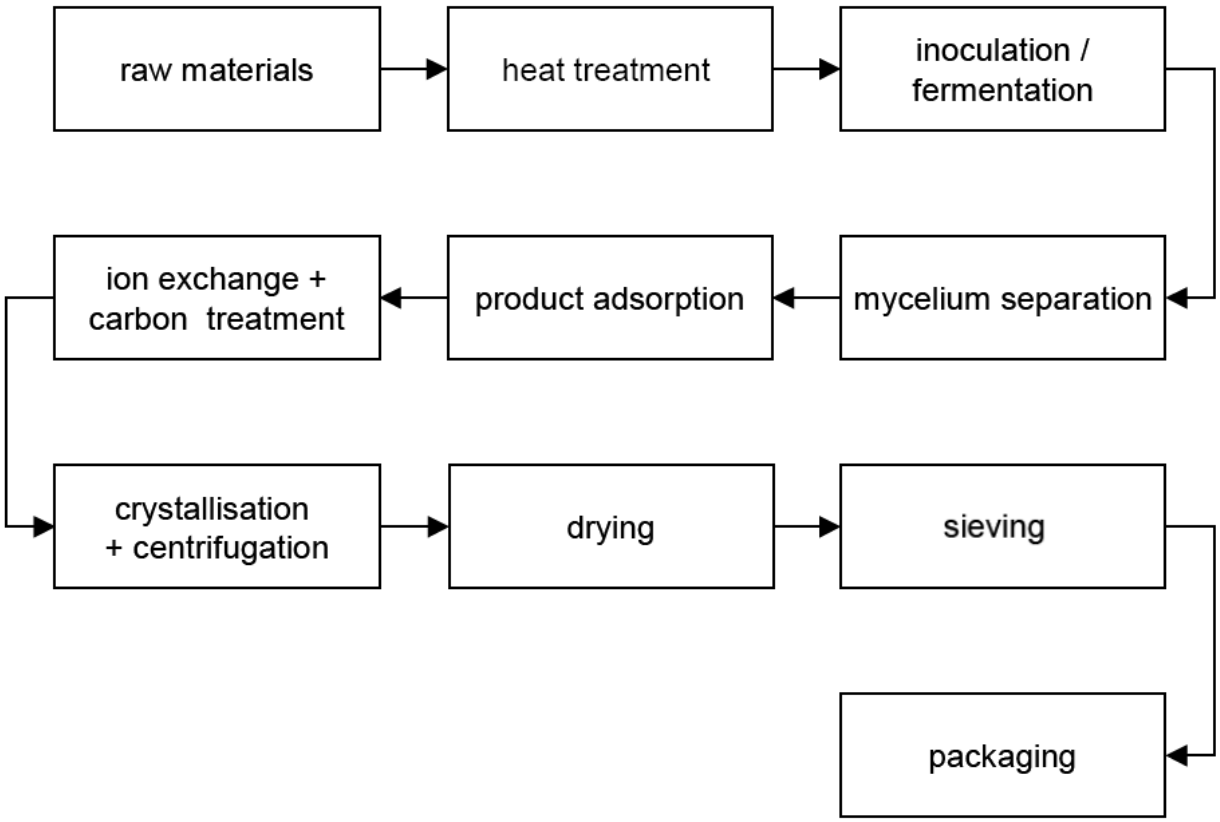
Energy:	1300 kJ / 300 kcal
Fat:	- g
of which	
- saturates	- g
- mono-unsaturates	- g
- polyunsaturates	- g
Carbohydrate:	- g
of which	
- sugars	- g
- polyols	- g
- starch	- g
Fibre:	- g
Protein:	- g
Salt:	
- sodium	< 0.3 mg
Organic acid:	~ 99.9 g
Moisture content:	~ 0.1 g
Vitamins:	none
Minerals:	
- Potassium	< 0.1 mg
- Chloride	< 0.5 mg
- Calcium	< 0.1 mg
- Phosphorus	< 0.3 mg
- Magnesium	< 0.05 mg
- Iron	< 0.05 mg
- Zinc	< 0.05 mg
- Copper	< 0.05 mg
- Manganese	< 0.01 mg
- Fluoride	< 1 mg
- Selenium	< 0.05 mg
- Chromium	< 0.05 mg
- Molybdenum	< 0.01 mg
- Iodine	- µg

Jungbunzlauer

Production of Citric Acid
Port Colborne, Canada

Jungbunzlauer citric acid is produced by a submerged fermentation process which employs a strain of the micro-organism *Aspergillus niger* to convert sugar into citric acid. This leaflet describes the manufacturing processes currently operated by Jungbunzlauer.

The following flowchart covers the single steps of our citric acid manufacturing process.



The substrate (glucose syrup) is heat-treated and inoculated with *Aspergillus niger*. After the fermentation the biological solids (mycelium) are removed. Then citric acid is recovered from the remaining broth by an adsorption process. The resulting citric acid solution is purified by ion exchange and carbon treatment. Finally the citric acid solution is evaporated, and citric acid is crystallised, dried, sieved and packaged.

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Shelf Life and Storage Conditions
Citric Acid, Trisodium Citrate

This information refers to following Jungbunzlauer products:

- Citric Acid Anhydrous
- Citric Acid Monohydrate
- Trisodium Citrate Anhydrous
- Trisodium Citrate Dihydrate

Storage Conditions
Citric acid and trisodium citrate should be stored in original packaging or tight containers in a cool and dry place.

Recommended temperature: max. 30°C
Recommended relative humidity: max. 70 %

Prolonged storage at higher temperatures and/or higher humidity should be avoided in order to prevent caking.

Shelf Life
A shelf life of 3 years (till end of the month) from the date of manufacturing has been defined for above mentioned products. This shelf life is guaranteed if the product is stored in the originally closed bag or tight containers under the above described storage conditions.
In the calculation of the shelf life, short-term excursions during transport of the product have been taken into consideration. The shelf-life is conditional upon compliance at all times by the customer with the above mentioned storage conditions.

Physical properties may change on prolonged storage, thus a retest is recommended after the mentioned shelf life period.

Expiry Date
The expiry date is consequently 3 years (till end of the month) after the date of production.

On the packaging of citric acid anhydrous, citric acid monohydrate, trisodium citrate dihydrate and trisodium citrate anhydrous the production and expiry date are mentioned as follows:
- Production date (YY/MM/DD)
- Expiry date (YY/MM)

Jungbunzlauer

Food Safety and Suitability
Citric Acid and Citrates

- Citric Acid Anhydrous
- Citric Acid Monohydrate
- Trimagnesium Citrate Anhydrous
- Trimagnesium Citrate Nonahydrate
- Trisodium Citrate Anhydrous
- Trisodium Citrate Dihydrate
- LIQUINAT® Citric Acid Solution
- Monosodium Citrate
- Tricalcium Citrate
- Tripotassium Citrate
- Zinc Citrate

Statement with regard to the Annex II of Regulation (EU) 1169/2011* (substances or products causing allergies or intolerances), the ALBA-list, other (allergenic) substances and dietetic suitability.
***supersedes Annex IIIa of Directive 2000/13/EC on 13 December 2014**

Do above mentioned products contain allergenic or other substances, respectively possible traces thereof (cross-contamination)?

Products of animal origin	**Yes**	**No**	**Comments**
Beef and products thereof		X	BSE free
Chicken and products thereof		X	
Crustaceans and products thereof		X	
Dairy products and products thereof (incl. milk constituents, caseinate, whey etc.)		X	
Eggs (chicken's egg) and products thereof (albumin, yolk etc.)		X	
Fish and products thereof		X	
Gelatine		X	
Hydrolysed animal protein (HAP)		X	
Insect derivatives		X	
Milk (cow's milk protein) and products thereof (incl. lactose, milk powder etc.)		X	
Molluscs and products thereof		X	
Pork and products thereof		X	
Royal jelly		X	
Seafood		X	
Shellfish		X	
Other products of animal origin		X	

Seeds	**Yes**	**No**	**Comments**
Cotton		X	
Poppy		X	
Rape		X	
Sesame seeds and products thereof		X	
Sesame oil		X	
Sunflower kernels		X	
Other seeds		X	

Fruits and vegetables	Yes	No	Comments
Almond and products thereof (*Amygdalus communis L*.)		X	
Brazil nut and products thereof (*Bertholletia excelsa*)		X	
Carrot		X	
Cashew and products thereof (*Anacardium occidentale*)		X	
Celery and products thereof		X	
Chestnut		X	
Cocoa		X	
Coconut		X	
Hazelnut and products thereof (*Corylus avellana*)		X	
Hydrolysed vegetable protein (HVP)		X	
Macadamia nut, queensland nut and products thereof *(Macadamia ternifolia)*		X	
Mustard and products thereof		X	
Nuts or nut oil		X	
Peanuts and products thereof (incl. peanut oil etc.)		X	
Pecan nut and products thereof (*Carya illinoiesis (Wangenh.) K. Koch*)		X	
Pistachio nut and products thereof (*Pistacia vera*)		X	
Sugar beet		X	1)
Walnut and products thereof (*Juglans regia*)		X	
Other fruits and products thereof		X	
Other vegetables and products thereof		X	

Spices and herbs	Yes	No	Comments
Anise		X	
Caraway		X	
Chervil		X	
Cinnamon		X	
Coriander		X	
Curry		X	
Dill		X	
Fennel		X	
Garlic		X	
Lovage		X	
Myrrh		X	
Paprika		X	
Parsley		X	
Rosemary extract		X	
Umbelliferea		X	
Vanillin		X	
Other spices or herbs		X	

1) Sugar from sugar beet is a fermentation raw material, but is not contained in the end product anymore.

Legumes/pulses	Yes	No	Comments
Beans		X	
Guar gum		X	
Gum tragacant		X	
Locust bean gum		X	
Lupin and products thereof		X	
Peas		X	
Soybeans and products thereof (incl. soy oil, soy flour, soy meal, soy protein, soy lecithin etc.)		X	
Tofu		X	
Other legumes/pulses		X	

Cereals and cereal products	Yes	No	Comments
Barley or its hybridised strains		X	
Bakery products (bread crumb)		X	
Cereals containing gluten		X	
Gluten (gliadin, avenin, hordein)		X	
Kamut or its hybridised strains		X	
Maize		X	2)
Millet		X	
Oats or its hybridised strains		X	
Rice		X	
Rye or its hybridised strains		X	
Spelt or its hybridised strains		X	
Starch		X	
Wheat or its hybridised strains		X	
Wheat flour, wheat meal or wheat starch		X	
Other cereals or cereal products		X	

Starch, sugars and sweeteners	Yes	No	Comments
Aspartame		X	
Cyclamate		X	
Dextrin		X	
Fructose		X	
Galactose		X	
Glucose		X	2)
Invert sugar		X	
Lactose		X	
Maltodextrin		X	
Maltose		X	
Mannitol		X	
Saccharose		X	
Sorbitol		X	
Starch		X	
Sucrose		X	
Other starches, sugars or sweeteners		X	

2) Glucose syrup from maize is a fermentation raw material, but is not contained in the end product anymore.

Preservatives	**Yes**	**No**	**Comments**
Benzoic acid and salts (E210 – E213)		X	
Parabenes, hydroxybenzoic acid and salts (E214 – E219)		X	
Sorbic acid and salts (E200, E202, E203)		X	
Sulphur dioxide and sulphites at concentrations of more than 10 mg/kg or 10 mg/litre expressed as SO_2		X	No added SO_2
Sulfite (E220 – E228)		X	
Other preservatives		X	

Antioxidants	**Yes**	**No**	**Comments**
BHA (E320)		X	
BHT (E321)		X	
Gallate (E310 – E312)		X	
Other antioxidants		X	

Colours, flavours and flavour enhancers	**Yes**	**No**	**Comments**
Artificial or natural colours		X	
Azo dye		X	
Flavours or flavour enhancers		X	
Disodium inosinate		X	
Disodium ribonucleotide		X	
Glutamate and glutamic acid (E 620 - 632)		X	

Others	**Yes**	**No**	**Comments**
Biogenic amines		X	
Caffeine		X	
Cholesterol		X	
Latex		X	
Lecithin		X	
Peru balsam		X	
Phenylalanin		X	
Purin and purin derivates		X	
Yeast		X	No added yeast

Suitability for dietetic food	**Yes**	**No**	**Comments**
Baby/infant food	X		
Patients with celiac disease	X		
Diabetics	X		
Patients with fructose-intolerance	X		
Patients with galactosemia	X		
Patients with phenylketonuria	X		

Vegetarism	**Yes**	**No**	**Comments**
Suitable for vegans	X		
Suitable for vegetarians	X		

Jungbunzlauer

BSE / TSE

The following Jungbunzlauer products

- **Calcium Lactate Gluconate**
- **Citric Acid**
- **Citric Acid DC**
- **Citric Acid S40**
- **CITROCOAT® EP**
- **CITROCOAT® N**
- **CITROFOL®**
- **Encapsulated Glucono-delta-Lactone eGdL**
- **ERYLITE®**
- **ERYLITE® Bronze**
- **ERYLITE® Stevia**
- **ERYLITE® Monkfruit**
- **Gluconic Acid**
- **Glucono-delta-Lactone**
- **GLUCOSET**
- **L(+)-Lactic Acid**
- **L(+)-Lactic Acid Buffered**
- **LIQUINAT®**
- **Magnesium Lactate**
- **Monomagnesium Citrate**
- **Monosodium Citrate**
- **NAGLUSOL®**
- **Potassium Gluconate**
- **Potassium L(+)-Lactate**
- **Potassium L(+)-Lactate/Potassium Acetate**
- **Potassium L(+)-Lactate/Potassium Diacetate**
- **Potassium L(+)-Lactate/Sodium Acetate**
- **Potassium L(+)-Lactate/Sodium Diacetate**
- **Potassium L(+)-Lactate/Vinegar**
- **Sodium Gluconate**
- **Sodium Gluconate EMF**
- **Sodium L(+)-Lactate**
- **Sodium L(+)-Lactate/Sodium Diacetate**
- **sub4salt®**
- **TayaGel®**
- **Tricalcium Citrate**
- **Trimagnesium Citrate**
- **Tripotassium Citrate**
- **Trisodium Citrate**
- **Xanthan Gum**
- **Xanthan Gum Blends**
- **Zinc Citrate**
- **Zinc Gluconate**
- **Zinc Lactate**

are either manufactured by fermentation of glucose syrup derived from corn or further processing (e.g. neutralisation, esterification, agglomeration, coating, blending etc.). The products undergo several purification steps and are finally obtained in their highly pure form.

Due to the fact that Jungbunzlauer does not use animal derived substances in the manufacturing process of above mentioned products, existing EC regulations and directives concerning BSE / TSE do not apply.

Jungbunzlauer

California Proposition 65

The following Jungbunzlauer products

- **Calcium Lactate Gluconate**
- **Citric Acid**
- **Citric Acid DC**
- **Citric Acid S40**
- **CITROCOAT® EP**
- **CITROCOAT® N**
- **CITROFOL®**
- **Encapsulated Glucono-delta-Lactone eGdL**
- **ERYLITE®**
- **ERYLITE® Bronze**
- **ERYLITE® Stevia**
- **Gluconic Acid**
- **Glucono-delta-Lactone**
- **GLUCOSET**
- **L(+)-Lactic Acid**
- **L(+)-Lactic Acid Buffered**
- **LIQUINAT®**
- **Magnesium Lactate**
- **Monomagnesium Citrate**
- **Monosodium Citrate**
- **NAGLUSOL®**
- **Potassium Gluconate**
- **Potassium L(+)-Lactate**
- **Potassium L(+)-Lactate/Potassium Acetate**
- **Potassium L(+)-Lactate/Potassium Diacetate**
- **Potassium L(+)-Lactate/Sodium Acetate**
- **Potassium L(+)-Lactate/Sodium Diacetate**
- **Potassium L(+)-Lactate/Vinegar**
- **Sodium Gluconate**
- **Sodium Gluconate EMF**
- **Sodium L(+)-Lactate**
- **Sodium L(+)-Lactate/Sodium Diacetate**
- **sub4salt®**
- **TayaGel®**
- **Tricalcium Citrate**
- **Trimagnesium Citrate**
- **Tripotassium Citrate**
- **Trisodium Citrate**
- **Xanthan Gum**
- **Xanthan Gum Blends**
- **Zinc Citrate**
- **Zinc Gluconate**
- **Zinc Lactate**

are either manufactured by fermentation of glucose syrup derived from corn or further processing (e.g. neutralisation, esterification, agglomeration, coating, blending etc.). The products undergo several purification steps and are finally obtained in their highly pure form.

To the best of our knowledge, the manufacturing processes of the above mentioned products do not leave any contaminants or by-products known to the State of California to cause cancer or reproductive toxicity as listed under Proposition 65 State Drinking Water and Toxic Enforcement Act (last update 11 August 2023), except of unavoidable traces of heavy metals.

Heavy metals are regularly tested. Typical data are available on request.

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Certificate of Origin

Jungbunzlauer

Basel, 22 January 2021

Dear customers

The following Jungbunzlauer products

- **Citric Acid Anhydrous**
- **Tripotassium Citrate**
- **Trisodium Citrate Dihydrate**

are manufactured by fermentation of the raw material glucose syrup which is a carbohydrate source derived from corn.

The above mentioned products are manufactured in the following Jungbunzlauer production facilities:

- **Jungbunzlauer Canada Inc.**
  1555 Elm Street
  Port Colborne, Ontario L3K 5V5
  CANADA

Kind regards
Jungbunzlauer International AG

B. Lindner

Barbara Lindner
Junior Technical Service Manager

Jungbunzlauer

GMO Position
Manufacturing Site Port Colborne, Canada

This position paper is valid for the Jungbunzlauer manufacturing site Port Colborne, Canada.

The following Jungbunzlauer products

- Citric Acid Anhydrous
- LIQUINAT® (Citric Acid Solution)
- Tripotassium Citrate
- Trisodium Citrate Dihydrate

are manufactured by fermentation or are based on fermentation derived products.

Micro-organisms – production strains

Jungbunzlauer does not use genetically modified production strains.

Fermentation media

The fermentation raw material, glucose syrup is derived from corn. Possible intermixing of genetically modified and non-genetically modified varieties of corn cannot be excluded. However, Jungbunzlauer works solely with raw material suppliers who process corn that meets all Canadian and US guidelines for usage of transgenic grains.

Absence of genetically modified DNA in the end product

During the production of glucose syrup, genetically modified DNA from corn is denatured, degraded, or removed through successive processing steps including physical separation, heating, purification and filtration. For this reason, DNA from genetically modified corn is not present in measurable amounts in glucose syrup. Consequently, it is not found in the above-mentioned Jungbunzlauer products.

Regulatory items – labelling requirements

US and Canada:

The existing guidelines on the labelling of novel foods derived from genetic engineering do not apply to the above-mentioned Jungbunzlauer products.

Europe:

None of the existing EC Directives and Regulations concerning GMO and the labelling of GMO's apply to the above-mentioned Jungbunzlauer products.

- **Regulation (EC) No 1829/2003** on genetically modified food and feed
- **Regulation (EC) No 1830/2003** concerning the traceability and labelling of genetically modified organisms and the traceability of food and feed products produced from genetically modified organisms and amending Directive 2001/18/EC
- **Directive 2009/41/EC** on the contained use of genetically modified micro-organisms