



# Safety Data Sheet

Revision Date: 15-Oct-2020

Revision Number: 3

## 1. Identification

**Product Name:**

Citric Acid Anhydrous Fine Granular

**Synonyms:**

2-hydroxy-1,2,3-propanetricarboxylic acid, or  
2-hydroxypropane-1,2,3-tricarboxylic acid

**Product Code:**

020420

**Use of the Substance / Preparation:**

Chemical intermediate, Personal care products, Cleaning/detergent products and other household products, Paper products, Construction products, Polymers and plastics products, Oil industry, Textile industry, Paints and coatings, Photography products, Laboratory reagents, Water treatment, Treatment of metal surfaces, Agricultural applications, Medical devices, Food additive.

**Supplier:**

Archer Daniels Midland Company  
4666 Farles Parkway  
Decatur, IL 62526, USA  
Telephone Number: (+1) 217-424-5200

**Emergency response telephone number:**

Chemtrec 1-800-424-9300 (CCN 1635)

## 2. Hazard(s) identification

### Emergency Overview

Warning. Irritating to eyes. Corrosive to metals (as aqueous solution). Product dust may cause mild, mechanical irritation. May form combustible dust concentrations in air (during processing and handling).

**Appearance**  
White

**Physical State**  
Solid: Powder / Granular

**Odor**  
Odorless

**This product IS classified as hazardous according to 29 CFR 1910.1200 (known as HCS 2012), amended to conform to the United Nations' Globally Harmonized System of Classification and Labeling of Chemicals (GHS). Depending on the intended use, this product is classified as hazardous according to the criteria contained in the Hazardous Products Regulations (SOR/2015-17), also known as WHMIS 2015.**


*NOTE: Certain products covered under other Canadian legislation, including but not limited to cosmetics, devices, drugs or food (as defined in the Food and Drugs Act), pest control products (as defined in the Pest Control Products Act), consumer products (as defined in the Canada Consumer Product Safety Act), and Hazardous waste (being a hazardous product that is sold for recycling or recovery and is intended for disposal), are NOT subject to the label and SDS requirements of the Hazardous Products Regulations (SOR/2015-17), also known as WHMIS 2015. As supplied for use in food, an SDS and WHMIS compliant labeling are NOT required for this product. Since Canadian employers must still provide education and training on health effects, safe use, and storage, and in the interest of providing relevant product information to our customers, this SDS is being provided on a voluntary basis.*

Serious Eye Damage / Eye Irritation	Category 2
OSHA Defined Hazard(s)	Combustible Dust
HPR Defined Hazard(s)	Combustible Dust

### Label Elements

*NOTE: While label elements are provided within this SDS, under 29 CFR 1910.1200 (b)(5), products already subject to the labeling requirements of other specified federal acts, may be exempt from OSHA labeling.*

Signal Word: Warning

GHS Hazard Pictogram(s):	
Hazard Statement(s):	H319 Causes serious eye irritation May form combustible dust concentrations in air.
<b>Prevention Precautionary Statements:</b> Wash hands and exposed skin thoroughly after handling. Wear eye/face protection.	
<b>Response Precautionary Statements:</b> If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice.	

### 3. Composition/information on ingredients

**Chemical nature of the preparation** Substance

**Chemical Family** Acids.  
**Molecular Formula** C<sub>6</sub>H<sub>8</sub>O<sub>7</sub>

The following component(s) in this product are considered hazardous under applicable OSHA (USA) and/or WHMIS (Canada) or require disclosure as an air contaminant

Chemical Name	CAS-No	Weight %	North American Substance Hazard Class
Citric acid	77-92-9	99-100	Eye Irrit. 2;

### 4. First-aid measures

**Description of first aid measures**

**Eye Contact** Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. If symptoms persist, call a physician.

**Skin Contact** Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes.

**Inhalation** Move to fresh air.

**Ingestion** Clean mouth with water and afterwards drink plenty of water.

**Protection of First-aiders** Use personal protective equipment. Avoid contact with skin, eyes and clothing.

**General Advice** If symptoms persist, call a physician. Show this safety data sheet to the doctor in attendance. Use personal protective equipment. For personal protection see section 8.

**Most important symptoms and affects, both acute and delayed**

**Eyes** Irritating to eyes. Contact with eyes may cause mechanical irritation.

**Skin** According to GHS hazard classification criteria, the product is not considered as being a skin irritant. Product dust may cause mild, mechanical irritation. Health injuries are not known or expected under normal use.

**Inhalation** May cause irritation of respiratory tract. Based on the low pH, citric acid would be expected to cause irritation to the respiratory tract, resulting in a higher cough response as the inhalation exposure concentration was increased.

**Ingestion** Oral exposure is not anticipated under normal working conditions. Health injuries are not known or expected under normal use.

**Main Symptoms** Itching. Redness. Burning sensation.

**Indication of any immediate medical attention and special treatment needed**

**Notes to Physician** Treat symptomatically.

### 5. Fire-fighting measures

**Flammable Properties**

Fine dust dispersed in air may ignite. Risk of ignition followed by flame propagation or secondary explosions should be prevented by avoiding accumulation of dust, e.g. on floors and ledges.

**Extinguishing media**

**Suitable Extinguishing Media** Dry chemical. Carbon dioxide (CO<sub>2</sub>). Water spray. Foam. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**Unsuitable Extinguishing Media** No information available.

**Special hazards arising from the substance or mixture**

<b>Hazardous Combustion Products</b>	Thermal decomposition can lead to release of irritating gases and vapors, Carbon monoxide (CO), Carbon dioxide (CO <sub>2</sub> ).
<b>Specific Hazards Arising from the Chemical</b>	None known.
<b>Sensitivity to mechanical impact</b>	No.
<b>Sensitivity to static discharge</b>	Yes. (as dust).
<b>Further Information</b>	Fine dust dispersed in air may ignite. Dust explosibility class = 1. Weak to moderately explosible.

**Advice for fire-fighters**

**Protective Equipment and Precautions for Firefighters** As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

**NFPA**

Health 1  
Flammability 1

Stability and Reactivity 0  
Physical hazard None known



## 6. Accidental release measures

**Personal Precautions, Protective Equipment, and Emergency Procedures**

Avoid contact with the skin and the eyes. Use personal protective equipment. For personal protection see section 8. Avoid dust formation.

**Environmental Precautions**

Prevent further leakage or spillage if safe to do so. Prevent product from entering drains.

**Methods and Materials for Containment and Cleaning Up**

Pick up and transfer to properly labelled containers. Avoid dust formation. Keep in suitable, closed containers for disposal. Aqueous spillage should be neutralized and treated prior to discharge. For disposal information see section 13.

## 7. Handling and storage

**Handling**

Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Handle in accordance with good industrial hygiene and safety practice. Do not breathe vapours/dust. Use only in area provided with appropriate exhaust ventilation. Avoid dust formation in confined areas. Fine dust dispersed in air may ignite. Ensure adequate ventilation. Refer to NFPA 61, "Standard for the Prevention of Fires and Dust Explosions in Agricultural and Food Processing Facilities".

**Storage**

Keep containers tightly closed in a cool, well-ventilated place. Keep in properly labelled containers. Keep at temperature not exceeding 23.9°C / 75°F. At 55% relative humidity. Keep away from metals. Corrosive to metals (as aqueous solution). Keep away from oxidizing agents. Keep away from strong bases. Keep away from amines.

## 8. Exposure controls/Personal protection

**Exposure Limits**

Where exposure limits have not been established for specific components of this material, please observe the OSHA and ACGIH established limits for particulates not otherwise classified (PNOC). OSHA PEL: [15 mg/m<sup>3</sup> (total dust) 8-hr TWA], [5 mg/m<sup>3</sup> (respirable) 8-hr TWA]. ACGIH TLV: [10 mg/m<sup>3</sup> (inhalable) 8-hr TWA], [3 mg/m<sup>3</sup> (respirable) 8-hr TWA].

**Biological Limit Values**

No biological limit values have been listed for the component(s) of this product.

**Appropriate Engineering Controls**  
**General Hygiene Considerations**

Local exhaust ventilation. Ensure adequate ventilation, especially in confined areas.  
When using, do not eat, drink or smoke. Regular cleaning of equipment, work area and clothing.

**Personal Protective Equipment****Eye/face Protection.**

Safety glasses with side-shields. If airborne dust concentrations are excessive, wear goggles.

**Skin and Body Protection**  
**Respiratory Protection**

Impervious gloves. Long sleeved clothing. Boots.  
 Respirator with a dust filter. In case of insufficient ventilation wear suitable respiratory equipment.



## 9. Physical and chemical properties

<b>Appearance</b>	White
<b>Physical State</b>	Solid: Powder / Granular
<b>Odor</b>	Odorless
<b>Odor Threshold</b>	Not applicable
<b>pH</b>	1.8 @ 25°C (5 wt% conc)
<b>Dissociation Constants (pKa)</b>	3.13, 4.76, and 6.4 at 25°C
<b>Flash Point</b>	Not applicable (solid)
<b>Autoignition Temperature</b>	Not applicable (No obligation to report when the autoignition temperature is >400°C.)
<b>Boiling point</b>	Not applicable (decomposes before boiling)
<b>Melting/Freezing Point</b>	153 °C / 307 °F (101.3 kPa)
<b>Decomposition temperature</b>	No information available
<b>Oxidizing Properties</b>	Not oxidizing
<b>Flammability Limits in Air</b>	Not flammable
<b>Explosion Limits</b>	Not explosive
<b>Water Solubility</b>	590g/l at 20°C
<b>Solubility(ies)</b>	
<b>Surface Tension</b>	Not applicable. (no surface tension anticipated).
<b>Evaporation Rate</b>	Not applicable (solid)
<b>Vapor Pressure</b>	2.21E-6 Pa at 25°C
<b>Vapor Density</b>	Not applicable
<b>Specific Gravity / Relative Density</b>	No information available
<b>Bulk Density</b>	500-950kg/m <sup>3</sup> at 20°C
<b>Viscosity (kinematic)</b>	Not applicable (solid)
<b>Partition Coefficient (n-octanol/water)</b>	-0.2 to -1.8
<b>Explosive Properties</b>	Not explosive

## 10. Stability and reactivity

**Reactivity** Reactions with metal nitrates may be potentially explosive. Aqueous form is corrosive to copper, zinc, aluminum and their alloys.

**Stability** Not applicable. Stable under normal conditions.

**Possibility of Hazardous Reactions** None under normal processing.

**Conditions to Avoid** Avoid dust formation. Heat, flames and sparks.

**Incompatible Materials** Amines. Heavy metals. Strong oxidizing agents. Strong bases.

**Hazardous Decomposition Products** Thermal decomposition can lead to release of irritating gases and vapors. Carbon monoxide (CO). Carbon dioxide (CO<sub>2</sub>).

## 11. Toxicological information

### Information on toxicological effects

<b>Acute toxicity</b>	Based on available data, the classification criteria are not met.			
<b>Chemical Name</b>	<b>Weight %</b>	<b>LD50 Oral</b>	<b>LD50 Dermal</b>	<b>LC50 Inhalation</b>
Citric acid	99-100	5400 mg/kg Mouse 11700 mg/kg Rat	>2000 mg/kg bw Rat	
<b>Skin corrosion/irritation</b>	Based on available data, not, or only slightly irritating.			
<b>Serious eye damage/eye irritation</b>	Irritant, causes serious eye irritation.			
<b>Method</b>	OECD Guideline 405 (Acute Eye Irritation / Corrosion)			

<b>Species</b>	Rabbit (New Zealand White)
<b>Results</b>	Irritating: Overall irritation score for 10% solution: 9.3 of max. 110 (mean (of 3 animals)) (Time point: at 1, 24, 48 or 72 h) (fully reversible within: 7 days) (score achieved at 1 h) Overall irritation score for 30% solution: 16 of max. 110 (mean (of 3 animals)) (Time point: at 1, 24, 48 or 72 h) (not fully reversible within: 14 days) (fully reversible in 14-21 days) (expert opinion) (score achieved at 1 h)
<b>Respiratory or skin sensitisation</b>	Based on available data, not expected to be a skin or respiratory sensitiser.
<b>Germ cell mutagenicity</b>	Based on available data, negative to test/non-mutagenic.
<b>Carcinogenicity</b>	Based on available data, no evidence of carcinogenicity.
<b>Reproductive toxicity</b>	Based on available data, no evidence of reproductive toxicity.
<b>STOT - single exposure</b>	No evidence of toxicity.
<b>STOT - repeated exposure</b>	Based on available data, no toxicity identified at highest exposure levels [NOAEL(rats) 4000mg/kg bw/d].
<b>Aspiration hazard</b>	Based on available data, no known aspiration hazard.

**Potential health effects**

<b>Eyes</b>	Irritating to eyes. Contact with eyes may cause mechanical irritation.
<b>Skin</b>	According to GHS hazard classification criteria, the product is not considered as being a skin irritant. Product dust may cause mild, mechanical irritation. Health injuries are not known or expected under normal use.
<b>Inhalation</b>	May cause irritation of respiratory tract. Based on the low pH, citric acid would be expected to cause irritation to the respiratory tract, resulting in a higher cough response as the inhalation exposure concentration was increased.
<b>Ingestion</b>	Oral exposure is not anticipated under normal working conditions. Health injuries are not known or expected under normal use.
<b>Main Symptoms</b>	Itching. Redness. Burning sensation.

<b>12. Ecological information</b>
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**Ecotoxicity**

Not classified for aquatic toxicity. Contains no substances known to be hazardous to the environment. Contains no substances known to be not degradable in waste water treatment plants.

Chemical Name	Fresh Water Algae	Acute Fish Toxicity	Daphnia (Water flea)	Effects on micro-organisms	Other
Citric acid	NOEC(8d): 425mg/l (nominal)*	LC50(48h):440mg/L (Leuciscus idus)(nominal)	EC50(24h): 1535mg/L (Daphnia magna)(nominal)		

\*Determined by extrapolation (testing of intrinsic toxicity to algae impractical due to nutrient complexing behaviour of citric acid)

**Predicted No Effect Concentrations (PNEC) - Determined by extrapolation**

Chemical Name	Aqua (fresh water)	Aqua (marine)	Sewage Treatment Plant	Sediment (fresh water)	Sediment (marine)	Soil
Citric acid	0.44mg/l	0.044mg/l	>1000mg/l	34.6mg/kg sediment dw	3.46mg/kg sediment dw	33.1mg/kg

**BCF**

Bioaccumulation is unlikely. [Logk<sub>ow</sub> < 0].

Chemical Name	log K <sub>ow</sub>	BCF
Citric acid	-0.2 to -1.8	BCF ~ 3.2 (estimated)

**Persistence/Degradability**

Readily biodegradable

**Mobility**

Soluble in water.

**PBT and vPvB assessment**

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).

**Other adverse effects**

Nothing specific known.

**13. Disposal considerations**

Whenever possible, as rules and regulations allow, please recycle or manage materials to minimize waste.

<b>Waste Disposal Methods</b>	Dispose of in compliance with the laws and regulations pertaining to this product in your jurisdiction. Rinsewater resulting from cleanup should be collected for treatment before disposal. Solutions with low pH-value should be neutralized before discharge.
<b>Contaminated Packaging</b>	Empty containers should be decontaminated and taken for local recycling, recovery or waste disposal.

**14. Transport information****Domestic transport regulations (USA)**

DOT Not regulated

**Domestic transport regulations (Canada)**

TDG Not regulated

**Domestic transport regulations (Mexico)**

MEX Not regulated

**International transport regulations**

ICAO Not regulated

IATA Not regulated

IMDG/IMO Not regulated

<b>15. Regulatory information</b>
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**International Inventories**

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

Chemical Name	TSCA	DSL	NDSL	ICL	EINECS	ELINCS	AICS
Citric acid	Yes ACTIVE	Yes	No	No	Yes 201-069-1	No	Yes

Chemical Name	ENCS ISHL	CHINA	PICCS	KECL	Taiwan	Turkey	NZIoC
Citric acid	Yes (2)-1318	Yes	Yes	Yes KE-20831	Yes	Yes 201-069-1	No

**USA****Federal Regulations****Ozone Depleting Substances:**

No Class I or Class II material is known to be used in the manufacture of, or contained in, this product.

**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product is not known to contain any chemicals which are subject to the reporting requirements of the Act or regulations contained in 40 CFR 372.

**CERCLA/SARA 103-302**

Sections 103-302 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product is not known to contain any chemicals which are subject to the reporting requirements of the Act or regulations contained in 40 CFR 103-302.

**SARA 311/312 Hazardous Categorization**

Refer to the OSHA hazard classification(s) provided in section 2 of this SDS.

**State Regulations****State Right-to-Know**

No known components subject to "Right-To-Know" legislation.

**Canada****(NPRI) Canadian National Pollutant Release Inventory**

No known component is listed on NPRI.

<b>16. Other information</b>
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Prepared By: ADM - Product Regulatory Affairs  
 Revision Date: 15-Oct-2020  
 Revision Number: 3  
 Reason for revision: Periodic review.

**Abbreviations and acronyms**

A1 - Known Human Carcinogen  
 A2 - Suspected Human Carcinogen  
 A3 - Animal Carcinogen  
 ACGIH TLV - American Conference of Governmental Industrial Hygienists Threshold Limit Values  
 CAS - Chemical Abstract Service  
 Ceiling - Ceiling Limit Value: Concentrations that should never be exceeded at any given time (instantaneous)  
 Delisted - Substances Delisted from Report on Carcinogens  
 DNEL - Derived No Effect Level  
 DOT - U.S. Department of Transportation

GHS - Globally Harmonized System of Classification and Labelling of Chemicals

Group 1 - Carcinogenic to Humans

Group 2A - Probably Carcinogenic to Humans

Group 2B - Possibly Carcinogenic to Humans

IARC - International Agency for Research on Cancer

IDLH - Immediately Dangerous to Life or Health

Known - Known Carcinogen

LC50 - Lethal concentration that produces fatalities in 50% of a given test population

LD50 - Median lethal dose of a given test population

NFPA - National Fire Protection Association

NIOSH - National Institute of Occupational Safety and Health

NOAEL - No Observed Adverse Effect Level

NTP - National Toxicology Program

OECD - Organisation for Economic Co-operation and Development

OSHA - Occupational Safety & Health Administration

OSHA PEL - Occupational Safety and Health Administration Permissible Exposure Limits

PNEC - Predicted No-Effect Concentration

Present - Carcinogen or potential carcinogen to be identified under OSHA's Hazard Communication Standard

Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen

Skin notation - Potential for cutaneous absorption

STEL - Short Term Exposure Limit; Concentrations that should not be exceeded except for short periods of time ( usually 15-minutes)

STOT - Specific Target Organ Toxicity

STV - Short Term Value (same as STEL)

TSCA - Toxic Substances Control Act, Section 8(b) Inventory (USA)

TWA - Time Weighted Average: Average concentration that should not be exceeded during a work day (usually 8-hours)

Under Consideration - Under Consideration by the National Toxicology Program

**The information provided on this SDS 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 guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as 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 material or in any process, unless specified in the text.**

End of sheet