

## SAFETY DATA SHEET

### Citric acid anhydrous

#### 1. Identification of the substance/mixture and of the company/undertaking

##### 1.1 Product identifier

Trade name : Citric acid anhydrous  
Substance name : Citric acid anhydrous  
Molecular formula : C<sub>6</sub>H<sub>8</sub>O<sub>7</sub>  
Chemical identity : 2-hydroxypropane-1,2,3-tricarboxylic acid anhydrous  
CAS-No. : 77-92-9  
EC-No. : 201-069-1

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

Use of the Substance/Mixture : Food/ feedstuff additives, Cosmetic additive, Medical aids, Industrial use

##### 1.3 Details of the supplier of the safety data sheet

Distributor : Duda Energy LLC  
1112 Brooks St.  
Decatur, AL 35601

Telephone : 256.340.4866  
Telefax : 866.568.3412

##### 1.4 Emergency telephone number

Telephone 800.255.3924 Chemtel

#### 2. Hazards identification

##### 2.1 Classification of the substance or mixture

###### Classification (REGULATION (EC) No 1272/2008)

Eye irritation, Category 2 H319: Causes serious eye irritation.

###### Classification (67/548/EEC, 1999/45/EC)

Irritant R36: Irritating to eyes.

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### 2.2 Label elements

#### Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :



Signal word : Warning

Hazard statements : H319 Causes serious eye irritation.

Precautionary statements : **Prevention:**  
P264 Wash skin thoroughly after handling.  
P280 Wear protective gloves/ eye protection/ face protection.  
**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.

### 2.3 Other hazards

## 3. Composition/information on ingredients

### 3.1 Substances

Substance name	CAS-No.	Concentration [%]
Citric acid anhydrous	77-92-9	100

### 3.2 Mixtures

## 4. First aid measures

### 4.1 Description of first aid measures

General advice : Get medical advice/ attention if you feel unwell.  
Show this safety data sheet to the doctor in attendance.

If inhaled : If breathed in, move person into fresh air.

In case of skin contact : Immediately flush skin with large amounts of water.

In case of eye contact : Remove contact lenses.  
Rinse immediately with plenty of water, also under the eyelids.

If swallowed : Drink plenty of water.  
If swallowed, DO NOT induce vomiting.

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

Symptoms : No information available.

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

Treatment : No information available.

### 5. Firefighting measures

#### 5.1 Extinguishing media

Suitable extinguishing media : Water spray  
Dry powder  
Foam  
Carbon dioxide (CO<sub>2</sub>)

#### 5.2 Special hazards arising from the substance or mixture

Specific hazards during fire-fighting : Do not use a solid water stream as it may scatter and spread fire.  
Hazardous decomposition products formed under fire conditions.  
Exposure to decomposition products may be a hazard to health.

#### 5.3 Advice for firefighters

Special protective equipment for firefighters : Wear self contained breathing apparatus for fire fighting if necessary.  
Use personal protective equipment.

Further information : Standard procedure for chemical fires.  
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.  
In the event of fire and/or explosion do not breathe fumes.

### 6. Accidental release measures

#### 6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Avoid dust formation.  
Avoid breathing dust.  
Ensure adequate ventilation, especially in confined areas.

#### 6.2 Environmental precautions

Environmental precautions : Prevent further leakage or spillage if safe to do so.  
No special environmental precautions required.

#### 6.3 Methods and materials for containment and cleaning up

Methods for cleaning up : Use mechanical handling equipment.  
Keep in suitable, closed containers for disposal.  
Clean contaminated surface thoroughly.

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#### 6.4 Reference to other sections

No conditions to be specially mentioned.

#### 7. Handling and storage

##### 7.1 Precautions for safe handling

- Advice on safe handling : Avoid creating dust.  
Do not breathe dust.  
Avoid contact with skin and eyes.
- Advice on protection against fire and explosion : Normal measures for preventive fire protection.
- Dust explosion class : St1

##### 7.2 Conditions for safe storage, including any incompatibilities

- Requirements for storage areas and containers : Keep in an area equipped with acid resistant flooring.  
Keep container tightly closed in a dry and well-ventilated place.
- Further information on storage conditions : Do not store at temperatures above 30 °C / 86 °F.
- Advice on common storage : Incompatible with strong bases and oxidizing agents.
- Other data : No decomposition if stored and applied as directed.

##### 7.3 Specific end uses

#### 8. Exposure controls/personal protection

##### 8.1 Control parameters

Contains no substances with occupational exposure limit values.

- PNEC : Water  
Value: 440 mg/l
- PNEC : Fresh water sediment  
Value: 34,6 mg/kg
- PNEC : Marine sediment  
Value: 3,46 mg/kg
- PNEC : Soil  
Value: 33,1 mg/kg

##### 8.2 Exposure controls

###### Engineering measures

Provide adequate ventilation.

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#### Personal protective equipment

- Respiratory protection : In the case of dust or aerosol formation use respirator with an approved filter.  
Half mask with a particle filter P2 (EN 143).
- Hand protection : Choose gloves to protect hands against chemicals depending on the concentration and quantity of the hazardous substance and specific to place of work.  
For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer.
- Eye protection : Safety glasses
- Skin and body protection : Choose body protection according to the amount and concentration of the dangerous substance at the work place.
- Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.  
General industrial hygiene practice.  
Do not breathe dust.  
Avoid contact with skin, eyes and clothing.

#### Environmental exposure controls

- General advice : Prevent further leakage or spillage if safe to do so.  
No special environmental precautions required.

## 9. Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

- Appearance : crystalline
- Colour : white
- Odour : odourless
- Flash point : not applicable
- Flammability (solid, gas) : does not ignite
- Oxidizing properties : No oxidising effect.
- Molecular Weight : 192,13 g/mol
- pH : 1,8  
at 5 %  
25 °C
- Melting point/range : ca. 153 °C
- Density : 1,665 g/cm<sup>3</sup>  
at 20 °C

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Water solubility : ca. 800 g/l  
at 20 °C

Partition coefficient: n-  
octanol/water : log Pow: -1,72  
log Pow: -1,8 - -0,2  
Calculation

#### 9.2 Other information

### 10. Stability and reactivity

#### 10.1 Reactivity

No decomposition if stored and applied as directed.

#### 10.2 Chemical stability

Stable under normal conditions.

#### 10.3 Possibility of hazardous reactions

Hazardous reactions : None known.

#### 10.4 Conditions to avoid

Conditions to avoid : Avoid dust formation.

#### 10.5 Incompatible materials

Materials to avoid : Strong bases  
Oxidizing agents

#### 10.6 Hazardous decomposition products

Hazardous decomposition products : Build-up of dangerous/toxic fumes possible in cases of fire/high temperature.

### 11. Toxicological information

#### 11.1 Information on toxicological effects

##### Acute toxicity

Acute oral toxicity  
Citric acid anhydrous : LD50 Oral: 5.400 mg/kg  
Species: mouse  
Method: OECD Test Guideline 401

LD50 Oral: 11.700 mg/kg  
Species: rat  
Method: OECD Test Guideline 401

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Acute dermal toxicity  
Citric acid anhydrous : LD50 Dermal: > 2.000 mg/kg  
Species: rat

Acute toxicity (other routes of administration)  
Citric acid anhydrous : LD50: 725 mg/kg  
Application Route: i.p.  
Species: rat

LD50: 940 mg/kg  
Application Route: i.p.  
Species: mouse

#### Skin corrosion/irritation

Skin irritation  
Citric acid anhydrous : Species: rabbit  
Result: No skin irritation  
May cause skin irritation in susceptible persons.

#### Serious eye damage/eye irritation

Eye irritation  
Citric acid anhydrous : Species: rabbit  
Result: Irritating to eyes.

#### Respiratory or skin sensitization

Sensitisation  
Citric acid anhydrous : Maximisation Test  
Species: guinea pig  
Result: Does not cause skin sensitization.  
Method: OECD Test Guideline 406

#### Germ cell mutagenicity

Assessment  
Citric acid anhydrous : In vivo tests did not show mutagenic effects

#### Carcinogenicity

Assessment  
Citric acid anhydrous : Did not show carcinogenic or teratogenic effects in animal experiments.

#### Reproductive toxicity

Assessment  
Citric acid anhydrous : No toxicity to reproduction

#### Target Organ Systemic Toxicant - Repeated exposure

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#### 12. Ecological information

##### 12.1 Toxicity

Toxicity to fish  
Citric acid anhydrous : LC50: 440 mg/l  
Exposure time: 48 h  
Species: *Leuciscus idus* (Golden orfe)  
static test  
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates.  
Citric acid anhydrous : LC50: 1.535 mg/l  
Exposure time: 24 h  
Species: *Daphnia magna* (Water flea)  
static test

Toxicity to algae  
Citric acid anhydrous : 425 mg/l  
Exposure time: 168 h  
Species: *Scenedesmus quadricauda* (Green algae)  
static test

Toxicity to bacteria  
Citric acid anhydrous : > 10.000 mg/l  
Exposure time: 16 h  
Species: *Pseudomonas putida*

##### 12.2 Persistence and degradability

Biodegradability  
Citric acid anhydrous : 97 %  
Testing period: 28 d  
Method: OECD Test Guideline 301B  
Readily biodegradable.

100 %  
Testing period: 19 d  
Method: OECD Test Guideline 301E  
Readily biodegradable.

Biochemical Oxygen Demand (BOD)  
Citric acid anhydrous : 526 mg/g

Chemical Oxygen Demand (COD)  
Citric acid anhydrous : 728 mg/g



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#### 12.3 Bioaccumulative potential

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

#### 12.4 Mobility in soil

#### 12.5 Results of PBT and vPvB assessment

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

#### 12.6 Other adverse effects

### 13. Disposal considerations

#### 13.1 Waste treatment methods

Product : Where possible recycling is preferred to disposal or incineration. Can be landfilled or incinerated, when in compliance with local regulations. Waste codes should be assigned by the user based on the application for which the product was used. According to the European Waste Catalogue, Waste Codes are not product specific, but application specific.

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

### 14. Transport information

**ADR**  
Not dangerous goods

**DOT**  
Not a Hazardous Material

**TDG**  
Not dangerous goods

**IATA**  
Not dangerous goods

**IMDG**  
Not dangerous goods

**RID**  
Not dangerous goods

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### 15. Regulatory information

#### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Major Accident Hazard Leg- : 96/82/EC      Update: 2003  
islation                                Directive 96/82/EC does not apply

##### Notification status

CERCLA                                : Not considered hazardous  
SARA Title III                        : Not considered hazardous  
WHMIS                                 : Class E  
TSCA                                  : On TSCA Inventory  
EINECS                                : On the inventory, or in compliance with the inventory  
AICS                                  : On the inventory, or in compliance with the inventory  
DSL                                    : All components of this product are on the Canadian DSL list.  
ENCS                                 : 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

#### 15.2 Chemical Safety Assessment

### 16. Other information

HMIS\* Rating Health = 1, Fire = 0, Reactivity = 0  
0=minimal, 1=slight, 2=moderate, 3=serious, 4=severe  
\*Hazardous Materials Identification System of the National Paint and Coating Association.

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