**SECTION 1: Identification**

1.1. Identification

<table>
<thead>
<tr>
<th>Product form</th>
<th>Substance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substance name</td>
<td>Citric Acid</td>
</tr>
<tr>
<td>CAS-No.</td>
<td>77-92-9</td>
</tr>
<tr>
<td>Formula</td>
<td>C₆H₈O₇</td>
</tr>
<tr>
<td>Synonyms</td>
<td>2-Hydroxy-1,2,3-propanetricarboxylic acid</td>
</tr>
</tbody>
</table>

1.2. Recommended use and restrictions on use

Use of the substance/mixture: Food industry: additive
Pharmaceutical product: raw material
Chemical intermediate
Laboratory chemical

1.3. Supplier

<table>
<thead>
<tr>
<th>Atlanta Branch Office</th>
<th>Ocoee Branch Office</th>
<th>Spartanburg Branch Office</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whitaker Oil Company</td>
<td>Whitaker Oil Company</td>
<td>Whitaker Chemicals LLC</td>
</tr>
<tr>
<td>1557 Marietta Road NW</td>
<td>280 Enterprise Street</td>
<td>405 John Dodd Road</td>
</tr>
<tr>
<td>Atlanta, GA 30318</td>
<td>Ocoee, FL 34761</td>
<td>Spartanburg, SC 29303</td>
</tr>
<tr>
<td>404-355-8220 (t)</td>
<td>407-656.0088 (t)</td>
<td>864-578-6968 (t)</td>
</tr>
<tr>
<td>404-355-2436 (f)</td>
<td>407-877-8335 (f)</td>
<td>864-578-6884 (f)</td>
</tr>
</tbody>
</table>

WEBSITE: www.whitakeroil.com  EMAIL: SDS@whitakeroil.com

1.4. Emergency telephone number

Emergency number: CHEMTREC 800-424-9300

**SECTION 2: Hazard(s) identification**

2.1. Classification of the substance or mixture

GHS-US classification

| Serious eye damage/eye irritation Category 2A | H319 | Causes serious eye irritation |

Full text of H statements: see section 16

2.2. GHS Label elements, including precautionary statements

GHS-US labeling

| Hazard pictograms (GHS-US) | ! |

Signal word (GHS-US): Warning

Hazard statements (GHS-US): H319 - Causes serious eye irritation

Precautionary statements (GHS-US): P264 - Wash Skin thoroughly after handling
P280 - Wear eye protection
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P337+P313 - If eye irritation persists: Get medical advice/attention

2.3. Other hazards which do not result in classification

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

**SECTION 3: Composition/Information on ingredients**

3.1. Substances

| Substance type | Mono-constituent |
Citric Acid
Safety Data Sheet

Full text of hazard classes and H-statements: see section 16

3.2. Mixtures
Not applicable

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general: Get medical advice/attention if you feel unwell. Show this safety data sheet to the doctor in attendance.

First-aid measures after inhalation: Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.

First-aid measures after skin contact: Rinse with water. Soap may be used. Do not apply (chemical) neutralizing agents. Take victim to a doctor if irritation persists.

First-aid measures after eye contact: Rinse immediately with plenty of water. Remove contact lenses, if present and easy to do. Continue rinsing. Do not apply neutralizing agents. Take victim to an ophthalmologist if irritation persists.

First-aid measures after ingestion: Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Rinse mouth with water. Seek medical attention if symptoms appear.

4.2. Most important symptoms and effects (acute and delayed)

Symptoms: No information available

4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media:
- Water spray
- Dry powder
- Foam
- Carbon dioxide (CO2)

Unsuitable extinguishing media:
- Quick-acting BC powder extinguisher
- Quick-acting CO2 extinguisher

5.2. Specific hazards arising from the chemical

Fire hazard: 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. Special protective equipment and precautions for fire-fighters

Precautionary measures fire: Exposure to fire/heat: keep upwind. Exposure to fire/heat: have neighborhood close doors and windows.

Firefighting instructions: Cool tanks/drums with water spray/remove them into safety.


SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel


Emergency procedures: Mark the danger area. Prevent dust cloud formation, e.g. by wetting. No naked flames. Wash contaminated clothes.


6.1.2. For emergency responders

Protective equipment: Do not attempt to take action without suitable protective equipment. For further information refer to section 8: “Exposure controls/personal protection”.

05/21/2018
EN (English US)
6.2. Environmental precautions
Avoid release to the environment.

6.3. Methods and material for containment and cleaning up
For containment: Contain released product, pump into suitable containers. Plug the leak, cut off the supply. Knock down/dilute dust cloud with water spray. Powdered form: no compressed air for pumping over spills.

Methods for cleaning up: Prevent dust cloud formation. Scoop solid spill into closing containers. Powdered: do not use compressed air for pumping over spills. Clean contaminated surfaces with an excess of water. Wash clothing and equipment after handling.

Other information: Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections
For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Hygiene measures: Observe normal hygiene standards. Keep container tightly closed.

7.2. Conditions for safe storage, including any incompatibilities
Storage conditions: Keep cool. Keep in an area equipped with acid resistant flooring. Keep container tightly closed in a dry and well-ventilated place.

Storage temperature: 5 - 30 °C

Heat-ignition: KEEP SUBSTANCE AWAY FROM: heat sources. ignition sources.

Information on mixed storage: KEEP SUBSTANCE AWAY FROM: oxidizing agents. reducing agents. (strong) bases. water/moisture.

Storage area: Store in a dry area. Keep container in a well-ventilated place. Store at ambient temperature. Keep only in the original container. Meet the legal requirements.

Special rules on packaging: SPECIAL REQUIREMENTS: closing. watertight. dry. clean. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.


SECTION 8: Exposure controls/personal protection

8.1. Control parameters
No additional information available

8.2. Appropriate engineering controls
Appropriate engineering controls: Ensure good ventilation of the work station. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

Environmental exposure controls: Avoid release to the environment.

8.3. Individual protection measures/Personal protective equipment

Materials for protective clothing:
GIVE EXCELLENT RESISTANCE: butyl rubber. natural rubber. neoprene. PVC. nitrile rubber. viton.
GIVE GOOD RESISTANCE: polyethylene.
GIVE POOR RESISTANCE: PVA

Hand protection:
Wear protective gloves

Eye protection:
Chemical goggles or safety glasses
Citric Acid
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according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Skin and body protection:
Protective clothing

Respiratory protection:
Dust production: dust mask with filter type P1

SECTION 9: Physical and chemical properties
9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Solid</td>
</tr>
<tr>
<td>Color</td>
<td>Colorless to white</td>
</tr>
<tr>
<td>Odor</td>
<td>Odorless</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>1.8 (5 %, 25 °C)</td>
</tr>
<tr>
<td>Melting point</td>
<td>153 °C</td>
</tr>
<tr>
<td>Freezing point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Boiling point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Relative evaporation rate (butyl acetate=1)</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Non flammable</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>&lt; 0.1 hPa (20 °C)</td>
</tr>
<tr>
<td>Relative vapor density at 20 °C</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Relative density</td>
<td>1.665 (20 °C)</td>
</tr>
<tr>
<td>Specific gravity / density</td>
<td>1670 kg/m³ (20 °C)</td>
</tr>
<tr>
<td>Molecular mass</td>
<td>192.13 g/mol</td>
</tr>
<tr>
<td>Solubility</td>
<td>Soluble in water.</td>
</tr>
<tr>
<td>Log Pow</td>
<td>-1.8 - -1.55 (Experimental value)</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>1010 °C</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>175 °C</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>3.892 mm²/s</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
<td>6.5 mPa.s (25 °C)</td>
</tr>
<tr>
<td>Explosion limits</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>No data available</td>
</tr>
</tbody>
</table>

9.2. Other information

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOC content</td>
<td>0 %</td>
</tr>
<tr>
<td>Other properties</td>
<td>Translucent. Hygroscopic. Substance has acid reaction.</td>
</tr>
</tbody>
</table>

SECTION 10: Stability and reactivity
10.1. Reactivity
No decomposition if stored and applied as directed

10.2. Chemical stability
Hygroscopic.

10.3. Possibility of hazardous reactions
No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid
Avoid dust formation

10.5. Incompatible materials
Strong bases. Oxidizing agents.

10.6. Hazardous decomposition products
Build-up of dangerous/toxic fumes possible in cases of fire/high temperature.
SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral): Not classified
Acute toxicity (dermal): Not classified
Acute toxicity (inhalation): Not classified

**Citric Acid (77-92-9)**

<table>
<thead>
<tr>
<th>LD50 dermal rat</th>
<th>&gt; 2000 mg/kg body weight (OECD 402: Acute Dermal Toxicity, 24 h, Rat, Male/female, Experimental value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATE US (oral)</td>
<td>5400 mg/kg body weight</td>
</tr>
</tbody>
</table>

Skin corrosion/irritation: Not classified

Serious eye damage/irritation: Causes serious eye irritation.

Respiratory or skin sensitization: Not classified

Germ cell mutagenicity: Not classified

Reproductive toxicity: Not classified

Specific target organ toxicity – single exposure: Not classified

Specific target organ toxicity – repeated exposure: Not classified

Aspiration hazard: Not classified

Viscosity, kinematic: 3.892 mm²/s

Potential Adverse human health effects and symptoms: Practically non-toxic if swallowed (LD50 oral 2000/5000 mg/kg). Slightly irritating to skin. Slightly irritating to respiratory organs. Causes serious eye irritation.


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

Symptoms/effects after eye contact: Irritation of the eye tissue.


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

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general: Not classified as dangerous for the environment according to the criteria of Regulation (EC) No 1272/2008.


**Citric Acid (77-92-9)**

| LC50 fish 1 | 440 - 760 mg/l (Equivalent or similar to OECD 203, 48 h, Leuciscus idus, Static system, Fresh water, Experimental value) |

12.2. Persistence and degradability

**Citric Acid (77-92-9)**

<table>
<thead>
<tr>
<th>Persistence and degradability</th>
<th>Biodegradable in the soil. Readily biodegradable in water.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biochemical oxygen demand (BOD)</td>
<td>0.42 g O₂/g substance</td>
</tr>
<tr>
<td>Chemical oxygen demand (COD)</td>
<td>0.728 g O₂/g substance</td>
</tr>
<tr>
<td>ThOD</td>
<td>0.686 g O₂/g substance</td>
</tr>
<tr>
<td>BOD (% of ThOD)</td>
<td>0.89 (20 day(s), Literature study)</td>
</tr>
</tbody>
</table>

12.3. Bioaccumulative potential

**Citric Acid (77-92-9)**

<table>
<thead>
<tr>
<th>BCF other aquatic organisms 1</th>
<th>3.2 (Other, Calculated value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Pow</td>
<td>-1.8 - -1.55 (Experimental value)</td>
</tr>
</tbody>
</table>
Citric Acid
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according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

<table>
<thead>
<tr>
<th>Citric Acid (77-92-9)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bioaccumulative potential</td>
<td>Not bioaccumulative.</td>
</tr>
</tbody>
</table>

12.4. Mobility in soil

<table>
<thead>
<tr>
<th>Citric Acid (77-92-9)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecology - soil</td>
<td>No (test)data on mobility of the substance available.</td>
</tr>
</tbody>
</table>

12.5. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste treatment methods: Dispose of contents/container in accordance with licensed collector's sorting instructions.

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

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Not regulated

Transportation of Dangerous Goods

Not applicable

Transport by sea

Not applicable

Air transport

Not applicable

SECTION 15: Regulatory information

15.1. US Federal regulations

<table>
<thead>
<tr>
<th>Citric Acid (77-92-9)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Listed on the United States TSCA (Toxic Substances Control Act) inventory</td>
<td></td>
</tr>
</tbody>
</table>

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

15.2. International regulations

CANADA

<table>
<thead>
<tr>
<th>Citric Acid (77-92-9)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Listed on the Canadian DSL (Domestic Substances List)</td>
<td></td>
</tr>
</tbody>
</table>

EU-Regulations

No additional information available
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15.3. US State regulations
California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

SECTION 16: Other information

Full text of H-phrases:

<table>
<thead>
<tr>
<th>H319</th>
<th>Causes serious eye irritation</th>
</tr>
</thead>
</table>

NFPA health hazard: 1 - Materials that, under emergency conditions, can cause significant irritation.

NFPA fire hazard: 0 - Materials that will not burn under typical dire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand.

NFPA reactivity: 0 - Material that in themselves are normally stable, even under fire conditions.

SDS US (GHS HazCom 2012)

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