

SECTION 1: Identification

1.1. Identification

Product form	: Substance
Substance name	: Citroflex™ 2
Chemical name	: Triethyl citrate
IUPAC name	: 1,2,3-triethyl 2-hydroxypropane-1,2,3-tricarboxylate
CAS-No.	: 77-93-0
Formula	: C12H20O7
Synonyms	: TEC

1.2. Recommended use and restrictions on use

Use of the substance/mixture	: Formulation into mixture Flavouring ingredient Perfumes, Fragrances
Recommended use	: Cosmetics, personal care products, Food/feedstuff additives, Perfumes, Fragrances, Pharmaceuticals, Plasticizer

1.3. Supplier

Vertellus LLC
201 North Illinois Street, Suite 1800
Indianapolis, Indiana 46204, USA
T: +1-317-247-8141
SDS@Vertellus.com

1.4. Emergency telephone number

Emergency number	: Vertellus: +1-336-292-1781 CHEMTREC (USA): +1-800-424-9300 CHEMTREC (International): +1-703-527-3887 US National Poison Help: +1-800-222-1222
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SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS US classification

Not classified

2.2. GHS Label elements, including precautionary statements

GHS US labeling

No labeling applicable

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

Name	Product identifier	%	GHS US classification
Citroflex™ 2	(CAS-No.) 77-93-0	100	Not classified

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 after inhalation	: Remove person to fresh air and keep comfortable for breathing. If experiencing respiratory symptoms: Call a poison center or a doctor.
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First-aid measures after skin contact	: Rinse skin with water/shower. If skin irritation occurs: Get medical advice/attention.
First-aid measures after eye contact	: Immediately rinse with water for a prolonged period while holding the eyelids wide open. If eye irritation persists: Get medical advice/attention.
First-aid measures after ingestion	: Rinse mouth out with water. Do NOT induce vomiting. Get medical advice/attention.

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

Chronic symptoms	: No chronic health hazards are likely for this material.
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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. Foam. Carbon dioxide (CO ₂). Dry chemical.
Unsuitable extinguishing media	: Do not use a water jet since it may cause the fire to spread.

5.2. Specific hazards arising from the chemical

Fire hazard	: Not flammable.
Explosion hazard	: Product is not explosive.
Hazardous decomposition products in case of fire	: Carbon dioxide. Carbon monoxide.

5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions	: Fight fire with normal precautions from a reasonable distance.
Protection during firefighting	: Wear recommended personal protective equipment. Complete protective clothing. Self-contained breathing apparatus.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures	: Ventilate spillage area. Do not breathe vapor. Do not get in eyes, on skin, or on clothing.
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6.1.1. For non-emergency personnel

Emergency procedures	: Evacuate unnecessary personnel.
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6.1.2. For emergency responders

Emergency procedures	: Do not attempt to take action without suitable protective equipment.
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6.2. Environmental precautions

Do not allow product to spread into the environment. Prevent entry to sewers and public waters.

6.3. Methods and material for containment and cleaning up

For containment	: Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.
Methods for cleaning up	: Absorb spilled material with sand or earth. Shovel into suitable and closed container for disposal. Wash contaminated area with large amounts of water.
Other information	: Collect all waste in suitable and labeled containers and dispose according to local legislation.

6.4. Reference to other sections

For further information refer to section 8: "Exposure controls/personal protection". For waste disposal after cleaning, see section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	: Wear personal protective equipment. Avoid any direct contact with the product.
Hygiene measures	: Do not eat, drink or smoke when using this product. Always wash hands after handling the product. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions	: Store in a dry place. Store in a closed container. Store in a well-ventilated place.
Incompatible products	: Strong acids. Strong bases. Strong oxidizers.
Incompatible materials	: None known.

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SECTION 8: Exposure controls/personal protection

8.1. Control parameters

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No additional information available

8.2. Appropriate engineering controls

Appropriate engineering controls : Provide local exhaust or general room ventilation. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

8.3. Individual protection measures/Personal protective equipment

Hand protection:

Chemical resistant gloves (according to European standard EN 374 or equivalent). Neoprene protective gloves. nitrile rubber gloves. Protective gloves made of PVC

Eye protection:

Chemical goggles or safety glasses

Skin and body protection:

Long sleeved protective clothing. Chemical resistant safety shoes

Respiratory protection:

In case of inadequate ventilation wear respiratory protection.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Appearance	: Clear, oily liquid.
Color	: Colorless
Odor	: Very slight
Odor threshold	: No data available
pH	: No data available
Melting point	: No data available
Freezing point	: -55 °C
Boiling point	: 294 °C
Flash point	: 155 °C (Open cup)
Relative evaporation rate (butyl acetate=1)	: < 1
Flammability (solid, gas)	: Not applicable.
Vapor pressure	: 0.000252 kPa (25°C)
Relative vapor density at 20 °C	: 9.7
Relative density	: 1.14
Specific gravity / density	: 1.137 g/ml (20°C)
Molecular mass	: 276.28 g/mol
Solubility	: Water: 6.5 g/l [22°C]
Partition coefficient n-octanol/water (Log Pow)	: 1.17
Auto-ignition temperature	: 394 – 397 °C
Decomposition temperature	: No data available
Viscosity, kinematic	: ≈ 31 mm ² /s (calculated value)
Viscosity, dynamic	: 35.2 mPa·s (25°C)
Explosion limits	: No data available
Explosive properties	: Product is not explosive.
Oxidizing properties	: No.

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9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No dangerous reactions known.

10.2. Chemical stability

The product is stable at normal handling and storage conditions.

10.3. Possibility of hazardous reactions

Stable under normal conditions of use.

10.4. Conditions to avoid

Overheating. Open flame.

10.5. Incompatible materials

Strong acids. Strong bases. Strong oxidizers.

10.6. Hazardous decomposition products

Carbon dioxide. Carbon monoxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral)	: Based on available data, the classification criteria are not met
Acute toxicity (dermal)	: Based on available data, the classification criteria are not met
Acute toxicity (inhalation)	: Based on available data, the classification criteria are not met

Citroflex™ 2 (77-93-0)	
LD50 oral rat	5900 mg/kg
LD50 dermal rabbit	> 5000 mg/kg
LC50 Inhalation - Rat [ppm]	1300 ppm

Skin corrosion/irritation	: Not classified
Serious eye damage/irritation	: Not classified
Respiratory or skin sensitization	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
STOT-single exposure	: Not classified
STOT-repeated exposure	: Not classified
Aspiration hazard	: Not classified
Viscosity, kinematic	: ≈ 31 mm ² /s (calculated value)
Chronic symptoms	: No chronic health hazards are likely for this material.

SECTION 12: Ecological information

12.1. Toxicity

Citroflex™ 2 (77-93-0)	
LC50 fish 1	327 mg/l
EC50 Daphnia 1	7262 mg/l

12.2. Persistence and degradability

Citroflex™ 2 (77-93-0)	
Persistence and degradability	Readily biodegradable.

12.3. Bioaccumulative potential

Citroflex™ 2 (77-93-0)	
Partition coefficient n-octanol/water (Log Pow)	1.17
Bioaccumulative potential	No bioaccumulation.

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12.4. Mobility in soil

Citroflex™ 2 (77-93-0)

Mobility in soil	Low mobility (soil)
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12.5. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Disposal methods

- Waste treatment methods : Dispose in a safe manner in accordance with local/national regulations.
- Sewage disposal recommendations : Do not dispose of waste into sewer.
- Product/Packaging disposal recommendations : Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Not applicable

Transport by sea

Not regulated

Air transport

Not regulated

SECTION 15: Regulatory information

15.1. US Federal regulations

Citroflex™ 2 (77-93-0)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

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

Citroflex™ 2 (77-93-0)

Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

Citroflex™ 2 (77-93-0)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations

Citroflex™ 2 (77-93-0)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

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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

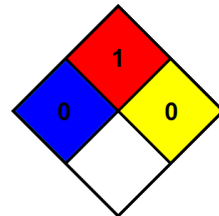
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Abbreviations and acronyms:

CAS-No.	Chemical Abstract Service number
ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
CLP	Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
DNEL	Derived-No Effect Level
EC-No.	European Community number
EC50	Median effective concentration
EN	European Standard
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Median lethal concentration
LD50	Median lethal dose
OECD	Organisation for Economic Co-operation and Development
PBT	Persistent Bioaccumulative Toxic
PNEC	Predicted No-Effect Concentration
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
SDS	Safety Data Sheet
vPvB	Very Persistent and Very Bioaccumulative
WGK	Water Hazard Class

NFPA health hazard : 0 - Materials that, under emergency conditions, would offer no hazard beyond that of ordinary combustible materials.
NFPA fire hazard : 1 - Materials that must be preheated before ignition can occur.
NFPA reactivity : 0 - Material that in themselves are normally stable, even under fire conditions.



Hazard Rating
Health : 0 Minimal Hazard - No significant risk to health
Flammability : 1 Slight Hazard - Materials that must be preheated before ignition will occur. Includes liquids, solids and semi solids having a flash point above 200 F. (Class IIIB)
Physical : 0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.

Indication of changes:

All chapters have been modified since the previous version (new software). Synonyms.

SDS US (GHS HazCom 2012)

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