

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1. Product identifier

Product form	: Substance
Substance name	: Citroflex™ 2
Chemical name	: Triethyl citrate
IUPAC name	: 1,2,3-triethyl 2-hydroxypropane-1,2,3-tricarboxylate
EC-No.	: 201-070-7
CAS-No.	: 77-93-0
REACH registration No	: 01-2119980975-17-0000
Formula	: C <sub>12</sub> H <sub>20</sub> O <sub>7</sub>

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

#### 1.2.1. Relevant identified uses

Use of the substance/mixture	: Formulation into mixture Flavouring ingredient Cosmetics, personal care products Perfumes, fragrances
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#### 1.2.2. Uses advised against

No additional information available

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

#### Supplier

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

#### Only Representative

Vertellus Specialties UK Ltd  
Seal Sands Road  
Seal Sands  
TS2 1UB Middlesbrough - UK  
REACH@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: Hazards identification

### 2.1. Classification of the substance or mixture

#### Classification according to Regulation (EC) No. 1272/2008 [CLP]

Not classified

#### Adverse physicochemical, human health and environmental effects

No additional information available

### 2.2. Label elements

#### Labelling according to Regulation (EC) No. 1272/2008 [CLP]

No labelling applicable

### 2.3. Other hazards

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII

This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

# Citroflex™ 2

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

### SECTION 3: Composition/information on ingredients

#### 3.1. Substances

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Citroflex™ 2	(CAS-No.) 77-93-0 (EC-No.) 201-070-7 (REACH-no) 01-2119980975-17-0000	100	Not classified

#### 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.
- 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, both acute and delayed

- Chronic symptoms : No chronic health hazards are likely for this material.

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

Treat symptomatically.

### SECTION 5: Firefighting measures

#### 5.1. Extinguishing media

- Suitable extinguishing media : Water spray. Foam. Carbon dioxide (CO<sub>2</sub>). Dry chemical.
- Unsuitable extinguishing media : Do not use a water jet since it may cause the fire to spread.

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

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

#### 5.3. Advice for firefighters

- 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 vapour. Do not get in eyes, on skin, or on clothing.

##### 6.1.1. For non-emergency personnel

- Emergency procedures : Evacuate unnecessary personnel.

# Citroflex™ 2

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

### 6.1.2. For emergency responders

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

### 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 labelled containers and dispose according to local legislation.

### 6.4. Reference to other sections

For further information refer to section 8: "Exposure controls/personal protection". Concerning disposal elimination 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.

### 7.3. Specific end use(s)

Cosmetics, personal care products. Perfumes, Fragrances.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

Citroflex™ 2 (77-93-0)	
<b>DNEL/DMEL (Workers)</b>	
Acute - systemic effects, inhalation	634.8 mg/m <sup>3</sup>
Long-term - systemic effects, dermal	20 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	211.58 mg/m <sup>3</sup>
<b>DNEL/DMEL (General population)</b>	
Acute - systemic effects, inhalation	208.8 mg/m <sup>3</sup>
Long-term - systemic effects, oral	20 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	69.57 mg/m <sup>3</sup>
Long-term - systemic effects, dermal	20 mg/kg bodyweight/day
<b>PNEC (Water)</b>	
PNEC aqua (freshwater)	0.024 mg/l
PNEC aqua (marine water)	0.0024 mg/l
PNEC aqua (intermittent, freshwater)	0.24 mg/l
PNEC aqua (intermittent, marine water)	0.24 mg/l

# Citroflex™ 2

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

### PNEC (STP)

PNEC sewage treatment plant	550 mg/l
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## 8.2. Exposure 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.

### 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. Use eye protection according to EN 166.

### 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.
Molecular mass	: 276.28 g/mol
Colour	: Colourless.
Odour	: Very slight.
Odour threshold	: No data available
pH	: No data available
Relative evaporation rate (butylacetate=1)	: < 1
Melting point	: No data available
Freezing point	: -55 °C
Boiling point	: 294 °C
Flash point	: 155 °C (Open cup)
Auto-ignition temperature	: 394 – 397 °C
Decomposition temperature	: No data available
Flammability (solid, gas)	: Not applicable
Vapour pressure	: 0.000252 kPa (25°C)
Relative vapour density at 20 °C	: 9.7
Relative density	: 1.14
Density	: 1.137 g/ml (20°C)
Solubility	: Water: 6.5 g/l [22°C]
Partition coefficient n-octanol/water (Log Pow)	: 1.17
Viscosity, kinematic	: ≈ 31 mm <sup>2</sup> /s (calculated value)
Viscosity, dynamic	: 35.2 mPa·s (25°C)
Explosive properties	: Product is not explosive.
Oxidising properties	: No.
Explosive limits	: No data available

### 9.2. Other information

No additional information available

# Citroflex™ 2

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

### 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 : Based on available data, the classification criteria are not met  
Serious eye damage/irritation : Based on available data, the classification criteria are not met  
Respiratory or skin sensitisation : Based on available data, the classification criteria are not met  
Germ cell mutagenicity : Based on available data, the classification criteria are not met  
Carcinogenicity : Based on available data, the classification criteria are not met

Reproductive toxicity : Based on available data, the classification criteria are not met

STOT-single exposure : Based on available data, the classification criteria are not met

STOT-repeated exposure : Based on available data, the classification criteria are not met

Aspiration hazard : Based on available data, the classification criteria are not met

#### Citroflex™ 2 (77-93-0)

Viscosity, kinematic	≈ 31.0 mm <sup>2</sup> /s (calculated value)
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# Citroflex™ 2

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

### SECTION 12: Ecological information

#### 12.1. Toxicity

Hazardous to the aquatic environment, short-term (acute) : Based on available data, the classification criteria are not met

Hazardous to the aquatic environment, long-term (chronic) : Based on available data, the classification criteria are not met

Citroflex™ 2 (77-93-0)	
LC50 fish 1	327 mg/l
EC50 Daphnia 1	7262 mg/l
EC50 72h algae (1)	> 100 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.

#### 12.4. Mobility in soil

Citroflex™ 2 (77-93-0)	
Mobility in soil	Low mobility (soil)

#### 12.5. Results of PBT and vPvB assessment

Citroflex™ 2 (77-93-0)	
This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII	
This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII	

#### 12.6. Other adverse effects

No additional information available

### SECTION 13: Disposal considerations

#### 13.1. Waste treatment 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

In accordance with ADR / RID / IMDG / IATA / ADN

ADR	IMDG	IATA	ADN	RID
14.1. UN number				
Not applicable	Not regulated.	Not regulated.	Not regulated.	Not regulated.

# Citroflex™ 2

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

14.2. UN proper shipping name				
Not applicable	Not regulated.	Not regulated.	Not regulated.	Not regulated.
14.3. Transport hazard class(es)				
Not applicable	Not regulated.	Not regulated.	Not regulated.	Not regulated.
14.4. Packing group				
Not applicable	Not regulated.	Not regulated.	Not regulated.	Not regulated.
14.5. Environmental hazards				
	Not regulated.	Not regulated.	Not regulated.	Not regulated.
No supplementary information available				

### 14.6. Special precautions for user

#### Overland transport

#### Transport by sea

Not regulated.

#### Air transport

Not regulated.

#### Inland waterway transport

Not regulated.

#### Rail transport

Not regulated.

### 14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable

## SECTION 15: Regulatory information

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

#### 15.1.1. EU-Regulations

No REACH Annex XVII restrictions

Citroflex™ 2 is not on the REACH Candidate List

Citroflex™ 2 is not on the REACH Annex XIV List

Citroflex™ 2 is not subject to Regulation (EU) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of hazardous chemicals.

Citroflex™ 2 is not subject to Regulation (EU) No 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants

#### 15.1.2. National regulations

Listed on the AICS (Australian Inventory of Chemical Substances)

Listed on the Canadian DSL (Domestic Substances List) inventory.

Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)

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

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 the United States TSCA (Toxic Substances Control Act) inventory

Listed on INSQ (Mexican National Inventory of Chemical Substances)

Listed on the TCSI (Taiwan Chemical Substance Inventory)

# Citroflex™ 2

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

### Germany

Water hazard class (WGK)

: WGK 1, Slightly hazardous to water (Classification according to AwSV; ID No. 5227)

## 15.2. Chemical safety assessment

A chemical safety assessment has been carried out by the registrant

## SECTION 16: Other information

### Indication of changes:

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

### 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

Data sources : Vertellus. REACH data.

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SDS EU (REACH Annex II)

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