

SAFETY DATA SHEET

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

1.1. Product identifier Citroflex* B-6
Synonyms: n-Butyryltri-n-hexyl Citrate, 1,2,3-Propanetricarboxylic acid, 2-(1-oxobutoxy)-, trihexyl ester
Chemical Abstracts Registry No: 82469-79-2
REACH Registration Number: 01-0000016100-90-0001

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

plasticizer

1.3. Details of the supplier of the safety data sheet

Vertellus LLC
201 North Illinois Street, Suite 1800,
Indianapolis, IN 46204
336-292-1781

e-mail Address: sds@vertellus.com

EU REACH Registrant:

Vertellus Specialties Belgium NV
Havenlaan 86-C- bus 204
1000 Brussels Belgium

1.4. Emergency telephone number **Vertellus:** 1-336-292-1781
CHEMTREC (USA): +1-800-424-9300 (collect calls accepted)
CHEMTREC (International): +1-703-527-3887 (collect calls accepted)
NRCC (China): +86 532 83889090

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture (According to Regulation (EC) No 1272/2008, 29 CFR 1910.1200 and the Globally Harmonized System)

Environmental Acute Category 1 (M Factor = 1)
Environmental Chronic Category 2

2.2. Label elements

Hazard Symbols (Pictogram):



Signal Word: Warning
Hazard Precautions: H400 - Very toxic to aquatic life.
H411 - Toxic to aquatic life with long lasting effects.
Prevention Precautionary Statements: P273 - Avoid release to the environment.
First Aid Precautionary Statements: P391 - Collect spillage.
Disposal Precautionary Statements: P501 - Dispose of contents/container in accordance with local/regional/national/international regulation for hazardous wastes.

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SECTION 3: Composition/information on ingredients

3.1. Substances or 3.2. Mixtures

Ingredient	CAS Number	Concentration (weight %)	EC Number	CLP Inventory/ Annex VI	EU CLP Classification (1272/2008)
n-Butyryltri-n-hexyl Citrate	82469-79-2	~ 100	413-890-4	Not listed.	Aquatic Acute 1; H400 Aquatic Chronic 1; H410

NOTE: See Section 8 for exposure limit data for these ingredients. See Section 15 for trade secret information (where applicable). See Section 16 for the full text of the R-phrases above.

SECTION 4: First aid measures

4.1. Description of first aid measures

Skin Contact:	Immediately flush with water for 15 minutes. Wash the contaminated skin with soap and water. If irritation develops, call a physician.
Eye Contact:	Immediately flush eyes with plenty of water. Get medical attention, if irritation persists.
Inhalation:	Remove from exposure. If not breathing, give artificial respiration and call a physician.
Ingestion:	If swallowed, contact physician or poison control center immediately.

4.2 Most important symptoms and effects, both acute and delayed

Acute:	Contact with citrate esters may cause mild irritation to skin, eyes and mucous membranes. This material is not expected to be toxic by inhalation, ingestion or dermal exposure. Although it has been observed that health effects related to this substance are minimal, as with any chemical, use appropriate precautions during handling.
Delayed Effects:	None known.

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

Note to Physician:	No specific indications. Treatment should be based on the judgment of the physician in response to the reactions of the patient.
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SECTION 5: Firefighting measures

5.1. Extinguishing media

Appropriate Extinguishing Media:	Water spray, water fog, alcohol-resistant foam, carbon dioxide, dry chemical.
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5.2. Special hazards arising from the substance or mixture

Hazardous Products of Combustion:	As with other organic materials, combustion will produce carbon monoxide and carbon dioxide.
Potential for Dust Explosion:	Not applicable.

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5.3. Advice for firefighters

Basic Fire Fighting Guidance: Wear self-contained breathing apparatus and full protective clothing (i.e., Bunker gear). Skin and eye contact should be avoided. Normal fire fighting procedures may be used.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Evacuation Procedures: Isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Special Instructions: See Section 8 for personal protective equipment recommendations. Remove all contaminated clothing to prevent further absorption. Decontaminate affected personnel using the first aid procedures in Section 4. Leather shoes that have been saturated must be discarded.

6.2. Environmental precautions

Prevent releases to soils, drains, sewers and waterways.

6.3. Methods and material for containment and cleaning up

Remove all ignition sources. Ventilate the area of spill or leak. Wear protective equipment during clean-up. For small spills, use suitable absorbent material and collect for later disposal. For large spills, the area may require diking to contain the spill. Material can then be collected (eg., suction) for later disposal. After collection of material, flush area with water. Dispose of the material in accordance with standard practice for disposal of potentially hazardous materials as required by applicable federal, state or local laws.

6.4. Reference to other sections

Refer to section 8 for information on selecting personal protective equipment. Refer to section 13 for information on spilled product, absorbent and clean up material disposal instructions.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Practices to Minimize Risk: Wear appropriate protective equipment when performing maintenance on contaminated equipment. Wash hands thoroughly before eating or smoking after handling this material. Do not eat, drink or smoke in work areas. Prevent contact with incompatible materials. Avoid spills and keep away from drains. Handle in a manner to prevent generation of aerosols, vapors or dust clouds.

7.2. Conditions for safe storage, including any incompatibilities

Storage Precautions & Recommendations: This product should be stored at ambient temperature in a dry, well-ventilated location. Keep container closed when not in use.

Dangerous Incompatibility Reactions: Incompatible with oxidizing materials.

Incompatibilities with Materials of Construction: None known

7.3. Specific end use(s)

If a chemical safety assessment has been completed an exposure scenario is attached as an annex to this Safety Data Sheet. Refer to this annex for the specific exposure scenario control parameters for uses identified in subsection 1.2.

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SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational Exposure Limit:	Not established
Air Monitoring Method:	No data available.

8.2. Exposure controls

Also see the annex to this SDS (if applicable) for specific exposure scenario controls.

Other Engineering Controls:	All operations should be conducted in well-ventilated conditions. Local exhaust ventilation should be provided.
Personal Protective Equipment:	Chemical goggles; face shields if necessary. Work uniforms or impervious clothing and boots. Neoprene, nitrile or PVC-coated gloves (Standard EN 374). Safety glasses or chemical goggles (Standard EN166). Chemical resistant clothing (Standard EN368). Where overexposures are a concern, use NIOSH-approved chemical cartridge respirator or supplied-air breathing equipment as necessary.
Respirator Caution:	Observe OSHA regulations for respirator use (29 CFR 1910.134). Air-purifying respirators must not be used in oxygen-deficient atmospheres.
Thermal Hazards:	Not applicable.
Environmental Exposure Controls:	The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance, State & Odor (ambient temperature):	Clear, oily liquid with mild, characteristic odor.		
Molecular Formula:	C ₂₈ H ₅₀ O ₈	Molecular Weight:	514.70
Vapor Pressure:	< 0.000001 Pa @ 20°C (estimated)	Evaporation Rate:	< 1 (Butyl Acetate = 1)
Specific Gravity or Density:	0.994 @ 21°C	Vapor Density (air = 1):	17.7
Boiling Point:	247°C @ 760 mm Hg	Freezing / Melting Point:	< -20°C
Solubility in Water:	0.61 mg/L @ 20°C	Octanol / Water Coefficient:	log Kow > 4
pH:	6 (as aqueous solution)	Odor Threshold:	No data available.
Viscosity:	No data available.	Autoignition Temperature:	384°C
Flash Point and Method:	453°F (234°C) Tag Open Cup	Flammable Limits:	No data available.
Flammability (solid, gas):	Not applicable.	Decomposition Temperature:	No data available.
Explosive Properties:	Not explosive.	Oxidizing Properties:	Not an oxidizer.

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SECTION 10: Stability and reactivity

<u>10.1. Reactivity</u>	Not classified as dangerously reactive.
<u>10.2. Chemical stability</u>	Stable
<u>10.3. Possibility of hazardous reactions</u>	Polymerization is not expected to occur
<u>10.4. Conditions to avoid</u>	Avoid static discharge and uncontrolled exposure to high temperatures.
<u>10.5. Incompatible materials</u>	Incompatible with oxidizing materials.
<u>10.6. Hazardous decomposition products</u>	As with other organic materials, combustion will produce carbon monoxide and carbon dioxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute Oral LD ₅₀ :	> 5000 mg/kg (rat) > 48,000 mg/kg (mouse)	n-Butyryltri-n-hexyl Citrate
Acute Dermal LD ₅₀ :	> 2000 mg/kg (rabbit)	n-Butyryltri-n-hexyl Citrate
Acute Inhalation LC ₅₀ :	No data available.	
Skin Irritation:	May cause slight irritation.	
Eye Irritation:	May cause slight irritation.	
Skin Sensitization:	Negative for sensitizing effects in guinea pig maximization test.	
Mutagenicity:	This material was negative for mutagenicity in Ames assay, both with and without metabolic activation. Cytogenetic assays with human peripheral lymphocytes and mouse lymphoma cells showed no increase in structural chromosome aberrations, both with and without metabolic activation.	
Reproductive / Developmental Toxicity:	No evidence of reproductive effects NOEL (fetotoxicity) = 500 mg/kg bw/day (intravenous)	
Carcinogenicity:	This material is not listed by IARC, NTP or OSHA as a carcinogen. No test data is available that indicates this material is a carcinogen.	
Target Organs:	None known	
Aspiration Hazard:	No data available.	
Primary Route(s) of Exposure:	Skin contact and absorption, eye contact, and inhalation. Ingestion is not likely to be a primary route of exposure.	
Most important symptoms and effects, both acute and delayed	Contact with citrate esters may cause mild irritation to skin, eyes and mucous membranes. This material is not expected to be toxic by inhalation, ingestion or dermal exposure. Although it has been observed that health effects related to this substance are minimal, as with any chemical, use appropriate precautions during handling. Delayed Effects: None known.	
Additive or Synergistic effects:	None known.	
Additional Toxicity Information:	NOAEL = 1000 mg/kg/day in 28-day oral rat study (OECD 407); no systemic toxicity was observed.	

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SECTION 12: Ecological information

<u>12.1. Toxicity</u>	LC ₅₀ (96h) Oncorhynchus mykiss (rainbow trout) = 120 mg/L NOEC Pimephales promelas (fathead minnow) >= 0.539 mg/L EC ₅₀ (48 h) Daphnia magna = 0.38 mg/L NOEC Daphnia magna = 0.416 mg/L EC ₅₀ (72 h) Selenastrum capricornutum (algae) > 1.04 mg/L	n-Butyryltri-n-hexyl Citrate
<u>12.2. Persistence and degradability</u>	Although Citroflex B-6 does ultimately biodegrade, a lag period of 20 to 34 days was observed in laboratory testing, resulting in not meeting the conditions of "ready biodegradable". However, significant abiotic degradation occurs (hydrolysis vs pH) with the material over a 120 hour period (64%). Hydrolysis testing per OECD 111 is not possible with Citroflex B-6 due to low water solubility (0.6 mg/L).	
<u>12.3. Bioaccumulative potential</u>	Bioaccumulation of CITROFLEX* B-6 is unlikely through direct and indirect exposure to the aquatic compartment due to its low water solubility, demonstrated inherent biodegradability, absence of adverse effects in a fish early life-stage toxicity test and observed rapid hydrolysis in mammalian in vivo and in vitro studies.	
<u>12.4. Mobility in soil</u>	No data available	
<u>12.5. Results of PBT and vPvB assessment</u>	This substance is not a PBT or vPvB.	

SECTION 13: Disposal considerations

<u>13.1. Waste treatment methods</u>	Non-Hazardous	
US EPA Waste Number:	Non-Hazardous	
Waste Classification: (per US regulations)	The waste may be classified as "special" or hazardous per State regulations.	
Waste Disposal:	NOTE: Generator is responsible for proper waste characterization. State hazardous waste regulations may differ substantially from federal regulations. Dispose of this material responsibly, and in accordance with standard practice for disposal of potentially hazardous materials as required by applicable international, national, regional, state or local laws, and environmental protection duty of care principles. Do NOT dump into any sewers, on the ground, or into any body of water. For disposal within the EC, the appropriate classification code according to the European Community List of Wastes should be used. Note that disposal regulations may also apply to empty containers and equipment rinsates.	

SECTION 14: Transport information

The following information applies to all shipping modes (DOT/IATA/ICAO/IMDG/ADR/RID/ADN), unless otherwise indicated:

14.1. UN number	Non-Hazardous	14.2. UN proper shipping name	Chemicals, n.o.s. (N-Butyryltri-n-Hexyl Citrate)
14.3. Transport hazard class(es)	Not applicable.	14.4. Packing group	Not applicable.
14.5. Environmental hazards	Marine Pollutant		
14.6. Special precautions for user	For transport OUTSIDE the United States the proper shipping name is: UN3082, Environmentally Hazardous substance, liquid, n.o.s., (n-butyryltri-n-hexyl citrate), 9, PG III (Marine Pollutant).		

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NA Emergency Guidebook Numbers: Not applicable. IMDG EMS: S-A; F-A

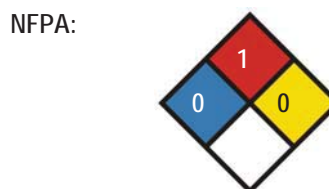
14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not applicable.

SECTION 15: Regulatory information

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

Chemical Inventory Lists:	Status:		
USA TSCA:	Listed	EINECS:	Listed (413-890-4)
Canada(DSL/NDSL):	Listed (NDSL)	Japan:	Not listed.
Korea:	Not listed.	Australia:	Listed
China:	Not listed.	Philippines:	Listed
Taiwan:	Not listed.	New Zealand:	Not listed.
German Water Hazard Classification:	WGK 2 (self-classification)		
SARA 313:	Not applicable.		
Reportable Quantities:	Not applicable.		

HMIS IV:	HEALTH	0
	FLAMMABILITY	1
	PHYSICAL HAZARD	0



15.2. Chemical safety assessment

Not applicable.

SECTION 16: Other information

Legend of Abbreviations:

ACGIH = American Conference on Governmental Industrial Hygienists.	LD = Lethal Dose.
CAS = Chemical Abstracts Service.	NFPA = National Fire Protection Association.
CFR = Code of Federal Regulations.	NIOSH = National Institute of Occupational Safety and Health.
DSL/NDSL = Domestic Substances List/Non-Domestic Substances List.	NTP = National Toxicology Program.
EC = European Community.	OSHA = Occupational Safety and Health Administration
EINECS = European Inventory of Existing Commercial Chemical Substances.	PEL = Permissible Exposure Limit.
ELINCS = European List of Notified Chemical Substances.	RQ = Reportable Quantity.
EU = European Union.	SARA = Superfund Amendments and Reauthorization Act of 1986.
GHS = Globally Harmonized System.	TLV = Threshold Limit Value.
LC = Lethal Concentration.	WHMIS = Workplace Hazardous Materials Information System.

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Important Note: Please note that the information contained herein is furnished without warranty of any kind. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. The information contained herein may change without prior notice. THIS SAFETY DATA SHEET SUPERSEDES ALL PREVIOUS EDITIONS.

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