

Safety Data Sheet

1. IDENTIFICATION

Product Name:	Tributyl Citrate
Other Names:	TBC
Recommended Use:	It is commonly used in cosmetics, food contact films, and articles of plastic, and it is a fastfusing plasticiser for technical applications.
Supplier:	Global Chemie ASCC Limited
Street Address:	88/123 Moo 2 Bangpoo Industrial Estate (North), Phraek Sa Mai, Mueang Samutprakan, Samutprakan 10280
Telephone:	+66 2324 6888
Fax:	+66 2324 6898-99
Emergency phone:	+66 2324 6888 ext.320

2. HAZARDS IDENTIFICATION

Health Hazard Classification

The substance is not classified according to the GHS.

Hazardous Categories

No data available.

Hazardous Statement

No data available.

GHS Pictograms

No data available.

Hazard Statements

Not applicable.

Other hazards : The substance is under assessment as endocrine- disrupting properties

Precautionary Statements

No data available.

Response

No data available.

Storage

No data available.

Disposal

P501: Disposal should be in accordance with applicable regional, national, and local laws and regulations. Local regulations may be more stringent than regional or national requirements and must be complied.

Signal Word No Signal Word

3. COMPOSITION: Information on Ingredients

Chemical Ingredient	CAS No.	UN No.	Proportion (%v/v)
Tributyl Citrate	77-94-1	-	> 99.0

Molecular Formular: $C_{18}H_{32}O_7$

Molecular Weight: 360.44 g/mol

PBT: The substance is not PBT.

vPvB: The substance is not vPvB.

SVHC: The substance is not in the SVHC list

4. FIRST AID MEASURES

For advice, contact Ramathibodi Poison Center (Phone: 1367) or a doctor.

Ingestion

Do not induce vomiting.

Eye Contact

Rinse opened eye for several minutes under running water. Check and remove contact lenses, if present and easy to do.

Skin Contact

Immediately wash with water and soap and rinse thoroughly.

Inhalation

If breathed in, move out of affected area and supply fresh fresh air.

First Aid facilities

Provide eye baths and safety showers.

Medical Attention

Treat symptomatically and supportively.

5. FIRE FIGHTING MEASURES

Shut off product that may 'fuel' a fire if safe to do so. Allow trained personnel to attend a fire in progress, providing firefighters with this Safety Data Sheet. Prevent extinguishing media from escaping to drains and waterways.

Suitable extinguishing media

Water spray or fog, Dry chemical powder and Carbon dioxide.

Unsuitable extinguishing media

Water with full jet.

Special hazards arising from the substance or mixture

Formation of toxic gases is possible during heating or in case of fire.

Hazards from combustion products

No data available.

Precautions for fire fighters and special protective equipment

Wear self-contained respiratory protective device. Use personal protective equipment.

Additional information

Cool endangered receptacles with water spray.

Collect contaminated firefighting water separately. It must not enter the sewage system.

Dispose of fire debris and contaminated firefighting water in accordance with official regulations.

6. ACCIDENTAL RELEASE MEASURES

Emergency Procedures

Prevent fluid from escaping to drains and waterways. Contain leaking packaging in a containment drum. Prevent vapours from building up in confined areas. Ensure that drain valves are closed at all times. Clean up and report spills immediately.

Methods and materials for containment

Protective Measures

- Observe all relevant local and international regulations.
- Avoid contact with spilled or released material. Immediately remove all contaminated clothing. For guidance on selection of personal protective equipment see chapter 8 this Material Safety Data Sheet. Shut off leaks, if possible, without personal risks. Remove all possible sources of ignition in the surrounding area. Prevent from spreading or entering drains, ditches, or rivers by using sand, earth, or other appropriate barriers.

• Take precautionary measures against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment.

Clean-Up Methods

- ♦ Small spillage (< 200 LT) : Transfer by mechanical means to a labelled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.
- ♦ large spillage (> 200 LT) : Transfer by mechanical means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.

7. HANDLING AND STORAGE

Precautions for safe handling

Avoid contact with skin, eyes, and clothing. Do not breathe vapours. Extinguish any naked flame. Remove ignition sources. Avoid sparks. Do not smoke. The vapour is heavier than air spreads along the ground and distant ignition is possible. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Do not use compressed air for filling, discharging, or handling operations. Handle and open container with care in well-ventilated area. Do not empty into drains.

Conditions for safe storage

Must be stored in a diked (bunded) well-ventilated area, away from sunlight, ignition sources and other sources of heat. Bulk storage tanks should be diked (bunded). Keep away from aerosols, flammables, oxidizing agents, corrosives. Storage Temperature: Ambient.

Incompatible materials

Strong oxidizing agents.

Recommended Materials

For containers, or container linings use mild steel, stainless steel.

Product Transfer

No data available.

8. EXPOSURE CONTROLS: PERSONAL PROTECTION

National Exposure Standards

Occupational Exposure Limits: No data available.

Engineering Controls

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapours below their respective threshold limit value.

Personal Protective Equipment

Respiratory Protection: Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.

Eye Protection: Chemical splash goggles (chemical monologues).

Skin/ Body Protection: Use protective clothing which is chemical resistant to this material. Safety shoes and boots should also be chemical resistant.

Hand Protection: Butyl rubber gloves, Nature rubber gloves, Neoprene rubber gloves, Nitrile rubber gloves.

9. PHYSICAL AND CHEMICAL PROPERTIES

Property	Unit of Measurement	Typical Value
Appearance	-	Colorless Liquid
Odour	-	No data available

Property	Unit of Measurement	Typical Value
pH	-	No data available
Boiling point	°C	309
Melting point	°C	-20
Flash point	°C	206.5
Flammability	-	Not flammable
Autoignition Temperature	°C	360
Decomposition Temperature	°C	No data available
Lower/Upper Flammability Limits	%V	No data available
Density @ 20°C	g/cm ³	1.04
Specific Gravity @ 25°C	-	No data available
Viscosity @ 20°C	cSt.s	26.9
Vapor pressure	kPa	0.076
Vapor density	kPa (Air = 1)	No data available
Evaporation Rate	(n-Butyl acetate = 1)	No data available
Water Solubility @ 20°C	g/L	0.103
Solubility in other solvents Partition coefficient	(n-octanol/water)	3.5
Coefficient of Thermal Expansion	per Deg °C	No data available
Particle Characteristic	-	No data available

The values listed are indicative of this product's physical and chemical properties. For a full product specification, please consult the Product Data Sheet.

10. STABILITY AND REACTIVITY

Chemical Stability

Stable under normal conditions.

Conditions to avoid

Keep away from heat and sources of ignition.

Hazardous decomposition products

No decomposition if used according to specifications.

No dangerous decomposition products known.

Hazardous reactions

Under normal conditions of storage and use, hazardous reactions will not occur.

Hazardous Polymerisation

No data available.

Materials to Avoid

No further relevant information available

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

♦ LD₅₀ Acute dermal toxicity : >2,000 mg/kg (rat)

Eye Contact

Endpoint: eye irritation

Type of information: migrated information: read across from supporting substance (structural analogue or surrogate)

Species: rabbit

Strain: New Zealand White

Conclusions: The test substance can be regarded as non-irritant according to the results of the study.

Skin Contact

Endpoint: skin irritation: in vivo

Type of information: migrated information: read-across from supporting substance (structural analogue or surrogate)

Species: rabbit

Strain: New Zealand White

Conclusions: The test substance can be regarded as non irritant according to the results of the study.

Respiratory Irritation

Endpoint: skin sensitisation

Type of information: migrated information: read across from supporting substance (structural analogue or surrogate)

Species: guinea pig

Strain: other: Pirbright white

Sex: male/female

Interpretation of results: not sensitising

Carcinogenicity

Endpoint: carcinogenicity: oral

Type of information: migrated information: read-across from supporting substance (structural analogue or surrogate)

Species: rat

Strain: not specified

Sex: male/female

Conclusions: There was no evidence of a carcinogenic potential of triethyl citrate in rats.

- Reproductive toxicity: Based on the available toxicity data for the substance and its structural analogues, adverse effects concerning toxicity to reproduction are not to be expected and therefore no further study is needed.
- Developmental toxicity

Endpoint: developmental toxicity

Type of information: migrated information: read across from supporting substance (structural analogue or surrogate)

Species: rat

Strain: not specified

Route of administration: oral: feed

Result : A Toxicological evaluation of Acetyltributylcitrate [Larionov AG & Cherkasova TE, 1977; cited in US EPA (2004) High Production Volume (HPV) Chemicals Challenge Program: Assessment of Data Availability and Test Plan for Acetyl Tributyl Citrate (ATBC) (CAS NR 77-90-7)] has been carried out as follows: Groups of rats were dosed with a milk solution of ATBC via diet at nominal doses of 50 and 250 mg/kg over 12 months. A cross-mating of the animals was performed. In the 9th month of the study, gonads were evaluated and the animals were evaluated for embryotoxic effects. The dosing caused no significant effects on male sexual cells, no embryotoxic effects and there also were no adverse effects on growth and foetal/litter development in the offspring. It can be assumed that the same applies to tributyl citrate (CAS 77-94-1) as it is a near analogue to the test substance acetyl tributyl citrate.

- STOT-single exposure No data available
- STOT-repeated exposure No data available

Additional toxicological information:

Toxicokinetics, metabolism and distribution

Endpoint: basic toxicokinetics in vitro / ex vivo

Type of information: experimental study

Conclusions: Interpretation of results (migrated information): no bioaccumulation potential based on study results

Tributyl citrate undergo rapid metabolism in both human serum and in rat liver homogenate.

- Repeated dose toxicity

Endpoint: sub-chronic toxicity: oral

Type of information: migrated information: read-across from supporting substance (structural analogue or surrogate)

Species: rat

Sex: male/female

Conclusions: Tributyl citrate did not induce deleterious effects at concentration of 5%, but the 10%-diet tended to depress the growth, an effect which may be due to frequent diarrhoea. Sections taken from the treated animals were indistinguishable from the controls.

- CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)
- Germ cell mutagenicity

Based on all pieces of weight of evidence it is clear that tributyl citrate is not mutagenic. Genetic toxicity in vitro: 1) ATEHC was negative with and without metabolic activation in a bacterial reverse mutation assay (Ames test) according to OECD 471 (GLP). [Read-across data from acetyltri-2-ethylhexylcitrate (CAS 144-15-0)] 2) ATCB was negative with and without metabolic activation in a mammalian cell gene mutation assay according to OECD 476 (GLP). [Read-across data from tributyl-O-acetylcitrate (CAS 77-90-7)] Genetic toxicity in vivo: 1) ATBC was tested in a chromosomal aberration study according to OECD 475 and found to be negative [Read across data from tributyl-O-acetylcitrate (CAS 77-90-7)]

12. ECOLOGICAL INFORMATION

Ecotoxicity

Acute Toxicity

♦ Daphnia magna	Low toxicity	EC50 > 66.89 mg/l (48h)
♦ Raphidocelis subcapitata (Algae & cyanobacteria)	Low toxicity	EC50 > 100.4 mg/l (72h)
♦ Fish	Low toxicity	EC50 = 6.80 mg/l (96h)

Persistence/ degradability

Biodegradation in water: screening tests

Within 28 days, a mean degradation of 74% (ThODNH₄) was determined for the test substance; the 10 day window criterion was not passed. Therefore, the test substance is considered to be readily, but failing the 10-day window.

Biodegradation in soil

The biodegradability of the test substance has been adequately characterised. In a test on biodegradation in soil according to EPA OPPTS 835.3300 Tributyl-O-acetylcitrate was found to be readily biodegradable.

Mobility

Endpoint: adsorption / desorption: screening

Type of information: calculation (if not (Q)SAR)

The Koc of the substance was calculated to be 769.9 L/kg using the MCI method of KOCWIN program (v2.00), whereby the traditional method reveals a value of 208.2 L/kg. In general, the MCI method is taken more seriously into account, due to the fact that it includes improved correction factors.

Bioaccumulation

Endpoint: bioaccumulation in aquatic species: fish

Type of information: calculation (if not (Q)SAR)

A Bioconcentration Factor (BCF) of 94.7 L/kg wet-wt was calculated for the test substance by taking the regression-based estimate (traditional method) into account. Using the Antroba's method, which is based on mechanistic first principles, an aquatic BCF of 6.54 L/kg wet-wt is the result. Both values have been calculated based on an experimental Log Pow of 3.5.

13. DISPOSAL CONSIDERATIONS**Disposal Methods****Material Disposal**

The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Container Disposal

Drain container thoroughly. After draining, vent in a safe place away from sparks and fire before handling the product or containers. Residues may cause an explosion hazard. Do not puncture, cut or weld uncleaned drums. Send to drum recovered or metal reclaimer.

Local Legislation

Disposal should be in accordance with applicable regional, national, and local laws and regulations. Local regulations may be more stringent than regional or national requirements and must be complied.

14. TRANSPORT INFORMATION

Road and Rail Transport		Marine Transport		Air Transport	
UN No.	Not Regulated	UN No.	Not Regulated	UN No.	Not Regulated
Class/Item	Not Regulated	Class/Item	Not Regulated	Class/Item	Not Regulated
Hazard Symbol	Not Regulated	Hazard Symbol	Not Regulated	Hazard Symbol	Not Regulated
Proper Shipping Name	Not Regulated	Proper Shipping Name	Not Regulated	Proper Shipping Name	Not Regulated
Packing Group	Not Regulated	Packing Group	Not Regulated	Packing Group	Not Regulated
		Marine Pollutant	Not Regulated		

Dangerous Goods Segregation

The substance is not classified according to the CLP regulation.

15. REGULATORY INFORMATION

EC Label Name	: Tributyl Citrate
EC Classification	: No data available
EINECS (EC)	: 201-070-2
EC Annex I Number	: No data available
MITI (Japan)	: No data available
Other	: None

Other regulations, limitations and prohibitive regulations

International inventories:

Australian Inventory of Industrial Chemicals (AIIC)-listed.

New Zealand - Inventory of Chemicals (NZIoC)-listed.

Philippine Inventory of Chemicals and Chemical Substances (PICCS)-listed.

Taiwan Chemical Substance Inventory (TCSI)-listed.

Turkish Chemical Inventory-listed.

Substances of very high concern (SVHC) according to REACH, Article 57. The substance is not listed as SVHC.

16. OTHER INFORMATION

National Fire Protection Association (USA)	: No data available
--	---------------------

SDS Distribution : The information contained herein is based on our current knowledge of the underlying data and is intended to describe the product for the purpose of health, safety and environmental requirements only. No warranty of guarantee is expressed or implied regarding the accuracy of these data or the results to be obtained from the use of the product.

Prepared By : Quality Control Department / Global Chemie ASCC Limited

Abbreviations:

ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

DNEL: Derived No-Effect Level (REACH)

PNEC: Predicted No-Effect Concentration (REACH)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

SVHC: Substances of Very High Concern

vPvB: very Persistent and very Bioaccumulative

References:

- Supplier Material Safety Data Sheets
- <http://hsis.ascc.gov.au/SearchHS.aspx> (October 18)
- REGULATION (EC) No. 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on classification, labelling and packaging of substances and mixtures, amending and repealing COMMISSION REGULATION (EU) 2020/878 of 18 June 2020 amending
- Annex II to Regulation (EC) No. 1907/2006 echa : <https://echa.europa.eu/registration-dossier/-/registered-dossier/5956/3/1/7>
- Toxplanet : <https://chemical-search.toxplanet.com//product-search/listexpert/ei-ftssearch/1c8c86b8-8e34-49a8-a023-4b2edb89eeba>

The information sourced for the preparation of this document was correct and complete at the time of writing to the best of the writer's knowledge. The document represents the commitment to the company's responsibilities surrounding the supply of this product, undertaken in good faith. This document should be taken as a safety guide for the product and its recommended uses but is in no way an absolute authority. Please consult the relevant legislation and regulations governing the use and storage of this type of product. No warranty and guarantee are expressed or implied regarding the accuracy of these data or the results to be obtained from the use of the product for further information, please contact Global Chemie ASCC Limited.