



# SAFETY DATA SHEET

## 1. Identification

|                                                        |                                                                           |                 |  |
|--------------------------------------------------------|---------------------------------------------------------------------------|-----------------|--|
| Product identifier                                     | Acetyltributyl Citrate                                                    |                 |  |
| Other means of identification                          |                                                                           |                 |  |
| Catalog number                                         | 1009901                                                                   |                 |  |
| CAS number                                             | 77-90-7                                                                   |                 |  |
| Chemical name                                          | 1,2,3-Propanetricarboxylic acid, 2-(acetyloxy)-, tributyl ester           |                 |  |
| Recommended use                                        | Specified quality tests and assay use only.                               |                 |  |
| Recommended restrictions                               | Not for use as a drug. Not for administration to humans or animals.       |                 |  |
| Manufacturer/Importer/Supplier/Distributor information |                                                                           |                 |  |
| Manufacturer                                           |                                                                           |                 |  |
| Company name                                           | U. S. Pharmacopeia                                                        |                 |  |
| Address                                                | 12601 Twinbrook Parkway<br>Rockville<br>MD<br>20852-1790<br>United States |                 |  |
| Telephone                                              | RS Technical Services                                                     | 301-816-8129    |  |
| Website                                                | www.usp.org                                                               |                 |  |
| E-mail                                                 | RSTECH@usp.org                                                            |                 |  |
| Emergency phone number                                 | CHEMTREC within US & Canada                                               | 1-800-424-9300  |  |
|                                                        | CHEMTREC outside US & Canada                                              | +1 703-527-3887 |  |

## 2. Hazard(s) identification

|                                           |                                                                                                                                                                                            |             |
|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Physical hazards                          | Not classified.                                                                                                                                                                            |             |
| Health hazards                            | Serious eye damage/eye irritation                                                                                                                                                          | Category 2B |
| Environmental hazards                     | Not classified.                                                                                                                                                                            |             |
| OSHA defined hazards                      | Not classified.                                                                                                                                                                            |             |
| Label elements                            |                                                                                                                                                                                            |             |
| Hazard symbol                             | None.                                                                                                                                                                                      |             |
| Signal word                               | Warning                                                                                                                                                                                    |             |
| Hazard statement                          | Causes eye irritation.                                                                                                                                                                     |             |
| Precautionary statement                   |                                                                                                                                                                                            |             |
| Prevention                                | Wash thoroughly after handling.                                                                                                                                                            |             |
| Response                                  | If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. |             |
| Storage                                   | Not available.                                                                                                                                                                             |             |
| Disposal                                  | Not available.                                                                                                                                                                             |             |
| Hazard(s) not otherwise classified (HNOC) | None known.                                                                                                                                                                                |             |
| Supplemental information                  | None.                                                                                                                                                                                      |             |

## 3. Composition/information on ingredients

| <b>Substance</b>       |                                 |                   |          |
|------------------------|---------------------------------|-------------------|----------|
| <b>Chemical name</b>   | <b>Common name and synonyms</b> | <b>CAS number</b> | <b>%</b> |
| Acetyltributyl Citrate |                                 | 77-90-7           | 100      |

## 4. First-aid measures

|                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Inhalation                                                             | Move to fresh air. Call a physician if symptoms develop or persist.                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Skin contact                                                           | Wash off with soap and water. Get medical attention if irritation develops and persists.                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Eye contact                                                            | Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.                                                                                                                                                                                                                                                                                                                                     |
| Ingestion                                                              | Rinse mouth. Get medical attention if symptoms occur.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Most important symptoms/effects, acute and delayed                     | Irritation of eyes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Indication of immediate medical attention and special treatment needed | Provide general supportive measures and treat symptomatically.                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| General information                                                    | Remove from exposure. Remove contaminated clothing. For treatment advice, seek guidance from an occupational health physician or other licensed health-care provider familiar with workplace chemical exposures. In the United States, the national poison control center phone number is 1-800-222-1222. If person is not breathing, give artificial respiration. If breathing is difficult, give oxygen if available. Persons developing serious hypersensitivity (anaphylactic) reactions must receive immediate medical attention. |

## 5. Fire-fighting measures

|                                                               |                                                                                                                                                                                        |
|---------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Suitable extinguishing media                                  | Water fog. Foam. Dry chemical powder. Carbon dioxide (CO <sub>2</sub> ).                                                                                                               |
| Unsuitable extinguishing media                                | Do not use water jet as an extinguisher, as this will spread the fire.                                                                                                                 |
| Specific hazards arising from the chemical                    | No unusual fire or explosion hazards noted.                                                                                                                                            |
| Special protective equipment and precautions for firefighters | Wear suitable protective equipment.                                                                                                                                                    |
| Fire fighting equipment/instructions                          | As with all fires, evacuate personnel to a safe area. Firefighters should use self-contained breathing equipment and protective clothing. Use water spray to cool unopened containers. |
| Specific methods                                              | Use standard firefighting procedures and consider the hazards of other involved materials.                                                                                             |
| General fire hazards                                          | No unusual fire or explosion hazards noted.                                                                                                                                            |

## 6. Accidental release measures

|                                                                     |                                                                                                                                                                                                                                                                                                  |
|---------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Personal precautions, protective equipment and emergency procedures | Keep unnecessary personnel away. Wear appropriate personal protective equipment. Avoid inhalation of vapors. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. For personal protection, see section 8 of the SDS. |
| Methods and materials for containment and cleaning up               | Absorb spillage with suitable absorbent material. Clean surface thoroughly to remove residual contamination. For waste disposal, see section 13 of the SDS.                                                                                                                                      |
| Environmental precautions                                           | Avoid discharge into drains, water courses or onto the ground.                                                                                                                                                                                                                                   |

## 7. Handling and storage

|                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Precautions for safe handling                                | As a general rule, when handling USP Reference Standards, avoid all contact and inhalation of dust, mists, and/or vapors associated with the material. Clean equipment and work surfaces with suitable detergent or solvent after use. After removing gloves, wash hands and other exposed skin thoroughly. Select and use containment devices and personal protective equipment based on a risk assessment of material potency and exposure potential. |
| Conditions for safe storage, including any incompatibilities | Store in tight container as defined in the USP-NF. This material should be handled and stored per label instructions to ensure product integrity.                                                                                                                                                                                                                                                                                                       |

## 8. Exposure controls/personal protection

|                                  |                                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Occupational exposure limits     | No exposure limits noted for ingredient(s).                                                                                                                                                                                                                                                                                                       |
| Biological limit values          | No biological exposure limits noted for the ingredient(s).                                                                                                                                                                                                                                                                                        |
| Appropriate engineering controls | For laboratory operations, use good technique and limit open handling. Control exposures to below the occupational exposure level (if available). Select and use containment devices and personal protective equipment based on a risk assessment of exposure potential. Cover all containers for solutions and slurries while being transferred. |

**Individual protection measures, such as personal protective equipment**

|                                       |                                                                                                                                                                                                                                                      |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Eye/face protection</b>            | Wear safety glasses with side shields, chemical splash goggles, or full face shield, if necessary. Base the choice of protection on the job activity and potential for contact with eyes or face. An emergency eye wash station should be available. |
| <b>Skin protection</b>                |                                                                                                                                                                                                                                                      |
| <b>Hand protection</b>                | Wear nitrile or other impervious gloves if skin contact is possible. When the material is dissolved or suspended in an organic solvent, wear gloves that provide protection against the solvent.                                                     |
| <b>Other</b>                          | Wear lab coat. Base the choice of skin protection on the job activity, potential for skin contact and solvents and reagents in use. Do not wear protective garments in common areas (e.g., cafeterias) or out-of-doors.                              |
| <b>Respiratory protection</b>         | Respirators are generally not required for laboratory operations. Choose respiratory protection appropriate to the task and the level of existing engineering controls.                                                                              |
| <b>Thermal hazards</b>                | Wear appropriate thermal protective clothing, when necessary.                                                                                                                                                                                        |
| <b>General hygiene considerations</b> | Handling practices in this SDS are recommendations for laboratory use of reference standards. Procedures for any other uses or quantities should be determined after an appropriate assessment.                                                      |

**9. Physical and chemical properties**

|                                                     |                                                                                                                        |
|-----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| <b>Appearance</b>                                   | Appearance descriptions are general information and not specific to any USP lot.                                       |
| <b>Physical state</b>                               | Liquid.                                                                                                                |
| <b>Form</b>                                         | Liquid.                                                                                                                |
| <b>Color</b>                                        | Clear. Colorless.                                                                                                      |
| <b>Odor</b>                                         | Very faint. Sweet. Herbal.                                                                                             |
| <b>Odor threshold</b>                               | 50 mg/L                                                                                                                |
| <b>pH</b>                                           | Not available.                                                                                                         |
| <b>Melting point/freezing point</b>                 | -112 °F (-80 °C)                                                                                                       |
| <b>Initial boiling point and boiling range</b>      | 618.8 °F (326 °C) at 760 mmHg                                                                                          |
| <b>Flash point</b>                                  | 400.0 °F (204.4 °C) Cleveland Open Cup                                                                                 |
| <b>Evaporation rate</b>                             | < 1 (butyl acetate = 1)                                                                                                |
| <b>Flammability (solid, gas)</b>                    | Not applicable.                                                                                                        |
| <b>Upper/lower flammability or explosive limits</b> |                                                                                                                        |
| <b>Flammability limit - lower (%)</b>               | Not available.                                                                                                         |
| <b>Flammability limit - upper (%)</b>               | Not available.                                                                                                         |
| <b>Explosive limit - lower (%)</b>                  | Not available.                                                                                                         |
| <b>Explosive limit - upper (%)</b>                  | Not available.                                                                                                         |
| <b>Vapor pressure</b>                               | 0.05 mm Hg at 20 °C                                                                                                    |
| <b>Vapor density</b>                                | 14.1                                                                                                                   |
| <b>Relative density</b>                             | Not available.                                                                                                         |
| <b>Solubility(ies)</b>                              |                                                                                                                        |
| <b>Solubility (water)</b>                           | Insoluble.                                                                                                             |
| <b>Solubility (other)</b>                           | Toluene: Freely soluble.<br>Acetone: Freely soluble.<br>Isopropyl alcohol: Freely soluble.<br>Alcohol: Freely soluble. |
| <b>Partition coefficient (n-octanol/water)</b>      | 4.92 at 22 °C                                                                                                          |
| <b>Auto-ignition temperature</b>                    | Not available.                                                                                                         |
| <b>Decomposition temperature</b>                    | Not available.                                                                                                         |
| <b>Viscosity</b>                                    | Not available.                                                                                                         |
| <b>Other information</b>                            |                                                                                                                        |
| <b>Molecular formula</b>                            | C <sub>20</sub> H <sub>34</sub> O <sub>8</sub>                                                                         |
| <b>Molecular weight</b>                             | 402.48                                                                                                                 |

Specific gravity 1.05 at 25 °C

## 10. Stability and reactivity

|                                    |                                                                                               |
|------------------------------------|-----------------------------------------------------------------------------------------------|
| Reactivity                         | The product is stable and non-reactive under normal conditions of use, storage and transport. |
| Chemical stability                 | Material is stable under normal conditions.                                                   |
| Possibility of hazardous reactions | No dangerous reaction known under conditions of normal use.                                   |
| Conditions to avoid                | Contact with incompatible materials.                                                          |
| Incompatible materials             | Strong oxidizing agents.                                                                      |
| Hazardous decomposition products   | Irritating and/or toxic fumes or gases. Emits toxic fumes under fire conditions.              |

## 11. Toxicological information

### Information on likely routes of exposure

|                                                                               |                                              |
|-------------------------------------------------------------------------------|----------------------------------------------|
| Inhalation                                                                    | Knowledge about health hazard is incomplete. |
| Skin contact                                                                  | Knowledge about health hazard is incomplete. |
| Eye contact                                                                   | Causes eye irritation.                       |
| Ingestion                                                                     | Knowledge about health hazard is incomplete. |
| Symptoms related to the physical, chemical, and toxicological characteristics | Not available.                               |

### Information on toxicological effects

#### Acute toxicity

| Product                              | Species | Test Results |
|--------------------------------------|---------|--------------|
| Acetyltributyl Citrate (CAS 77-90-7) |         |              |
| Oral                                 |         |              |
| LD50                                 | Rat     | 31.4 g/kg    |

**Skin corrosion/irritation** Based on available data, the classification criteria are not met.

**Serious eye damage/eye irritation** Causes eye irritation.

#### Local effects

Irritation test  
Result: Moderate: erythema less than 72 hours.  
Species: Rabbit  
Organ: Eye.  
Irritation test  
Result: Non-irritant.  
Species: Rabbit  
Organ: Skin.  
Irritation test: occlusive patch.  
Result: Negative.  
Species: Human  
Organ: Skin.

#### Respiratory or skin sensitization

**Respiratory sensitization** Knowledge about health hazard is incomplete.

**Skin sensitization** Based on available data, the classification criteria are not met.

Maximisation test  
Result: Negative.  
Species: Guinea pig  
Organ: Skin.  
Sensitization: Occlusive patch test.  
Result: Negative.  
Species: Human

**Germ cell mutagenicity** Knowledge about mutagenicity is incomplete.

#### Mutagenicity

Ames test (Salmonella typhimurium)  
Result: Negative: with and without activation.

**Mutagenicity**

In vitro unscheduled DNA synthesis: rat hepatocytes.

Result: Negative.

Mouse lymphoma assay

Result: Negative: with and without activation.

**Carcinogenicity**

Based on available data, the classification criteria are not met.

200 - 20000 ppm Two-year carcinogenicity study, Oral

Result: Negative.

Species: Rat

**IARC Monographs. Overall Evaluation of Carcinogenicity**

Not listed.

**OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)**

Not regulated.

**US. National Toxicology Program (NTP) Report on Carcinogens**

Not listed.

**Reproductive toxicity**

Based on available data, the classification criteria are not met.

**Reproductivity**

1000 mg/kg/day Two-generation reproductive toxicity, Oral

Result: NOAEL

Species: Rat

**Specific target organ toxicity - single exposure**

Knowledge about health hazard is incomplete.

**Specific target organ toxicity - repeated exposure**

Based on available data, the classification criteria are not met.

300 mg/kg NOAEL - No Observable Adverse Effect Level,

Dietary study

Species: Rat

Test Duration: 90 day

**Aspiration hazard**

Knowledge about health hazard is incomplete.

**12. Ecological information****Ecotoxicity**

| Product                              | Species |                                   | Test Results           |
|--------------------------------------|---------|-----------------------------------|------------------------|
| Acetyltributyl Citrate (CAS 77-90-7) |         |                                   |                        |
| Aquatic                              |         |                                   |                        |
| Acute                                |         |                                   |                        |
| Crustacea                            | EC50    | Ceriodaphnia dubia                | 7.82 mg/l, 48 hours    |
| Fish                                 | LC50    | Bluegill (Lepomis macrochirus)    | 38 - 60 mg/l, 96 hours |
|                                      |         | Mummichog (Fundulus heteroclitus) | 59 mg/l, 96 hours      |

**Persistence and degradability**

Inherently biodegradable.

**Bioaccumulative potential****Octanol/water partition coefficient log Kow**

4.92, at 22 °C

**Mobility in soil**

No data available.

**Other adverse effects**

No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

**13. Disposal considerations****Disposal instructions**

Dispose in accordance with all applicable regulations. Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste.

**Local disposal regulations**

Dispose in accordance with all applicable regulations.

**Hazardous waste code**

The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

**Waste from residues / unused products**

Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

**Contaminated packaging**

Since emptied containers may retain product residue, follow label warnings even after container is emptied.

## 14. Transport information

### DOT

|                            |                                                                               |
|----------------------------|-------------------------------------------------------------------------------|
| UN number                  | UN3082                                                                        |
| UN proper shipping name    | Environmentally hazardous substances, liquid, n.o.s. (Acetyltributyl Citrate) |
| Transport hazard class(es) |                                                                               |
| Class                      | 9                                                                             |
| Subsidiary risk            | -                                                                             |
| Packing group              | III                                                                           |
| Packaging exceptions       | 155                                                                           |
| Packaging non bulk         | 203                                                                           |
| Packaging bulk             | 241                                                                           |

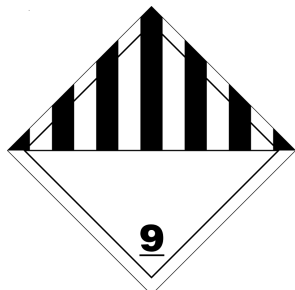
### IATA

|                              |                                                                              |
|------------------------------|------------------------------------------------------------------------------|
| UN number                    | UN3082                                                                       |
| UN proper shipping name      | Environmentally hazardous substance, liquid, n.o.s. (Acetyltributyl Citrate) |
| Transport hazard class(es)   |                                                                              |
| Class                        | 9                                                                            |
| Subsidiary risk              | -                                                                            |
| Packing group                | III                                                                          |
| Other information            |                                                                              |
| Passenger and cargo aircraft | Allowed with restrictions.                                                   |
| Cargo aircraft only          | Allowed with restrictions.                                                   |

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not established.

DOT; IATA



### General information

It is the shipper's responsibility to determine the correct transport classification at the time of shipment.

## 15. Regulatory information

**US federal regulations** This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

### TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

### CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

### SARA 304 Emergency release notification

Not regulated.

### OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)

Not regulated.

### Superfund Amendments and Reauthorization Act of 1986 (SARA)

#### SARA 302 Extremely hazardous substance

Not listed.

**SARA 311/312 Hazardous chemical** Yes

**Classified hazard categories** Serious eye damage or eye irritation

**SARA 313 (TRI reporting)**

Not regulated.

**Other federal regulations****Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**

Not regulated.

**Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)**

Not regulated.

**Safe Drinking Water Act (SDWA)** Not regulated.**US state regulations****California Proposition 65**

California Safe Drinking Water and Toxic Enforcement Act of 2016 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**International Inventories**

| Country(s) or region        | Inventory name                                                         | On inventory (yes/no)* |
|-----------------------------|------------------------------------------------------------------------|------------------------|
| Australia                   | Australian Inventory of Chemical Substances (AICS)                     | Yes                    |
| Canada                      | Domestic Substances List (DSL)                                         | Yes                    |
| Canada                      | Non-Domestic Substances List (NDSL)                                    | No                     |
| China                       | Inventory of Existing Chemical Substances in China (IECSC)             | Yes                    |
| Europe                      | European Inventory of Existing Commercial Chemical Substances (EINECS) | Yes                    |
| Europe                      | European List of Notified Chemical Substances (ELINCS)                 | No                     |
| Japan                       | Inventory of Existing and New Chemical Substances (ENCS)               | Yes                    |
| Korea                       | Existing Chemicals List (ECL)                                          | Yes                    |
| New Zealand                 | New Zealand Inventory                                                  | Yes                    |
| Philippines                 | Philippine Inventory of Chemicals and Chemical Substances (PICCS)      | Yes                    |
| Taiwan                      | Taiwan Chemical Substance Inventory (TCSI)                             | Yes                    |
| United States & Puerto Rico | Toxic Substances Control Act (TSCA) Inventory                          | Yes                    |

\*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

**16. Other information, including date of preparation or last revision**

**Issue date** 05-15-2006

**Revision date** 06-25-2019

**Version #** 04

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