

**TERT BUTYL ACETATE**

Version 1.0

Revision Date 12/04/2014

Print Date 02/13/2015

SDS No.: BE2458

**SECTION 1. PRODUCT AND COMPANY IDENTIFICATION**

Product name : TERT BUTYL ACETATE  
CAS Number: 540-88-5  
Chemical characterization : Organic Ester  
Chemical Name : Acetic Acid, tert-butyl ester  
Synonyms : Tertiary butyl Acetate; Acetic Acid, 1,1-Dimethylethyl ester;  
1,1-Dimethyl acetate

Identified uses : Solvent

Prohibited uses : Fuel blending; Fuel additive

Company : Lyondell Chemical Company  
LyondellBasell Tower, Suite 300  
1221 McKinney St.  
P.O. Box 2583  
Houston Texas 77252-2583

Telephone : Customer Service 888 777-0232  
Product Safety 800 700-0946

Emergency telephone : CHEMTREC USA 800-424-9300  
LYONDELL 800-245-4532

E-mail address : product.safety@lyb.com

**SECTION 2. HAZARDS IDENTIFICATION****GHS Classification**

Flammable liquids	Category 2
Acute toxicity; Inhalation	Category 4
Specific target organ systemic toxicity - single exposure	Category 3
Acute aquatic toxicity	Category 3

GHS Classification Scale (1= severe hazard; 4= slight hazard)

**Label elements****Hazard symbols** :**Signal Word** : Danger

**Hazard Statements** : H225 Highly flammable liquid and vapor.  
H332 Harmful if inhaled.  
H335 May cause respiratory irritation.  
H336 May cause drowsiness or dizziness.  
H402 Harmful to aquatic life.

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**Precautionary Statements****: Prevention**

P210 Keep away from heat/sparks/open flames/hot surfaces.  
- No smoking.  
P233 Keep container tightly closed.  
P243 Take precautionary measures against static discharge.  
P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.  
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

**Response**

P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.  
P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
P312 Call a POISON CENTER or doctor/ physician if you feel unwell.

**Storage**

P403 + P235 Store in a well-ventilated place. Keep cool.  
P405 Store locked up.

**Other hazards**

Hazards Not Otherwise Classified (HNOC)  
Repeated exposure may cause skin dryness or cracking.

**3. Composition/information on ingredients****Substances**

Chemical nature : Substance

**Ingredients**

Chemical Name	CAS-No. EC-No.	Weight %	Component Type
Tert-Butyl acetate	540-88-5	> 99.5 %	A
Tert-Butyl alcohol	75-65-0	<0.5 %	C
2,4,4-Trimethyl-1-pentene	107-39-1	<0.5 %	C

Key:  
(A) Substance  
(C) Impurity

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**SECTION 4. FIRST AID MEASURES****First aid procedures**

- General advice : Take proper precautions to ensure your own health and safety before attempting rescue and providing first aid.  
Consult a physician/doctor if necessary.  
Show this material safety data sheet to the doctor in attendance.
- If inhaled : If overcome by exposure, remove victim to fresh air immediately.  
Give oxygen or artificial respiration as needed.  
Call a physician.
- In case of skin contact : Remove contaminated clothing as needed.  
Wash skin thoroughly with mild soap and water.  
Flush with lukewarm water for 15 minutes.  
If sticky, use waterless cleaner first.  
Seek medical attention if ill effect or irritation develops.
- In case of eye contact : Thoroughly flush the eyes with large amounts of clean low-pressure water for at least 15 minutes, occasionally lifting the upper and lower eyelids. If irritation persists, seek medical attention.
- If swallowed : If large quantity swallowed, give lukewarm water (pint/ 1/2 litre) if victim completely conscious/alert.  
Do not induce vomiting. Risk of damage to lungs exceeds poisoning risk.  
Obtain emergency medical attention.

**Notes to physician**

- Symptoms : If inhalation occurs signs and symptoms may include coughing, choking, wheezing, difficulty in breathing, chest congestion, shortness of breath and/or fever.  
High doses may cause CNS depression (fatigue, dizziness and possibly loss of concentration, with collapse, coma and death in cases of severe over-exposure).  
The onset of respiratory symptoms may be delayed for several hours after exposure.
- Hazards : Can cause pulmonary edema if aspirated into lungs.  
Harmful: may cause lung damage if swallowed.
- Treatment : Treat symptomatically.  
Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient.  
In case of ingestion, the stomach should be emptied by gastric lavage under qualified medical supervision.

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**SECTION 5. FIRE-FIGHTING MEASURES****Flammable properties**

Flash point : 39 °F (4 °C)  
at 1013.0 hPa (759.8 mm Hg)

Autoignition temperature : 1092 °F (589 °C)  
at 1,013 hPa (760 mm Hg)

Lower explosion limit : ~1.26 vol%

Upper explosion limit : ~6.88 vol%

Flammability (solid, gas) : Not applicable

**Fire fighting**

Suitable extinguishing media : SMALL FIRE: Use dry chemicals, CO2, water spray or alcohol-resistant foam. LARGE FIRE: Use water spray, water fog or alcohol-resistant foam.

Unsuitable extinguishing media : Do not use solid water stream - may spread fire.

Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.  
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.  
For safety reasons in case of fire, cans should be stored separately in closed containments.  
Use a water spray to cool fully closed containers.

**Protective equipment and precautions for firefighters**

Specific hazards during fire fighting : Releases flammable vapors below normal ambient temperatures.  
When mixed with air and exposed to ignition source, vapors can burn in open or explode if confined.  
Flammable vapors may be heavier than air and travel long distances along the ground before igniting and flashing back to vapor source.  
Move containers from fire area if it can be done without risk.  
Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.  
Cool containers with flooding quantities of water until well after fire is out.  
Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.  
Always stay away from tanks engulfed in fire.  
For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

Special protective equipment : Wear positive pressure self-contained breathing apparatus

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for fire-fighters

(SCBA).

Structural firefighter's protective clothing will only provide limited protection.

**SECTION 6. ACCIDENTAL RELEASE MEASURES**

- Personal precautions : Use personal protective equipment.  
Ensure adequate ventilation.
- Environmental precautions : Prevent product from entering drains.  
Prevent further leakage or spillage if safe to do so.  
If the product contaminates rivers and lakes or drains inform respective authorities.
- Methods for containment /  
Methods for cleaning up : Extremely flammable.  
Eliminate all sources of ignition.  
All equipment used when handling this product must be grounded.  
Do not touch or walk through spilled material.  
Stop leak if you can do it without risk.  
Prevent entry into waterways, sewers, basements or confined areas.  
A vapor suppressing foam may be used to reduce vapors.  
Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.  
Use clean non-sparking tools to collect absorbed material.  
Dike large spills and place materials in salvage containers.  
Water spray may reduce vapor; but may not prevent ignition in closed spaces.
- Additional advice : See section 8 for additional PPE information.

**SECTION 7. HANDLING AND STORAGE****Handling**

- Advice on safe handling : Use only non-sparking tools.  
Extinguish all ignition sources.  
Carefully vent any internal pressure before removing closure.  
Containers must be properly grounded before beginning transfer.  
Handle empty containers with care; vapor/residue may be flammable.  
All equipment must conform to applicable electrical code.  
This material may attack some forms of plastics, rubbers, and coatings.  
Isolate, vent, drain, wash and purge systems or equipment before maintenance or repair.  
Check atmosphere for explosiveness and oxygen deficiencies.  
Wear recommended personal protective equipment.  
Observe precautions pertaining to confined space entry.  
Do not breathe vapors or spray mist.

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Advice on protection against fire and explosion : Keep away from heat/sparks/open flames/hot surfaces. - No smoking.  
Take precautionary measures against static discharge.

**Storage**

Requirements for storage areas and containers : Store closed drums with bung in up position.  
Store only in tightly closed, properly vented containers away from heat, sparks, open flame and strong oxidizing agents.  
Containers must be properly grounded before beginning transfer.  
This material may attack some forms of plastics, rubbers, and coatings.  
Consult supplier(s) of these materials for specific recommendations.  
Steel drums are recommended for packaging.

**8. Exposure controls/personal protection****Control parameters****Ingredients with workplace control parameters****Occupational Exposure Limits**

Ingredients	CAS-No.	Type	Limit Value	Basis Revision Date	Additional Information
Tert-Butyl acetate	540-88-5	TWA	200 ppm	US (ACGIH) 2012	
Tert-Butyl acetate	540-88-5	IDLH	1,500 ppm	NIOSH September 2007	
<b>Remarks:</b> 10% LEL					
Tert-Butyl acetate	540-88-5	TWA	200 ppm 950 mg/m <sup>3</sup>	US (OSHA) June 23, 2006	
Tert-Butyl alcohol	75-65-0	TWA	100 ppm	US (ACGIH) 2012	
Tert-Butyl alcohol	75-65-0	IDLH	1,600 ppm	NIOSH September 2007	
Tert-Butyl alcohol	75-65-0	TWA	100 ppm 300 mg/m <sup>3</sup>	US (OSHA) June 23, 2006	

Consult local authorities for acceptable exposure limits.

**Exposure controls**

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**Engineering measures**

Both local exhaust and good general room ventilation must be provided not only to control exposure but also to prevent formation of flammable mixtures.

**Personal protective equipment**

- Respiratory protection : When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
- Hand protection : Wear chemical resistant gloves such as:  
Butyl rubber.
- Eye and face protection : Use splash goggles when eye contact due to splashing or spraying liquid is possible.
- Skin and body protection : Depending on the conditions of use, protective gloves, apron, boots, head and face protection should be worn.  
The equipment must be cleaned thoroughly after each use.
- Hygiene measures : Selection of appropriate personal protective equipment should be based on an evaluation of the performance characteristics of the protective equipment relative to the task(s) to be performed, conditions present, duration of use, and the hazards and/or potential hazards that may be encountered during use.  
Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.  
Use good personal hygiene practices.  
Wash hands before eating, drinking, smoking, or using toilet facilities.  
Wash clothing frequently.

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES****Appearance**

- Physical state : liquid
- Color : Clear, colorless.
- Odor : Camphor-like odor.
- Odor Threshold : 71 ppb

**Safety data**

- Flash point : 39 °F (4 °C)  
at 1013.0 hPa (759.8 mm Hg)
- Lower explosion limit : ~1.26 vol%

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Upper explosion limit	: ~6.88 vol%
Flammability (solid, gas)	: Not applicable
Oxidizing properties	: Not considered an oxidizing agent.
Autoignition temperature	: 1092 °F (589 °C) at 1,013 hPa (760 mm Hg)
Molecular weight	: 116.16 g/mol
Decomposition temperature	: not determined
pH	: 6 - 7
Melting point/freezing point	: -72.67 °F (-58.15 °C) at 1,013 hPa (760 mm Hg)
Boiling point/boiling range	: 208.0 °F (97.8 °C) at 1,013 hPa (760 mm Hg)
Vapor pressure	: 55.995 hPa (42.000 mm Hg) at 68 °F (20 °C)
Density	: 0.86 g/cm <sup>3</sup> at 77 °F (25 °C)
Water solubility	: 7,820 mg/l at 73 °F (23 °C)
Partition coefficient: n-octanol/water	: log Pow: 1.64 at 71.1 °F (21.7 °C)
Viscosity, dynamic	: <1 mPa.s at 77 °F (25 °C)
Viscosity, kinematic	: <1 mm <sup>2</sup> /s
Relative vapor density	: No Data Available.
Evaporation rate	: 2.8 (butyl acetate = 1)
Explosive properties	: Not explosive

Remarks - Other information : Additional properties may be listed in Sections 2 and 5.

**SECTION 10. STABILITY AND REACTIVITY**

Reactivity : Will not occur.



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Chemical stability	: Stable under recommended storage conditions.
Conditions to avoid	: Heat, sparks, open flame, other ignition sources, and oxidizing conditions.
Materials to avoid	: Some plastics. Acids. Alkalies. Nitrates. Strong oxidizing agents.
Hazardous decomposition products	: Under hot, acidic conditions, the decomposition products are isobutylene and acetic acid.
Thermal decomposition	: Carbon oxides (CO, CO <sub>2</sub> ), Water.
Hazardous reactions	: Not expected to occur.

**SECTION 11. TOXICOLOGICAL INFORMATION**

<b>Product Summary</b>	: The below given information is based on the assessment of the product including impurities.
<b>Acute toxicity</b>	
<b>Acute oral toxicity</b>	: Based on acute toxicity values, not classified.  : High doses may cause CNS depression (fatigue, dizziness and possibly loss of concentration, with collapse, coma and death in cases of severe over-exposure).  : LD50 Oral: 4,500 mg/kg
<b>Acute inhalation toxicity</b>	: Classified Harmful if inhaled.  : High vapor concentrations may cause CNS stimulation (increased activity, shaking, tremors) and/or depression (fatigue, dizziness, and possibly loss of concentration, with collapse, coma and death in cases of severe over-exposure).  : LC50: 12.52 mg/l Exposure time: 4 HOURS Method: Calculation method
<b>Acute dermal toxicity</b>	: Based on acute toxicity values, not classified.  : LD50 Dermal: > 2,000 mg/kg
<b>Skin corrosion/irritation</b>	: Based on skin irritation values, not classified.

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	: May cause slight transient skin irritation.
	: Repeated exposure may cause skin dryness or cracking.
<b>Serious eye damage/eye irritation</b>	: Based on eye irritation values, not classified.
	: Moderate eye irritation
<b>Respiratory or skin sensitization</b>	: Respiratory sensitization Not classified No study available.
	: Skin sensitization Not classified No adverse effect observed.
<b>Chronic toxicity</b>	
Carcinogenicity	: Not classified Contains a substance that has a positive carcinogenicity study. The weight of evidence for the carcinogenicity of this substance does not meet the criteria for classification.
Germ cell mutagenicity	: Not classified No adverse effect observed.
<b>Reproductive toxicity</b>	
Effects on fertility / Effects on or via lactation	: Not classified No adverse effect observed.
Effects on Development	: Not classified No adverse effect observed.
<b>Target Organ Systemic Toxicant - Single exposure</b>	: Classified, May cause respiratory irritation., May cause drowsiness or dizziness.
	: Target Organs: Central nervous system, Respiratory system
<b>Target Organ Systemic Toxicant - Repeated exposure</b>	: Based on repeated exposure toxicity values, not classified.
<b>Aspiration hazard</b>	: Based on physico-chemical values or lack of human evidence, not classified.

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**12. ECOLOGICAL INFORMATION****Ecotoxicology Assessment**

- Acute aquatic toxicity** : Classified  
Harmful to aquatic life.
- Chronic aquatic toxicity** : Not classified, based on readily biodegradability and low acute toxicity.
- Toxicity to fish** :  
Acute toxicity to fish is very low.
- Toxicity to daphnia and other aquatic invertebrates** : Acute toxicity to freshwater and marine invertebrates is very low.
- Toxicity to algae** : Can inhibit growth of aquatic algae
- : EC50: 16 mg/l  
Exposure time: 72 HOURS  
Species: Pseudokirchneriella subcapitata (green algae)  
Growth inhibition
- : EC50: 64 mg/l  
Exposure time: 96 HOURS
- : NOEC: 2.3 mg/l
- Toxicity to bacteria** : High concentrations may be harmful to sewage treatment plant microbes
- : 1.5 mg/l  
Species: Activated sludge  
Respiration inhibition
- Toxicity to fish (Chronic toxicity)** : no data available
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)** : no data available

**Persistence and degradability**

- Biodegradability** : 50 %  
Inherently biodegradable.  
(After 28 days in a ready biodegradability test)

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**Bioaccumulative potential**

**Bioaccumulation** : Bioconcentration factor (BCF): 5.61  
This material is not expected to bioaccumulate.

**Mobility in soil**

**Distribution among environmental compartments** : Stability in water  
Hydrolyzes in water, under environmental conditions  
Hydrolytic half-life 334 days (8010h) at 25C and pH7

: Stability in soil  
no data available  
Low absorption to soil particulates predicted

**Additional advice Environmental fate and pathways** : No additional information available.

**Results of PBT and vPvB assessment**

Not applicable.

**Other adverse effects**

**Additional ecological information** : No additional information available.

**SECTION 13. DISPOSAL CONSIDERATIONS**

**Further information** : Contaminated product, soil, water, container residues and spill cleanup materials may be hazardous wastes.  
Comply with applicable federal, state, and local regulations.

**SECTION 14. TRANSPORT INFORMATION**

**DOT**

UN number : 1123  
Description of the goods : BUTYL ACETATES  
Class : 3  
Packing group : II  
Labels : 3

**SECTION 15. REGULATORY INFORMATION**

Tertiary butyl acetate was excluded from the Federal definition of a VOC (40 C.F.R. § 51.100(s)(5)) by the U.S. Environmental Protection Agency on November 29, 2004 (69 FR 69304). State and local definitions may vary. If identified components of this product are listed under the TSCA 12(b) Export Notification rule, they will be listed below.

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**SARA 302/304**ComponentTPQRQ

Tert-Butyl acetate

5000 lbs

**SARA 311/312**

Fire Hazard.  
Immediate (Acute) Health Hazard.

**SARA 313**

This product contains the following chemicals subject to the reporting requirements of SARA Title III, Section 313 and 40 CFR 372:

ComponentReporting Threshold

Tert-Butyl alcohol

1.0%

**State Reporting**

This material is not known to contain a chemical substance known to the State of California to cause cancer, reproductive, or developmental toxicity under California Proposition 65. However, LyondellBasell has not tested for the presence of listed chemical substances.

This product contains the following chemicals regulated by New Jersey's Worker and Community Right to Know Act:

540-88-5 Tert-Butyl acetate  
75-65-0 Tert-Butyl alcohol

This product contains the following chemicals regulated by Massachusetts' Right to Know Law:

540-88-5 Tert-Butyl acetate  
75-65-0 Tert-Butyl alcohol  
107-39-1 2,4,4-Trimethyl-1-pentene

This product contains the following chemicals regulated by Pennsylvania's Right to Know Act:

540-88-5 Tert-Butyl acetate  
75-65-0 Tert-Butyl alcohol  
107-39-1 2,4,4-Trimethyl-1-pentene

**Other international regulations****Global Inventory Status**

The ingredients of this product are compliant with the following chemical inventory requirements or exemptions.

\*Additional Explanatory Status Statements follow the table, as necessary.

Country/Region	Inventory	Status Description
Australia	AICS	Compliant
Canada	DSL	Compliant
China	IECSC	Compliant
Europe	REACH	See REACH Compliance Statement
Japan	ENCS	Compliant

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Korea	KECI	Compliant
New Zealand	NZIoC	Compliant
Philippines	PICCS	Compliant
United States of America	TSCA	Compliant

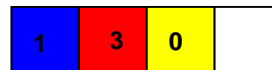
**REACH status**

If the product has been purchased from any company of the LyondellBasell group of companies registered in the European Union, we confirm that the chemical substance in this product has been pre-registered or, where required under REACH, registered, and that we have the intention to proceed with any required registration in accordance with the deadlines set forth in REACH. (Regulation (EU) No. 1907/2006)

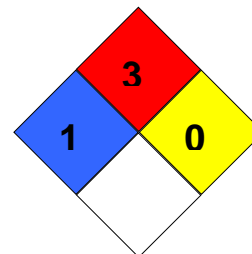
Contact product.safety@lyb.com for additional global inventory information.

**SECTION 16. OTHER INFORMATION****Further information**

**HMIS Classification** : Health Hazard: 1  
Flammability: 3  
Physical hazards: 0



**NFPA Classification** : Health Hazard: 1  
Fire Hazard: 3  
Instability: 0

**Other Information**

HMIS rating scale (0 = minimal hazard; 4 = severe hazard)

NFPA rating scale (0 = minimal hazard; 4 = severe hazard)

**Material safety datasheet sections which have been updated:**

Revised Section(s): 1 2 3 8 11 12 15 Revision Date November 30 2014

**Disclaimer**

This document is generated for the purpose of distributing health, safety, and environmental data.

Information is correct to the best of our knowledge at the date of the SDS publication.

It is not a specification sheet nor should any displayed data be construed as a specification.

Before using a product sold by a company of the LyondellBasell family of companies, users should make their own independent determination that the product is suitable for the intended use and can be used safely and legally. SELLER MAKES NO WARRANTY; EXPRESS OR

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**Disclaimer**

IMPLIED (INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY WARRANTY) OTHER THAN AS SEPARATELY AGREED TO BY THE PARTIES IN A CONTRACT.

This product(s) may not be used in:

(i) any U.S. FDA Class I, Health Canada Class I, and/or European Union Class I medical devices, without prior notification to Seller for each specific product and application; or (ii) the manufacture of any of the following, without prior written approval by Seller for each specific product and application: U.S. FDA Class II Medical Devices; Health Canada Class II or Class III Medical Devices; European Union Class II Medical Devices; film, overwrap and/or product packaging that is considered a part or component of one of the aforementioned medical devices; packaging in direct contact with a pharmaceutical active ingredient and/or dosage form that is intended for inhalation, injection, intravenous, nasal, ophthalmic (eye), digestive, or topical (skin) administration; tobacco related products and applications, electronic cigarettes and similar devices, and pressure pipe or fittings that are considered a part or component of a nuclear reactor. Additionally, the product(s) may not be used in: (i) U.S. FDA Class III Medical Devices; Health Canada Class IV Medical Devices; European Class III Medical Devices; (ii) applications involving permanent implantation into the body; (iii) life-sustaining medical applications; and (iv) lead, asbestos or MTBE related applications. All references to U.S. FDA, Health Canada, and European Union regulations include another country's equivalent regulatory classification.

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