

'DOCK/ CHEMICALS

SEMICONDUCTORS DECISION



Liquid, Safe and Efficient P-Precursor
for MOVPE

'MO-III/V

BP: 54°C/129°F/1013 hPa

'TBP-TERTIARYBUTYLPHOSPHINE

**MATERIAL SAFETY
DATASHEET**

TBP-TERTIARYBUTYLPHOSPHINE

Tertiarybutylphosphine TBP C₄H₁₁P

Revision Date: 01.02.2013

According to EC-Directive
1907/2006/EC

EC-No. 1272/2008 [EU-GHS/CLP]
67/548/EEC or 1999/45/EC

MO-III/W

1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND COMPANY

Identification of the product

Product name: Tertiarybutylphosphine
Acronym: TBP

Manufacturer / Supplier Information

Dockweiler Chemicals GmbH
Emil-von-Behring-Str. 76, Postfach 1746, 35007 Marburg, Germany
T +49 6421 39 -6380 | F -6381

Contact for Information

Dockweiler Chemicals GmbH
T +49 6421 39 -6380 | F -63 81

Emergency telephone no.: +49 178 433 74 34

In case of intoxication:
Giftnotrufzentrale - Munich
T +49 89 41 40 -2211 / -2240 | F +49 89 41 40 -2467
In case of burn: local hospital and/or specialist near at hand

2. HAZARDS IDENTIFICATION

Pyrophoric liquid, spontaneously flammable in air. Skin contact can cause severe burns. Causes injury to the cornea and eyelids. Risk of serious damage to eyes.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Synonym

Acronym: TBP
(purity 100% w/w)
CAS-No.: 2501-94-2
EG-Index-No.: not registered
EC-No.: not registered
ELINCS-No.: 02-04-1518-00

EC-No.: not registered
ELINCS-No.: 02-04-1518-00
Molar mass (g/mol): 89.97
Molecular formula: C₄H₁₁P
Dangerous ingredients: none

4. FIRST AID MEASURES

Prompt medical attention is required in all cases of exposure to Tertiarybutylphosphine and its products. Rescue personnel should be equipped with appropriate protective equipment (e.g. self contained breathing apparatus) and must be aware of fire potential of Tertiarybutylphosphine.

Skin contact

Contact may cause severe burns. Fumes may cause irritation. Immediately flush affected areas with large quantities of water. Remove contaminated clothing if not stuck on skin. Wash clothing before reuse. Thoroughly clean or destroy contaminated shoes.

Eyes

Contact may cause severe burns. Persons with potential exposures to Tertiarybutylphosphine should not wear contact lenses. Flush contaminated eyes with large quantities of water for at least 15 minutes. Hold eyelids open to ensure complete flushing. Get medical attention if irritation develops and persists.

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Inhalation

Move exposed personnel to an uncontaminated area wearing breathing apparatus. If breathing is difficult, give oxygen. If breathing has stopped, apply artificial respiration. Medical assistance should be sought immediately. Keep victim warm and quiet.

5. FIRE-FIGHTING MEASURES

Extinguishing Media

Waterspray, alcohol resistant foam, dry chemical powder, soda, sand, lime or CO₂. Never use Halones. Without risk stop flow of this compound to the fire. Without risk and if save to do so, move container(s) away from fire area.

Exposure Hazards

In a controlled fire any unreacted Tertiarybutylphosphine may reignite when contact with air is renewed. Smoke may contain oxides of Phosphorous and various Hydrocarbons.

Special protective Equipment for Fire-Fighters

Self-contained breathing apparatus, face shields and safety goggles, safety shoes and fire resistant gloves.

6. ACCIDENTAL RELEASE MEASURES

Personnel Precautions

Evacuate area. Use appropriate protective equipment. Purge equipment with inert gas before attempting repairs. Ensure adequate ventilation. If leak is in container call one of the emergency numbers as appropriate (see section 1.)

Environmental Precautions

Try to stop release, if save to do so. For fire-fighting measures see section 5.

Clean Up Methods

Contact Dockweiler Chemicals GmbH for specific advice.

7. HANDLING AND STORAGE

Handling

Valve outlet seals must remain in place unless container is secured and valve outlet piped to use point. Use a check valve or trap to prevent hazardous back flow into the container. Any equipment used for Tertiarybutylphosphine service must be thoroughly cleaned and prepared to eliminate contamination and must be maintained in a leak free state. All air and moisture in the system must be eliminated before use.

Storage

Protect container from physical damage. Do not allow temperatures to exceed 54°C. Store away from flammable material.

8. LIMITATION AND MONITORING OF EXPOSURE AND PERSONAL PROTECTION

Exposure Controls

OSHA or ACGIH: None established
OES and MEL: None established
Ensure adequate ventilation

Personal Protection

Self-contained breathing apparatus, fire resistant gloves, face shield and safety goggles, safety shoes and fire resistant garments. Safety shower and eyewash.

9. PHYSICAL AND CHEMICAL PROPERTIES

Colour:	colourless
State:	liquid
Odour:	unpleasant
pH-Value:	not available
Viscosity:	not available
Density (g/ccm; 20°C)	0.72
Boiling Point (1013 mbar)	54°C / 129°F
Melting Point:	4°C / 39.2°F
Flashpoint:	pyrophoric compound
Auto-Ignition Temperature:	pyrophoric compound
Vapor Pressure (20°C)	289 mbar
Vapor Pressure (25°C)	354 mbar
Vapor Pressure (30°C)	430 mbar
Solubility in Water (20°C)	insoluble
Solubility in aliphatic Hydrocarbons & alcohols (20°C)	soluble

10. STABILITY AND REACTIVITY

Conditions to avoid

Reacts pyrophorically in air.

Materials to avoid

Avoid oxidisers and overheating.

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Hazardous Decomposition Products

Phosphine, Phosphorous Oxides, various Phosphoric-, Hypophosphoric Acids and Hydrocarbons.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Oral LD50: no data available

Inhalation LC50:

Greater than 510 ppm - No lethality was observed by whole body exposure and inhalation for 4 hours in Sprague-Dawley rats (combined males and females) or at a 3 hours exposure at 1144 ppm.

Irritation

Skin

No data available. However product is pyrophoric and burns may occur.

Eye

No data available. Burns may occur.

Respiratory

No data available

Other toxicological information

Long-term, chronic overexposure may affect the skin, eyes, respiratory system and the cardiovascular system.

12. ECOLOGICAL INFORMATION

No data available on the substance as such.

13. WASTE DISPOSAL CONSIDERATIONS

Regional and national regulations should be followed during waste disposal. Contact Dockweiler Chemicals GmbH representatives for waste disposal of unused quantities and regeneration of refilling containers.

14. TRANSPORT INFORMATION

ADR/RID 2007

GGVS/GGVE-class: 4.2

ADR/RID-class: 4.2

UN-no: 2845

Packaging group: I

IMDG ARNDT. 33-06

IMDG/GGVSee-class: 4254

UN-no: 2845
Packaging group: I
EmS: F-G, S-M
Shipping Name: PYROPHORIC LIQUID, ORGANIC, N.O.S. (Tertiarybutylphosphine)
Special Provision: none

ICAO/IATA 2007

ICAO/IATA-class: 4.2
UN-no: 2845 - FORBIDDEN
Packaging group: I
PAX-PIN: 0 /MQ?
CAO-PIN: 0 /MQ?

15. REGULATORY INFORMATION

GHS-Classification

Flammable Liquids (Category 2)
Pyrophoric Liquids (Category 1)
Acute Toxicity (Category 2)



Signal Word: **DANGER**

Hazard and Precautionary Statements:

H250: Catches fire spontaneously if exposed to air

H330: Fatal if inhaled

P210: Keep away from heat/sparks/open flames/hot surfaces – No smoking

P222: Do not allow contact with air

P260: Do not breathe dust/fume/gas/mist/vapours/spray

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P271: Use only outdoors or in a well-ventilated area
P280: Wear protective gloves/protective clothing/eye protection/face protection
P284: Wear respiratory protection
P302+334: IF ON SKIN: Immerse in cool water/wrap in wet bandages
P304+340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P310: Immediately call a POISON CENTER or doctor/physician
P320: Specific treatment is urgent (see label and section 4 of this material safety data sheet)
P370+378: In case of fire: Use Waterspray, alcohol resistant foam, dry chemical powder, soda, sand, lime or CO₂ for extinction
P403+233: Store in a well ventilated place. Keep container tightly closed
P405: Store locked up
P422: Store contents under Nitrogen or Argon
P501: Disposal of contents/container in accordance with national regulations by an authorized waste disposal institution or return reusable cylinder to the manufacturer for recycling (cylinder refurbishment).

16. OTHER INFORMATION

DATE: 01.02.2013

Ensure operators understand the pyrophoric and toxic nature of this product. Before using this product it is recommended that a risk assessment and safety study be carried out. This product is on the Dual-Use Goods list (3C003b) and can only be exported under a valid export license. The above mentioned information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. Dockweiler Chemicals GmbH shall not be held liable for any damage resulting from handling or from contact with the above product.

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