C₄H₁₁As

Liquid, Safe and Efficient As-Precursor for MOVPE
Tertiarybutylarsine TBAs C₄H₁₁As
Revision Date: 06.05.2015
According to EC-Directive 1907/2006/EC

1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND COMPANY

Identification of the product
Product name: Tertiarybutylarsine
Acronym: TBAs

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

Contact for Information
Dockweiler Chemicals GmbH
T +49 6421 39-6380 l F -63 81

Emergency telephone no.: +49 178 433 74 34
In case of intoxication:
Giftnotrufzentrale - Munich
T +49 89 41 40 -2211 / -2240 l F +49 89 41 40 -2467
In case of burn: local hospital and/or specialist near at hand

2. HAZARDS IDENTIFICATION

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

3. COMPOSITION / INFORMATION ON INGREDIENTS

Synonym
Acronym: TBAs
CAS-No.: 4262-43-5
EG-Index-No.: 033-007-00-2

Molar mass (g/mol): 134.1
Molecular formula: C₄H₁₁As
Dangerous ingredients: none

4. FIRST AID MEASURES

Prompt medical attention is required in all cases of exposure to Tertiarybutylarsine 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 Tertiarybutylarsine.

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 Tertiarybutylarsine 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.
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 safe to do so, move container(s) away from fire area.

Exposure Hazards
In a controlled fire any unreacted Tertiarybutylarsine may reignite when contact with air is renewed. Smoke may contain Arsenic(III)oxide and Carbondioxide.

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 Tertiarybutylarsine 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 68°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]: 1.08
Boiling Point (1013 mbar): 68°C / 154°F
Melting Point: -1°C / 32°F
Flashpoint: pyrophoric compound
Auto-Ignition Temperature: pyrophoric compound
Vapor Pressure (20°C): 166 mbar
Vapor Pressure (25°C): 202 mbar
Vapor Pressure (30°C): 245 mbar
Solubility in Water (20°C): unsoluble
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.
Hazardous Decomposition Products
In all cases of contact with air mainly Arsenic(III)-oxide and Carbon dioxide is formed instantaneously.

11. TOXICOLOGICAL INFORMATION
Arsenic Compounds are known to cause liver and kidney damage as long term effects. Arsenic Oxide dust formed when this compound is oxidised are toxic, symptoms include skin discolouration and anaemia. Long term effects include loss of red blood cells and liver and kidney damage. TWA [Time Weighted Exposure Limit, 8h period] for Arsenic Compounds is 0.01 mg/m3

Acute toxicity
Arsenic(III)-oxide
Oral LD50: 20 mg/kg (mouse) 20 mg/kg (rabbit) 10 mg/kg (rat)

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

Eye
No data available. Burns may occur. Exposure to vapors of product is expected to cause eye irritation.

Respiratory
No data available

Genotoxicity
Arsenic(III)-oxide
ACGIH: A1 – Confirmed Human Carcinogen [listed as Arsenic, inorganic compounds]
California: carcinogen, initial date 2/2/87 [listed as Arsenic, inorganic compounds]
NTP: Known carcinogen [listed as Arsenic, inorganic compounds]
IARC: Group 1 carcinogen

Reproductive
Arsenic(III)-oxide
May cause reproductive effects.

12. ECOLOGICAL INFORMATION
Ecotoxicity
Arsenic(III)-oxide
Water flea Daphnia-LC50 (24h) 0,038 mg/L
Phytophthoraeum phosphoreum (5,15,30min) 31,43 – 73,73 mg/L

Other Information
Earthworm-LC50 (14 days): 542.7ppm (mg/kg dry weight soil)
estimated ECOSAR v0.99.
Note: Chemical may not be soluble enough to measure this predicted effect. The mandatory EC-labeling has been followed.

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
GGY/GGE-class: 4.2
ADR/RID-class: 4.2
UN-no: 2845
Packaging group: 1

IMDG ARNDT. 33-06
IMDG/GGVSee-class: 4254
UN-no: 2845
Packaging group: 1
Sms: F-G, S-M
Shipping Name: PYROPHORIC LIQUID, ORGANIC, N.O.S. (Tertiarybutylarsine)
Special Provision: 274

ICAO/IATA 2007
ICAO/IATA-class: 4.2
UN-no: 2845 - FORBIDDEN
Packaging group: 1
PAX-PIN: 0 /MQ?
CAO-PIN: 0 /MQ?

15. REGULATORY INFORMATION
GHS-Classification

Signal Word: DANGER
Hazard and Precautionary Statements:

H250: Catches fire spontaneously if exposed to air

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
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
P314: If contact with skin: Wash with plenty of water for at least 15 minutes
P318: If contact with eyes: Rinse immediately with plenty of water for 15 minutes and seek medical attention
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: 06.05.2015

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.