

TRIPHENYLBORANE, 95%

Safety Data Sheet OMBO078

Date of issue: 08/04/2016

Version: 1.0

SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1. Product identifier**

| | |
|-----------------|-------------------------------------|
| Product form | : Substance |
| Physical state | : Solid |
| Substance name | : TRIPHENYLBORANE, 95% |
| Product code | : OMBO078 |
| Formula | : C ₁₈ H ₁₅ B |
| Synonyms | : PHENYLBORANE |
| Chemical family | : ORGANOSILANE |

1.2. Relevant identified uses of the substance or mixture and uses advised against**1.2.1. Relevant identified uses**

Use of the substance/mixture : Chemical intermediate

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet**GELEST, INC.**11 East Steel Road
Morrisville, PA 19067**USA**

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info@gelestde.com - www.gelestde.com**1.4. Emergency telephone number**

Emergency number : CHEMTREC: 1-800-424-9300 (USA); +1 703-527-3887 (International)

SECTION 2: Hazards identification**2.1. Classification of the substance or mixture****Classification according to Regulation (EC) No. 1272/2008 [CLP]**

| | |
|--|------|
| Flammable solids, Category 2 | H228 |
| Acute toxicity (oral), Category 3 | H301 |
| Skin corrosion/irritation, Category 2 | H315 |
| Serious eye damage/eye irritation, Category 2 | H319 |
| Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation | H335 |
| Full text of H statements : see section 16 | |

Adverse physicochemical, human health and environmental effects

No additional information available

2.2. Label elements**Labelling according to Regulation (EC) No. 1272/2008 [CLP]**

Hazard pictograms (CLP) :



GHS02



GHS06

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| | |
|--------------------------------|---|
| Signal word (CLP) | : Danger |
| Hazard statements (CLP) | : H228 - Flammable solid. H301 - Toxic if swallowed. H315 - Causes skin irritation. H319 - Causes serious eye irritation. H335 - May cause respiratory irritation. |
| Precautionary statements (CLP) | : P280 - Wear protective gloves/protective clothing/eye protection/face protection. P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P240 - Ground/bond container and receiving equipment. P264 - Wash hands thoroughly after handling. P271 - Use only outdoors or in a well-ventilated area. P312 - Call a doctor if you feel unwell. |

2.3. Other hazards

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

| | |
|----------------|------------------------|
| Substance type | : Mono-constituent |
| Name | : TRIPHENYLBORANE, 95% |
| CAS-No. | : 960-71-4 |
| EC-No. | : 213-504-2 |

| Name | Product identifier | % | Classification according to Regulation (EC) No. 1272/2008 [CLP] |
|-----------------|--|----------|---|
| Triphenylborane | (CAS-No.) 960-71-4 (EC-No.) 213-504-2 | 95 - 100 | Flam. Sol. 2, H228 Acute Tox. 3 (Oral), H301 Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335 |

Full text of H-statements: see section 16

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

| | |
|---------------------------------------|--|
| First-aid measures general | : Remove contaminated clothing and shoes. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). If possible show this sheet; if not available show packaging or label. |
| First-aid measures after inhalation | : Remove person to fresh air and keep comfortable for breathing. If you feel unwell, seek medical advice. |
| First-aid measures after skin contact | : Wash with plenty of water/.... Get medical advice/attention. |
| First-aid measures after eye contact | : Immediately flush eyes thoroughly with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention. |
| First-aid measures after ingestion | : Never give anything by mouth to an unconscious person. Get medical advice/attention. |

4.2. Most important symptoms and effects, both acute and delayed

| | |
|-------------------------------------|--|
| Symptoms/effects after inhalation | : May cause respiratory irritation. |
| Symptoms/effects after skin contact | : Causes skin irritation. |
| Symptoms/effects after eye contact | : Causes serious eye irritation. |
| Symptoms/effects after ingestion | : Toxic if swallowed. Swallowing a small quantity of this material will result in serious health hazard. |

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

| | |
|--------------------------------|--|
| Suitable extinguishing media | : Water spray. Foam. Carbon dioxide. Dry chemical. |
| Unsuitable extinguishing media | : Do not use straight streams. |

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5.2. Special hazards arising from the substance or mixture

Fire hazard : Flammable solid. Irritating fumes and organic acid vapors may develop when material is exposed to water or open flame.

5.3. Advice for firefighters

Firefighting instructions : Exercise caution when fighting any chemical fire. Use water spray to cool exposed surfaces.
Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection. Avoid contact with skin and eyes. Do not breathe dust.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Eliminate ignition sources. Use special care to avoid static electric charges.

6.1.1. For non-emergency personnel

Protective equipment : Wear protective equipment as described in Section 8.
Emergency procedures : Evacuate unnecessary personnel.

6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. Equip cleanup crew with proper protection. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if product enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

For containment : Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.
Methods for cleaning up : Sweep or shovel spills into appropriate container for disposal.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed : Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Precautions for safe handling : Avoid contact with skin and eyes. Avoid dust formation. Do not breathe dust. Ground/bond container and receiving equipment. Use only outdoors or in a well-ventilated area.
Hygiene measures : Wash contaminated clothing before reuse. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Proper grounding procedures to avoid static electricity should be followed. Use explosion-proof electrical equipment.
Storage conditions : Keep container tightly closed. Store locked up.
Incompatible materials : Oxidizing agent. Strong acids.
Storage area : Store in a well-ventilated place. Store away from heat.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No additional information available

8.2. Exposure controls

Appropriate engineering controls:

Handle in an enclosing hood with exhaust ventilation.

Personal protective equipment:

Avoid all unnecessary exposure. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

Hand protection:

Neoprene or nitrile rubber gloves

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Eye protection:

Chemical goggles. Contact lenses should not be worn

Skin and body protection:

Wear suitable protective clothing

Respiratory protection:

Where exposure through inhalation may occur from use, respiratory protection equipment is recommended. NIOSH-certified dust and mist (teal cartridge) respirator.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|--|---------------------------------------|
| Physical state | : Solid |
| Appearance | : Solid. |
| Molecular mass | : 242.13 g/mol |
| Colour | : Off-white. |
| Odour | : No data available |
| Odour threshold | : No data available |
| Refractive index | : No additional information available |
| pH | : No data available |
| Relative evaporation rate (butylacetate=1) | : No data available |
| Melting point | : 147 °C |
| Freezing point | : No data available |
| Boiling point | : 208 °C @ 14 mm Hg |
| Flash point | : > 65 °C |
| Auto-ignition temperature | : No data available |
| Decomposition temperature | : No data available |
| Flammability (solid, gas) | : Flammable solid. |
| Vapour pressure | : No data available |
| Relative vapour density at 20 °C | : No data available |
| Relative density | : < 1 |
| % Volatiles | : < 1 % |
| Solubility | : Insoluble in water. |
| Log Pow | : No data available |
| Log Kow | : No data available |
| Viscosity, kinematic | : No data available |
| Viscosity, dynamic | : No data available |
| Explosive properties | : No data available |
| Oxidising properties | : No data available |
| Explosive limits | : No data available |

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available

10.2. Chemical stability

Stable in sealed containers.

10.3. Possibility of hazardous reactions

Caution: Explosions have been reported when mixed with trialkylaluminum compounds.

10.4. Conditions to avoid

Heat. Open flame. Sparks.

10.5. Incompatible materials

Oxidizing agent. Strong acids.

10.6. Hazardous decomposition products

Carbon monoxide. Organic acid vapors. Silicon dioxide.

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SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Toxic if swallowed.

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| | |
|----------------|----------------------|
| ATE CLP (oral) | 196 mg/kg bodyweight |
|----------------|----------------------|

Triphenylborane (960-71-4)

| | |
|---------------------|--|
| LD50 oral rat | 196 mg/kg RTECS Number: ED2367500: GASTROINTESTINAL: Hypermotility |
| LCLo inhalation rat | 73 mg/m ³ 4H; LUNGS, THORAX, OR RESPIRATION: Dyspnea; GASTROINTESTINAL: Changes in structure or function of salivary glands; NUTRITIONAL AND GROWTH: Weight loss or decreased weight gain |
| ATE CLP (oral) | 196 mg/kg bodyweight |

Skin corrosion/irritation : Causes skin irritation.
Skin Irritation - rabbit: 0.5 mg: severe irritation effect

Serious eye damage/irritation : Causes serious eye irritation.
Eye Irritation - rabbit: 100 uL/24H: severe irritation effect
Eye Irritation - rabbit: 3000 mg: severe irritation effect

Respiratory or skin sensitisation : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Not classified

STOT-single exposure : May cause respiratory irritation.

STOT-repeated exposure : Not classified

Aspiration hazard : Not classified

Symptoms/effects after inhalation : May cause respiratory irritation.

Symptoms/effects after skin contact : Causes skin irritation.

Symptoms/effects after eye contact : Causes serious eye irritation.

Symptoms/effects after ingestion : Toxic if swallowed. Swallowing a small quantity of this material will result in serious health hazard.

SECTION 12: Ecological information

12.1. Toxicity

Acute aquatic toxicity : Not classified

Chronic aquatic toxicity : Not classified

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

No additional information available

12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

No additional information available

12.6. Other adverse effects

Other adverse effects : This substance may be hazardous to the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Sewage disposal recommendations : Do not dispose of waste into sewer.

Product/Packaging disposal recommendations : Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to licensed waste disposal facility.

Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

14.1. UN number

In accordance with ADR / RID / IMDG / IATA / ADN

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14.1. UN number

| | |
|---------------|--------|
| UN-No. (ADR) | : 2926 |
| UN-No. (IMDG) | : 2926 |
| UN-No. (IATA) | : 2926 |
| UN-No. (ADN) | : 2926 |
| UN-No. (RID) | : 2926 |

14.2. UN proper shipping name

| | |
|---------------------------------------|--|
| Proper Shipping Name (ADR) | : FLAMMABLE SOLID, TOXIC, ORGANIC, N.O.S. |
| Proper Shipping Name (IMDG) | : FLAMMABLE SOLID, TOXIC, ORGANIC, N.O.S. |
| Proper Shipping Name (IATA) | : Flammable solid, toxic, organic, n.o.s. |
| Proper Shipping Name (ADN) | : FLAMMABLE SOLID, TOXIC, ORGANIC, N.O.S. |
| Proper Shipping Name (RID) | : FLAMMABLE SOLID, TOXIC, ORGANIC, N.O.S. |
| Transport document description (ADR) | : UN 2926 FLAMMABLE SOLID, TOXIC, ORGANIC, N.O.S. (TRIPHENYLBORANE), 4.1 (6.1), III, (E) |
| Transport document description (IMDG) | : UN 2926 FLAMMABLE SOLID, TOXIC, ORGANIC, N.O.S. (TRIPHENYLBORANE), 4.1 (6.1), III |
| Transport document description (IATA) | : UN 2926 Flammable solid, toxic, organic, n.o.s. (TRIPHENYLBORANE), 4.1, III |
| Transport document description (ADN) | : UN 2926 FLAMMABLE SOLID, TOXIC, ORGANIC, N.O.S. (TRIPHENYLBORANE), 4.1 (6.1), III |
| Transport document description (RID) | : UN 2926 FLAMMABLE SOLID, TOXIC, ORGANIC, N.O.S. (TRIPHENYLBORANE), 4.1 (6.1), III |

14.3. Transport hazard class(es)

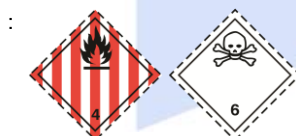
ADR

| | |
|----------------------------------|-------------|
| Transport hazard class(es) (ADR) | : 4.1 (6.1) |
| Danger labels (ADR) | : 4.1, 6.1 |



IMDG

| | |
|-----------------------------------|-------------|
| Transport hazard class(es) (IMDG) | : 4.1 (6.1) |
| Danger labels (IMDG) | : 4.1, 6.1 |



IATA

| | |
|-----------------------------------|-------------|
| Transport hazard class(es) (IATA) | : 4.1 (6.1) |
| Hazard labels (IATA) | : 4.1, 6.1 |



ADN

| | |
|----------------------------------|-------------|
| Transport hazard class(es) (ADN) | : 4.1 (6.1) |
| Danger labels (ADN) | : 4.1, 6.1 |



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RID

Transport hazard class(es) (RID) : 4.1 (6.1)
Danger labels (RID) : 4.1, 6.1



14.4. Packing group

Packing group (ADR) : III
Packing group (IMDG) : III
Packing group (IATA) : III
Packing group (ADN) : III
Packing group (RID) : III

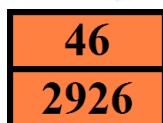
14.5. Environmental hazards

Dangerous for the environment : No
Marine pollutant : No
Other information : No supplementary information available

14.6. Special precautions for user

- Overland transport

Classification code (ADR) : FT1
Special provisions (ADR) : 274
Limited quantities (ADR) : 5kg
Excepted quantities (ADR) : E1
Packing instructions (ADR) : P002, IBC06, R001
Mixed packing provisions (ADR) : MP10
Portable tank and bulk container instructions (ADR) : T1
Portable tank and bulk container special provisions (ADR) : TP33
Tank code (ADR) : SGAN
Vehicle for tank carriage : AT
Transport category (ADR) : 3
Special provisions for carriage - Loading, unloading and handling (ADR) : CV28
Hazard identification number (Kemler No.) : 46
Orange plates :



Tunnel restriction code (ADR) : E
EAC code : 1X

- Transport by sea

Special provisions (IMDG) : 223, 274, 915
Limited quantities (IMDG) : 5 kg
Excepted quantities (IMDG) : E1
Packing instructions (IMDG) : P002
IBC packing instructions (IMDG) : IBC06
Tank instructions (IMDG) : T1
Tank special provisions (IMDG) : TP33
EmS-No. (Fire) : F-A
EmS-No. (Spillage) : S-G
Stowage category (IMDG) : B
Stowage and handling (IMDG) : SW2

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Properties and observations (IMDG) : Toxic if swallowed, by skin contact or by dust inhalation. Should be handled with care to minimize exposure, particularly to dust.

- Air transport

PCA Excepted quantities (IATA) : E1
PCA Limited quantities (IATA) : Y443
PCA limited quantity max net quantity (IATA) : 10kg
PCA packing instructions (IATA) : 446
PCA max net quantity (IATA) : 25kg
CAO packing instructions (IATA) : 449
CAO max net quantity (IATA) : 100kg
Special provisions (IATA) : A3
ERG code (IATA) : 3P

- Inland waterway transport

Classification code (ADN) : FT1
Special provisions (ADN) : 274, 802
Limited quantities (ADN) : 5 kg
Excepted quantities (ADN) : E1
Equipment required (ADN) : PP, EP
Number of blue cones/lights (ADN) : 0

- Rail transport

Classification code (RID) : FT1
Special provisions (RID) : 274
Limited quantities (RID) : 5kg
Excepted quantities (RID) : E1
Packing instructions (RID) : P002, IBC06, R001
Mixed packing provisions (RID) : MP10
Portable tank and bulk container instructions (RID) : T1
Portable tank and bulk container special provisions (RID) : TP33
Tank codes for RID tanks (RID) : SGAN
Transport category (RID) : 3
Special provisions for carriage – Packages (RID) : W1
Special provisions for carriage - Loading, unloading and handling (RID) : CW28
Colis express (express parcels) (RID) : CE11
Hazard identification number (RID) : 46

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU-Regulations

No REACH Annex XVII restrictions

TRIPHENYLBORANE, 95% is not on the REACH Candidate List

TRIPHENYLBORANE, 95% is not on the REACH Annex XIV List

TRIPHENYLBORANE, 95% is not subject to REGULATION (EU) No 649/2012 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 4 July 2012 concerning the export and import of hazardous chemicals.

TRIPHENYLBORANE, 95% is not subject to Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC

% Volatiles : < 1 %

15.1.2. National regulations

Germany

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12th Ordinance Implementing the Federal Immission Control Act - 12.BImSchV : Is not subject of the 12. BImSchV (Hazardous Incident Ordinance)

Netherlands

SZW-lijst van kankerverwekkende stoffen : The substance is not listed

SZW-lijst van mutagene stoffen : The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Borstvoeding : The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Vruchtbaarheid : The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling : The substance is not listed

Denmark

Classification remarks : Emergency management guidelines for the storage of flammable liquids must be followed

Danish National Regulations : Young people below the age of 18 years are not allowed to use the product

15.2. Chemical safety assessment

No additional information available

SECTION 16: Other information

Abbreviations and acronyms:

Abbreviations: ND: Not Determined, No Data; NA: Not Applicable; LD: Lethal Dose; LC: Lethal Concentration; ATE: Acute Toxicity Estimates; H: hour; °: °C unless otherwise stated; mm: millimeters Hg, torr; PEL: permissible exposure level; TWA: time weighted average; TLV: threshold limit value; TG: Test Guideline; NIOSH: National Institute for Occupational Safety and Health; IARC: International Agency for Research on Cancer; NTP: National Toxicology Program; HMIS: Hazardous Material Information System; CAS No.: Chemical Abstract Service Registration Number; EC No.: European Commission Registration Number; EC Index No.: European Commission Index Number; OECD: The Organisation for Economic Co-operation and Development; GHS: The Globally Harmonized System of Classification and Labelling; APF: Assigned Protection Factor

Other information : Prepared by safety and environmental affairs.

Full text of H- and EUH-statements:

| | |
|---------------------|--|
| Acute Tox. 3 (Oral) | Acute toxicity (oral), Category 3 |
| Eye Irrit. 2 | Serious eye damage/eye irritation, Category 2 |
| Flam. Sol. 2 | Flammable solids, Category 2 |
| Skin Irrit. 2 | Skin corrosion/irritation, Category 2 |
| STOT SE 3 | Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation |
| H228 | Flammable solid. |
| H301 | Toxic if swallowed. |
| H315 | Causes skin irritation. |
| H319 | Causes serious eye irritation. |
| H335 | May cause respiratory irritation. |

SDS EU (REACH Annex II) - Custom

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