## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1 Product identifier

| | |
|---|---|
| Product name | TETRAHYDROFURAN |
| CAS-No. | 109-99-9 |
| Product code | AH1201B, AH1204B, AR1203B, GP1203B, LC1203B, PS1203B, RP1203B |

### 1.2 Relevant identified uses of the substance or mixture and uses advised against

| | |
|---|---|
| Identified uses | Chemical for analysis and production. |

### 1.3 Details of the manufacturer of the safety data sheet

| | |
|---|---|
| Manufacturer | RCI LABSCAN LIMITED.<br>24 Rama 1 Road, Pathumwan, Bangkok 10330 Thailand |
| Telephone number | (662) 613-7911-4 |
| Fax number | (662) 613-7915 |

### 1.4 Emergency Telephone Number

| | |
|---|---|
| Emergency phone | (662) 613-7911-4 |

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

**Classification according to Regulation (EC) No 1272/2008**

Flammable liquids (Category 2), H225
Acute toxicity, Oral (Category 4), H302
Eye irritation (Category 2), H319
Carcinogenicity (Category 2), H351
Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335
Specific target organ toxicity - single exposure (Category 3), Central nervous system, H336

For the full text of the H-Statements mentioned in this Section, see Section 16.

### 2.2 Label elements

**Labelling according Regulation (EC) No 1272/2008**

Pictogram

Signal word — Danger

Hazard statement(s)

| | |
|---|---|
| H225 | Highly flammable liquid and vapour. |
| H302 | Harmful if swallowed. |
| H319 | Causes serious eye irritation. |
| H335 | May cause respiratory irritation. |
| H336 | May cause drowsiness or dizziness. |
| H351 | Suspected of causing cancer. |
| EUH019 | May form explosive peroxides. |

Precautionary statement(s)

| | |
|---|---|
| P203 | Obtain, read and follow all safety instructions before use. |

| | |
|---|---|
| P210 | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. |
| P240 | Ground and bond container and receiving equipment. |
| P243 | Take action to prevent static discharges. |
| P261 | Avoid breathing fume/gas/mist/vapours/spray. |
| P264 + P265 | Wash hands thoroughly after handling. Do not touch eyes. |
| P270 | Do not eat, drink or smoke when using this product. |
| P280 | Wear protective gloves/protective clothing/eye protection/face protection. |
| P301 + P317 | IF SWALLOWED: Get medical help. |
| P303 + P361 + P353 | IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]. |
| P304 + P340 | IF INHALED: Remove person to fresh air and keep comfortable for breathing. |
| P305 + P351 + P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P318 | IF exposed or concerned: Get medical advice. |

**2.3 Other hazards** None

## SECTION 3: Composition/information on ingredients

**3.1 Substances**

Synonyms Cyclotetramethylene oxide, Diethylene oxide, 1,4-Epoxybutane, Oxacyclopentane, Oxolane, Tetramethylene oxide.

| CAS-No | EC-No | EC-Index-No | Formula | Molecular Weight | Weight % |
|---|---|---|---|---|---|
| 109-99-9 | 203-726-8 | 603-025-00-0 | $C_4H_8O$ | 72.11 g/mol | <=100 |

**Hazardous ingredients according to Regulation (EC) No 1272/2008**

| Component | Concentration | Classification |
|---|---|---|
| **Tetrahydrofuran** | | |
| CAS-No 109-99-9<br>EC-No 203-726-8<br>EC-Index-No 603-025-00-0 | <=100% | Flammable liquids (Category 2), H225<br>Acute toxicity, Oral (Category 4), H302<br>Eye irritation (Category 2), H319<br>Carcinogenicity (Category 2), H351<br>Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335<br>Specific target organ toxicity - single exposure (Category 3), Central nervous system, H336 |

For the full text of the H-Statements mentioned in this Section, see Section 16.

**3.2 Stabilized**

**2,6-Di-tert-butyl-4-methylphenol**

Synonyms Butylhydroxytoluene, Butylated hydroxytoluene, 2,6-di-tert-butyl-p-cresol, 2,6-Di-tert-butyl-4-methylphenol, 3,5-Di-tert-butyl-4-hydroxytoluene, BHT

| CAS-No | EC-No | EC-Index-No | Formula | Molecular Weight | Weight % |
|---|---|---|---|---|---|
| 128-37-0 | 204-881-4 | - | $C_{15}H_{24}O$ | 220.36 g/mol | <0.025 |

**Hazardous ingredients according to Regulation (EC) No 1272/2008**

| Component | Concentration | Classification |
|---|---|---|
| **2,6-Di-tert-butyl-4-methylphenol** | | |
| CAS-No 128-37-0<br>EC-No 204-881-4<br>EC-Index-No - | <0.025% | Acute aquatic toxicity (Category 1), H400<br>Chronic aquatic toxicity (Category 1), H410 |

For the full text of the H-Statements mentioned in this Section, see Section 16

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

| | |
|---|---|
| General advice | Show this safety data sheet to the doctor in attendance. |
| Inhalation | Move to fresh air in case of accidental inhalation of vapors. Keep patient warm. In case of shortness of breath, give oxygen. Apply artificial respiration only if patient is not breathing or under medical supervision. No artificial aspiration mouth to mouth or mouth to nose. Use suitable instruments/apparatus. |
| Skin contact | Remove contaminated clothing and wash affected skin with soap and water. If signs of poisoning appear, treat as for inhalation. Obtain medical attention. Wash contaminated clothing before reuse. Contaminated combustible material, e.g. clothing ignites more readily and burns fiercely. |
| Eye contact | If the substance has got into the eyes, immediately wash out with plenty of water at least 15 minutes. Obtain medical attention. |
| Ingestion | Rinse mouth. Immediately make victim drink water (two glasses at the most). Do not induce vomiting. Keep patient warm. In case of shortness of breath, give oxygen. Apply artificial respiration only if patient is not breathing or under medical supervision. No artificial aspiration mouth to mouth or mouth to nose. Use suitable instruments/apparatus. Obtain medical attention. Never give anything by mouth to an unconscious person. |

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

The most important known symptoms and effects are described in section 2.2 and section 11

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

Not Available

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

**Suitable extinguishing media**

Extinguish with carbon dioxide, dry chemical or foam. In the event of fire, cool tanks with water spray.

### 5.2 Special hazards arising from the substance or mixture

Vapors may form explosive mixture with air at ambient temperature. Flash back possible over considerable distance.

### 5.3 Advice for firefighters

Wear self-contained breathing apparatus and protective suit.

### 5.4 Further information

Standard procedure for chemical fires. Take measures to prevent electrostatic charging. Prevent firefighting water from entering surface water or groundwater.

## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

Evacuate personnel to safe areas. Do not breathe vapors or spray mist. Wear a positive-pressure supplied-air respirator, flame retardant antistatic protective clothing. Shut off leaks if without risk. Keep people away from and upwind of spill/leak.

### 6.2 Environmental precautions

Contain or absorb leaking liquid with sand or earth, consults an expert. Prevent liquid entering sewers, basements and workpits. If substance has entered a water course or sewer or contaminated soil, advise police.

### 6.3 Methods and materials for containment and cleaning up

Spillage: May react with combustible substances creating fire or explosion hazard and formation of toxic fumes. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Soak up with inert absorbent material (e.g. sand, silica gel or chemical absorbent pads). Prevent liquid entering sewers, basements and workpits; vapor may create explosive atmosphere. Transfer to covered steel drums. Dispose of promptly.

### 6.4 Reference to other sections

For disposal see **Section 13**.

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

Keep container tightly closed. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Use only in area provided with appropriate exhaust ventilation. Do not breathe vapors or spray mist. Avoid contact with skin, eyes and clothing. Do not empty into drains.

### 7.2 Conditions for safe storage, including any incompatibilities

Keep tightly closed in a dry, cool and well-ventilated place. Keep away from heat and sources of ignition. Keep out of direct sunlight and away from incompatible materials. Store in original container. Electrical equipment should be protected to the appropriate standard.

**Storage class 3(TRGS 510);** Flammable liquids.

### 7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

**Derived No Effect Level (DNEL)**

| Application Area | Health Effects | Exposure | Value |
|---|---|---|---|
| Worker | Long-term Local effects | Inhalation | 150 mg/m³ |
| Worker | Long-term Systemic effects | Inhalation | 150 mg/m³ |
| Worker | Long-term Systemic effects | Skin contact | 25 mg/kg Body weight |
| Consumer | Acute Local effects | Inhalation | 150 mg/m³ |
| Consumer | Acute Systemic effects | Inhalation | 150 mg/kg Body weight |
| Consumer | Long-term Systemic effects | Inhalation | 62 mg/m³ |
| Consumer | Long-term Systemic effects | Skin contact | 15 mg/kg Body weight |

**Predicted No Effect Concentration (PNEC)**

| Compartment | Value |
|---|---|
| Aquatic intermittent release | 21.6 mg/l |
| Fresh water | 4.32 mg/l |
| Fresh water sediment | 23.3 mg/kg |
| Marine water | 0.432 mg/l |
| Marine sediment | 2.33 mg/kg |
| Sewage treatment plant | 4.6 mg/l |
| Soil | 2.13 mg/kg |

### 8.2 Exposure controls

**Appropriate engineering controls**

The product should only be used in areas from which all naked lights and other sources of ignition have been excluded. Ventilation hoods and fans required when working with organic solvents or in hot melt applications.

**Individual protection measures (Personal protective equipment, PPE)**

**Eye/face protection**

Goggles giving complete protection to eyes.

**Skin protection**

Chemical resistant apron / flame retardant antistatic protective clothing, heavy duty work shoes.

Handle with gloves

- Splash contact wears gloves from butyl rubber material.

The select protective gloves have to satisfy the specifications of EU Directive 89/686 EEC and standard EN 374 derived from it.

**Respiratory protection**

In case of insufficient ventilation, wear suitable respiratory equipment. Required when vapor/aerosols are generated filter A (EN 141 or EN 14387).

**Environmental exposure controls**

Prevent liquid entering sewers, basements and workpits.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

| | |
|---|---|
| Physical State | Liquid |
| Color | Colorless |
| Odour | Ether like |
| Odour Threshold | Not Available |
| pH | 7-8 at 200g/l of $H_2O$ at 20 ºC |
| Melting point/range | -108.5 ºC |
| Boiling point/range | 65-66 ºC at 1013 hPa |
| Flash point | -21.5 ºC (closed cup) |
| Evaporation rate | Not Available |
| Flammability (solid, gas) | Not Available |
| Explosion limits: lower | 1.5 % (V) |
| upper | 12.4 % (V) |
| Vapor Pressure | 173 hPa at 20ºC |
| Relative Vapor Density | 2.5 |
| Density | 0.890 g/ml at 20ºC |
| Water solubility | Soluble at 20ºC |
| Partition coefficient (n-octanol/water) | log Pow: 0.45 |
| Auto-Ignition temperature | 215 °C |
| Decomposition Temperature | Not Available |
| Viscosity | 0.48 mPa.s at 20ºC |
| Explosive properties | Not Explosive |
| Oxidizing properties | The substance or mixture is not classified as oxidizing. |

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

Highly inflammable. Light sensitive. Sensitive to air.

**10.2 Chemical stability**

Stable under recommended storage conditions.

**10.3 Possibility of hazardous reactions**

Risk of explosion in contact with air (formation of peroxides), alkali hydroxide, potassium, strong oxidizing agents, lithium aluminium hydride, thionyl chloride.

The substance can react dangerously with bromine, acids, calcium hydride/heat, metal halides, titanium tetrachloride.

**10.4 Conditions to avoid**

Heating.

**10.5 Incompatible materials**

Alkali hydroxides, hydrides, air, oxygen, oxidizing agent, bromine.
Unsuitable working materials with various plastic, rubber, tin.

**10.6 Hazardous decomposition products**

Peroxide, Carbon monoxides, Carbon dioxides (Hazardous decomposition products from under fire condition).

## SECTION 11: Toxicological information

**11.1 Information on toxicological effects**

**Acute toxicity**

$LD_{50}$ (oral, rat): 1650 mg/kg
$LD_{50}$ (dermal, rat): >2000 mg/kg
$LC_{50}$ (inhalation, rat): 53.9 mg/l/4h

**Skin corrosion/irritation**

No skin irritation

**Serious eye damage/eye irritation**

Causes serious eye irritation.

**Respiratory or skin sensitization**

The Sensitization test (guinea pig) is negative.
Experience in man is negative.

**Germ cell mutagenicity**

Bacterial mutagenicity; Ames test is negative.
No indication of mutagenic activity.

**Carcinogenicity**

Suspected of causing cancer.

**Reproductive toxicity**

Not Available

**Specific target organ toxicity (STOT) - single exposure**

May cause respiratory irritation. May cause drowsiness or dizziness.

**Specific target organ toxicity (STOT) - repeated exposure**

Not Available

**Aspiration hazard**

Not Available

**Further information**

After inhalation in high does: drowsiness, narcosis.
The product should be handled with the care usual when dealing with chemicals.

## SECTION 12: Ecological information

**12.1 Toxicity**

| | |
|---|---|
| Toxicity to fish | $LC_{50}$ P. promelas: 2160 mg/l/96h (in soft water). |
| Toxicity to daphnia and other aquatic invertebrates | $EC_{50}$ Daphnia magna: 382 mg/l/24h. |
| Toxicity to algae | $IC_5$ Sc.quadricauda: 3700 mg/l/8d. |
| Toxicity to bacteria | $EC_5$ Ps. Putida: 580 mg/l/16h.<br>$EC_5$ M.aeruginosa: 225 mg/l/8d. |

**12.2 Persistence and degradability**

Biodegradability: 39% /28d. Not readily biodegradable.

**12.3 Bioaccumulative potential**

Partition coefficient (n-octanol/water): log Pow: 0.45 (experimental).
No bioaccumulation is to be expected (log P o/w <1)

**12.4 Mobility in soil**

Not Available

**12.5 Results of PBT and vPvB assessment**

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

**12.6 Other adverse effects**

Do not allow to enter waters, waste water or soil.

## SECTION 13: Disposal considerations

**13.1 Waste treatment methods**

**Product**

There are no uniform EC Regulations for the disposal of chemicals or residues. Chemical residues generally count as special waste. The disposal of the latter is regulated in the EC member countries through corresponding law and regulations. We recommend that you contact either the authorities in charge or approved waste disposal companies which will advise you on how to dispose of special waste or burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Observe all federal, state, and local environmental regulations.

**Contaminated packaging**

Disposal in compliance with official regulations. Handle contaminated packaging as hazardous waste in the same way of the substance itself. If not officially specified differently, non-contaminated packaging may be treated like household waste or recycled.

## SECTION 14: Transport information

**Land Transport (ADR/RID)**

| | |
|---|---|
| UN Number | 2056 |
| UN proper shipping name | TETRAHYDROFURAN |
| Transport hazard class(es) | 3 |
| Packing group | II |
| Environmental hazards | No |

| | |
|---|---|
| Special precautions for user | Yes |

**Sea transport (IMDG)**

| | |
|---|---|
| UN Number | 2056 |
| UN proper shipping name | TETRAHYDROFURAN |
| Transport hazard class(es) | 3 |
| Packing group | II |
| Marine pollutant | No |
| Special precautions for user | Yes |
| EmS | F-E S-D |

**Air transport (IATA)**

| | |
|---|---|
| UN Number | 2056 |
| UN proper shipping name | TETRAHYDROFURAN |
| Transport hazard class(es) | 3 |
| Packing group | II |
| Environmental hazards | No |
| Special precautions for user | No |

**River transport (AND/ADNR)**
(Not examined)

## SECTION 15: Regulatory information

This safety datasheet complies with the requirements of Globally Harmonized System of Classification and Labelling of Chemicals (GHS)

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
Not Available

**15.2 Chemical Safety Assessment**
For this product a chemical safety assessment was not carried out.

## SECTION 16: Other information

**Recommended restrictions**
Take notice of labels and safety data sheets for the working. Chemicals Take necessary action to avoid static electricity discharge.

**Reference**
Globally Harmonized System of Classification and Labelling of Chemicals (GHS).
Labelling according to EC Directives 67/548 EEC and Regulation (EC) No 1272/2008.
Transportation information according to Recommendations on the Transport of Dangerous Goods, Model Regulations. Twelfth revised edition. United Nations.
Institute for Occupational Safety and Health of the German Social Accident Insurance in Sankt Augustin/Germany, Source: IFA for Databases on hazardous substances (GESTIS).

**Further information**
Contact to RCI Labscan Limited.

**Revision Date**
23/05/2025