1. PRODUCT AND COMPANY IDENTIFICATION

Product name: TBPB
Chemical nature: Organic Peroxide liquid

Manufacturer or supplier's details
Company: Shanghai United Initiators Trading Co. Ltd.
Address: 1702, Asia Mansion
650 Han Kou Road
Shanghai, China 09 200001
Telephone: +86 21 34293909
Emergency telephone number: +86 21 34293909
E-mail address: cs-initiators.cn@united-in.com

Recommended use of the chemical and restrictions on use
Recommended use: polymerisation initiators

2. HAZARDS IDENTIFICATION

Emergency Overview
Appearance: liquid
Colour: light yellow
Odour: ester-like

Heating may cause a fire. Causes skin irritation. May cause an allergic skin reaction. Harmful if inhaled. Very toxic to aquatic life. Harmful to aquatic life with long lasting effects.

GHS Classification
Organic peroxides: Type C
Acute toxicity (Inhalation): Category 4
Skin corrosion/irritation: Category 2
Skin sensitisation: Category 1
Short-term (acute) aquatic hazard: Category 1
Long-term (chronic) aquatic hazard: Category 3

GHS label elements
SAFETY DATA SHEET
to GB/T 16483 and GB/T 17519

TBPB

Version 1.1  
Revision Date: 2019/11/28  
SDS Number: 600000000000  
Date of last issue: 2017/05/04  
Date of first issue: 2017/05/04

Hazard pictograms:

Signal word: Danger

Hazard statements:
H242 Heating may cause a fire.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H332 Harmful if inhaled.
H400 Very toxic to aquatic life.
H412 Harmful to aquatic life with long lasting effects.

Precautionary statements:

Prevention:
P210 Keep away from heat/sparks/open flames/hot surfaces.  
No smoking.
P220 Keep/Store away from clothing/ strong acids, bases,  
heavy metal salts and other reducing substances /combustible  
materials.
P234 Keep only in original container.
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.  
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P272 Contaminated work clothing should not be allowed out of  
the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves/ eye protection/ face protection.

Response:
P302 + P352 IF ON SKIN: Wash with plenty of water.  
P304 + P340 + P312 IF INHALED: Remove person to fresh air  
and keep comfortable for breathing. Call a POISON  
CENTER/doctor if you feel unwell.
P333 + P313 If skin irritation or rash occurs: Get medical ad-  
vice/ attention.
P362 + P364 Take off contaminated clothing and wash it before  
reuse.
P391 Collect spillage.

Storage:
P410 Protect from sunlight.
P411 + P235 Store at temperatures not exceeding 30 °C/ 86  
°F. Keep cool.
P420 Store away from other materials.

Disposal:
P501 Dispose of contents/ container to an approved waste  
disposal plant.

Physical and chemical hazards:

Heating may cause a fire.
Health hazards
Harmful if inhaled. Causes skin irritation. May cause an allergic skin reaction.

Environmental hazards
Very toxic to aquatic life. Harmful to aquatic life with long lasting effects.

Other hazards which do not result in classification
None known.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance
Substance name : tert-Butyl perbenzoate
CAS-No. : 614-45-9

Components

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>tert-Butyl perbenzoate</td>
<td>614-45-9</td>
<td>&lt;= 100</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

General advice : Move out of dangerous area.
Show this safety data sheet to the doctor in attendance.
Do not leave the victim unattended.
Symptoms of poisoning may appear several hours later.
Call a physician immediately.

If inhaled : Call a physician or poison control centre immediately.
If unconscious, place in recovery position and seek medical advice.
Keep respiratory tract clear.
If breathed in, move person into fresh air.

In case of skin contact : In case of contact, immediately flush skin with plenty of water
for at least 15 minutes while removing contaminated clothing and shoes.
Wash contaminated clothing before re-use.
If on skin, rinse well with water.
If on clothes, remove clothes.
If symptoms persist, call a physician.

In case of eye contact : In the case of contact with eyes, rinse immediately with plenty
of water and seek medical advice.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.

If swallowed : Keep respiratory tract clear.
Call a physician immediately.
Rinse mouth thoroughly with water.
Most important symptoms and effects, both acute and delayed:
Causes skin irritation.
May cause an allergic skin reaction.
Harmful if inhaled.

Protection of first-aiders:
First Aid responders should pay attention to self-protection and use the recommended protective clothing.

Notes to physician:
Treat symptomatically and supportively.

5. FIREFIGHTING MEASURES

Suitable extinguishing media:
- Water spray jet
- Alcohol-resistant foam
- Carbon dioxide (CO2)
- Dry chemical

Unsuitable extinguishing media:
- High volume water jet

Specific hazards during firefighting:
Contact with incompatible materials or exposure to temperatures exceeding SADT may result in a self-accelerating decomposition reaction with release of flammable vapors which may auto-ignite.
The product burns violently.
Flash back possible over considerable distance.
Vapours may form explosive mixtures with air.
The product will float on water and can be reignited on surface water.
Cool closed containers exposed to fire with water spray.

Specific extinguishing methods:
- 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.
- Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

- Do not use a solid water stream as it may scatter and spread fire.
- Remove undamaged containers from fire area if it is safe to do so.
- Use water spray to cool unopened containers.

Special protective equipment for firefighters:
Wear self-contained breathing apparatus for firefighting if necessary.
Use personal protective equipment.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:
- Use personal protective equipment.
- Ensure adequate ventilation.
- Remove all sources of ignition.
- Follow safe handling advice and personal protective equipment recommendations.
Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

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 and materials for containment and cleaning up:
- Contact with incompatible substances can cause decomposition at or below SADT.
- Clear spills immediately.
- Suppress (knock down) gases/vapours/mists with a water spray jet.
- To clean the floor and all objects contaminated by this material, use plenty of water.
- Soak up with inert absorbent material.
- Isolate waste and do not reuse.
- Non-sparking tools should be used.
- Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable.

Prevention of secondary hazards:
- Never return spills in original containers for re-use.
- Treat recovered material as described in the section “Disposal considerations”.

### 7. HANDLING AND STORAGE

**Handling**

Technical measures:
- See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.

Advice on protection against fire and explosion:
- Keep away from heat and sources of ignition.
- Use only explosion-proof equipment.
- Keep away from combustible material.

Advice on safe handling:
- Do not swallow.
- Do not breathe vapours/dust.
- Avoid exposure - obtain special instructions before use.
- Avoid contact with skin and eyes.
- Avoid formation of aerosol.
- Take precautionary measures against static discharges.
- Never return any product to the container from which it was originally removed.
- Provide sufficient air exchange and/or exhaust in work rooms.
- Avoid confinement.
- Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- Smoking, eating and drinking should be prohibited in the application area.
- Wash thoroughly after handling.
- For personal protection see section 8.
- Persons susceptible to skin sensitisation problems or asthma,
allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.
Protect from contamination.

Avoidance of contact: Accelerators, strong acids and bases, heavy metals and heavy metal salts, reducing agents

Storage
Conditions for safe storage: Avoid impurities (e.g. rust, dust, ash), risk of decomposition. Electrical installations / working materials must comply with the technological safety standards. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Store in original container. Keep containers tightly closed in a cool, well-ventilated place. Store in accordance with the particular national regulations.

Materials to avoid: Keep away from strong acids, bases, heavy metal salts and other reducing substances.

Recommended storage temperature: 10 - 30 °C

Further information on storage stability: No decomposition if stored normally.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters
Contains no substances with occupational exposure limit values.

Engineering measures: Minimize workplace exposure concentrations.

Personal protective equipment
Filter type: ABEK-filter

Respiratory protection: In the case of dust or aerosol formation use respirator with an approved filter.

Eye/face protection: Tightly fitting safety goggles Please wear suitable protective goggles. Also wear face protection if there is a splash hazard. Ensure that eyewash stations and safety showers are close to the workstation location.

Skin and body protection: Select appropriate protective clothing based on chemical resistance data and an assessment of the local exposure potential.

Hand protection
Material: butyl-rubber
Break through time: >= 480 min
Glove thickness: 0.5 mm

Remarks: Choose gloves to protect hands against chemicals depending on the concentration and quantity of the hazardous substance and specific to place of work. For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer. Wash hands before breaks and at the end of workday.

Hygiene measures: Keep away from food and drink. When using do not eat or drink. When using do not smoke. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: liquid
Colour: light yellow
Odour: ester-like
Odour Threshold: No data available
pH: No data available
Melting point/freezing point: ca. 10 °C
Initial boiling point and boiling range: Decomposition: Decomposes below the boiling point.
Flash point: 100 °C
   Method: ISO 3679
Evaporation rate: No data available
Flammability (solid, gas): Not applicable
Upper explosion limit / Upper flammability limit: No data available
Lower explosion limit / Lower flammability limit: No data available
Vapour pressure: 0.003 hPa (20 °C)
Relative vapour density: No data available
Density: 1.04 g/cm³ (20 °C)
Solubility(ies)
Water solubility : 1.18 g/l insoluble
Solubility in other solvents : completely miscible
   Solvent: Alcohol
   completely miscible
   Solvent: Phthalates
Partition coefficient: n-octanol/water : log Pow: 3.0 (25 °C)
Self-Accelerating decomposition temperature (SADT) : 60 °C
   Method: UN-Test H.4
   SADT-Self Accelerating Decomposition Temperature. Lowest
temperature at which the tested package size will undergo a self-accelerating decomposition reaction.
Viscosity
   Viscosity, dynamic : 8 mPa.s (20 °C)
Explosive properties : Not explosive
Oxidizing properties : The substance or mixture is not classified as oxidizing.
   Organic peroxide
Refractive index : 1.499 (20 °C)

10. STABILITY AND REACTIVITY

Reactivity : Stable under recommended storage conditions.
Chemical stability : Stable under recommended storage conditions.
Possibility of hazardous reactions : Vapours may form explosive mixture with air.
Conditions to avoid : Protect from contamination.
   Contact with incompatible substances can cause decomposi-
   tion at or below SADT.
   Heat, flames and sparks.
   Avoid confinement.
Incompatible materials : Accelerators, strong acids and bases, heavy metals and
   heavy metal salts, reducing agents
Hazardous decomposition products : Irritant, caustic, flammable, noxious/toxic gases and vapours
can develop in the case of fire and decomposition

11. TOXICOLOGICAL INFORMATION

Acute toxicity
Harmful if inhaled.
Product:
Acute inhalation toxicity: LC50 (Rat): > 1.01 mg/l
  Exposure time: 4 h
  Test atmosphere: dust/mist
  Method: OECD Test Guideline 436

Components:
 tert-Butyl perbenzoate:
Acute oral toxicity: LD0 (Rat): > 2,000 mg/kg
  Method: OECD Test Guideline 423
  Assessment: The substance or mixture has no acute oral toxicity

Acute inhalation toxicity: LC50 (Rat): 1.01 mg/l
  Exposure time: 4 h
  Test atmosphere: dust/mist
  Method: OECD Test Guideline 436

Acute dermal toxicity: LD0 (Rat): > 2,000 mg/kg
  Method: OECD Test Guideline 402
  Assessment: The substance or mixture has no acute dermal toxicity

Skin corrosion/irritation
Causes skin irritation.

Product:
Remarks: May cause skin irritation in susceptible persons.

Skin corrosion/irritation
Causes skin irritation.

Components:
 tert-Butyl perbenzoate:
Species: Rabbit
Method: OECD Test Guideline 404
Result: Skin irritation

Serious eye damage/eye irritation
Not classified based on available information.

Product:
Remarks: Vapours may cause irritation to the eyes, respiratory system and the skin.

Components:
 tert-Butyl perbenzoate:
Species: Rabbit
Result: No eye irritation
Method: OECD Test Guideline 405
Respiratory or skin sensitisation

Skin sensitisation
May cause an allergic skin reaction.

Respiratory sensitisation
Not classified based on available information.

Product:
Remarks: Causes sensitisation.

Components:

tert-Butyl perbenzoate:
Species: Mouse
Method: OECD Test Guideline 429
Result: May cause sensitisation by skin contact.

Germ cell mutagenicity
Not classified based on available information.

Components:

tert-Butyl perbenzoate:
Genotoxicity in vitro:
Test Type: Bacterial reverse mutation assay (AMES)
Method: OECD Test Guideline 471
Result: positive

Test Type: In vitro mammalian cell gene mutation test
Method: OECD Test Guideline 476
Result: positive

Test Type: Chromosome aberration test in vitro
Method: OECD Test Guideline 473
Result: positive

Test Type: Mouse Lymphoma
Result: positive

Genotoxicity in vivo:
Test Type: Micronucleus test
Species: Mouse (male and female)
Application Route: Oral
Result: negative

Carcinogenicity
Not classified based on available information.

Components:

tert-Butyl perbenzoate:
Remarks: This information is not available.

Reproductive toxicity
Not classified based on available information.
Components:

**tert-Butyl perbenzoate:**

Effects on fertility: Species: Rat
Application Route: Oral
General Toxicity - Parent: NOAEL: 300 mg/kg body weight
Method: OECD Test Guideline 421

Effects on foetal development: Species: Rat
Application Route: Oral
General Toxicity Maternal: NOAEL: 300 mg/kg body weight
Method: OECD Test Guideline 414

**STOT - single exposure**
Not classified based on available information.

**STOT - repeated exposure**
Not classified based on available information.

**Aspiration toxicity**
Not classified based on available information.

**Further information**

**Product:**
Remarks: No data available

---

12. **ECOLOGICAL INFORMATION**

**Ecotoxicity**

**Components:**

**tert-Butyl perbenzoate:**

Toxicity to fish: LC50 (Danio rerio (zebra fish)): 1.6 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates: EC50 (Daphnia magna (Water flea)): 11 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

Toxicity to algae: EC50 (Pseudokirchneriella subcapitata (green algae)): 0.8 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): 0.72 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

M-Factor (Acute aquatic toxicity): 1
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity): EC10 (Daphnia magna (Water flea)): 0.49 mg/l
Exposure time: 21 d
Method: OECD Test Guideline 211

Toxicity to microorganisms: EC50: 43 mg/l
Exposure time: 0.5 h
Method: OECD Test Guideline 209

Persistence and degradability
Components:

tert-Butyl perbenzoate:
Biodegradability: Result: Readily biodegradable.
Method: OECD Test Guideline 301D

Bioaccumulative potential
Components:

tert-Butyl perbenzoate:
Partition coefficient: n-octanol/water: log Pow: 2.89 (25 °C)

Mobility in soil
No data available

Other adverse effects
Product:
Additional ecological information: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Very toxic to aquatic life.
Harmful to aquatic life with long lasting effects.

13. DISPOSAL CONSIDERATIONS

Disposal methods
Waste from residues: The product should not be allowed to enter drains, water courses or the soil.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Dispose of wastes in an approved waste disposal facility.

Contaminated packaging: Empty remaining contents.
Dispose of as unused product.
Do not re-use empty containers.
Do not burn, or use a cutting torch on, the empty drum.
Dispose of in accordance with local regulations.
14. TRANSPORT INFORMATION

### International Regulations

**UNRTDG**
- **UN number**: UN 3103
- **Proper shipping name**: ORGANIC PEROXIDE TYPE C, LIQUID (tert-BUTYL PEROXYBENZOATE)
- **Class**: 5.2
- **Packing group**: Not assigned by regulation
- **Labels**: 5.2

**IATA-DGR**
- **UN/ID No.**: UN 3103
- **Proper shipping name**: Organic peroxide type C, liquid (tert-Butyl peroxybenzoate)
- **Class**: 5.2
- **Packing group**: Not assigned by regulation
- **Labels**: Organic Peroxides, Keep Away From Heat
- **Packing instruction (cargo aircraft)**: 570
- **Packing instruction (passenger aircraft)**: 570

**IMDG-Code**
- **UN number**: UN 3103
- **Proper shipping name**: ORGANIC PEROXIDE TYPE C, LIQUID (tert-BUTYL PEROXYBENZOATE)
- **Class**: 5.2
- **Packing group**: Not assigned by regulation
- **Labels**: 5.2
- **EmS Code**: F-J, S-R
- **Marine pollutant**: yes

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**
Not applicable for product as supplied.

### National Regulations

**GB 6944/12268**
- **UN number**: UN 3103
- **Proper shipping name**: ORGANIC PEROXIDE TYPE C, LIQUID (tert-BUTYL PEROXYBENZOATE)
- **Class**: 5.2
- **Packing group**: Not assigned by regulation
- **Labels**: 5.2

### Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.
15. REGULATORY INFORMATION

National regulatory information
Gefahrgruppe nach § 3 BGV B4: Ib, S+ (German regulatory requirements)
Produkt unterliegt dem Sprengstoffgesetz (SprengG; Stoffgruppe C). (German regulatory requirements)

Regulations on Safety Management of Hazardous Chemicals
Catalogue of Hazardous Chemicals : Listed
Identification of Major Hazard Installations for Dangerous Chemicals (GB 18218)
Category
Organic peroxides
Threshold quantity
50 t

Hazardous Chemicals for Priority Management under SAWs : Listed

The components of this product are reported in the following inventories:
DSL (CA) : All components of this product are on the Canadian DSL
AICS (AU) : On the inventory, or in compliance with the inventory
NZIoC (NZ) : On the inventory, or in compliance with the inventory
ENCS (JP) : On the inventory, or in compliance with the inventory
ISHL (JP) : On the inventory, or in compliance with the inventory
KECI (KR) : On the inventory, or in compliance with the inventory
PICCS (PH) : On the inventory, or in compliance with the inventory
IECSC (CN) : On the inventory, or in compliance with the inventory
TCSI (TW) : On the inventory, or in compliance with the inventory
TSCA (US) : On TSCA Inventory

16. OTHER INFORMATION

Further information
Other information : This safety datasheet only contains information relating to safety and does not replace any product information or product specification. These safety instructions also apply to empty packaging which may still contain product residues.
Sources of key data used to compile the Safety Data Sheet:


Date format: yyyy/mm/dd

Full text of other abbreviations

AICS - Australian Inventory of Chemical Substances; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; CPR - Controlled Products Regulations; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50% of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

CN / EN