

SAFETY DATA SHEETS

According to Globally Harmonized System of Classification and Labelling of Chemicals (GHS) - Sixth revised edition

Version: 1.0

Creation Date: Aug 12, 2017

Revision Date: Aug 12, 2017

1. Identification

1.1 GHS Product identifier

Product name 4-tert-Butyltoluene

1.2 Other means of identification

Product number -

Other names Benzene, 1-(1,1-dimethylethyl)-4-methyl-

1.3 Recommended use of the chemical and restrictions on use

Identified uses For industry use only.

Uses advised against no data available

2. Hazard identification

2.1 Classification of the substance or mixture

Acute toxicity - Oral, Category 4

Eye irritation, Category 2

Acute toxicity - Inhalation, Category 2

Reproductive toxicity, Category 2

Specific target organ toxicity – single exposure, Category 1

Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 2

2.2 GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

Hazard statement(s)

H302 Harmful if swallowed

H319 Causes serious eye irritation

H330 Fatal if inhaled

H361 Suspected of damaging fertility or the unborn child

H370 Causes damage to organs

H411 Toxic to aquatic life with long lasting effects

Precautionary statement(s)

Prevention

P264 Wash ... thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

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

P271 Use only outdoors or in a well-ventilated area.

P284 [In case of inadequate ventilation] wear respiratory protection.

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P273 Avoid release to the environment.

Response

P301+P312 IF SWALLOWED: Call a POISON CENTER/doctor/...if you feel unwell.

P330 Rinse mouth.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337+P313 If eye irritation persists: Get medical advice/attention.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P310 Immediately call a POISON CENTER/doctor/...

P320 Specific treatment is urgent (see ... on this label).

P308+P313 IF exposed or concerned: Get medical advice/ attention.

P308+P311 IF exposed or concerned: Call a POISON CENTER/doctor/...

P321 Specific treatment (see ... on this label).

P391 Collect spillage.

Storage

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

P405 Store locked up.

Disposal

P501 Dispose of contents/container to ...

2.3 Other hazards which do not result in classification

none

3. Composition/information on ingredients

3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
4-tert-Butyltoluene	4-tert-Butyltoluene	98-51-1	none	100%

4. First-aid measures

4.1 Description of necessary first-aid measures

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled

Fresh air, rest. Half-upright position. Refer immediately for medical attention.

In case of skin contact

Rinse and then wash skin with water and soap.

In case of eye contact

Rinse with plenty of water for several minutes (remove contact lenses if easily possible).

If swallowed

Rinse mouth. Give one or two glasses of water to drink. Refer for medical attention .

4.2 Most important symptoms/effects, acute and delayed

Exposure Routes: inhalation, ingestion, skin and/or eye contact Symptoms: Irritation eyes, skin; dry nose, throat; headache; low blood pressure, tachycardia, abnormalities cardiovascular system stress; central nervous system, hematopoietic depression; metallic taste; liver, kidney injury Target Organs: Eyes, skin, respiratory system, cardiovascular system, central nervous system, bone marrow, liver, kidneys (NIOSH, 2016)

4.3 Indication of immediate medical attention and special treatment needed, if necessary

Flush eyes with water. Wash off contaminated areas of body with soap and water. Gastric lavage (stomach wash), if swallowed, followed by saline catharsis.

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media

Fires involving this compound should be controlled with a dry chemical, carbon dioxide or halon extinguisher.

5.2 Specific hazards arising from the chemical

This chemical is combustible.

5.3 Special protective actions for fire-fighters

Wear self-contained breathing apparatus for firefighting if necessary.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

6.2 Environmental precautions

Personal protection: self-contained breathing apparatus. Do NOT let this chemical enter the environment. Ventilation. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

6.3 Methods and materials for containment and cleaning up

Absorb on paper. Evaporate on a glass or an iron dish in hood. Burn the paper.

7. Handling and storage

7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Avoid exposure - obtain special instructions before use. Provide appropriate exhaust ventilation at places where dust is formed. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Separated from food and feedstuffs and strong oxidants. Well closed. Keep in a well-ventilated room. Store in an area without drain or sewer access. Provision to contain effluent from fire extinguishing.

8. Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure limit values

Recommended Exposure Limit: 10 Hr Time-Weighted avg: 10 ppm (60 mg/cu m)

Recommended Exposure Limit: 15 Min Short-Term Exposure Limit: 20 ppm (120 mg/cu m).

Biological limit values

no data available

8.2 Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

8.3 Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Safety glasses with side-shields conforming to EN166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Wear impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique(without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Respiratory protection

Wear dust mask when handling large quantities.

Thermal hazards

no data available

9. Physical and chemical properties

Physical state	colourless liquid
Colour	CLEAR, COLORLESS LIQ
Odour	DISTINCT AROMATIC ODOR
Melting point/ freezing point	28°C(lit.)
Boiling point or initial boiling point and boiling range	193°C
Flammability	Class IIIA Combustible Liquid: Fl.P. at or above 60°C and below 93.33°C.Combustible.
Lower and upper explosion limit / flammability limit	no data available
Flash point	61°C(lit.)
Auto-ignition temperature	510°C
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	no data available
Solubility	In water:0.06 g/100 mL (20 °C)
Partition coefficient n-octanol/water (log value)	4.35
Vapour pressure	less than or equal to 1 mm Hg at 20°C
Density and/or relative density	0.8612
Relative vapour density	4.62 (AIR= 1)
Particle characteristics	no data available

10. Stability and reactivity

10.1 Reactivity

no data available

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

Flammable. Moderately dangerous fire risk. As a result of flow, agitation, etc., electrostatic charges can be generated. P-TERT-BUTYL TOLUENE may react with oxidizing materials.

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Oxidizers.

10.6 Hazardous decomposition products

When heated to decomposition it emits acrid smoke and irritating fumes.

11. Toxicological information

Acute toxicity

- Oral: no data available
- Inhalation: LC50 Rat inhalation 165 ppm/8 hr
- Dermal: LD50 Rabbit percutaneous 13.8 to 27.8 ml/kg

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

no data available

Reproductive toxicity

no data available

STOT-single exposure

no data available

STOT-repeated exposure

no data available

Aspiration hazard

no data available

12. Ecological information

12.1 Toxicity

- Toxicity to fish: no data available
- Toxicity to daphnia and other aquatic invertebrates: no data available
- Toxicity to algae: no data available
- Toxicity to microorganisms: no data available

12.2 Persistence and degradability

Using a standard dilution method over a 5-day inoculation period and a seed from an effluent of a biological sanitary waste treatment plant, 4-t-butyltoluene was found to have a 2% theoretical BOD when the seed was not adapted and 6% theoretical BOD when the seed was adapted(1).

12.3 Bioaccumulative potential

Based upon a reported water solubility of 5.5 ppm at 25°C(1), the BCF for 4-t-butyltoluene can be estimated to be 236 from a recommended regression-derived equation(2,SRC). This estimated BCF indicates that some bioconcentration in aquatic organisms may occur(SRC).

12.4 Mobility in soil

Based upon a reported water solubility of 5.5 ppm at 25°C(1), the Koc for 4-t-butyltoluene can be estimated to be 1700 from a linear regression-derived equation(2,SRC). Using a structure estimation method based on molecular connectivity indexes, the Koc for 4-t-butyltoluene can be estimated to be 1900(3). These estimated Koc values indicate that 4-t-butyltoluene will have low mobility in soil(4).

12.5 Other adverse effects

no data available

13. Disposal considerations

13.1 Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

14. Transport information

14.1 UN Number

ADR/RID: UN2667

IMDG: UN2667

IATA: UN2667

14.2 UN Proper Shipping Name

ADR/RID: BUTYLTOLUENES

IMDG: BUTYLTOLUENES

IATA: BUTYLTOLUENES

14.3 Transport hazard class(es)

ADR/RID: 6.1

IMDG: 6.1

IATA: 6.1

14.4 Packing group, if applicable

ADR/RID: III

IMDG: III

IATA: III

14.5 Environmental hazards

ADR/RID: yes

IMDG: yes

IATA: yes

14.6 Special precautions for user

no data available

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

no data available

15. Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

Chemical name	Common names and synonyms	CAS number	EC number
4-tert-Butyltoluene	4-tert-Butyltoluene	98-51-1	none
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
EC Inventory			Listed.
United States Toxic Substances Control Act (TSCA) Inventory			Listed.
China Catalog of Hazardous chemicals 2015			Not Listed.
New Zealand Inventory of Chemicals (NZIoC)			Listed.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)			Listed.
Vietnam National Chemical Inventory			Not Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)			Listed.

16. Other information

Information on revision

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Abbreviations and acronyms

- CAS: Chemical Abstracts Service
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transportation Association
- TWA: Time Weighted Average
- STEL: Short term exposure limit
- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%
- EC50: Effective Concentration 50%

References

- IPCS - The International Chemical Safety Cards (ICSC), website:
<http://www.ilo.org/dyn/icsc/showcard.home>
- HSDB - Hazardous Substances Data Bank, website:
<https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>
- IARC - International Agency for Research on Cancer, website:
<http://www.iarc.fr/>
- eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website:
http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
- CAMEO Chemicals, website:
<http://cameochemicals.noaa.gov/search/simple>
- ChemIDplus, website:
<http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>
- ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: <http://www.phmsa.dot.gov/hazmat/library/erg>
- Germany GESTIS-database on hazard substance, website:
<http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>
- ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. We as supplier shall not be held liable for any damage resulting from handling or from contact with the above product.