Di-tert-Butyl Polysulfide (TBPS 454)

Version 1.7 Revision Date 2018-02-01

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

Product information

Product Name : Di-tert-Butyl Polysulfide (TBPS 454)
Material : 1120381, 1072616, 1086440, 1086442, 1086441, 1024577, 1024572, 1024785, 1024784, 1024573, 1024574, 1024576, 1024578, 1024575, 1105172

Company : Chevron Phillips Chemical Company LP
Specialty Chemicals
10001 Six Pines Drive
The Woodlands, TX 77380

Emergency telephone:

Health:
866.442.9628 (North America)
1.832.813.4984 (International)
Transport:
CHEMTREC 800.424.9300 or 703.527.3887(int'l)
Asia: CHEMWATCH (+612 9186 1132) China: 0532 8388 9090
EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
Mexico CHEMTREC 01-800-681-9531 (24 hours)
South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600
Argentina: +(54)-1159839431

Responsible Department : Product Safety and Toxicology Group
E-mail address : SDS@CPChem.com
Website : www.CPChem.com

SECTION 2: Hazards identification

Classification of the substance or mixture
This product has been classified in accordance with the hazard communication standard 29 CFR 1910.1200; the SDS and labels contain all the information as required by the standard.

Classification

: Skin sensitization, Category 1

Labeling

Symbol(s) :

Signal Word : Warning

Hazard Statements : H317: May cause an allergic skin reaction.

Precautionary Statements : **Prevention:**
P261 Avoid breathing dust/fume/gas/mist/vapors/spray.
P272 Contaminated work clothing must not be allowed out of the workplace.
P280 Wear protective gloves.
Response:
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P363 Wash contaminated clothing before reuse.
Disposal:
P501 Dispose of contents/ container to an approved waste disposal plant.

Carcinogenicity:

IARC No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

SECTION 3: Composition/information on ingredients

Synonyms : Tertiary-Butyl Polysulfide
di-t-Butyl Polysulfide
tert-Butyl Polysulfide
Polysulfides, di-tert-Butyl
CPChem TBPS 454

Molecular formula : C8H18Sx (x = average of 4.0)

Component	CAS-No.	Weight %
Di-tert-butyl Polysulfide	68937-96-2	90 - 100

SECTION 4: First aid measures

General advice : Move out of dangerous area. Show this material safety data sheet to the doctor in attendance.

If inhaled : If unconscious, place in recovery position and seek medical advice. If symptoms persist, call a physician.

In case of skin contact	:	If on skin, rinse well with water.
In case of eye contact	:	Flush eyes with water as a precaution. 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. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.

SECTION 5: Firefighting measures

Flash point	:	103 °C (217 °F) Method: ASTM D 93
Autoignition temperature	:	225 °C (437 °F) at 1,005.20 - 1,009.40 hPa Information given is based on data obtained from similar substances.
Unsuitable extinguishing media	:	High volume water jet.
Specific hazards during fire fighting	:	Do not allow run-off from fire fighting to enter drains or water courses.
Special protective equipment for fire-fighters	:	Wear self-contained breathing apparatus for firefighting if necessary.
Further information	:	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.
Fire and explosion protection	:	Normal measures for preventive fire protection.
Hazardous decomposition products	:	Carbon oxides. Sulfur oxides.

SECTION 6: Accidental release measures

Personal precautions	:	Use personal protective equipment.
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 for cleaning up	:	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal.

SECTION 7: Handling and storage

Handling

Advice on safe handling	:	Do not breathe vapors/dust. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Dispose of rinse water in accordance with local and national regulations. Persons susceptible to skin sensitization problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.
Advice on protection against fire and explosion	:	Normal measures for preventive fire protection.

Storage

Requirements for storage areas and containers	:	Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Electrical installations / working materials must comply with the technological safety standards.

SECTION 8: Exposure controls/personal protection

Hazardous components without workplace control parameters

Engineering measures

Adequate ventilation to control airborned concentrations below the exposure guidelines/limits. Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

Personal protective equipment

Respiratory protection	:	Wear a NIOSH approved respirator that provides protection when working with this material if exposure to harmful levels of airborne material may occur, such as:. Wear a supplied-air NIOSH approved respirator unless ventilation or other engineering controls are adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure. Air-Purifying Respirator for Organic Vapors. Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.
Hand protection	:	The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Eye protection	:	Eye wash bottle with pure water. Tightly fitting safety goggles.
Skin and body protection	:	Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate:. Remove and wash contaminated clothing before re-use. Skin should be washed after contact. Footwear protecting against chemicals.
Hygiene measures	:	Wash hands before breaks and at the end of workday.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Appearance

Form	:	Liquid
Physical state	:	Liquid
Color	:	Yellow
Odor	:	Mild, sweet

Safety data

Flash point	:	103 °C (217 °F) Method: ASTM D 93
Lower explosion limit	:	No data available
Upper explosion limit	:	No data available
Oxidizing properties	:	No
Autoignition temperature	:	225 °C (437 °F) at 1,005.20 - 1,009.40 hPa Information given is based on data obtained from similar substances.
Thermal decomposition	:	144 °C
Molecular formula	:	C8H18Sx (x = average of 4.0)
Molecular weight	:	242.5 g/mol
pH	:	Not applicable
Melting point/range	:	-11 °C (12 °F) at 103.25 hPa Information given is based on data obtained from similar substances.
Freezing point		No data available
Boiling point/boiling range	:	172 - 180 °C (342 - 356 °F) (5%-50%), Decomposes

Vapor pressure	:	15.60 Pa at 20 °C (68 °F) Information given is based on data obtained from similar substances.
Density	:	1.0697 G/ML at 20 °C (68 °F)
Water solubility	:	Insoluble
Partition coefficient: n-octanol/water	:	log Pow: 5.6 Information given is based on data obtained from similar substances.
Solubility in other solvents	:	Soluble in hexane and white spirits.
Viscosity, dynamic	:	10 cP at 20 °C (68 °F)
Relative vapor density	:	1 (Air = 1.0)
Evaporation rate	:	Not applicable
Percent volatile	:	> 99 %

SECTION 10: Stability and reactivity

Chemical stability	:	This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Possibility of hazardous reactions

Conditions to avoid	:	No data available.
Thermal decomposition	:	144 °C
Hazardous decomposition products	:	Carbon oxides Sulfur oxides
Other data	:	No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

Acute oral toxicity

Di-tert-butyl Polysulfide	:	LD50: > 2,000 mg/kg Species: Rat Sex: male and female Method: OECD Test Guideline 401

Information given is based on data obtained from similar substances.

Acute dermal toxicity

Di-tert-butyl Polysulfide : LD50: > 2,000 mg/kg
Sex: male and female
Method: OECD Test Guideline 402
Information given is based on data obtained from similar substances.

Skin irritation

Di-tert-butyl Polysulfide : Mild skin irritation

Eye irritation

Di-tert-butyl Polysulfide : Mild eye irritation

Sensitization

Di-tert-butyl Polysulfide : The product is a skin sensitizer, sub-category 1B.

Repeated dose toxicity

Di-tert-butyl Polysulfide : Species: Rat
Application Route: Oral
NOEL: 100 mg/kg
Method: OECD Test Guideline 407
Target Organs: Blood
Information given is based on data obtained from similar substances.

Reproductive toxicity

Di-tert-butyl Polysulfide : Species: Rat
Sex: male and female
Application Route: Oral
Method: OECD Guideline 421
Fertility and developmental toxicity tests did not reveal any effect on reproduction.
Information given is based on data obtained from similar substances.

Di-tert-Butyl Polysulfide (TBPS 454)

Aspiration toxicity : No aspiration toxicity classification.

CMR effects

Di-tert-butyl Polysulfide : Carcinogenicity: Not available
Teratogenicity: Animal testing did not show any effects on fetal development.
Reproductive toxicity: Animal testing did not show any effects on fertility.

Di-tert-Butyl Polysulfide (TBPS 454)

Further information : No data available.

SECTION 12: Ecological information

Toxicity to fish

Di-tert-butyl Polysulfide : LC50: > 0.088 mg/l
Exposure time: 96 h
static test Analytical monitoring: yes
Method: OECD Test Guideline 203
No toxicity at the limit of solubility.
Information given is based on data obtained from similar substances.

Toxicity to daphnia and other aquatic invertebrates

Di-tert-butyl Polysulfide : EC50: 0.24 mg/l
Exposure time: 48 h
Species: Daphnia magna (Water flea)
static test Analytical monitoring: yes
Method: OECD Test Guideline 202
Information given is based on data obtained from similar substances.

Toxicity to algae

Di-tert-butyl Polysulfide : EC50: 0.838 mg/l
Exposure time: 96 h
Species: Pseudokirchneriella subcapitata (microalgae)
static test Analytical monitoring: yes
Method: OECD Test Guideline 201
Information given is based on data obtained from similar substances.

M-Factor

Polysulfides, di-tert-Bu : M-Factor (Acute Aquat. Tox.) 1

M-Factor (Chron. Aquat. Tox.) 1

Toxicity to bacteria

Di-tert-butyl Polysulfide : NOEC: 45.1 mg/l
Respiration inhibition

Biodegradability

Di-tert-butyl Polysulfide : aerobic
Result: Not readily biodegradable.
13 %
Testing period: 28 d
Method: OECD Test Guideline 301B
Information given is based on data obtained from similar substances.

Ecotoxicology Assessment

Acute aquatic toxicity
Di-tert-butyl Polysulfide : Very toxic to aquatic life.

Chronic aquatic toxicity
Di-tert-butyl Polysulfide : Very toxic to aquatic life with long lasting effects.

Results of PBT assessment
Di-tert-butyl Polysulfide : No conclusion can be reached based on available information. Further testing proposed.

Additional ecological information : Very toxic to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

The information in this SDS pertains only to the product as shipped.

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

Product : 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. Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents. Dispose of as unused product. Do not re-use empty containers.

SECTION 14: Transport information

The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition).

Consult the appropriate domestic or international mode-specific and quantity-specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.) Therefore, the information shown here, may not always agree with the bill of lading shipping description for the material. Flashpoints for the material may vary slightly between the SDS and the bill of lading.

US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)
UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (DI-TERT-BUTYL POLYSULFIDE), 9, III

IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)
UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (DI-TERT-BUTYL POLYSULFIDE), 9, III, (103 °C), MARINE POLLUTANT, (DI-TERT-BUTYL POLYSULFIDE)

IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)
UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (DI-TERT-BUTYL POLYSULFIDE), 9, III

ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))
UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (DI-TERT-BUTYL POLYSULFIDE), 9, III

RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))
UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (DI-TERT-BUTYL POLYSULFIDE), 9, III

ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)
UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (DI-TERT-BUTYL POLYSULFIDE), 9, III

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

SECTION 15: Regulatory information

National legislation

SARA 311/312 Hazards : Respiratory or skin sensitization

EPCRA - EMERGENCY PLANNING COMMUNITY RIGHT - TO – KNOW

CERCLA Reportable Quantity	:	Calculated RQ exceeds reasonably attainable upper limit. Propylene oxide
SARA 302 Reportable Quantity	:	Calculated RQ exceeds reasonably attainable upper limit. Propylene oxide
SARA 302 Threshold Planning Quantity	:	This material does not contain any components with a section 302 EHS TPQ.
SARA 304 Reportable Quantity	:	Calculated RQ exceeds reasonably attainable upper limit. Propylene oxide 75-56-9 100 lbs

SARA 313 Ingredients : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Air Act

Ozone-Depletion Potential : This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489).

US State Regulations

Pennsylvania Right To Know : Di-tert-butyl Polysulfide - 68937-96-2
Triethylamine - 121-44-8
Propylene oxide - 75-56-9

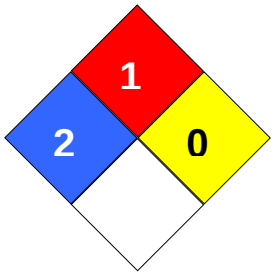
California Prop. 65 Ingredients : WARNING! This product contains a chemical known in the State of California to cause cancer.
Propylene oxide 75-56-9

Notification status

Europe REACH	:	On the inventory, or in compliance with the inventory
Switzerland CH INV	:	On the inventory, or in compliance with the inventory
United States of America (USA) TSCA	:	On the inventory, or in compliance with the inventory
Canada DSL	:	On the inventory, or in compliance with the inventory
Australia AICS	:	On the inventory, or in compliance with the inventory
New Zealand NZIoC	:	Not in compliance with the inventory
Japan ENCS	:	Not in compliance with the inventory
Korea KECI	:	On the inventory, or in compliance with the inventory
Philippines PICCS	:	On the inventory, or in compliance with the inventory
China IECSC	:	On the inventory, or in compliance with the inventory

SECTION 16: Other information

NFPA Classification : Health Hazard: 2
Fire Hazard: 1
Reactivity Hazard: 0



Further information

Legacy SDS Number : 627080

Significant changes since the last version are highlighted in the margin. This version replaces all previous versions.

The information in this SDS pertains only to the product as shipped.

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.

Key or legend to abbreviations and acronyms used in the safety data sheet			
ACGIH	American Conference of Government Industrial Hygienists	LD50	Lethal Dose 50%
AICS	Australia, Inventory of Chemical Substances	LOAEL	Lowest Observed Adverse Effect Level
DSL	Canada, Domestic Substances List	NFPA	National Fire Protection Agency
NDSL	Canada, Non-Domestic Substances List	NIOSH	National Institute for Occupational Safety & Health
CNS	Central Nervous System	NTP	National Toxicology Program
CAS	Chemical Abstract Service	NZIoC	New Zealand Inventory of Chemicals
EC50	Effective Concentration	NOAEL	No Observable Adverse Effect Level
EC50	Effective Concentration 50%	NOEC	No Observed Effect Concentration
EGEST	EOSCA Generic Exposure Scenario Tool	OSHA	Occupational Safety & Health Administration
EOSCA	European Oilfield Specialty Chemicals Association	PEL	Permissible Exposure Limit
EINECS	European Inventory of Existing Chemical Substances	PICCS	Philippines Inventory of Commercial Chemical Substances
MAK	Germany Maximum Concentration Values	PRNT	Presumed Not Toxic
GHS	Globally Harmonized System	RCRA	Resource Conservation Recovery Act
>=	Greater Than or Equal To	STEL	Short-term Exposure Limit
IC50	Inhibition Concentration 50%	SARA	Superfund Amendments and Reauthorization Act.
IARC	International Agency for Research on Cancer	TLV	Threshold Limit Value
IECSC	Inventory of Existing Chemical Substances in China	TWA	Time Weighted Average
ENCS	Japan, Inventory of Existing and	TSCA	Toxic Substance Control Act

	New Chemical Substances		
KECI	Korea, Existing Chemical Inventory	UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological Materials
<=	Less Than or Equal To	WHMIS	Workplace Hazardous Materials Information System
LC50	Lethal Concentration 50%		