

**Di-sec-butyl Disulfide**

Version 1.8

Revision Date 2013-08-12

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

Trade name : Di-sec-butyl Disulfide
Material : 1058746, 1086321, 1024603, 1024606, 1024604, 1024602, 1024605

Use : Chemical intermediate

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:

North America: CHEMTREC 800.424.9300 or 703.527.3887

Asia: +800 CHEMCALL (+800 2436 2255)

EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)

South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600

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

SECTION 2: Hazards identification**Emergency Overview****Danger**

Form: Liquid **Physical state:** Liquid **Color:** Water white **Odor:** heavy musty

OSHA Hazards : Combustible Liquid, Moderate skin irritant, Moderate eye irritant

GHS Classification


: Flammable liquids, Category 4
Skin irritation, Category 3
Eye irritation, Category 2B
Specific target organ systemic toxicity - single exposure,
Category 3, Respiratory system
Aspiration hazard, Category 2
Acute aquatic toxicity, Category 1
Chronic aquatic toxicity, Category 1

GHS-Labeling

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Symbol(s)	:	
Signal Word	:	Warning
Hazard Statements	:	<p>H227: Combustible liquid</p> <p>H305: May be harmful if swallowed and enters airways.</p> <p>H316: Causes mild skin irritation.</p> <p>H320: Causes eye irritation.</p> <p>H335: May cause respiratory irritation.</p> <p>H410: Very toxic to aquatic life with long lasting effects.</p>
Precautionary Statements	:	<p>Prevention:</p> <p>P210: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.</p> <p>P261: Avoid breathing dust/fume/gas/mist/vapors/spray.</p> <p>P264: Wash skin thoroughly after handling.</p> <p>P271: Use only outdoors or in a well-ventilated area.</p> <p>P273: Avoid release to the environment.</p> <p>P280: Wear protective gloves/ protective clothing/ eye protection/ face protection.</p> <p>Response:</p> <p>P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.</p> <p>P304 + P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.</p> <p>P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</p> <p>P312: Call a POISON CENTER or doctor/ physician if you feel unwell.</p> <p>P331: Do NOT induce vomiting.</p> <p>P332 + P313: If skin irritation occurs: Get medical advice/ attention.</p> <p>P337 + P313: If eye irritation persists: Get medical advice/ attention.</p> <p>P370 + P378: In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.</p> <p>P391: Collect spillage.</p> <p>Storage:</p> <p>P403 + P233: Store in a well-ventilated place. Keep container tightly closed.</p> <p>P403 + P235: Store in a well-ventilated place. Keep cool.</p> <p>P405: Store locked up.</p> <p>Disposal:</p> <p>P501: Dispose of contents/ container to an approved waste disposal plant.</p>

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.

ACGIH

No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen

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by ACGIH.

SECTION 3: Composition/information on ingredients

Synonyms : 3,6-Dimethyl-4,5-Dithiaoctane
 Di-s-butyl disulfide
 DI-Secondary-Butyl Disulfide
 Di-sec Butyl disulfide

Molecular formula : C₈H₁₈S₂

Component	CAS-No.	Weight %
Di-Sec-Butyl Disulfide	5943-30-6	60 - 100
DI-n-Butyl Disulfide	629-45-8	0 - 1

SECTION 4: First aid measures

General advice : Move out of dangerous area. Show this material safety data sheet to the doctor in attendance. Material may produce a serious, potentially fatal pneumonia if swallowed or vomited.

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

In case of skin contact : If skin irritation persists, call a physician. If on skin, rinse well with water. If on clothes, remove clothes.

In case of eye contact : Immediately flush eye(s) with plenty of water. 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. Take victim immediately to hospital.

SECTION 5: Firefighting measures

Flash point : 83 °C (181 °F)
 Method: PMCC

Autoignition temperature : No data available

Suitable extinguishing media : Carbon dioxide (CO₂).

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 : Wear self contained breathing apparatus for fire fighting if

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| equipment for fire-fighters | 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. For safety reasons in case of fire, cans should be stored separately in closed containments. Use a water spray to cool fully closed containers. |
| Fire and explosion protection | : Do not spray on an open flame or any other incandescent material. Keep away from open flames, hot surfaces and sources of ignition. |
| Hazardous decomposition products | : Carbon. Sulfur. |

SECTION 6: Accidental release measures

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|---------------------------|---|
| Personal precautions | : Use personal protective equipment. Ensure adequate ventilation. |
| 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 | : Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Keep in suitable, closed containers for disposal. |

SECTION 7: Handling and storage**Handling**

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|---|--|
| Advice on safe handling | : Avoid formation of aerosol. 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. Provide sufficient air exchange and/or exhaust in work rooms. Dispose of rinse water in accordance with local and national regulations. |
| Advice on protection against fire and explosion | : Do not spray on an open flame or any other incandescent material. Keep away from open flames, hot surfaces and sources of ignition. |

Storage

- | | |
|---|--|
| Requirements for storage areas and containers | : No smoking. 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. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards. |
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SECTION 8: Exposure controls/personal protection**Engineering measures**

Adequate ventilation to control airborne 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 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. 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:. 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 according to the amount and concentration of the dangerous substance at the work place. Wear as appropriate:. Flame-resistant clothing. Footwear protecting against chemicals. |
| Hygiene measures | : | When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday. |

SECTION 9: Physical and chemical properties**Information on basic physical and chemical properties****Appearance**

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|----------------|---|-------------|
| Form | : | Liquid |
| Physical state | : | Liquid |
| Color | : | Water white |
| Odor | : | heavy musty |

Safety data

- | | | |
|-------------|---|----------------|
| Flash point | : | 83 °C (181 °F) |
| | | Method: PMCC |

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Lower explosion limit	: No data available
Upper explosion limit	: No data available
Oxidizing properties	: yes
Autoignition temperature	: No data available
Molecular formula	: C ₈ H ₁₈ S ₂
Molecular Weight	: 178.38 g/mol
pH	: Not applicable
Pour point	: No data available
Boiling point/boiling range	: 213.6 °C (416.5 °F)
Vapor pressure	: No data available
Relative density	: 0.94, 15.6 °C(60.1 °F)
Water solubility	: Negligible
Partition coefficient: n-octanol/water	: No data available
Viscosity, kinematic	: No data available
Relative vapor density	: 1 (Air = 1.0)
Evaporation rate	: No data available
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.
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Possibility of hazardous reactions

Conditions to avoid	: Heat, flames and sparks.
Materials to avoid	: May react with oxygen and strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
Other data	: No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

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Acute oral toxicity

Di-Sec-Butyl Disulfide : LD50: > 5,000 mg/kg
Species: rat
Information given is based on data obtained from similar substances.

Acute inhalation toxicity

Di-Sec-Butyl Disulfide : LC50: > 545 ppm
Exposure time: 4 h
Species: rat
Information given is based on data obtained from similar substances.

Acute dermal toxicity

Di-Sec-Butyl Disulfide : LD50: > 2,000 mg/kg
Species: rabbit
Information given is based on data obtained from similar substances.

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Skin irritation**

: May cause skin irritation and/or dermatitis.

**Di-sec-butyl Disulfide
Eye irritation**

: May irritate eyes.
Vapors may cause irritation to the eyes, respiratory system and the skin.

**Di-sec-butyl Disulfide
Aspiration toxicity**

: May be harmful if swallowed and enters airways.
Substances known to cause human aspiration toxicity hazards or to be regarded as if they cause human aspiration toxicity hazard.

**Di-sec-butyl Disulfide
Further information**

: Solvents may degrease the skin.

SECTION 12: Ecological information**Toxicity to fish**

Di-Sec-Butyl Disulfide : Toxic to aquatic organisms.

Elimination information (persistence and degradability)

Biodegradability : This material is not expected to be readily biodegradable.

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

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SECTION 13: Disposal considerations

The information in this MSDS 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. Do not burn, or use a cutting torch on, the empty drum.

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 MSDS and the bill of lading.

US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)

NA1993, COMBUSTIBLE LIQUID, N.O.S., (DI-SECONDARY-BUTYL DISULFIDE, DI-N-BUTYL DISULFIDE), III

IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)

UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (DI-SECONDARY-BUTYL DISULFIDE, DI-N-BUTYL DISULFIDE), 9, III, (83 °C), MARINE POLLUTANT, (DI-SECONDARY-BUTYL DISULFIDE)

IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)

UN3334, AVIATION REGULATED LIQUID, N.O.S., (DI-SECONDARY-BUTYL DISULFIDE, DI-N-BUTYL DISULFIDE), 9, III

ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))

UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (DI-SECONDARY-BUTYL DISULFIDE, DI-N-BUTYL DISULFIDE), 9, III, (E)

RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))

UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (DI-SECONDARY-BUTYL DISULFIDE, DI-N-BUTYL DISULFIDE), 9, III

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ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)

UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (DI-SECONDARY-BUTYL DISULFIDE, DI-N-BUTYL DISULFIDE), 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** : Fire Hazard
Acute Health Hazard**CERCLA Reportable Quantity** : This material does not contain any components with a CERCLA RQ.**SARA 302 Reportable Quantity** : This material does not contain any components with a SARA 302 RQ.**SARA 302 Threshold Planning Quantity** : SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.**SARA 304 Reportable Quantity** : This material does not contain any components with a section 304 EHS RQ.**SARA 313 Ingredients** : SARA 313: 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 12 (40 CFR 61).

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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 SOCM I Intermediate or Final VOC's (40 CFR 60.489).

US State Regulations

Pennsylvania Right To Know

: Di-Sec-Butyl Disulfide - 5943-30-6

New Jersey Right To Know

: Di-Sec-Butyl Disulfide - 5943-30-6

DI-n-Butyl Disulfide - 629-45-8

California Prop. 65
Ingredients

: This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

Notification status

Europe REACH

: Not in compliance with the inventory

United States of America TSCA

: On the inventory, or in compliance with the inventory

Canada NDSL

: On the inventory, or in compliance with the inventory

Australia AICS

: Not in compliance with the inventory

New Zealand NZIoC

: Not in compliance with the inventory

Japan ENCS

: On the inventory, or in compliance with the inventory

Korea KECI

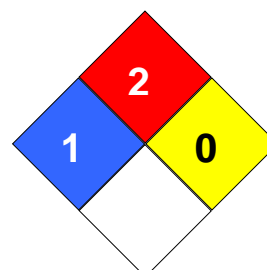
: Not in compliance with the inventory

Philippines PICCS

: On the inventory, or in compliance with the inventory

China IECSC

: Not in compliance with the inventory

SECTION 16: Other information**NFPA Classification**: Health Hazard: 1
Fire Hazard: 2
Reactivity Hazard: 0**Further information**

Legacy MSDS Number : 96120

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

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

The information provided in this Material 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 New Chemical Substances	TSCA	Toxic Substance Control Act
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%		