

**Sulfur Calibration Standard**

Version 2.2

Revision Date 2011-02-02

**1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING****Product information**

Trade name : Sulfur Calibration Standard  
Material : 1101143, 1024585, 1024589, 1024588, 1024587, 1024586

**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) China: 0532.8388.9090  
EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)  
Chemcare Asia: Tel: +65 6848 9048 - Mob: +65 8382 9188 - Fax: +65 6848  
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

**2. HAZARDS IDENTIFICATION****Emergency Overview****Danger**

**Form:** Liquid **Physical state:** Liquid **Color:** Clear **Odor:** Repulsive

OSHA Hazards : Combustible Liquid, Toxic by inhalation., Moderate skin irritant,  
Moderate eye irritant

**GHS-Classification**

: Flammable liquids, Category 4  
Acute toxicity, Category 3, Inhalation  
Acute toxicity, Category 5, Oral  
Eye irritation, Category 2A  
Skin irritation, Category 2  
Aspiration hazard, Category 2  
Specific target organ systemic toxicity - single exposure,  
Category 3  
Eye irritation, Category 2A

**GHS-Labeling**

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Symbol(s)	:	
Signal Word	:	Danger
Hazard Statements	:	H227: Combustible liquid H303: May be harmful if swallowed. H305: May be harmful if swallowed and enters airways. H315: Causes skin irritation. H319: Causes serious eye irritation. H331: Toxic if inhaled. H335: May cause respiratory irritation. H336: May cause drowsiness or dizziness.
Precautionary Statements	:	<b>Prevention:</b> P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking. P271 Use only outdoors or in a well-ventilated area. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection. P261 Avoid breathing dust/fume/gas/mist/vapors/spray. <b>Response:</b> P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. P311 Call a POISON CENTER or doctor/ physician. P331 Do NOT induce vomiting. <b>Storage:</b> P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
<b>Carcinogenicity:</b>		
<b>IARC</b>		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.
<b>NTP</b>		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.
<b>ACGIH</b>		No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

Synonyms	:	Dinormal Butyl Sulfide normal-Butyl Sulfide 5-Thianonane DNBS n-Butyl Sulfide 1,1-Thiobisbutane
Molecular formula	:	C8H18S

Component	CAS-No.	Weight %
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DI Normal Butyl Sulfide

544-40-1

60.00 - 100.00

**4. FIRST AID MEASURES**

- General advice : Move out of dangerous area. Consult a physician. Show this material safety data sheet to the doctor in attendance. Symptoms of poisoning may only appear several hours later. Do not leave the victim unattended.
- If inhaled : Call a physician or poison control center immediately. Move to fresh air. If unconscious place in recovery position and seek medical advice.
- 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. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Take victim immediately to hospital.

**5. FIRE-FIGHTING MEASURES**

- Flash point : 77 °C (171 °F)  
Method: Cleveland Open Cup
- Autoignition temperature : No data available
- 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 fire fighting 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. 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 oxides. Sulfur oxides.

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**6. ACCIDENTAL RELEASE MEASURES**

- Personal precautions : Use personal protective equipment. Ensure adequate ventilation. Evacuate personnel to safe 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 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.

**7. HANDLING AND STORAGE****Handling**

- 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 : Prevent unauthorized access. 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.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Personal protective equipment**

- Respiratory protection : In the case of vapor formation use a respirator with an approved filter.
- Hand protection : Recommended preventive skin protection.
- Eye protection : Eye wash bottle with pure water. Tightly fitting safety goggles. Wear face-shield and protective suit for abnormal processing problems.

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Skin and body protection : Impervious clothing. Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures : Avoid contact with skin, eyes and clothing. 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****Information on basic physical and chemical properties****Appearance**

Form : Liquid

Physical state : Liquid

Color : Clear

Odor : Repulsive

**Safety data**

Flash point : 77 °C (171 °F)  
Method: Cleveland Open Cup

Lower explosion limit : No data available

Upper explosion limit : No data available

Oxidizing properties : No

Autoignition temperature : No data available

Molecular formula : C<sub>8</sub>H<sub>18</sub>S

Molecular Weight : 146.32 g/mol

pH : No data available

Freezing point : No data available

Boiling point/boiling range : 180 - 191 °C (356 - 376 °F)

Vapor pressure : 0.10 PSI  
at 38 °C (100 °F)

Density : 841.2 G/L

Water solubility : Negligible

Viscosity, dynamic : 1.05 cps

Relative vapor density : 5.07  
(Air = 1.0)

Evaporation rate : 1

Percent volatile : > 99 %

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**10. STABILITY AND REACTIVITY****Possibility of hazardous reactions**

- Conditions to avoid : Heat, flames and sparks.
- Materials to avoid : Avoid oxidizing agents.
- Other data : This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.  
No decomposition if stored and applied as directed.

**11. TOXICOLOGICAL INFORMATION****Sulfur Calibration Standard**

Acute oral toxicity : LD50: 2,220 mg/kg  
Species: rat

**Sulfur Calibration Standard**

Acute inhalation toxicity : LC50: 3.7 mg/l  
Exposure time: 4 HR  
Species: mouse

LC50: 620 ppm  
Exposure time: 4 HR  
Species: mouse

**Sulfur Calibration Standard**

Acute dermal toxicity : LD50: > 5,000 mg/kg  
Species: rabbit

**Sulfur Calibration Standard**

Skin irritation : Irritating to skin.  
  
May cause skin irritation in susceptible persons.

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Eye irritation : Eye irritation  
  
May cause irreversible eye damage.

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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.

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Further information : Concentrations substantially above the TLV value may cause narcotic effects. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.  
Solvents may degrease the skin.

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**12. ECOLOGICAL INFORMATION****Elimination information (persistence and degradability)**

Biodegradability : not applicable

**Further information on ecology****Additional ecological information** : No data available**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 : Do not dispose of waste into sewer. 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.

**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.

**USDOT**

NA1993, COMBUSTIBLE LIQUID, N.O.S., (DINORMAL BUTYL SULFIDE), III

**IMO / IMDG**

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

**IATA**

UN3334, AVIATION REGULATED LIQUID, N.O.S., (DINORMAL BUTYL SULFIDE), 9

**ADR**

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

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**RID**

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

**15. REGULATORY INFORMATION****National legislation**

**SARA 311/312 Hazards** : Fire Hazard  
Acute Health Hazard

**SARA 302 Reportable Quantity** : SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

**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).

**US State Regulations****Massachusetts Right To Know**

Remarks : No components are subject to the Massachusetts Right to Know Act.

**Pennsylvania Right To Know**

Ingredients : DI Normal Butyl Sulfide 544-40-1  
Related Materials

**New Jersey Right To Know**

Ingredients : DI Normal Butyl Sulfide 544-40-1  
Related Materials

**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  
Switzerland CH INV : The mixture contains substances listed on the Swiss Inventory  
United States of America US.TSCA : On TSCA Inventory  
Canada DSL : All components of this product are on the Canadian DSL list.  
Australia AICS : On the inventory, or in compliance with the inventory  
New Zealand NZIoC : On the inventory, or in compliance with the inventory  
Japan ENCS : On the inventory, or in compliance with the inventory  
Japan ISHL : On the inventory, or in compliance with the inventory



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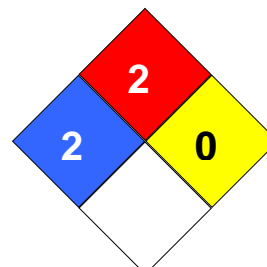
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Korea KECI : Not in compliance with the inventory  
 Philippines PICCS : On the inventory, or in compliance with the inventory  
 China IECSC : On the inventory, or in compliance with the inventory

**16. OTHER INFORMATION**

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

**Further information**

Legacy MSDS Number : 42960

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 above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

**Key or legend to abbreviations and acronyms used in the safety data sheet**

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

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KECI	Korea, Existing Chemical Inventory	TSCA	Toxic Substance Control Act
<=	Less Than or Equal To	UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological Materials
LC50	Lethal Concentration 50%	WHMIS	Workplace Hazardous Materials Information System
LD50	Lethal Dose 50%		