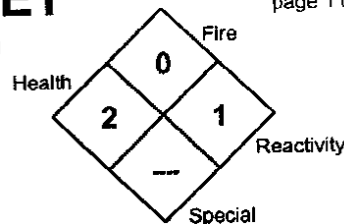


BRENNTAG MATERIAL SAFETY DATA SHEET

NFPA 704 DESIGNATION
HAZARD RATING

4=Extreme
3=High
2=Moderate
1=Slight
0=Insignificant



Brenntag MSDS #:	BPI-00187
MSDS Revision/Issue Date:	08/10/07
Supersedes Revision Date:	New

1. CHEMICAL PRODUCT IDENTIFICATION & COMPANY IDENTIFICATION

PRODUCT IDENTIFIER: Calcium Polysulfide Solution

GENERAL USE: Used in industrial processes and as a part of a treatment program for Mercury contaminated soils.

PRODUCT DESCRIPTION: A clear, ruby red to reddish orange liquid having a strong Hydrogen Sulfide (rotten egg) odor.

INFORMATION PROVIDED BY: Brenntag Pacific, Inc.
5700 N.W. Front Avenue
Portland, OR 97210

For MSDS call: PHONE: 503-242-0200

EMERGENCY PHONE NUMBERS

BRENNTAG: 503-699-7055
CHEMTREC: 800-424-9300
CANUTEC: 613-996-6666

2. COMPOSITION & INFORMATION ON INGREDIENTS

COMPONENT	CAS #	OSHA HAZARD	WT %	ACGIH		OSHA	
				TLV _(TWA)	STEL	PEL _(TWA)	STEL
Calcium Polysulfide	1344-81-6	Severe Eye Irritant; Skin & Respiratory Irritant; Toxic by Ingestion; Hydrogen Sulfide Releaser	26.5 ± 2.5	None	None	None	None
[Hydrogen Sulfide]	[7783-06-4]	[Poison Gas; Flammable Gas; Eye, Skin and Respiratory Irritant; Central Nervous System toxin]	[Trace]	[10 ppm Proposed: 1 ppm]	[15 ppm Proposed: 5 ppm]	[None] [Acceptable Ceiling: 20 ppm] [Acceptable Maximum Peak: 50 ppm (10 minutes, once only per 8 hour shift)]	[None]

NDA = No Data Available

N/A = Not Applicable

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: A clear, ruby red to reddish orange, alkaline liquid having a strong Hydrogen Sulfide (rotten egg) odor. The vapors, mists and liquid may cause severe eye irritation. The mists and liquid may cause skin or respiratory tract irritation. A large amount of toxic, flammable Hydrogen Sulfide gas will be liberated on contact with acids or acidic materials and products. **The NIOSH I.D.L.H. for Hydrogen Sulfide is: 100 ppm.**

POTENTIAL HEALTH EFFECTS

- INHALATION:** Inhalation of vapors or mists may be irritating to the nose, mouth, throat, mucous membranes and lungs. Symptoms of exposure may include a rotten egg odor, sneezing, coughing, chest discomfort or pain and possible impairment of lung function, with dizziness, lightheadedness, loss of the sense of smell and other central nervous system effects that can cause unexpected overexposure.
- EYE CONTACT:** Exposure to the mists or liquid can cause severe eye irritation and possible burns. Symptoms of overexposure may include tearing, redness, swelling and pain. Direct contact with the liquid or mist may cause corneal damage and visual impairment, unless treated promptly.
- SKIN CONTACT:** Exposure to the mists or liquid may cause skin irritation. Symptoms of exposure may include redness, swelling, an itching sensation, discomfort or pain. This product is not expected to be absorbed through the intact skin in harmful amounts.
- INGESTION:** Ingestion can cause irritation of the entire gastrointestinal tract. Ingestion and contact with the stomach acid will cause the liberation of Hydrogen Sulfide gas, which can be absorbed into the tissues causing headache, nausea, vomiting, drowsiness, amnesia, tremors, depressed respiration, convulsions, cyanosis and possibly death due to respiratory paralysis.
- CHRONIC:** The chronic skin exposure effects to this product may include dermatitis and possible impairment of the skin to repair itself. Otherwise, the chronic exposure effects are expected to be the same as for acute exposure.

PRODUCT IDENTIFIER: **Calcium Polysulfide Solution**

4. FIRST AID MEASURES

INHALATION: If inhaled, immediately move to fresh air. If not breathing, give artificial respiration. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; use the Holger Nielsen method (back pressure-arm lift) or proper respiratory device. If breathing is difficult, give oxygen. Call a physician immediately.

EYE CONTACT: In case of contact, immediately flush eyes with plenty of clean running water for at least 15 minutes, lifting the upper and lower lids occasionally. Remove contact lenses, if worn. Get medical attention.

SKIN CONTACT: In case of contact, cleanse affected area thoroughly by washing with mild soap and water. Remove contaminated clothing and shoes, and wash before reuse. If irritation occurs and persists, get medical attention.

INGESTION: If swallowed, get medical attention immediately. DO NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.

NOTE TO PHYSICIANS: Ingestion of this product or inhalation of the vapors may cause Hydrogen Sulfide poisoning. Hydrogen Sulfide poisoning is similar in effects and mechanism to Hydrogen Cyanide poisoning. Consideration should be given to treating severe Hydrogen Sulfide poisoning with Amyl Nitrite and Sodium Nitrite as for cyanide poisoning, but omitting the Sodium Thiosulfate injection. Consider giving antibiotics at the first sign of pulmonary infection.

5. FIRE FIGHTING MEASURES

Flashpoint and Method: This product does not flash.

Flammable Limits (in air, % by volume) Lower: 4.3% (H₂S in air)

Upper: 45% (H₂S in air)

Autoignition Temperature: Not applicable

GENERAL HAZARD: This product is an aqueous solution of a sulfide salt. The Uniform Fire Code health hazard rating for this product is: **Irritant**. Toxic and flammable / explosive Hydrogen Sulfide gas will be generated if this product solution comes in contact with acids or acidic materials and products. This product can produce hazardous vapors and hazardous decomposition products.

FIRE FIGHTING INSTRUCTIONS: **EXTINGUISHING MEDIA:** Water fog or spray, foam, CO₂ and dry chemicals. Use a water fog or spray to cool the containers exposed to the heat of a fire.

FIRE FIGHTING EQUIPMENT: Fire fighters should wear full protective equipment, including self-contained breathing apparatus.

HAZARDOUS COMBUSTION PRODUCTS: When heated to dryness and decomposition, it emits toxic and flammable Hydrogen Sulfide gas, plus toxic sulfur oxides and calcium oxide.

6. ACCIDENTAL RELEASE MEASURES

LAND SPILL: Wearing recommended protective equipment and clothing, dike the spill and pick up the bulk of liquid using pumps or a vacuum truck, or absorb the liquid in sand or a commercial absorbent. Place the liquid in approved containers for recovery, disposal, or satellite accumulation. Destroy the remaining sulfide by using the appropriate amount of an alkaline hypochlorite solution. Neutralize the remaining hypochlorite with a dilute Sodium Thiosulfate solution. Neutralize the alkalinity, of the remaining liquid, with a dilute acid solution that is appropriate for neutralizing alkaline liquids. Liberally cover the spill area with Sodium Bicarbonate. Flush the spill area with water; collect the rinsates for disposal or sewer, as appropriate. This procedure should only be done under the direction of experienced technical personnel.

WATER SPILL: Wear recommended protective equipment and clothing if contact with hazardous material can occur. Stop or divert water flow. Dike contaminated water and remove for disposal and/or treatment. As appropriate, notify all downstream users of possible contamination.

PRODUCT IDENTIFIER: **Calcium Polysulfide Solution**

7. HANDLING AND STORAGE

STORAGE TEMPERATURE: Ambient
STORAGE PRESSURE: Ambient
GENERAL: Store this product in a cool, dry, well ventilated area away from incompatible materials and products. Protect the eyes, skin and clothing from contact with this product. Wear the recommended personnel protective equipment when handling this product. Do not breathe vapors, mists or aerosols. Use only with adequate ventilation. Keep the containers tightly closed when not in use. Do not swallow this product. Wash hands thoroughly after handling this product.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

CONTROL MEASURES: Use a local or general, mechanical exhaust ventilation system capable of maintaining emissions, in the work area, below the new, proposed ACGIH-TLV and STEL for Hydrogen Sulfide.

RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

RESPIRATOR: For exposures above the ACGIH-TLV or STEL, wear a NIOSH-approved full facepiece or half mask air-purifying cartridge respirator equipped with a good mist / particulate and acid gas cartridge for those who may be briefly in an area where this product is exposed to the air. For those who will be working with this product for an extended period of time, filling drums, etc., who may be exposed to an I.D.L.H. atmosphere, a full facepiece, supplied air respirator, or self contained breathing apparatus (SCBA), operated in the positive pressure mode is recommended by NIOSH.

EYES: Wear chemical goggles (recommended by ANSI Z87.1-1979), unless a full facepiece respirator is worn.

GLOVES: Viton, Butyl Rubber or Neoprene gloves.

CLOTHING & EQUIPMENT: Wear a Butyl Rubber or Neoprene apron or full protective clothing when handling this product. An eye wash station and safety shower should be available in the work area.

FOOTWEAR: Wear Butyl Rubber or Neoprene boots.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear, ruby red to reddish orange	Bulk Density (pounds/ft³):	Not applicable
Physical State:	Liquid	Vapor Pressure:	No data available
Odor:	Strong, Hydrogen Sulfide	Vapor Density (air=1):	1.189 (Hydrogen Sulfide)
Odor Threshold:	0.0007 to 0.140 mg/m ³ (H ₂ S gas)	Evaporation Rate (n-Butyl Acetate=1):	No data available
Molecular Formula:	CaS(x) (in water)	VOC Content:	Not applicable
Molecular Weight:	Not determined	% Volatile:	Approximately 73
Boiling Point:	Not determined	Solubility in H₂O:	Partially, some Sulfur precipitation
Freezing/Melting Point:	Not determined	Octanol/Water Partition Coefficient:	No data available
Specific Gravity:	Approximately 1.235 @ 20° C.	pH (as is):	10.0 to 11.7
Density (pounds/gallon):	Approximately 10.31	pH (1% solution):	No data available

10. STABILITY AND REACTIVITY

GENERAL: This product is stable and hazardous polymerization will not occur.

CONDITIONS TO AVOID: Hot storage.

INCOMPATIBLE MATERIAL: Oxidizers, acids & acidic materials or products, and dilution with water can cause the release of Hydrogen Sulfide gas.

HAZARDOUS DECOMPOSITION PRODUCTS: When heated to dryness and decomposition, it emits toxic and flammable Hydrogen Sulfide gas, plus toxic oxides of sulfur and calcium.

SENSITIVITY TO MECHANICAL IMPACT: This product is not sensitive to mechanical impact.

SENSITIVITY TO STATIC DISCHARGE: This product is not sensitive to static discharge.

PRODUCT IDENTIFIER: **Calcium Polysulfide Solution**

11. TOXICOLOGICAL INFORMATION

Components:	Calcium Polysulfide	[Hydrogen Sulfide]
Eye Contact:	No data available	[No data available]
Skin Contact:	No data available	[No data available]
Oral Rat LD₅₀:	820 mg/kg	[No data available]
Dermal Rabbit LD₅₀:	2,000 mg/kg	[No data available]
Inhalation Rat LC₅₀:	3.6 mg/L/4 hours	[444 ppm]
Human Data:	Oral Woman LD ₅₀ : 562 mg/kg	[Human LC ₅₀ : 600 ppm/30 minutes]
Other Toxicological Data:	Oral Man TD ₅₀ : 891 mg/kg	[Human LC ₅₀ : 800 ppm/5 minutes]
Carcinogenicity:	No data available	[No data available]
Teratogenicity:	No data available	[Inhalation Rat TDLo: 20 ppm; (female 6 – 22 Days pregnant), Effects on Newborn - Physical]
Mutagenicity:	No data available	[No data available]
Synergistic Products:	None reported	[None reported]
Target Organs:	Eyes, Skin, Mucous membranes & Lungs	[Eyes, Skin, Mucous membranes, Lungs, Gastrointestinal tract & Central Nervous System]
Medical Conditions Aggravated By Exposure:	Skin or Respiratory disorders	[Skin, Respiratory or Gastrointestinal disorders]

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE:
 This product is heavier than water and partially soluble in water. This product may affect the pH of water. No specific environmental fate data has been found.

ENVIRONMENTAL CONSIDERATIONS:
 The aquatic toxicity for this product has not been determined. However, when diluted in water, Hydrogen Sulfide is released and Hydrogen Sulfide is toxic to both marine and land animals.

13. DISPOSAL CONSIDERATIONS

RCRA 40 CFR 261 CLASSIFICATION: Non-RCRA Hazardous Waste
U.S. EPA WASTE NUMBER/DESCRIPTION: Not applicable
 If this product is disposed of as shipped, it does not meet the criteria of a hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of a hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D due to toxicity. As a non-RCRA hazardous liquid waste, it should be disposed of in accordance with all local, state, and federal regulations. Consult state or local officials for proper disposal method.

14. TRANSPORTATION INFORMATION

DOT PROPER SHIPPING NAME:	Not Restricted		
	Hazard Class:	Not applicable	UN Number: Not applicable
	Primary Label:	None Required	Subsidiary Label(s): None Required
	Primary/Subsidiary Placards:	None Required	
DOT Reportable Quantity (RQ):	Not listed	RQ for Product:	Not applicable
Marine Pollutant:	No		
2004 North American Emergency Response Guidebook No.:	Not applicable		
TDG PROPER SHIPPING NAME:	NOT RESTRICTED		
	Hazard Class:	Not applicable	UN Number: Not applicable
	Primary Label:	None Required	Subsidiary Label(s): None Required
	Primary/Subsidiary Placards:	None Required	
TDG Reportable Quantity (RQ):*	Not listed		
TDG Schedule XII:	Not listed		
Regulated Limit (RL):**	Not listed	RL for Product:	Not applicable
Other Shipping Information:	None		

* Canadian Transportation of Dangerous Goods Regulations (TDGR), Part IX, Table I, Quantities or levels for Immediate Reporting: releases of reportable quantities, RQ, that meet the definition of a "dangerous occurrence" (a threat to life, health, property, or the environment) must be reported to the appropriate authorities as outlined in TDGR 9.13(1) and 9.14(1).

** Reporting to Environment Canada is required for any releases exceeding the regulated limits, RL, of 9.2 materials (primary or secondary). The regulated limits are found in Schedule XIII of the TDGR.

PRODUCT IDENTIFIER: Calcium Polysulfide Solution

15. REGULATORY INFORMATION

COMPONENTS:	<u>Calcium Polysulfide</u>	<u>[Hydrogen Sulfide]</u>
OSHA Target Organs:	Eyes, Skin, Mucous membranes & Lungs	[Eyes, Skin, Mucous membranes, Lungs, Gastrointestinal tract & Central Nervous System]

Carcinogenic Potential:

Regulated by OSHA:	No	[No]
Listed on NTP Report:	No	[No]
Listed by IARC:	No	[No]
IARC Group:	Not listed	[Not listed]
ACGIH Appendix A:	Not listed	[Not listed]
A1 Confirmed Human:	Not applicable	[Not applicable]
A2 Suspected Human:	Not applicable	[Not applicable]

U.S. EPA Requirements

Release Reporting

CERCLA (40 CFR 302)

Listed Substance:	Not listed	[Yes]
Reportable Quantity:	Not applicable	[100 pounds]
Category:	Not applicable	[B]
RCRA Waste No.:	Not applicable	[U135]
Unlisted Substance:	Not applicable	[Not applicable]
Reportable Quantity:	Not applicable	[Not applicable]
Characteristic:	Not applicable	[Not applicable]
RCRA Waste No.:	Not applicable	[Not applicable]

SARA TITLE III

Section 302 & 303 (40 CFR 355):

Listed Substance:	Not listed	[Yes]
Reportable Quantity:	Not applicable	[100 pounds]
Planning Threshold:	Not applicable	[500 pounds]

Section 311 & 312 (40 CFR 370):

Hazard Categories (product): Fire: N Sudden Release of Pressure: N Reactive: Y Acute Health: Y Chronic Health: N
 Planning threshold:

Section 313 (40 CFR 372):

Listed Toxic Chemical:	Not listed	[Not listed]
Reporting Threshold:	Not applicable	[Not applicable]

U.S. TSCA Status

Listed (40 CFR 710):	Yes	[Yes]
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State Regulations

State of California: Safe Drinking Water and Toxins Enforcement Act, 1986 (Proposition 65):

Carcinogen:	No	[No]
Reproductive Toxin:	No	[No]

Other Regulations

State Right To Know Laws: None known

Canadian Regulations

Product Information:

Controlled Product:	Yes
WHMIS Hazard Symbols:	Material Causing Other Toxic Effects
WHMIS Class & Division:	D.2B

Ingredient Information:

IDL Substance:	No	[Yes]
DSL or NDSL Lists:	NDSL	[DSL]

PRODUCT IDENTIFIER: **Calcium Polysulfide Solution**

16. OTHER INFORMATION

EPA Registration number: Not applicable
Approved Product Uses: Not applicable

Special Notes:

This product is not formulated to contain any material which the State of California has found to cause cancer and/or birth defects or other reproductive harm.

Special Instructions:

Do not add this product to acids or acidic materials and products as this will liberate toxic, flammable / explosive Hydrogen Sulfide gas.

Be careful when diluting Calcium Polysulfide Solution with water as this can also liberate toxic, flammable / explosive Hydrogen Sulfide gas.

MSDS Revision Information: Information Revised This Issue Date: **New product MSDS.**
Form Revision made 2/03/06

MSDS Distributed by: Brenntag Pacific, Inc.
NW Environmental Department
Phone: 503-242-0200 FAX: 503-412-3390

Prepared By: Edward Doheny **Date Prepared:** August 10, 2007

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