Prairie Mud Service

"Serving Western Canada with 24 Hour Drilling Mud Service"

WELLCLENE

Material Safety Data Sheet

Section 1. Chemical Product and Company Identification

Trade name WELLCLENE

Material uses Solvent for removing sulfur, bitumen and paraffin waxes from well tubing and flow lines.

Distributer Prairie Petro-Chem
738 - 6th Street
Estevan, SK
S4A 1A4
(306) 634-5808

Validation date **11/15/2013**

In case of emergency Canada : CANUTEC 1-613-996-6666

Section 2. Hazards identification

Physical state and Appearance Liquid. Physical data for the product is not available. The following physical data is for the major component, carbon disulfide.

This material is classified hazardous under OSHA regulations in the United States and the WHMIS Controlled Product Regulation in Canada.

Emergency overview DANGER!
EXTREMELY FLAMMABLE LIQUID AND VAPOR.

VAPOR MAY CAUSE FLASH FIRE.
MAY BE FATAL IF INHALED OR SWALLOWED.
MAY CAUSE SEVERE ALLERGIC SKIN REACTION.
CAUSES EYE AND SKIN IRRITATION.

Keep away from heat, sparks and flame. Avoid contact with eyes. Avoid breathing vapor or mist. Avoid prolonged or repeated contact with skin. Keep container closed. Use only with adequate ventilation. Avoid exposure during pregnancy. Wash thoroughly after handling. Avoid contact of spilled material and runoff with soil and surface waterways.

Routes of entry Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects

Eyes High vapor concentrations may cause irritation. Eye irritation was reported among employees exposed to high peak concentrations (estimated at 48- 320 ppm (150-1000 mg/m^3)).

Skin Carbon disulfide liquid can be absorbed through intact skin and may cause harmful effects. Effects are similar to those described for inhalation above. Carbon disulfide vapor may also be absorbed through the skin. Significant skin absorption was observed in volunteers exposed to water solutions containing carbon disulfide. Repeated or prolonged contact may result in blistering and burns, based on human and animal information.

Inhalation Carbon disulfide is very toxic, easily forms very high vapor concentrations at room temperature and so poses a high inhalation hazard. Relatively low concentrations of the vapor can cause harmful effects on the central nervous system (CNS). Initial symptoms may include headache, dizziness, fatigue, excitement or depression. High concentrations can cause serious psychological disturbances and in some cases death. Psychiatric disturbances (including excitability, confusion, extreme irritability, uncontrolled anger, emotional instability, nightmares, depression) have been observed following episodes of exposure to high concentrations of carbon disulfide. Deaths have reportedly occurred rapidly following exposure to 5000 ppm.

Ingestion Deaths have been reported following ingestion of approximately 15 mL. Symptoms include tremors, exhaustion, shortness of breath, peripheral vascular collapse, reduced body temperature, dilation of the pupils, convulsions, coma and death in a few hours. It is possible that carbon disulfide can be aspirated (inhaled into the lungs) during ingestion or vomiting. Aspiration of even a small amount of liquid could result in a life threatening accumulation of fluid in the lungs. Ingestion is not a typical route of occupational exposure.

Potential chronic health effects CARCINOGENIC EFFECTS: Not classified or listed by IARC, NTP, OSHA, EU and ACGIH.
MUTAGENIC EFFECTS: Not available.
TERATOGENIC EFFECTS: Not available.

Medical conditions aggravated by over exposure Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Over-exposure signs/symptoms Included are problems related to central and peripheral nervous systems, eyes, cardiovascular system, kidneys, liver, and alcoholism.

See Section 11 for Toxicological Data.

Section 3. Composition/information on ingredients

Name	CAS#	% by weight

Carbon Disulfide	75-15-0	91
Petroleum Condensate	8002-05-9	9

See Section 8 for Exposure Limits. See Section 11 for Toxicological Data.

Section 4. First Aid Measures

Eye contact Immediately flush eyes with lukewarm running water for a minimum of 20 minutes. Hold eyelids open during flushing. If irritation persists, repeat flushing. Obtain medical attention IMMEDIATELY.

Skin contact Remove contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Wash skin gently and thoroughly with water and soap for at least 20 minutes or until the chemical is removed. Discard contaminated clothing, shoes and leather goods.

Inhalation Move victim to fresh air. Remove any contaminated clothing to prevent further inhalation exposure. Give artificial respiration ONLY if breathing has stopped. Give Cardiopulmonary Resuscitation (CPR) if there is no breathing AND no pulse. Avoid mouth-to-mouth contact by using mouth guards or shields. Obtain medical attention IMMEDIATELY.

Ingestion DO NOT INDUCE VOMITING. If victim is alert and not convulsing, rinse mouth and give 240 to 300 mL (8 to 10 oz) of water to dilute material. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer more water. IMMEDIATELY contact local poison control centre. IMMEDIATELY transport victim to an emergency facility.

Notes to physician Not available.

Section 5. Fire Fighting Measures

Flammability of the product Flammable. The following flammability data is for pure carbon disulfide.

Auto-ignition temperature 260 to 288°C (500 to 550°F)

Flash points Closed cup: -30°C (-22°F). (Pensky-Martens.)

Flammable limits Lower: 1 to 1.3% Upper: 50%

Products of combustion Decomposition products may include the following materials: carbon oxides (CO, CO_2), sulfur oxides (SO_2, SO_3 etc.).

Fire hazards in the presence of various substances Extremely flammable in the presence of open flames, sparks and static discharge. Highly flammable in the presence of heat.

Explosion hazards in the presence of various substances The combination of high volatility, very low flash point, ignition energy, and wide flammability range results in a dangerous fire and explosion hazard. Vapor is heavier than air and may travel a considerable distance to a source of ignition and flash back to a leak or open container.

Fire-fighting media and instructions SMALL FIRE: Use dry chemical powder. LARGE FIRE: Use alcohol-resistant foam or water spray or fog. Cool containers with water jet in order to prevent pressure build-up, auto-ignition or explosion. Water may be ineffective except as a blanket.

Protective clothing (fire) Firefighter's normal protective equipment (Bunker Gear) will not provide adequate protection. A full-body encapsulating chemical protective suit with positive pressure self-contained breathing apparatus may be necessary. Caution should be used in fighting a carbon disulfide fire because the flame is nearly invisible. Water may be ineffective except as a blanket. The water must be gently applied to the surface of the liquid. If possible, isolate materials not yet involved in the fire, and move containers from fire area if this can be done without risk, and protect personnel. Otherwise, fire-exposed containers or tanks should be cooled by application of hose streams and this should begin as soon as possible. If this is not possible, use unmanned monitor nozzles and immediately evacuate the area. If a leak or spill has not ignited, use water spray in large quantities to disperse the vapors and to protect personnel attempting to stop a leak. Water spray can be used to dilute spills to nonflammable mixtures and flush spills away from ignition sources. Solid streams of water may be ineffective and spread material. For a massive fire in a large area, use unmanned hose holder or monitor nozzles; if this is not possible withdraw from fire area and allow fire to burn. Stay away from ends of tanks, but be aware that flying material from ruptured tanks may travel in any direction.

Section 6. Accidental Release Measures

Small spill and leak Soak up spill with absorbent material which does not react with spilled chemical. Put material in suitable,covered, labeled containers. Flush area with water.

Large spill and leak To contain spill, dike with earth, sand, or absorbent material which does not react with spilled material. Remove liquid by pumps or vacuum equipment, which is airtight, and spark and explosion-proof. Place in suitable, covered, labeled containers. Soak up remainder of spill with absorbent material. Place material in suitable, covered, labeled containers. Flush area with water. Ground all equipment or contact surfaces to prevent ignition by static electricity.

Section 7. Handling and Storage

Handling Keep away from heat, sparks and flame. Keep container closed. Use only with adequate ventilation. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Use explosion-proof electrical (ventilating, lighting and material handling) equipment.

Storage Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and

sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8. Exposure Controls, Personal Protection

Engineering controls Due to the high potential hazard associated with this substance, stringent control measures such as enclosure or isolation are necessary. Closed handling systems should be used for processes involving this material. Use non-sparking ventilation systems, approved explosion-proof equipment and intrinsically safe electrical systems in areas of use. General and local exhaust ventilation are required for this substance. The non-sparking, grounded ventilation system should be separate from other exhaust ventilation systems. Exhaust directly to the outside. For large scale operations, install leak and fire detection equipment along with a suitable, automatic fire suppression system.

Personal protection

Eyes Splash goggles.

Body Lab coat or coveralls.

Respiratory NIOSH recommendations for carbon disulfide vapor concentrations in air: Up to 10 ppm: Chemical cartridge respirator with organic vapor cartridge(s); or Supplied Air Respirator (SAR). Up to 25 ppm: SAR operated in a continuous-flow mode; or powered air-purifying respirator with organic vapor cartridge(s). Up to 50 ppm: Full-facepiece chemical cartridge respirator with organic vapor cartridge(s); or powered air-purifying respirator with tight-fitting facepiece and organic vapor cartridge(s); or gas mask with organic vapor canister; or full-facepiece SCBA; or full-facepiece SAR.

Up to 500 ppm: Positive pressure SAR.

Hands Gloves.

Recommended (resistance to breakthrough longer than 8 hours): Polyvinyl alcohol, Viton™, 4H™, Barricade™, Responder™. (43)
Recommended (estimated resistance to breakthrough longer than 4 hours): Trellchem HPS™.

Feet Appropriate industrial footware.

Protective clothing (pictograms)

Personal protection in case of a large spill Splash goggles. Full suit. Vapor respirator. Boots. Gloves. Self-contained breathing apparatus (SCBA) should be used to avoid inhalation of the product. Suggested protective clothing might not be adequate. Consult a specialist before handling this product.

Exposure limits

Product name	Exposure limits
Carbon Disulfide	**ACGIH TLV (United States, 1/2006). Skin**

TWA: 31 mg/m3 8 hour(s).
TWA: 10 ppm 8 hour(s).
NIOSH REL (United States, 12/2001). Skin
STEL: 30 mg/m^3 15 minute(s). STEL: 10 ppm 15 minute(s).
TWA: 3 mg/m^3 10 hour(s). TWA: 1 ppm 10 hour(s).
OSHA PEL Z2 (United States, 11/2006).
AMP: 100 ppm 30 minute(s). CEIL: 30 ppm
TWA: 20 ppm 8 hour(s).

Petroleum Condensate	**ACGIH TLV (United States, 1/2006).**

TWA: 1050 mg/m^3 8 hour(s).
TWA: 400 ppm 8 hour(s).
NIOSH REL (United States, 12/2001).
TWA: 1050 mg/m^3 10 hour(s). TWA: 200 ppm 10 hour(s). **OSHA PEL 1989 (United States, 3/1989).**
TWA: 1050 mg/m^3 8 hour(s).
TWA: 400 ppm 8 hour(s).

Consult local authorities for acceptable exposure limits.

Section 9. Physical and Chemical Properties

Physical state and Appearance	Liquid. Physical data for the product is not available. The following physical data is for the major component, carbon disulfide.
Color	Colorless to light yellow.
Odor	Disagreeable and choking. (Strong.)
pH	7 [Neutral.]
Boiling/condensation point	46.3°C (115.3°F)
Melting/freezing point	-111.5 to -112°C (-168.7 to -169.6°F)
Specific gravity	1.26 (Water = 1)
Vapor pressure	47.9 kPa (359 mm Hg) (at 20°C)
Vapor density	2.67 (Air = 1)
Odor threshold	Not available.
Evaporation rate	22.6 compared with Butyl acetate.

$LogK_{ow}$ Not available.

Solubility Partially soluble in the following materials: cold water. Soluble in all proportions in ethanol, methanol, diethyl ether, benzene, chloroform, carbon tetrachloride and oils.

Section 10. Stability and Reactivity

Stability and reactivity The product is stable.

Conditions of instability Exposure to ultraviolet radiation from sunlight may cause carbon disulfide vapor to ignite and explode.

Incompatibility with various substances Reactive with Oxidizing agents., Reducing agents., metals, alkalis.
Slightly reactive to reactive with acids.

Hazardous decomposition products Thermal decomposition products are toxic and include oxides of sulfur.

Hazardous polymerization Will not occur.

Section 11. Toxicological Information

Toxicity data

Ingredient name	Test	Result	Route	Species
Carbon	LD50	3188 mg/kg	Oral	Rat
	LD50	2550 mg/kg	Oral	Rabbit
	LD50	2125 mg/kg	Oral	Guinea pig
	LC50	25000 mg/m^3 (2		
	LC50	10000 mg/m^3 (2 hour(s))	Inhalation	Rat
			Inhalation	Mouse

Chronic effects on humans See Section 2.

Other toxic effects on humans Very hazardous by the following route of exposure: of inhalation. Hazardous by the following route of exposure: of skin contact (irritant, sensitizer), of eye contact (irritant).

Special remarks on toxicity One study has shown embryotoxic and fetotoxic effects in the offspring of rabbits exposed to carbon disulfide, in the absence of harmful effects on mothers. Harmful effects on the embryo and fetus (decreased body weight and deaths) were observed in the offspring of rabbits following exposure to 600 ppm during pregnancy, in the absence of significant harmful effects on mothers. Teratogenic effects were observed at 1200 ppm, but only in the presence of harmful effects on mothers (decreased body weight gain, incoordination and wheezing). No harmful effects were observed at 60-300 ppm. Other studies have shown no harmful effects on offspring or mothers following exposures to as high as 40 ppm.

Special remarks on chronic effects on humans No firm conclusions can be drawn on the basis of the available human information.

Target organs Contains material which causes damage to the following organs: kidneys, the reproductive system, liver, peripheral nervous system, cardiovascular system, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea.

Section 12. Ecological Information

Ecotoxicity data

Ingredient name	Species	Period	Result
Carbon Disulfide	Poecilia reticulata (LC50)	96 hour(s)	4 mg/l
Mosquito fish. (LC50)		96 hour(s)	135 ppm

Mobility When released into the soil, this material may biodegrade to a moderate extent and is expected to leach into groundwater. When released into the soil or air this material is expected to quickly evaporate. When released into the water, this material is expected to have a half-life of less than 1 day. This material has an experimentally determined bioconcentration factor (BCF) of less than 100. It is not expected to significantly bioaccumulate. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals and is expected to have a half-life between 1 and 10 days.

Products of degradation Decomposition products may include the following materials: carbon oxides (CO, CO_2), sulfur oxides (SO_2, SO_3 etc.).

Toxicity of the products of biodegradation The products of biodegradation are as toxic as the original product.

Section 13. Disposal Considerations

Waste information Waste must be disposed of in accordance with federal, state and local environmental control regulations.
Consult your local or regional authorities.

Section 14. Transport Information

Canada (TDG) UN1992, FLAMMABLE LIQUID, TOXIC, N.O.S. (Carbon Disulfide), 3(6.1), PG II.

United States (DOT) RQ, UN1992, FLAMMABLE LIQUID, TOXIC, N.O.S. (Carbon Disulfide), 3(6.1), PG II.
ERG 131

Section 15. Regulatory Information

WHMIS (Canada) Class B-2: Flammable liquid with a flash point lower than 37.8°C (100°F).
Class D-1B: Material causing immediate and serious toxic effects (Toxic). Class D-2A: Material causing other toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).

Canada inventory: All components are listed or exempted.

CEPA Toxic substances: None of the components are listed.
Canadian ARET: None of the components are listed.
Canadian NPRI: The following components are listed: Carbon disulfide; Decane;Nonane **Alberta Designated Substances**: None of the components are listed.

Ontario Designated Substances: None of the components are listed.

Quebec Designated Substances: None of the components are listed.

This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

HCS Classification Flammable liquid
Toxic material
Irritating material Target organ effects

U.S. Federal Regulations TSCA 4(a) final test rules: Carbon disulfide; Nonane; Heptane; Hexanes; Pentane
TSCA 8(a) PAIR: Carbon disulfide; Nonane; Heptane; Pentane
United States inventory (TSCA 8b): All components are listed or exempted. TSCA 12(b) one-time export: Carbon disulfide; Nonane; Heptane; Pentane

SARA 302/304/311/312 extremely hazardous substances: Carbon disulfide

SARA 302/304 emergency planning and notification: Carbon disulfide
SARA 302/304/311/312 hazardous chemicals: Carbon disulfide; Petroleum Condensate
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Carbon disulfide: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard; Petroleum Condensate: Fire hazard, Immediate (acute) health hazard

Clean Water Act (CWA) 311: Carbon disulfide

Clean Air Act (CAA) 112 accidental release prevention: Carbon disulfide; Pentane; butane; Propane; Isobutane; Hydrogen sulfide

Clean Air Act (CAA) 112 regulated flammable substances: Pentane; Butane; Propane; Isobutane **Clean Air Act (CAA) 112 regulated toxic substances**: Carbon disulfide; Hydrogen sulfide

SARA 313	Ingredient name	% by weight
Form R. Reporting requirements	Carbon Disulfide	70-100
Supplier notification	Carbon Disulfide	70-100

State Regulations **Connecticut Carcinogen Reporting**: None of the components are listed.

Connecticut Hazardous Material Survey: None of the components are listed.
Florida substances: None of the components are listed.
Illinois Chemical Safety Act: None of the components are listed.
Illinois Toxic Substances Disclosure to Employee Act: None of the components are listed. **Louisiana Reporting**: None of the components are listed.

Louisiana Spill: None of the components are listed.

Massachusetts Spill: None of the components are listed.

Massachusetts Substances: The following components are listed: Carbon disulfide; Petroleum Condensate;Nonane
Michigan Critical Material: None of the components are listed.
Minnesota Hazardous Substances: None of the components are listed.

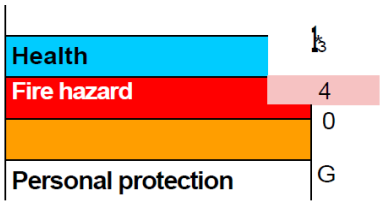
New Jersey Hazardous Substances: The following components are listed: Carbon disulfide; Petroleum Condensate; Decane;Nonane
New Jersey Spill: None of the components are listed.
New Jersey Toxic Catastrophe Prevention Act: None of the components are listed.
New York Acutely Hazardous Substances: The following components are listed: Carbon disulfide **New York Toxic Chemical Release Reporting**: None of the components are listed.
Pennsylvania RTK Hazardous Substances: The following components are listed: Carbon disulfide; Petroleum Condensate; Decane;Nonane
Rhode Island Hazardous Substances: None of the components are listed.

California Prop. 65
WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

Ingredient name	Cancer	Reproductive	No significant risk	Maximum levela cceptable dosage level
Carbon disulfide	No.	Yes.	No.	No.

Section 16. Other Information

Hazardous Material Information System (U.S.A.)



National Fire Protection Association (U.S.A.)

- 29CFR Part1910.1200 OSHA MSDS Requirements. - 49CFR Table List of Hazardous Materials, UN#, Proper Shipping Names, PG. ANSI Z400.1, MSDS Standard, 2004. - Canada Gazette Part II, Vol. 122, No. 2. Registration SOR/88-64, 31 December 1987. Hazardous Products Act "Ingredient Disclosure List" - Canadian Transport of Dangerous Goods, Regulations and Schedules, Clear Language version 2005. - Manufacturer's Material Safety Data Sheet.

Responsible name Product Safety Committee

Date of issue 11/15/2013

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