Safety Data Sheet
TKI-330

SDS Number: 1535M **Revision:** June 10, 2016

Section 1: IDENTIFICATION

1.1 Product Name: **TKI-330**

1.2 Other Identification:

Chemical Family: Inorganic salt solution.
Formula: CaS_x

1.3 Recommended Use of Chemical: Metal precipitant

1.4 Manufacturer: Tessenderlo Kerley, Inc.
2255 N. 44th Street, Suite 300
Phoenix, Arizona 85008-3279
Information: (602) 889-8300

1.5 Emergency Contact:

Tessenderlo Kerley, Inc.	(800) 877-1737
CHEMTREC	(800) 424-9300 (Domestic)
	(703) 527-3887 (International)

Section 2: HAZARD(S) IDENTIFICATION

2.1 Hazard Classification:

Health	Acute Toxicity-Oral	Category 4
	Acute Toxicity-Dermal	Category 4
	Acute Toxicity-Inhalation	Category 4
	Skin Corrosion/Irritation	Category 2
	Eye Damage/Irritation	Category 2A
Physical	Corrosive to metals	Category 1

2.2 Signal Word: Warning

2.3 Hazard Statement(s):

Harmful if swallowed.
Harmful in contact with skin.
Harmful if inhaled.
Causes skin irritation.
Causes serious eye irritation.
May be corrosive to metals

2.4 Symbol(s):

2.5 Precautionary Statement(s):

If swallowed: Rinse mouth. Call a poison center/doctor/regional medical center if you feel unwell.
If on skin: Wash with plenty of water. Take off contaminated clothing and wash before reuse. If skin irritation occurs: Get medical advice. Call a poison center/doctor/regional medical center if you feel unwell.
If inhaled: Remove person to fresh air and make comfortable for breathing. Call poison center/doctor/regional medical center if you feel unwell.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
Wash hands and face thoroughly with water after handling. Do not eat, drink or smoke when using this product.
Wear neoprene rubber chemical suit, gloves, goggles/full-face shield when handling product.
Avoid breathing product fume/gas/mist/vapors/spray.
Use only outdoors or in well-ventilated area.
Absorb spillage to prevent material damage.
Keep/store in original corrosive resistant container
Dispose of contents/container to chemical waste facility in accordance with local/regional/federal regulations.
Do not allow release to aquatic waterways.

2.6 Unclassified Hazard(s): Aquatic toxicity.

2.7 Unknown Toxicity Ingredient: None

Section 3: COMPOSITION/INFORMATION on INGREDIENTS

3.1 Chemical Ingredients: (See Section 8 for exposure guidelines)

Chemical	Synonym Common Name	CAS No.	EINECS No.	% by Wt.
Calcium polysulfide, CaS_x	Lime sulfur, calcium sulfide	1344-81-6	215-709-2	24 - 29
Water	Water	7732-18-5	231-791-2	Remaining %

Section 4: FIRST AID MEASURES

4.1 Symptoms/Effects:

Acute: Eye contact may cause eye irritation. Repeated or prolonged skin contact may cause skin irritation. Ingestion may irritate the gastrointestinal tract.

Chronic: No known chronic effects.

4.2 Eyes: Immediately flush with large quantities of water for 15 minutes. Hold eyelids apart during irrigation to ensure thorough flushing of the entire area of the eye and lids. Obtain medical attention if irritation occurs.

4.3 Skin: Immediately flush with large quantities of water. Remove contaminated clothing under a safety shower. Continue rinsing. Obtain medical attention if irritation occurs.

4.4 Ingestion: If victim is conscious, give 2 to 4 glasses of water and induce vomiting by touching finger to back of throat. Obtain immediate medical attention.

4.5 Inhalation: Remove victim from contaminated atmosphere. If breathing is labored, administer Oxygen. If breathing has ceased, clear airway and start CPR. Obtain immediate medical attention.

Section 5: FIRE FIGHTING MEASURES

5.1 Flammable Properties: (See Section 9, for additional flammable properties)

NFPA: Health – 2 Flammability – 0 Reactivity - 1

5.2 Extinguishing Media:

5.2.1 Suitable Extinguishing Media: Not flammable, use media suitable for combustibles involved in fire.

5.2.2 Unsuitable Extinguishing Media: Not applicable.

5.3 Protection of Firefighters:

5.3.1 Specific Hazards Arising from the Chemical:

Physical Hazards: Heating (flames) of closed or sealed containers may cause violent rupture of container due to thermal expansion of compressed gases.

Chemical Hazards: Heating causes release of Hydrogen sulfide vapors. Vapors are irritating to eyes, skin and respiratory tract.

5.3.2 Protective Equipment and Precautions for Firefighters:

Heating this product may evolve hydrogen sulfide vapors.

Firefighters should wear self-contained breathing apparatus (SCBA) and full fire-fighting turnout gear. Keep containers/storage vessels in fire area cooled with water spray.

Section 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions: Use personal protective equipment specified in Section 8. Isolate the release area and deny entry to unnecessary, unprotected and untrained personnel.

6.2 Environmental Precautions: Keep out of "waters of the United States" because of aquatic toxicity (See Section 12).

6.3 Methods of Containment:

Small Release: Confine and absorb small releases on sand, earth or other inert absorbents.

Large Release: Shut off release if safe to do so. Dike spill area with earth, sand or other inert absorbents to prevent runoff into surface waterways, storm drains or sewers (aquatic toxicity).

6.4 Method for Cleanup:

Small Release: For small areas shovel up absorbed material and place in drums for disposal as a chemical waste.

Large Release: Recover as much of the spilled product using portable pump and hoses. Use as originally intended or dispose of as a chemical waste. Treat remaining material as a small release (above).

Section 7: HANDLING and STORAGE

7.1 Handling: Avoid contact with eyes. Use only in a well-ventilated area. Wash thoroughly after handling. Avoid prolonged or repeated breathing of vapors. Avoid prolonged or repeated contact with the skin.

7.2 Storage: Store in well-ventilated areas. Do not store combustibles in the area of storage vessels. Keep away from any sources of heat or flame. Store totes and smaller containers out of direct sunlight at moderate temperatures. (See Section 10.5 for materials of construction).

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Exposure Guidelines:

Chemical	OSHA PELs		ACGIH TLVs	
	TWA	STEL	TWA	STEL
Hydrogen sulfide	None	20 ppm (Ceiling)	1 ppm	5 ppm
Calcium polysulfide	None	None	None	None
Water	None	None	None	None

8.2 Engineering Controls: Use adequate exhaust ventilation to prevent inhalation of product vapors. Keep eye wash/safety shower in areas where product is commonly handled.

8.3 Personal Protective Equipment (PPE):

8.3.1 Eye/Face Protection: Chemical goggles and a full face shield.

8.3.2 Skin Protection: Neoprene rubber gloves and suit should be worn to prevent repeated or prolonged contact with the liquid. Wash contaminated clothing prior to reuse.

8.3.3 Respiratory Protection: Have self-contained breathing apparatus (SCBA), positive pressure, MSHA/NIOSH (approved or equivalent) available in case of spillage or equipment failure.

8.3.4 Hygiene Considerations: Common good industrial hygiene practices should be followed, such as washing thoroughly after handling and before eating or drinking.

Section 9: PHYSICAL and CHEMICAL PROPERTIES

9.1 Appearance: Ruby-red liquid.
9.2 Odor: Possible odor of rotten eggs.
9.3 Odor Threshold: 4.7 ppb (hydrogen sulfide)
9.4 pH: 11.5 – 11.7, Typical
9.5 Melting Point/Freezing Point: 18 to 25°F (-7.7 to -3.9°C), (Typical)
9.6 Boiling Point: Not determined
9.7 Flash Point: Not applicable
9.8 Evaporation Rate: Not determined
9.9 Flammability: Not applicable
9.10 Upper/Lower Flammability Limits: Not applicable
9.11 Vapor Pressure: Not determined
9.12 Vapor Density: Not determined

9.13 Relative Density:	1.27 (10.6 lbs/gal) (Typical)
9.14 Solubility:	Miscible
9.15 Partition Coefficient:	No data available.
9.16 Auto-ignition Temperature:	Not applicable
9.17 Decomposition Temperature:	Not determined
9.18 Viscosity:	2.95 cSt @ 20°C, 2.5 cSt @ 30°C.

Section 10: STABILITY and REACTIVITY

10.1 Reactivity:	Strong oxidizers and acids.
10.2 Chemical Stability:	This is a stable product under normal (ambient) temperature and pressure.
10.3 Possibility of Hazardous Reactions:	Interaction with strong oxidizers, acids or acidic materials.
10.4 Conditions to Avoid:	High heat and fire conditions. Interaction with strong oxidizers or acidic materials (evolution of Hydrogen sulfide vapors).
10.5 Incompatible:	Strong oxidizers can cause explosive mixtures if heated to dryness. Acids, acidic materials and dilution with water will cause the release of highly toxic Hydrogen sulfide vapors. **This product is not compatible with Copper, Aluminum or their alloys (i.e. brass, bronze, etc.)**. These materials of construction should not be utilized in handling systems or storage containers for this product.
10.6 Hazardous Decomposition Products:	Hydrogen sulfide and Oxides of Sulfur.

Section 11: TOXICOLOGICAL INFORMATION

11.1 Oral:	Oral Rat LD_{50}: 820 mg/kg. (calcium polysulfide)
11.2 Dermal:	Dermal Rabbit LD_{50}: > 2,000 mg/kg. (calcium polysulfide)
11.3 Inhalation:	INH-Rat LC_{50}: 3.6 mg/L (4 hr. exposure). (calcium polysulfide)
11.4 Eye:	Primary Eye Irritation – Irreversible damage due to high pH.
11.5 Chronic/Carcinogenicity:	Not listed in NTP, IARC or by OSHA.
11.6 Teratology:	No data available.
11.7 Reproduction:	No data available.
11.8 Mutagenicity:	No data available.

Section 12: ECOLOGICAL INFORMATION

12.1 Ecotoxicity:

Green Algae, EC_{50}: 16.4 mg/l. (calcium polysulfide)
Water Flea, EC_{50}: 13.7 mg/l. (calcium polysulfide)
Bluegill, LC_{50}: 52.9 mg/l. (calcium polysulfide)
Fathead Minnow, LC_{50}: 42.9 mg/l. (calcium polysulfide)
Rainbow Trout, LC_{50}: 8.8 mg/l. (calcium polysulfide)
Honey Bee LD_{50}: >25 µg ai/Bee. (calcium polysulfide)
Avian LD_{50}: 560 ai/kg. (calcium polysulfide)
Bobwhite Quail LD_{50}: 560 ai/kg body wt. (calcium polysulfide)

12.2 Persistence & Degradability: "Calcium polysulfide present in moist soils and/or on moist foliage is expected to dissociate rapidly; therefore, run-off and erosion into surface waters, as present calcium polysulfide, should be negligible." (EPA, RED)

12.3 Bioaccumulative Potential: This product is not bioaccumulative.

12.4 Mobility in Soil: No data available.

12.5 Other Adverse Effects: None

Section 13: DISPOSAL CONSIDERATIONS

Consult federal, state and local regulations for disposal regulations.

Section 14: TRANSPORT INFORMATION

14.1 Basic Shipping Description:

14.1.1 Proper Shipping Name: Calcium polysulfide solution *(Not regulated by DOT)*
14.1.2 Hazard Classes: Not applicable
14.1.3 Identification Number: Not applicable
14.1.4 Packing Group: Not applicable
14.1.5 Hazardous Substance: No
14.1.6 Marine Pollutant: No

14.2 Additional Information:

14.2.1 Other DOT Requirements:

14.2.1.1 Reportable Quantity: No
14.2.1.2 Placard(s): Not applicable

14.2.1.3 Label(s): Not applicable

14.2.2 USCG Classification: Not determined.

14.2.3 International Transportation:

14.2.3.1 IMO: UN3082, Environmentally Hazardous Substance, liquid, n.o.s., 9, PG III (Marine Pollutant - calcium polysulphide)

14.2.3.2 IATA: Not regulated

14.2.3.3 TDG (Canada): Not regulated

14.2.3.4 ADR (Europe): UN3082, Environmentally Hazardous Substance, liquid, n.o.s., 9, PG III (Marine Pollutant - calcium polysulphide

14.2.3.5 ADG (Australia): UN3082, Environmentally Hazardous Substance, liquid, n.o.s., 9, PG III (Marine Pollutant - calcium polysulphide

14.2.4 Emergency Response Guide: Not applicable

14.2.5 ERAP - Canada: Not applicable

14.2.6 Special Precautions: Not applicable

Section 15: REGULATORY INFORMATION

15.1 U.S. Federal Regulations:

15.1.1 OSHA: This product is considered a hazardous chemical under the Federal OSHA Hazard Communication Standard (29 CFR 1910.1200).

15.1.2 TSCA: Product is contained in USEPA Toxic Substance Control Act Inventory.

15.1.3 CERCLA: Reportable Quantity Not applicable

15.1.4 SARA Title III:

15.1.4.1 Extremely Hazardous Substance (EHS): No

15.1.4.2 Section 312 (Tier II) Ratings:

Immediate (acute)	Yes
Fire	No
Sudden Release	No

Reactivity	No
Delayed (chronic)	No

15.1.4.3 Section 313 (FORM R): Not applicable

15.1.5 RCRA: Not applicable

15.1.6 CAA (Hazardous Air Pollutant/HAP): Not applicable

15.2 International Regulations:

15.2.1 Canada:

15.2.1.1 WHMIS: Not determined

15.2.1.2 DSL/NDSL: Listed in NDSL, Record No. 28636

15.3 State Regulations:

CA Proposition 65: Not applicable

Section 16: OTHER INFORMATION

REVISIONS: This SDS was reformatted to comply with the new Hazard Communication Standard dated March 26, 2012, by the Regulatory Affairs Department of Tessenderlo Kerley, Inc. 7/1/2014.

Revised multiple sections for formatting and wording. 3/19/15.
Revised sections 2, 10 and 11. 3/8/16.
Revised sections 2, 3, 8, 11, 12 and 14. 6/10/16.

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