SAFETY DATA SHEET

Ag/AgCl Reference Electrode (RE)

Section 1: Identification

Product Name: Caltrode +800
Chemical Name/Synonyms: Reference Electrode
Company: CALTRODE PTE. LTD.

In emergency call 911.
For information about this SDS, use this department contact phone#: +1 520 3987850

Section 2: Hazard(s) Identification

Hazard Classification: Not classified
Signal Word(s): Warning
Hazard Statements: H302, H312, H319, H332, H410
Pictograms:

Precautionary Statements: Do not inhale
Description of other hazards: Not applicable

Section 3: Composition/ Information on Ingredients

Chemical Name	Synonym	CAS#	Conc.
Silver Powder	Ag	7440-22-4	
Silver Chloride	AgCl	7783-90-6	
Potassium Chloride	KCl	7447-40-7	

Section 4: First-Aid Measures

After skin contact: Wash skin with soap and water during at least 15 minutes
After eye contact: Rinse eyes with plenty of water during at least 15 minutes, raising the eyelids several times
After inhalation: In the event of inhalation of vapors or dust, bring the person into a ventilated place. If the respiration is difficult, give him oxygen. If the person is not breathing give him artificial respiration. Do not give mouth to mouth respiration. Call a doctor
After swallowing: In the event of ingestion, do not induce vomiting. If the victim is conscious and alert, give him 2 to 4 cups of water or milk. Never give anything to a person who is unconscious. Ask for medicl help immediately.

Section 5: Fire-Fighting Measures

Suitable extinguishing agents: Not applicable
Special protective equipment for firefighters: Not applicable

Section 6: Accidental Release Measures

Personal precautions: Dust-proof safety googles
Measures for environmental protection: Sufficient to keep dust air levels below the workplace exposure limits. Fume hood
Measures for cleaning/collecting: 8-inch minimum face shield, gloves and other clothing to protect exposed skin from prolonged or repeated contact. Use rubber for all contact points

Section 7: Handling and Storage

Handling: Avoid contact with the eyes, skin, clothing, ingestion and inhalation. Wear ocular protection, and in the event of insufficient ventilation, a suitable breathing apparatus. Minimize the production and the accumulation of dust. Keep containers well closed.
Storage: Store in a cool, dark, well ventilated place, away from any source of ignition, light or any combustible materials. Store in hermetic containers

Section 8: Exposure Controls/Personal Protection

Chemical Name	OSHA PEL	OSHA PEL (ceiling)	ACGIH OEL (TWA)	ACGIH OEL (STEL)
Silver Powder	0.01 mg/m^3	N/E	0.1 mg/m^3	N/E
Silver Chloride	0.01 $mg(Ag)/m^3$	N/E	0.1 $mg(Ag)/m^3$	N/E
Potassium Chloride	N/E	N/E	N/E	N/E

General protective and hygienic measures: Wash hands, forearms and face after handing chemical products, before eating and using the lavatory and at the end of the work period. Appropriate techniques should be used to remove potentially contaminated clothing. Ensure that eyewash stations and safety showers are close to the workstation location.
Breathing equipment: Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based ok known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator
Protection of hands: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary
Eye protection: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to mists, gases or dust. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection

Section 9: Physical and Chemical Properties

Silver Chloride (AgCl)
Form: Solid
Odor: Odorless
Odor threshold: Not available
pH: Not available
Melting point/melting range: 455 C
Boiling point/boiling range: 1550.00 C
Flash point: Not available
Evaporation rate: Not available
Flammability: Not flammable
Upper/lower flammability or explosive limits: Not available
Auto ignition temperature: Not available
Danger of explosion: Not available
Vapor pressure: 1 mm Hg at 1,674 F (912 C)
Vapor density: Not available
Relative density: 5.59
Solubility in/Miscibility with water: Insoluble

Silver Powder (Ag)
Form: Solid
Odor: Odorless
Odor threshold: Not available
pH: Not available
Melting point/melting range: 961.78 C
Boiling point/boiling range: 2162 C
Flash point: Not available
Evaporation rate: Not available
Flammability: Not flammable
Upper/lower flammability or explosive limits: Not available
Auto ignition temperature: Not available
Danger of explosion: Not available
Vapor pressure: Not available

Vapor density: Not available
Relative density: 10.5 g/cc @ 20 C
Solubility in/Miscibility with water: Insoluble

Potassium Chloride (KCl)
Form: Solid
Odor: Odorless
Odor threshold: Not available
pH: Not available
Melting point/melting range: 770 C
Boiling point/boiling range: 1500 C
Flash point: Not available
Evaporation rate: Not available
Flammability: Not flammable
Upper/lower flammability or explosive limits: Not available
Auto ignition temperature: Not available
Danger of explosion: Not available
Vapor pressure: Not available
Vapor density: Not available
Relative density: 1.98 g/cm^3
Solubility in/Miscibility with water: Soluble

Section 10: Stability and Reactivity

Silver Chloride (AgCl)
Reactivity: 0
Chemical stability: Stable if used and stored according to specifications
Conditions to avoid: Light, extreme hear. Exposure to light slowly releases silver and chlorine (accumulation of chlorine in an enclosed space could be hazardous to people entering the area: highly irrigating and corrosive to tissues)
Incompatible materials: Aluminum, ammonium hydroxide, bromine trifluoride, alkali metals, sodium peroxide-charcoal, acetylene
Hazardous decomposition products: Hydrogen chlorides
Silver Powder (Ag)
Reactivity: 0
Chemical stability: Stable under recommended storage conditions
Conditions to avoid: Dusting conditions
Incompatible materials: Acids, halogens, sulfur
Hazardous decomposition products: None expected

Potassium Chloride (KCl)
Reactivity: 0
Chemical stability: Stable
Conditions to avoid: None
Incompatible materials: Bromine trifluoride, sulfuric acid + potassium permanganate, acids, oxidizing agents, water/moisture
Hazardous decomposition products: Chlorine compounds, hydrogen chloride and K2O

Section 11: Toxicological Information

Silver Chloride (AgCl)
Acute toxicity: Not available
Potential routes of exposure/potential health effects
Skin: May cause irritation
Eye: May cause irritation
Inhalation: May cause bronchitis, kidney injury, and argyria (permanent blue-gray discoloration of the skin, conjunctive and internal organs)
Ingestion: May cause kidney injury and argyria
Carcinogenic effects: Not available
Mutagenic effects: Not available
Reproductive toxicity: Not available
Sensitization: Not available
Target organs: Not available

Silver Powder (Ag)
Acute toxicity: Not available
Potential routes of exposure/potential health effects
Skin: May cause irritation
Eye: May cause irritation
Inhalation: May cause irritation
Ingestion: May cause irritation
Carcinogenic effects: Not available
Mutagenic effects: Not available
Reproductive toxicity: Not available
Sensitization: Not available
Target organs: Not available

Potassium Chloride (KCl)
Acute toxicity: Not available
Potential routes of exposure/potential health effects
Skin: May cause irritation
Eye: May cause irritation
Inhalation: May cause irritation to the respiratory tract and mucous membranes
Ingestion: Poison by ingestion. Large oral doses cause gastrointestinal irritation, purging, weakness, and circulatory problems
Carcinogenic effects: Not available
Mutagenic effects: Not available
Reproductive toxicity: Not available
Sensitization: Not available
Target organs: Not available

Section 12: Ecological Information (non-mandatory)

Silver Chloride (AgCl)
Ecotoxicity: Not available
Mobility: Not available
Biodegradation: Not available
Bioaccumulation: Not available

Silver Powder (Ag)
Ecotoxicity: Not available
Mobility: Not available
Biodegradation: Not available
Bioaccumulation: Not available

Potassium Chloride (KCl)
Ecotoxicity: Not available
Mobility: Not available
Biodegradation: Not available
Bioaccumulation: Not available

Section 13: Disposal Considerations (non-mandatory)

Steps to Be Taken in Case Material Is Released or Spilled: Wear appropriate respiratory and protective gear specified in section VIII. Isolate spill area and provides ventilation. Vacuum up spill using a high efficiency particulate absolute (HEPA) air filter and place in a closed container for proper disposal. Take care not to raise dust. Waste Disposal Method: In accordance with Local, State and Federal waste disposal regulations.

Section 14: Transport Information (non-mandatory)

DOT regulations: N/A

- **Hazard class:** None
- **Land transport ADR/RID (cross-border):** N/A
- **ADR/RID class:** N/A
- **Maritime transport IMDG:** N/A

Air transport ICAO-TI and IATA-DGR: N/A

- **ICAO/IATA Class:** N/A

Section 15: Regulatory Information (non-mandatory)

US Federal Regulations
SARA Section 355 (extremely hazardous substances): N/A
SARA Section 313 (specific toxic chemical listings): N/A
Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs): N/A
TSCA (Toxic Substances Control Act): N/A

Section 16: Other Information

SDS date of preparation/update: 1/1/2019