CHEMTRONICS[®] Technical Data Sheet

TDS # CW7100

CircuitWorks[®] Silver Conductive Grease

PRODUCT DESCRIPTION

CircuitWorks[®] Silver Conductive Grease provides maximum electrical and thermal conductivity, proven lubrication properties, and protection from moisture, oxidation, and other environmental hazards. This system utilizes an advanced silicone lubricant that is compatible with metal, rubber, and plastic.

- High electrical conductivity
- Excellent thermal conductivity
- Provides protection against wear
- Remains stable in a wide temperature range; -70 to 485°F (-57 to 252°C)
- Protects against moisture and corrosion
- Very low viscosity vs. temperature change

TYPICAL APPLICATIONS

CircuitWorks[®] Silver Conductive Grease may be used for high and low power applications including:

- Lubrication of Substation Switches or Circuit Breakers
- Heat Dissipation from Transformers
- Low or Medium Speed Sliding Contacts
- Static Grounding on Seals or O-Rings
- Extending the Life of Rotating Switches

TYPICAL PRODUCT DATA AND PHYSICAL PROPERTIES

Composition	
Material	100% Silver Filled
	Silicone Grease
Color	Silver/Gray
Consistency	Smooth Paste
Properties	
Volume resistivity	<0.01 ohm-cm
Thermal Conductivity (BTU-in/hr-ft ² -°F) (CAL-cm/sec-cm ² -°C)	38.8 1.3 x 10 ⁻²
(W/m°K)	5.6
Operating Temperature Range	-70 to 485°F (-57 to 252°C)
Unworked Penetration (ASTM D-1403) 77°F	210
Worked Penetration (ASTM D-1403, 60 Strokes)	250
Dropping Point (ASTM D-2266)	491°F (255°C)
Steel on Steel Wear (ASTM D-2266)	1.5mm
Corrosion on Copper	None
Moisture Resistance	Excellent
Chemical Resistance	Excellent
Electrical Conductivity	Excellent
Thermal Conductivity	Excellent
Lubrication Properties	Excellent
Protection from Oxidation	Excellent
Power Rating	High/Low
Shelflife	2 years
RoHS/WEEE	ROHS
Status	Compliant

COMPATIBILITY

CircuitWorks[®] Silver Conductive Grease is generally compatible with metal, rubber, and plastic. As with any compound, compatibility with substrate should be determined on a non-critical area prior to use.

USAGE INSTRUCTIONS

Surface Preparation: For best results, clean parts to be lubricated with Chemtronics[®] Electro-Wash[®] PX cleaner in order to remove any surface contamination which may prevent adequate material contact.

Thinning: Do not attempt to thin.

Application:

Syringe: Remove cap and gently press on plunger. Apply CircuitWorks[®] Silver Conductive Grease directly to surface or use application tip.

Clean-Up: Electro-Wash[®] PX cleaner can be used to remove trace residues. Excess material may also be removed using a wipe such as the Chemtronics[®] ControlWipesTM. Silver particles may stain porous materials.

WARNING:

To avoid shock or possible fire, stop power to any system before applying conductive grease. Insure positive and negative contacts remain isolated. Improper use can result in shorting, arcing, or shock.

AVAILABILITY

CW7100 6.5g / 0.23 oz. Syringe

NOTE:

This information is believed to be accurate. It is intended for professional end users having the skills to evaluate and use the data properly. ITW CHEMTRONICS[®] does not guarantee the accuracy of the data and assumes no liability in connection with damages incurred while using it.

SECTION 1: CHEMICAL PRODUCT AND COMPANY INFORMATION

Product Information: 800-TECH-401

CIRCUITWORKS* CONDUCTIVE GREASE - SILVER Product Code: CWT100, CWT100BLK2500 SECTION 2: COMPOSITION/NEOMATION ON INGREDIENTS WL % Range Product Ingredient Information CAS No. WL % Range Silver (Metalic) 744P 22-4 550.850.0 Silver (Metalic) 744P 22-4 550.850.0 Silver (Metalic) 9005-12.3 150-45.0 SECTION 3: EUCORSTICATION INGREDIENT Product is onflammable. Liquid will irritate eyes and skin. Exercise 2. Section 300 Silver (Metalic) 150-45.0 State: Not expected to be singly on door. This product is onflammable. Liquid will irritate eyes and skin. Product Conflammable. Silver (Metalic) State: Not expected to be singly on door box is prosting the mounts of water. Receivation Metalica Conditions Activated by Exposure Eye SECTION 4: FIRST AID MEASURES Eye: Introdicidue (Inde) rotate of exposure I (Indea) and indicidue occurs, remove to fresh air. If irritation persists, call a Physician. SECTION 5: FIRE FIGUTION (MEASURES Electron 1. Electron 1. Electron 1. Side indexists Engegisting: I appreciable quantities are swallowed, seek metical attention if irritation persists, call a Physician. Secono 2. Secono 2.	Product Identification			
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Stuff: Rethrow contaminated cloring and wash skin win soap and water. Cet medical attention. Inhalator: Not likely route of exposure. If inhaled and irritation occurs, remove to fresh air. If irritation persists, call a Physician. SECTION 5: FIRE FIGHTING MEASURES Each Point: > 520°F (> 271C) (Staffash) Extinguishing Media: Use carbon dioxide or dry chemicals for small fires, aqueous foam or water for large fires involving this material. Err. Fighting Instructions: Remove all ignition sources. Closed containers may rupture due to build-up of pressure when exposed to extreme heat. Fight fire from a safe distance. As in any fire, wear self-contained breathing apparatus (pressure demand, OSHA/NIOSH approved or equivalent) and full protective equipment. Ventilate area and contain spill with sand or other absorbent material. Collect spill by scooping up liquids and absorbent material, then place in a sealed metal container for proper disposal. Do not flush to sever. Frevent material from entering stores that lead to waterways and ground. Small Spills: Absorb spill with absorbent material, then place in a sealed metal container for proper disposal. Section 7: HANDLING AND STORAGE Avoid prolonged or repeated contact with eyes, skin, and clothing. Wash hands before eating. Use with adequate ventilation. Avoid breathing product vapor or mist. Do not reuse this container. Store in a cool dry place away from heat, sparks and flame. Keep container closed when not in use. Do not store in direct sunlight. KEEP OUT O	examined by a Physician.		· · · · · · · · · · · · · · · · · · ·	
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safe distance. As in any fire, wear self-contained breathing apparatus (pressure demand, OSHA/NIOSH approved or equivalent) and full protective gear. SECTION 6: ACCIDENTAL RELEASE MEASURES Large, Spills: Remove all sources of ignition (sparks, open flames, etc.). Wear self-contained breathing apparatus and appropriate personal protective equipment. Ventilate area and contain spill with sond or other absorbent material. Collect spill by scooping up liquids and absorbent material and place in a sealed metal container for proper disposal. Do not flush to sewer. Prevent material from entering storm sewers, ditches that lead to waterways and ground. Section 7: HANDLING AND STORAGE Avoid prolonged or repeated contact with eyes, skin, and clothing. Wash hands before eating. Use with adequate ventilation. Avoid breathing product vapor or mist. Do not rule this container. Store in a cool dry place away from heat, sparks and flame. Keep container closed when not in use. Do not store in direct sunlight. KEPOUT OF REACH OF CHILDREN. ACGIH TLV OSHA PEL ACGIH STEL Sliver 0.1 mg/m3 0.0 lmg/m3 NA Sliver 0.1 mg/m3 0.0 lmg/m3 NA Suite on Oil NA NA NA Work/Hygienic Practices: Good general ventilation should be sufficient to control airborne levels. Local exhaust ventilation may be necessary to control any air contaminants to within their TLVs during the use of this product. Wear safety g	Fire Fighting Instructions: Remove all ignition sources. Closed conta	ainers may rupture due to b	uild-up of pressure when expose	d to extreme heat. Fight fire from a
SECTION 6: ACCIDENTAL RELEASE MEASURES Large Spills: Remove all sources of ignition (sparks, open flames, etc.). Wear self-contained breathing apparatus and apporpriate personal protective equipment. Ventilate area and contain spill with abs or other absorbent material. Collect spill by scooping up liquids and absorbent material and place in a sealed metal container for proper disposal. SECTION 7: HANDLING AND STORAGE Absorb spill with absorbent material, then place in a sealed metal container for proper disposal. SECTION 7: HANDLING AND STORAGE Avoid prebated contact with eyes, skin, and clothing. Wash hands before eating. Use with adequate ventilation. Avoid breathing product vapor or mist. Do not reuse this container. Store in a cool dry place away from heat, sparks and flame. Keep container closed when not in use. Do not store in direct sunlight. KEEP OUT OF REACH OF CHILDREN. Exposure Guidelines: OI mg/m3 0.01mg/m3 NA Silicone Oil NA NA NA NA Work/Hygienic Practices: God general ventilation should be sufficient to control airborne levels. Local exhaust ventilation may be necessary to control any air contaminants to within their TLVs during the use of this product. Wear safety glasses with side shields or goggles and rubber or other chenically resistant gloves when handling this material. NPFA HMIS 1 1 Health 1 1 Personal Protection - B SECTION 9: PHYSICAL AND CHEMIC	safe distance. As in any fire, wear self-contained breathing apparatus (pr	ressure demand, OSHA/NI	OSH approved or equivalent) and	full protective gear.
Large_Spills: Remove all sources of ignition (sparks, open flames, etc.). Wear self-contained breathing apparatus and appropriate personal protective equipment. Ventilate area and contain spill with absorbent material. Collect spill by scooping up liquids and absorbent material and place in a sealed metal container for proper disposal. Do not flush to sewer. Prevent material from entering storm sewers, ditches that lead to waterways and ground. Small Spills: Absorbent material, then place in a sealed metal container for proper disposal. Section 7: HANDLING AND STORAGE Avoid prolonged or repeated contact with eyes, skin, and clothing. Wash hands before eating. Use with adequate ventilation. Avoid breathing product vapor or mist. Do not reuse this container. Store in a cool dry place away from heat, sparks and flame. Keep container closed when not in use. Do not store in direct sunlight. KEEP OUT OF REACH OF CHILDREN. Sectriton 8: EXPOSURE CONTROLS/PERSONAL PROTECTION Exposure Guidelines: 0.1 mg/m3 0.01mg/m3 NA Silver 0.1 mg/m3 0.01mg/m3 NA Solicone Oil NA NA NA Work/Hygienic Practices: Godg general ventilation should be sufficient to control airborne levels. Local exhaust ventilation may be necessary to control any air contaminants to within their TLVs during the use of this product. Wear safety glasses with side shields or goggles and rubber or other chemically resistant gloves when handling this material. MEPA and HMIS Codes: NFPA <t< td=""><td>SECTION 6: ACCIDENTAL RELEASE MEASURES</td><td></td><td></td><td></td></t<>	SECTION 6: ACCIDENTAL RELEASE MEASURES			
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Torpper disposal. Do not rules to severe. Prevent material from entering storm severes, durines dual read to waterways and ground. Section 7: HANDLING AND STORAGE Avoid prolonged or repeated contact with eyes, skin, and clothing. Wash hands before eating. Use with adequate ventilation. Avoid breathing product vapor or mist. Do not ruse this container. Store in a cool dry place away from heat, sparks and flame. Keep container closed when not in use. Do not store in direct sunlight. KEEP OUT OF REACH OF CHLIDREN. Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION Exposure Guidelines: CHEMICAL NAME ACGIH TLV Silver 0.1 mg/m3 0.01mg/m3 Silver 0.1 mg/m3 0.01mg/m3 Silver 0.1 mg/m3 NA Softer Practices: God general ventilation should be sufficient to control airborne levels. Local exhaust ventilation may be necessary to control any air contaminants to within their TLVs during the use of this product. Wear safety glasses with side shields or goggles and rubber or other chemically resistant gloves when handling this material. NFPA and HINS Codes: NFPA HMIS Reactivity 0 0 Personal Protection - B Section 9: PHYSICAL AND CHEMICAL PROPERTIES Slubility in Water: <1.0%	Ventilate area and contain spill with sand or other absorbent material. C	Collect spill by scooping up	liquids and absorbent material a	and place in a sealed metal container
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Vapor Pressure: Vapor Density: NANA(Butyl acetate=1)Percent Volatile: < 2.0%	<u>pH:</u> NA		Evaporation Rate: <1	
vapor Density:NABoiling Range:NAPercent Volatile:< 2.0%	Vapor Pressure: NA		(Butyl acetate=1)	
<u>recent (olutio.</u> \ 2.0/0	<u>v apor Density:</u> NA Percent Volatile: $< 2.0\%$		<u>вошид Range:</u> NA	
	<u>recent volutio.</u> $\times 2.070$			

SECTION 10: STABILITY AND REACTIVITY INFORMATION

Stability: This product is stable.

Conditions to Avoid: Contamination with incompatible materials.

Incompatibility: Avoid strong oxidizing agents, strong acids and bases.

Products of Decomposition: Carbon monoxide, carbon dioxide, silicon dioxide, oxides of nitrogen, and incompletely burned hydrocarbons which may include traces of formaldehyde.

Hazardous Polymerization: May not occur.

Conditions to avoid: NA

SECTION 11: TOXICOLOGICAL INFORMATION

	LD50	LD50	LC50 (ppm)
Ingredients	(rat) Oral	(rbt) Dermal	(rat) Inhalation
Silver (metallic)	> 10000 mg/kg (mouse	e) NA	NA
Silicone Oil	NA	NA	NA
Cancer Information: No ingredients listed	l as human carcinogens by	NTP or IARC	
Reproductive effects: none	Teratogenic effects: n	one	Mutagenic effects: none
SECTION 12: ECOLOGICAL INFOR	MATION		

Environmental Impact Information

Avoid runoff into storm sewers and ditches which lead to waterways. Water runoff can cause environmental damage.

REPORTING

US regulations require reporting spills of this material that could reach any surface waters. The toll free number for the US Coast Guard National Response Center is: 1-800-424-8802

SECTION 13: DISPOSAL CONSIDERATIONS Dispose of in accordance with all federal, state and local regulations. Water runoff can cause environmental damage. SECTION 14: TRANSPORTATION INFORMATION

Air and Ground Shipments:

Adhesives, sealants Not Regulated

SECTION 15: REGULATORY INFORMATION

SECTION 313 SUPPLIER NOTIFICATION

This product contains the following toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To- Know Act of 1986 (40 CFR 372). Silver CAS# 7440-22-4 55.0-85.0%

Silver CAS# 7440-22-4 This information should be included on all MSDSs copied and distributed for this material. TOXIC SUBSTANCES CONTROL ACT (TSCA).

All ingredients of this product are listed on the TSCA Inventory.

WHMIS: Class D2B

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

SECTION 16: OTHER INFORMATION

Normal ventilation for standard manufacturing practices is usually adequate. Local exhaust should be used when large amounts are released.

To the best of our knowledge, the information contained herein is accurate. However, all materials may present unknown hazards and should be used with caution. In particular, improper use of our products and their inappropriate combination with other products and substances may produce harmful results which cannot be anticipated. Final determination of the suitability of any material is the sole responsibility of the user. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that may exist.