GC Electronics
1801 Morgan Street
Rockford, IL 61102
Phone: (815) 968-9661
Fax: (815) 968-9731
www.gcelectronics.com

Product Name: Print Kote Conformal Coating
MSDS Number: 138
Revision Date: 4/6/10
Supersedes Date: 5/15/07

MATERIAL SAFETY DATA SHEET

Complies with OSHA Hazard Communication Standard 29 CFR 1910.1200

Product Type: Silicone resin solution
Product Name: **Print Kote Conformal Coating**
Part Number(s): **22-203**

Emergency Contact: Chemtrec
Phone (24 hours): (800)424-9300

Section 1 - Identification of Product

NFPA RATINGS

Health	1	Least	0
Flammability	3	Slight	1
Reactivity	0	Moderate	2
Personal Protection	B	High	3
		Extreme	4
Product Name: Silicone Resin Solution		Gloves, Safety Glasses	B

Note: NFPA = National Fire Protection Association

Section 2 - Hazardous Ingredients

Component	Cas Number	% Weight	Exposure Limits
Octamethyltrisiloxane (Silicone Resins) Dimethyl. Methylphenylmethoxy Siloxane	107-51-7 68952-93-2	>60 15-40	TWA 200 PPM See methyl alcohol comments
Toluene	108-88-3	3-7	OSHA PEL (final rule): 8 Hour TWA 200 PPM, Ceiling 300 ppm 10 minutes maximum duration 500 ppm../ ACGIH TLV: Skin: TWA 20 PPM.
Methyltrimethoxysilane	1185-55-3	1.0-5.0	TWA 50 PPM. Also see methyl alcohol comments.

Comments: Methyl alcohol forms on contact with water or humid air. Provide adequate ventilation to control exposures within guidelines of OSHA PEL: TWA 200 PPM and ACGIH TLV-Skin: TWA 200 PPM, STEL 250 PPM

The above components are hazardous as defined in 29 CFR 1910.1200.

Warning: This product contains Toluene, known to the State of California to cause birth defects or other reproductive harm.

Section 3 - Physical Data

Physical form:	Liquid
Color:	Translucent
Odor:	Some odor
Specific Gravity @ 25C:	0.9
Viscosity:	350.00 cSt
Freezing/Melting Point:	Not Determined
Boiling Point:	101°C
Vapor Pressure @ 25C:	Not Determined
Vapor Density:	Not Determined
Solubility in Water:	Not Determined
pH:	Not Determined
Volatile Content:	Not Determined

Note: The above information is not intended for use in preparing product specifications.

Section 4 - Fire & Explosion Hazard Data

Flammability Limits in Air:	Not Determined
Flash Point (closed cup):	62.6°F/17°C (Seta Closed Cup)
Autoignition Temperature:	Not Determined
Extinguishing Media:	On large fires use medium expansion (>30:1) AFFF alcohol compatible foam or water spray. On small fires use medium expansion (>30:1) AFFF alcohol compatible foam or CO2 or water spray. Water can be used to cool fire exposed containers.
Unusual Fire Hazards:	Fire burns more vigorously than would be expected. Static electricity will accumulate and may ignite vapors. Prevent a possible fire hazard by bonding and grounding or inert gas purge. Vapors are heavier than air and may travel to a source of ignition and flash back.
Fire Fighting Procedures:	Self-contained breathing apparatus and protective clothing should be worn in fighting large fires involving chemicals. Determine the need to evacuate or isolate the area according to your local emergency plan. Use water spray to keep fire exposed containers cool.
Hazardous Decomposition products:	Thermal breakdown of this product during fire or very high heat conditions may evolve the following hazardous decomposition products: Carbon oxides and traces of incompletely burned carbon compounds. Silicon dioxide. Metal Oxides. Formaldehyde.

Section 5 - Health Hazard Data

Effects of Overexposure-
Acute Effects:

Eye:	Direct contact may cause mild irritation.
Skin:	No significant irritation expected from a single short term exposure..
Inhalation:	Vapor may irritate nose and throat. Vapor overexposure may cause drowsiness.
Oral:	Swallowing large amounts may cause drowsiness.

Emergency First Aid Measures:

Eye:	Immediately flush with water for 15 minutes. Get medical attention.
Skin:	Remove from skin and wash thoroughly with soap and water or waterless cleanser. Get medical attention if irritation or other ill effects develop or persist.
Inhalation:	Remove to fresh air. Get immediate medical attention.
Oral:	Get medical attention.
Comments:	Treat according to person's condition and specifics of exposure.

Prolonged/Repeated Exposure Effects

Skin:	Repeated or prolonged contact may cause defatting and drying of skin which may result in skin irritation and dermatitis.
Inhalation:	Product generates methyl alcohol which may cause blindness and damage to nervous system. Prolonged or repeated exposure by inhalation may injure internally. Overexposure by inhalation may injure the following organ(s): Nervous system, liver, kidneys.
Oral:	Product generates methyl alcohol which may cause blindness and possibly death if swallowed. Repeated ingestion or swallowing large amounts may injure internally.
Signs and symptoms of overexposure	No known applicable information
Medical Conditions Aggravated by Exposure.	No known applicable information.

The above listed potential effects of overexposure are based on actual data, results of studies performed upon similar compositions, component data and/ or expert review of the product. Please refer to Section 11 for detailed toxicology information.

Section 6 - Reactivity Data

Chemical Stability:	Stable
Hazardous Polymerization:	X Will not occur.
Conditions to Avoid:	None.
Materials to Avoid:	Oxidizing materials can cause a reaction. Water, moisture, or humid air can cause hazardous vapors to form as described in Section 2 and 8.
Hazardous Decomposition Products:	Thermal breakdown of this product during fire or very high heat conditions may evolve the following decomposition products: carbon oxides and traces of incompletely burned carbon compounds, metal oxides, formaldehyde, silicon dioxide.

Section 7 - Spill or Leak Procedures

Containment/Clean-up:	Remove possible ignition source. Determine whether to evacuate or isolate the area according to your local emergency plan. Observe all personal protection equipment recommendations described in Sections 4 and 8. For large spills, provide diking or other appropriate containment to keep material from spreading. If diked material can be pumped, store recovered material in appropriate container. Clean up remaining materials from spill with suitable absorbent. Clean area as appropriate since some silicone materials, even in small quantities, may present a slip hazard. Final cleaning may require use of steam, solvents or detergents. Dispose of saturated absorbent or cleaning materials appropriately, since spontaneous heating may occur. Local, state, and federal laws and regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which federal, state and local laws and regulations are applicable. Sections 9 and 10 of this MSDS provide information regarding certain federal and state requirements.

Personal Protective Equipment for Spills

Eye:	Use full face respirator.
Skin:	Wash at mealtime and end of shift. Contaminated clothing and shoes should be removed as soon as practical and thoroughly cleaned before reuse. Chemical protective gloves are recommended.
Inhalation/Suitable Respirator:	Respiratory protection recommended. Follow OSHA Respirator Regulations (29 CFR 1910.134) and use NIOSH/MHSA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstances where air purifying respirators may not provide adequate protection.
Precautionary Measures:	Avoid eye contact. Avoid skin contact. Avoid breathing vapor, mist dust or fumes. Keep container closed. Do not take internally. Use reasonable care.
Comments:	Product evolves flammable methyl alcohol when exposed to water or humid air. Provide ventilation during use to control exposure within Section 2 and 8 guidelines or use air-supplied or self-contained breathing apparatus.

Note: These precautions are for room temperature handling. Use at elevated temperature, or aerosol/spray applications, may require added precautions.

Section 8 - Special Protection Information

Component Exposure Limits:

Component Name	CAS#	Exposure Limits
Octamethyltrisiloxane	107-51-7	TWA 200ppm.
Dimethyl methylphenylmethoxy siloxane	68952-93-2	See methyl alcohol comments.
Methyltrimethoxysilane	1185-55-3	TWA 50ppm. Also see methyl alcohol comments.
Toluene	108-88-3	OSHA PEL (final rule): 8 hour TWA 200 ppm. Ceiling 300 ppm, 10 minutes maximum duration 500 ppm. ACGIH TLV-skin: TWA 50 ppm.

Methyl alcohol forms on contact with water or humid air. Provide adequate ventilation to control exposures within guidelines of OSHA PEL: TWA 200 ppm and ACGIH TLV–skin: TWA 200 ppm, STEL 250 ppm
Engineering Controls

Local exhaust:	Recommended
General Ventilation:	Recommended

Personal Protective Equipment for Routine Handling

Eye:	Use proper protection – safety glasses as a minimum.
Skin:	Wash at mealtime and end of shift. Contaminated clothing and shoes should be removed as soon as practical and thoroughly cleaned before reuse. Chemical protective gloves are recommended.
Suitable Gloves:	Butyl Rubber, Nitrile Rubber, Silver Shield ® 4H ®
Inhalation:	Use respiratory protection unless adequate local exhaust ventilation is provided or air sampling data show exposures are within recommended exposure guidelines. Industrial Hygiene Personnel can assist in judging the adequacy of existing engineering controls.
Suitable Respirator:	General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits as determined by air sampling or are unknown, appropriate respiratory protection should be worn. Follow OSHA Respirator Regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators.

Section 9 – Special Precautions

Handling and Storage:	Use with adequate ventilation. Product evolves flammable methyl alcohol when exposed to water or humid air. Provide ventilation during use to control exposure within Section 2 and 8 guidelines or use air-supplied or self-contained breathing apparatus. Traces of benzene (carcinogen) may form if heated in air above 300°F (149°C). Provide ventilation to control vapor exposure within inhalation guidelines when handling at elevated temperatures. Review the OSHA benzene regulation for detailed information on safe handling requirements. Avoid breathing vapor, mist, dust and fumes. Keep container closed. Avoid eye contact. Do not take internally. Avoid skin contact. Static electricity will accumulate and may ignite vapors. Prevent a possible fire hazard by bonding and grounding or inert gas purge. Keep container closed and store away from water , moisture, heat, sparks or flame.

Disposal Considerations

RCRA Hazard Class (40 CFR 261) — When a decision is made to discard this material, as received, is it classified as a hazardous waste? Yes

Federal Hazardous Waste Code: NA

Characteristic Waste: Ignitable: D001

State or local laws may impose additional regulatory requirements regarding disposal.

NA= Not Applicable

Section 10 - Regulatory Information

Contents of this MSDS comply with the OSHA Hazard Communication Standard 29CFR 1910.1200

TSCA Status: All chemical substances in this material are included on or exempted from listing on the TSCA Inventory of chemical Substances.

EPA SARA Title III chemical Listings:

	CAS #	Wt.	Component Name
Section 302 Extremely Hazardous Substances: (40 CFR 355)	None		
Section 304 CERCLA Hazardous Substances: (40 CFR 362)	108-88-3	3.0	Toluene

Section 311/312 Hazard Class (40CFR370):

Acute: Y
Chronic: Y
Fire: Y
Pressure: N
Reactive: N
Y= Yes N= No

Section 313 Toxic Chemicals (40CFR372):	CAS #	Wt. %	Component Name
	108-88-3	3.0	Toluene

Note: chemicals are listed under 313 toxic chemicals section only if they meet or exceed s reporting threshold.

Supplemental State Compliance Information

Warning: This product contains the following chemical (s) listed by the State of California under the Safe Drinking Water and Toxic Enforcement Act 1986 (Proposition 65) as being known to cause cancer, birth defects or other reproductive harm.

	Cas #	WT%	Component	
California	108-88-3	3.0-7.0	Toluene	Developmental Toxin

	Cas #	WT%	Component
Massachusetts	108-88-3	3.0-7.0	Toluene
New Jersey	107-51-7	>60.0	Octamethyltrisiloxane
	68952-93-2	15.0-40.0	Dimethyl methylphenylmethoxy siloxane
	1185-55-3	1.0-5.0	Methyltrimethoxysilane
	108-88-3	3.0-7.0	Toluene

	CAS#	Wt%	Component
Pennsylvania	107-51-7	>60.0	Octamethyltrisiloxane
	68952-93-2	15.0-40.0	Dimethyl methylphenymethoxy siloxane
	108-88-3	3.0-7.0	Toluene

Transport Information

Dot Road Shipment Information (49CFR 172.101)

Proper Shipping Name:	FLAMMABLE LIQUID, N.O.S.
Hazard Technical Name:	OCTAMETHYLTRISILOXANE/TOLUENE
Hazard Class:	3
UN/NA Number:	UN1993
Packing Group:	II
Hazard Label:	ORM-D, flammable liquid

Ocean Shipment (IMDG)

Proper Shipping Name:	Flammable Liquid, N.O.S.
Hazardous Technical Name:	Octamethyltrisiloxane/Toluene
Hazard Class:	3
UN/NA #:	UN1993
Packing Group:	II
Hazard Label:	Flammable Liquid
Marine Pollutant:	N/A

Air Shipment (IATA)

Proper Shipping Name:	Flammable Liquid, N.O.S.
Hazard Technical Name:	Octamethyltrisiloxane/Toluene
Hazard Class:	3
UN#:	UN1993
Packing Group:	II
Hazard Label(s):	Flammable Liquid

Section 11- Other Information

Toxicological Information

Component Toxicology Information:	This material contains methyltrimetoxysilane (MTMS) MTMS was evaluated in a combined repeated-dose toxicity study that included screening tests for reproductive and developmental toxicity (OECD 422) Sprague-Dawley rats were treated (oral route, corn oil as carrier) daily at dose levels of 0, 50, 250, and 1000 mg MTMS/kg body weight. Test article-related effects were seen in one or both sexes at the two top dose levels (unless otherwise noted) and included (but not limited to): increased liver weights; increased incidence of hyperplasia and / or hypertrophy in the liver; thyroid and adrenals (high dose only); acanthocytosis (high dose only); increased prothrombin time; elevations in blood platelet count (high dose only), serum total protein and cholesterol. The no observed adverse effect level (NOAEL) was determined to be 50 mg/kg/day for parental toxicity and 1000 mg/kg/day for effects on reproductive performance and on developmental toxicity.

In a 90-day study, five (5) groups of 10 male and 10 female Sprague-Dawley rats were exposed to target methyltrimethoxysilane concentrations of 0 (control), 25, 100, 400 and 1600 ppm for groups 1 through 5, repectively, for six hours per day, five days per week. Additional satellite groups of 10 males and 10 females were introduced in the 0 and 1600 ppm exposure groups for evaluation of a 28-day post-exposure recovery period. Based on the grossly observed urinary bladder calculi and kidney dilation at the 400 and 1600 ppm exposure levels, the No Observable Effect Level (NOEL) for methyltrimethoxysilane was 100 ppm.

Toxicology studies with laboratory animals and occupational evaluations with humans have found limited evidence of birth defects, low birth weights and delayed growth in offspring resulting from repeated exposure to toluene during pregnancy.

This material contains octamethyltrisiloxane (L3). L3 was evaluated in a combined repeated-dose toxicity study that included reproductive / developmental toxicity screening in Sprague-Dawley rats by whole-body vapor inhalation. The test article was administered six hours a day, seven days a week to 10 rats/sex/group at target concentrations of 0, 800, 1600 and 3200 ppm for up to 42 days. An increase in protoporphyrin in the liver was observed only in males and only at the highest doses: 1600 ppm (6/10) and 3200 ppm (9/10). This condition, known as hepatic porphyria, is characterized by an abnormal increase of pigments (porphrins) in the body. Porphrins are the main precursor of heme, which is a major constituent of hemoglobin. Without knowledge of the specific mechanism leading to the protoporphyrinosis following exposure to L3 the relevance of this finding to humans is unknown.

Special Hazard Information On Components — Evidence of reproductive effects in humans

CAS#	Wt%	Component Name
108-88-3	3-7	Toluene

Ecological Information

Environmental Fate and Distribution	Complete information is not yet available.
Environmental Effects	Complete information is not yet available.
Fated Effects in Waste Water Treatment Plant	Complete information is not yet available.

Ecotoxicity Classification Criteria

Hazard Paramaters (LC50 or EC 50)	High	Medium	Low
Acute Aquatic Toxicity (mg/L)	<=1	>1 and <=100	>100
Acute Terrestrial Toxicity (mg/kg)	<=100	>100 and <=2000	>2000

This table is adapted from "Environmental Toxicology and Risk Assessment", ASTM STP 1179, p.34, 1993.

This table can be used to classify the ecotoxicity of this product when ecotoxicity data is listed above. Please read the other information presented in the section concerning the overall ecological safety of this material.

0000 and NA= Not Applicable

Disclaimer

GC Electronics believes that the information contained herein is accurate and reliable as of the date of this material safety data sheet, but no representation guarantee or warranty, express or implied, is made as to the accuracy, reliability, or completeness of the information. Persons receiving this information are encouraged to make their own determination. NO INFORMATION CONTAINED HEREIN CONSTITUTUES A PRODUCT WARRANTY OF ANY KIND, WHETHER EXPRESS OR IMPLIED; AND ALL IMPLIED WARRANTIES OF MERCHANT ABILITY AND OF FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED BY GC ELECTRONICS.

® indicates registered Trademark