MATERIAL SAFETY DATA SHEET

MSDS-E-CS100L

Prepared to OSHA, ACC, ANSI, WHMIS & 2001/58 EC Standards | MSDS Revision: 1.1 | MSDS Revision Date: 02/14/2011

1. PRODUCT IDENTIFICATION

1.1	Product Name:	**CircuitSealer™, CS100L and CS100L-UV**
1.2	Chemical Name:	See ingredients listed in section 2
1.3	Synonyms:	CircuitSealer with UV trace
1.4	Trade Names:	CircuitSealer
1.5	Product Use:	Conformal coating for sealing various materials
1.6	Manufacturer's Name:	CAIG Laboratories, Inc.
1.7	Manufacturer's Address:	12200 Thatcher Court, Poway, CA 92064-6876
1.8	Business Phone:	+1 (800)-224-4123
1.9	Emergency Phone:	**CHEMTREC 1-800-424-9300/1-703-527-3887**
1.10	Other Product Names:	Part No. K-CS100P, PEN Applicator, 7 ml Part No. K-CS100P-UV, PEN Applicator with UV tracer, 7 ml Part No. CS100L-2DB, Brush Applicator, 7.4 ml Part No. CS100L-2DB-UV, Brush Applicator with UV tracer, 7.4 ml Part No. CS100L-12, 354 ml Container Part No. CS100L-12-UV, 354 ml Container with UV tracer

CHEMICAL RESPONSE CARD:	**04**
RESPONSE TEAM PPE:	
WHMIS:	
HEALTH:	**1**
FLAMMABILITY:	**3**
PHYSICAL HAZARDS:	**0**
PERSONAL PROTECTION:	**B**

2. HAZARD IDENTIFICATION

3.1 Hazard Identification:

This product is Classified as a HAZARDOUS SUBSTANCE AND a DANGEROUS GOODS according to the classification criteria of NOHSC: 1088 (2004) and ADG Code (Australia).Clear to hazy liquid with pungent, sweet odor. Flammable liquid. Breathing high concentrations of product vapor may produce drowsiness or headache. Vapors displace air and can cause asphyxiation in confined spaces.

3.2 Routes of Entry:	Inhalation:	**YES**	Absorption:	**YES**	Ingestion:	**YES**

3.3 Effects of Exposure:

EYES: **May cause severe eye irritation, burning, blurred vision.**
SKIN: **Prolonged or repeated contact can cause moderate irritation, defatting, dermatitis.**
INGESTION: **May result in severe or permanent toxic effects.**
INHALATION: **Not harmful in low quantities.**

3.4 Symptoms of Overexposure:

EYES: **May cause severe eye irritation, burning, blurred vision.**
SKIN: **Prolonged or repeated contact can cause moderate irritation, defatting, dermatitis.**
INGESTION: **May result in severe or permanent toxic effects.**
INHALATION: **Repeated inhalation of concentration above permissible exposure limits may result in severe or permanent toxic effects.**

3.5 Acute Health Effects:

EYES: **May cause severe eye irritation, burning, blurred vision.**
SKIN: **Prolonged or repeated contact can cause moderate irritation, defatting, dermatitis.**
INGESTION: **May result in severe or permanent toxic effects.**
INHALATION: **Repeated inhalation of concentration above permissible exposure limits may result in severe or permanent toxic effects.**

3.6 Chronic Health Effects:

EYES: **May cause severe eye irritation, burning, blurred vision.**
SKIN: **Prolonged or repeated contact can cause moderate irritation, defatting, dermatitis.**
INGESTION: **May result in severe or permanent toxic effects.**
INHALATION: **Repeated inhalation of concentration above permissible exposure limits may result in severe or permanent toxic effects.**

3.7 Target Organs:

Eyes, skin and respiratory system.

NA = Not Available; ND = Not Determined; NE = Not Established; NF = Not Found; C = Ceiling Limit; See Section 16 for Additional Definitions of Terms Used
NOTE: all WHMIS required information is included. It is located in appropriate sections based on the ANSI Z400.1-2003 format.

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3. COMPOSITION & INGREDIENT INFORMATION

CHEMICAL NAME(S)	CAS No.	RTECS No.	EINECS No.	%	EXPOSURE LIMITS IN AIR (mg/m³) ACGIH ppm TLV	ACGIH ppm STEL	NOHSC ppm ES-TWA	NOHSC ppm ES-STEL	NOHSC ppm ES-PEAK	OSHA ppm TLV	OSHA ppm STEL	OSHA ppm IDLH	OTHER
METHYL ETHYL KETONE	78-93-3	EL6475000	201-159-0	69-73	200	300	445	890	NF	NA	300	NA	
ACRYLIC COPOLYMER	NA	NA	NA	27-31	NE	NE	NF	NF	NF	NA	NA	NA	

4. FIRST AID MEASURES

4.1 First Aid:

EYES: Flush eyes thoroughly with copious amounts of water for at least 15 minutes, holding eyelid(s) open to ensure complete flushing. If irritation persists, seek immediate medical attention.

SKIN: Remove contaminated clothing and wash affected areas with soap and water. If irritation persists, seek prompt medical attention. Do not wear contaminated clothing until after it has been properly cleaned.

INGESTION: keep person warm, quiet, and get medical attention immediately.

INHALATION: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Seek medical attention.

4.2 Medical Conditions Aggravated by Exposure:

None reported by the manufacturer.

HEALTH	1
FLAMMABILITY	3
PHYSICAL HAZARDS	0
PROTECTIVE EQUIPMENT	B

EYES | SKIN

5. FIREFIGHTING MEASURES

5.1 Flashpoint & Method:

-4.5 °C 24 °F Setaflash closed cup

5.2 Autoignition Temperature:

NA

5.3 Flammability Limits: Lower Explosive Limit (LEL): **2.0** Upper Explosive Limit (UEL): **12.0**

5.4 Fire & Explosion Hazards:

Carbon dioxide, carbon monoxide, hydrocarbons.

5.5 Extinguishing Methods:

CO_2, Alcohol foam, Dry Chemical.

5.6 Firefighting Procedures:

Wear NIOSH/MSHA approved self-contained breathing apparatus and protective clothing. Do not use water. Prevent runoff from fire control or dilution from entering sewers, drains, drinking water supply, or any natural waterway.

6. ACCIDENTAL RELEASE MEASURES

6.1	Spills: **Secure spill area and deny entry to all unprotected individuals. Individuals involved in the cleanup should wear appropriate personal protective equipment. Area may become slippery. Absorb product onto porous material, such as sand, clay, diatomaceous earth or commercial absorbent material. Place into leak-proof, U.S. DOT-approved containers. If necessary, cover all drains and dike well ahead of the spill to prevent runoff into sewers, drains, and all waterways. Contact appropriate local or provincial authorities for assistance and/or reporting requirements.**

7. HANDLING & STORAGE INFORMATION

7.1	Work & Hygiene Practices: **Wash hands thoroughly after using this product and before eating, drinking, or smoking. Remove soiled clothing to prevent prolonged skin contact.**
7.2	Storage & Handling: **Do not expose to sunlight or elevated temperatures to prevent possible bursting. Use in well ventilated areas. Use and store in cool, dry, well ventilated areas away from heat, hot surfaces and all sources of ignition. Protect containers from physical damage. Indoor storage should meet OSHA standards and appropriate codes. Keep container tightly closed when not in use. Keep out of reach of children. Avoid prolonged or repeated contact with skin; eyes or clothing. Avoid breathing product vapor for extended periods of time. Avoid activities that could cause splashing of the spilled material or create mists.**
7.3	Special Precautions: **NA**

8. EXPOSURE CONTROLS & PERSONAL PROTECTION

8.1	Ventilation & Engineering Controls: **Use with adequate ventilation (e.g., open doors and windows, local exhaust ventilation). Ensure appropriate decontamination equipment is available (e.g., sink, safety shower, eye-wash station).**
8.2	Respiratory Protection: **Not necessary unless used in an unventilated area or in high concentrations. If exceeded, a mechanical or self contained breathing apparatus is advised.**
8.3	Eye Protection: **Wear splash goggles or other appropriate eye protection.**
8.4	Hand Protection: **Wear chemically resistant rubber gloves with repeated exposure.**
8.5	Body Protection: **None required for normal conditions of use.**

9. PHYSICAL & CHEMICAL PROPERTIES

9.1	Density:	**0.87**
9.2	Boiling Point:	**80 °C - 176 °F**
9.3	Melting Point:	**NA**
9.4	Evaporation Rate:	**> 1**
9.5	Vapor Pressure:	**71 mm Hg**
9.6	Molecular Weight:	**NA**
9.7	Appearance & Color:	**Clear to hazy liquid**
9.8	Odor Threshold:	**Pungent, sweet odor**
9.9	Solubility:	**ND**
9.10	pH	**ND**
9.11	Viscosity:	**1700 cps**
9.12	Other Information:	**Vapor density > 1(Air=1)**

10. STABILITY & REACTIVITY

10.1	Stability:	**Stable under normal conditions of use (see section 7).**
10.2	Hazardous Decomposition Products:	**CO, CO2**
10.3	Hazardous Polymerization:	**Will not occur.**
10.4	Conditions to Avoid:	**Avoid all possible sources of ignition.**
10.5	Incompatible Substances:	**Strong oxidizing agents.**

11. TOXICOLOGICAL INFORMATION

11.1	Toxicity Data:	**This product has not been tested on animals to obtain toxicological data. There are toxicology data for the components of this product, which are found in the scientific literature. These data have not been presented in this document.**
11.2	Acute Toxicity:	**See section 3.5**
11.3	Chronic Toxicity:	**See section 3.6**
11.4	Suspected Carcinogen:	**NE**
11.5	Reproductive Toxicity:	**This product is not reported to produce reproductive toxicity in humans.**
	Mutagenicity:	**This product is not reported to produce mutagenic effects in humans.**
	Embryotoxicity:	**This product is not reported to produce embryotoxic effects in humans.**
	Teratogenicity:	**This product is not reported to produce teratogenic effects in humans.**
	Reproductive Toxicity:	**This product is not reported to produce reproductive effects in humans.**
11.6	Irritancy of Product:	**See Section 3.3**
11.7	Biological Exposure Indices:	**NE**
11.8	Physician Recommendations:	**Treat symptomatically.**

12. ECOLOGICAL INFORMATION

12.1	Environmental Stability:	**This product will slowly volatile from soil. Components of this product will slowly decompose into organic compounds.**
12.2	Effects on Plants & Animals:	**There is no specific data available for this product.**
12.3	Effects on Aquatic Life:	**Releases of large volumes of this product are expected to be harmful or fatal to overexposed aquatic life.**

13. DISPOSAL CONSIDERATIONS

13.1	Waste Disposal: **Dispose of in accordance with federal, state or local regulations.**
13.2	Special Considerations: **EPA Waste Code: D001 (characteristic – ignitability)**

14. TRANSPORTATION INFORMATION

The basic description (proper shipping name, hazard class & division, ID Number, packing group) is shown for each mode of transportation. Additional descriptive information may be required by 49 CFR, IATA/ICAO, IMDG and the CTDGR.

14.1	49 CFR (GND): **CONSUMER COMMODITY, ORM-D (<1.0L)**
14.2	IATA (AIR): **CONSUMER COMMODITY, 9, ID8000 (≤ 500 ml)** **UN1993, FLAMMABLE LIQUID, N.O.S. (methyl ethyl ketone),3, II (>500 ml)**
14.3	IMDG (OCN): **UN1993, FLAMMABLE LIQUID, N.O.S. (methyl ethyl ketone),3, II**
14.4	TDGR (Canadian GND): **MARK PACKAGE "LIMITED QUANTITY" or "QUANTITÉ LIMITÉE" or "LTD QTY" or "QUANT LTÉE" (≤ 1.0 L)** **UN1993, FLAMMABLE LIQUID, N.O.S. (methyl ethyl ketone),3, III (> 1.0 L)**
14.5	ADR/RID (EU): **UN1993 FLAMMABLE LIQUID, N.O.S. (methyl ethyl ketone), 3, 3°(b), ADR, LTD QTY (≤ 3.0 L)** **UN1993 FLAMMABLE LIQUID, N.O.S. (methyl ethyl ketone), 3, 3°(b), ADR (> 3.0 L)**
14.6	SCT (MEXICO): **UN1993, FLAMMABLE LIQUID, N.O.S. (methyl ethyl ketone), 3, II, CANTIDAD LIMITADA (≤5.0 L)**
14.7	ADGR (AUS): **UN1993, FLAMMABLE LIQUID, N.O.S. (methyl ethyl ketone),3, II LTD QTY (≤ 5.0 L)**

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15. REGULATORY INFORMATION

15.1	SARA Reporting Requirements: **This product contains Methyl Ethyl Ketone, a substance which is subject to SARA 313 reporting requirements.**
15.2	SARA Threshold Planning Quantity: **NA**
15.3	TSCA Inventory Status: **All chemical substances of this product are listed on the TSCA inventory or are otherwise exempt from inventory status.**
15.4	CERCLA Reportable Quantity (RQ): **Methyl Ethyl Ketone: 5000 lbs (2270 kgs)**
15.5	Other Federal Requirements: **NA**
15.6	Other Canadian Regulations **This product has been classified according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR. The components of this product are listed on the DSL/NDSL. None of the components of this product are listed on the Priorities Substances List.**
15.7	State Regulatory Information: **The primary component of this product is listed on the following state lists: California OSHA; California Proposition 65; Massachusetts Right to Know List of Chemicals; New Jersey Right to Know List 8:59 Appendix A; Pennsylvania Hazardous Substances List 34 323 Appendix A; Wisconsin Hazardous Substances List NR 605.09; Minnesota Hazardous Substances List; and Florida Toxic Substances List.**
15.8	67/548/EEC (European Union) Requirements: **The primary component of this product is listed in Annex I of EU Directive 67/548/EEC:** **Methyl Ethyl Ketone: Flammable, Harmful (F, Xn). R: 11-36/37-66-67 – Flammable. Harmful: may cause lung damage if swallowed. S: 2-9-16 – Keep away from children. Do not breathe gas, fumes, vapor or spray. Avoid contact with skin. If swallowed, do not induce vomiting: seek medical advice immediately and show this MSDS or the container label.**

16. OTHER INFORMATION

16.1	Other Information: **NA**
16.2	Terms & Definitions: **See page 7 of this MSDS**.
16.3	Disclaimer: This Material Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29 CFR §1910.1200. Other government regulations must be reviewed for applicability to this product. To the best of ShipMate's & CAIG Laboratories, Inc.'s knowledge, the information contained herein is reliable and accurate as of this date; however, accuracy, suitability or completeness are not guaranteed and no warranties of any type, either expressed or implied, are provided. The information contained herein relates only to the specific product(s). If this product(s) is combined with other materials, all component properties must be considered. Data may be changed from time to time. Be sure to consult the latest edition.
16.4	Prepared for: **CAIG Laboratories, Inc.** **12200 Thatcher Court** **Poway, CA 92064-6876** **+1 (800) CAIG-123 (244-4123) phone** **+1 (858) 486-8398 fax** **http://www.caig.com/**
16.5	Prepared by: **ShipMate, Inc.** **P.O. Box 787** **Sisters, OR. 97759-0787** **310-370-3600 phone** **310-370-5700 fax** **http://www.shipmate.com/**

DEFINITION OF TERMS

A large number of abbreviations and acronyms appear on a MSDS. Some of these that are commonly used include the following:

GENERAL INFORMATION:

CAS No.	Chemical Abstract Service Number

EXPOSURE LIMITS IN AIR:

ACGIH	American Conference on Governmental Industrial Hygienists
TLV	Threshold Limit Value
OSHA	U.S. Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
IDLH	Immediately Dangerous to Life and Health

FIRST AID MEASURES:

CPR	Cardiopulmonary resuscitation - method in which a person whose heart has stopped receives manual chest compressions and breathing to circulate blood and provide oxygen to the body.

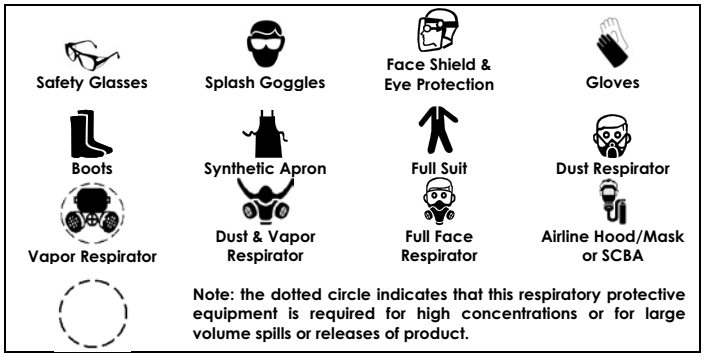
HAZARDOUS MATERIALS IDENTIFICATION SYSTEM: HMIS

HEALTH, FLAMMABILITY & REACTIVITY RATINGS:

0	Minimal Hazard
1	Slight Hazard
2	Moderate Hazard
3	Severe Hazard
4	Extreme Hazard

PERSONAL PROTECTION RATINGS:

A	
B	
C	
D	
E	
F	
G	
H	
I	
J	
K	
X	**Consult your supervisor or S.O.P. for special handling directions.**



Note: the dotted circle indicates that this respiratory protective equipment is required for high concentrations or for large volume spills or releases of product.

OTHER STANDARD ABBREVIATIONS:

NA	Not Available
NR	No Results
NE	Not Established
NF	Not Found
ND	Not Determined
ML	Maximum Limit
SCBA	Self-Contained Breathing Apparatus

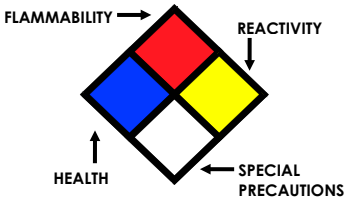
NATIONAL FIRE PROTECTION ASSOCIATION: NFPA

FLAMMABILITY LIMITS IN AIR:

Autoignition Temperature	Minimum temperature required to initiate combustion in air with no other source of ignition
LEL	Lower Explosive Limit - lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source
UEL	Upper Explosive Limit - highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source

HAZARD RATINGS:

0	Minimal Hazard
1	Slight Hazard
2	Moderate Hazard
3	Severe Hazard
4	Extreme Hazard
ACD	Acidic
ALK	Alkaline
COR	Corrosive
~~W~~	Use No Water
OX	Oxidizer



TOXICOLOGICAL INFORMATION:

LD_{50}	Lethal Dose (solids & liquids) which kills 50% of the exposed animals s
LC_{50}	Lethal concentration (gases) which kills 50% of the exposed animal
ppm	Concentration expressed in parts of material per million parts
TD_{lo}	Lowest dose to cause a symptom
TCLo	Lowest concentration to cause a symptom
TD_{lo}, LD_{lo}, & LD_o or TC, TC_o, LC_{lo}, & LC_o	Lowest dose (or concentration) to cause lethal or toxic effects
IARC	International Agency for Research on Cancer
NTP	National Toxicology Program
RTECS	Registry of Toxic Effects of Chemical Substances
BCF	Bioconcentration Factor
TL_m	Median threshold limit
log K_{OW} or log K_{OC}	Coefficient of Oil/Water Distribution

REGULATORY INFORMATION:

WHMIS	Canadian Workplace Hazardous Material Information System
DOT	U.S. Department of Transportation
TC	Transport Canada
EPA	U.S. Environmental Protection Agency
DSL	Canadian Domestic Substance List
NDSL	Canadian Non-Domestic Substance List
PSL	Canadian Priority Substances List
TSCA	U.S. Toxic Substance Control Act
EU	European Union (European Union Directive 67/548/EEC)

EC INFORMATION:

							
C	**E**	**F**	**N**	**O**	**T+**	**Xi**	**Xn**
Corrosive	Explosive	Flammable	Harmful	Oxidizing	Toxic	Irritant	Harmful