

SAFETY DATA SHEET DLC

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MSDS143 Revision 1
Revision Date 06/24/2015

1. PRODUCT AND COMPANY IDENTIFICATION

Product name	Dispersed Liquid Crystal (DLC)		
Additional Names	None		
Description	Color changing ink containing cholesteric liquid crystal, solvent, latex polymers, water, and wetting agents.		
Intended Use	Manufacture of temperature indicating devices.		
Company	LCR Hallcrest 1911 Pickwick Lane Glenview IL 60026 USA		
Web	www.hallcrest.com		
Telephone	+1 847 998 8580		
Fax	+1 847 998 6866		
Email	sales@hallcrest.com		
Emergency telephone number	Chemtel	Domestic:	800-255-3924
		Intl:	+01-813-248-0585

2. HAZARDS IDENTIFICATION.

GHS Classification	Flammable liquids (Category 2), H226 Eye irritation (Category 2A), H319 Specific target organ toxicity - single exposure (Category 3), Central nervous system, Respiratory, H336 Chronic aquatic toxicity (Category 3), H412
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GHS Label Elements

Pictograms



Signal Word Hazard Statements

Danger
H225 Highly Flammable liquid and vapour.
H319 Causes serious eye irritation
H336 May cause drowsiness or dizziness

Precautionary Statement

- P210 – Keep away from heat/sparks/open flames/hot surfaces. — No smoking.
- P233 – Keep container tightly closed.
- P240 – Ground/bond container and receiving equipment.
- P241 – Use explosion-proof electrical/ventilating/lighting/.../equipment.
- P242 – Use only non-sparking tools.
- P243 – Take precautionary measures against static discharge.
- P261 – Avoid breathing dust/fume/gas/mist/vapours/spray.
- P264 – Wash ... thoroughly after handling.
- P271 – Use only outdoors or in a well-ventilated area.
- P280 – Wear protective gloves/protective clothing/eye protection/face protection.
- P312 - Call a POISON CENTER or doctor/physician if you feel unwell
- P302 + P361 + P353 – IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin
- P304 + P340 – IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P305 + P351 + P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.312
- P337 + P313 – If eye irritation persists: Get medical advice/attention.
- P370 + P378 – In case of fire: Use water spray, alcohol resistant foam, dry chemical or carbon dioxide for extinction.
- P403 + P233 – Store in a well-ventilated place. Keep container tightly closed.
- P403 + P235 – Store in a well-ventilated place. Keep cool.
- P405 – Store locked up.
- P501 – Dispose of contents/container to according to regulations.

3. COMPOSITION / INFORMATION ON INGREDIENTS.			
Hazardous ingredients	Classification	Conc.	CAS
2-Butanone	Flam Liq (Cat 2): H225, Eye Irritation (Cat 2A): H319, STOT (Cat 3): H336	15%	78-93-3
Pentyl acetate	Flam Liq (Cat 3): H226, Acute Aquatic Tox (Cat 3): H402, Chronic Aquatic Tox (Cat 3): H412	3.9%	628-63-7

4. FIRST AID MEASURES

Description of first aid measures

- Skin contact** Irritating to skin. Wash off immediately with plenty of soap and water. Remove contaminated clothing. Seek medical attention if irritation or symptoms persist.
- Eye contact** Irritating to eyes. Rinse immediately with plenty of water for 15 minutes holding the eyelids open. Seek medical attention if irritation or symptoms persist.
- Inhalation** Move the exposed person to fresh air. Seek medical attention.
- Ingestion** Seek medical attention if irritation or symptoms persist. DO NOT INDUCE VOMITING.

Most important symptoms and effect, both acute or delayed.

- Skin Contact** Irritating to skin.
- Eye Contact** Irritation to eyes.
- Inhalation** Irritating to respiratory system. Inhalation may cause coughing, tightness of the chest and irritation of the respiratory system.
- Ingestion** Ingestion may cause nausea and vomiting.

Indication of any immediate medical attention and special treatment needed.

- Skin Contact** Seek medical attention if irritation or symptoms persist.
- Eye Contact** Seek medical attention if irritation or symptoms persist.
- Inhalation** Seek medical attention if irritation or symptoms persist.
- Ingestion** Seek medical attention if irritation or symptoms persist.

5. FIRE FIGHTING MEASURES

Extinguishing Media Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Specific hazards arising from the chemical Burning produces irritating, toxic and obnoxious fumes.

Special protective actions for fire-fighters Wear suitable respiratory equipment when necessary.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, protective equipment and emergency procedures Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

Environmental Precautions Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Methods and material for containment and cleaning up Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations.

7. HANDLING AND STORAGE

Individual protection measures Avoid contact with eyes and skin. Avoid inhalation of vapor or mist. Use explosion-proof equipment. Keep away from sources of ignition – No smoking. Take measures to prevent the build up of electrostatic charge.

Conditions for safe storage, including incompatibilities: Keep containers tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Specific end uses: Apart from the uses listed in Section 1, no other specific uses are stipulated.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Components with workplace control parameters.

Ethyl methyl ketone	USA. ACGIH Threshold Limit Value, TWA, 200ppm Remarks – Central Nervous System impairment, Upper respiratory irritation USA. ACGIH Threshold Limit Values 300ppm	USA NIOSH Recommended Exposure Limits: TWA: 200ppm, 590mg/m3 ST: 300ppm, 885 mg/m3
Pentyl acetate	USA. OSHA – Table Z-1 Limits for air contaminants – TWA – 100ppm to 525 mg/m3 USA. ACGIH Threshold Limit Values 50ppm USA. ACGIH STEL – 100ppm	

Biological occupational exposure limits.

Ethyl methyl ketone	ACGIH – Biological Exposure Indices (BEI) urine – 2mg/L methyl ethyl ketone	
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Individual protection measures Wear chemical protective clothing.

Eye/face protection Face shield and safety glasses. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).
 Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Skin protection – Hand protection Splash contact – Material: butyl –rubber, minimum thickness 0.3mm breakthrough time 292 min.

 Wear impervious clothing, Flame retardant antistatic protective clothing. The type of protective equipment must be selected according to the concentration and amount of dangerous substance at the specific workplace.

Respiratory protection Where risk assessment shows air-purifying respirators are appropriate, use a full-face respirator with multi-purpose combination (US) or type ABEK 9EN14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU)

Environmental Exposure Controls Ensure adequate ventilation of the working area.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Creamy Liquid
Colors	Pink
Odor	Sharp mint like
Odor threshold	N/A
pH	N/A
Melting Point/Freezing Point	130°F
Initial Boiling Point and Boiling Range	No testing available
Flash Point	No testing available
Evaporation rate	No testing available.
Flammability	No testing available.
Upper/Lower Flammability or Explosive Limits	No testing available.
Vapor Pressure	No testing available.
Solubility	Soluble in water.
Viscosity	250cps.

10. STABILITY AND REACTIVITY

Reactivity	Avoid sparks, flames, heat and sources of ignition.
Chemical Stability	Stable under normal conditions.
Possibility of hazardous reactions	Vapours may form explosive mixture with air..
Conditions to avoid	Heat, flames, sparks
Incompatible materials	Strong acids, oxidizers, and alkalis
Hazardous Decomposition Products	No data available.
Hazardous Polymerization	Will not occur

11. TOXICOLOGICAL INFORMATION

Toxicological Information		
Acute Toxicity		
Ethyl methyl ketone	LD50 oral – Rat – 2737 mg/kg LC50 Inhalation – Mouse – 4h – 32000 mg/m3	LC50 Inhalation – Mammal 38,000mg/m3 LD50 Dermal – Rabbit – 6480 mg/kg
Pentyl acetate	LC50 Oral Rate – 1220mg/kg	

Skin corrosion/irritation No test data available.

Serious eye damage/irritation No test data available.

Respiratory or skin sensitization No test data available

Germ cell mutagenicity No test data available

Carcinogenicity No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC, ACGIH, NTP, or OSHA

Reproductive toxicity No test data available

STOT-single exposure Inhalation, Oral - May cause drowsiness or dizziness.

STOT-repeat exposure No test data available

Aspiration hazard No test data available

Additional Information Central nervous system depression, Gastrointestinal disturbance, narcosis

Liver – Irregularities – Based on Human Evidence
 Stomach – Irregularities – Based on Human Evidence

Pneumonia
 To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.
 Kidney - Irregularities - Based on Human Evidence
 Kidney - Irregularities - Based on Human Evidence

12. ECOLOGICAL INFORMATION

Toxicity	
Ethyl methyl ketone	Mortality NOEC – Cyprinodon variegatus (Sheepshead minnow) – 400 mg/L – 96 hr LC50 – Pimephales promelas (fathead minnow) 3130-3320 mg/L – 96 hr LC50 – Daphnia magna (Water flea) -> 520 mg/L – 48 hr EC50 – Daphnia magna (Water flea) – 7060 mg/L – 24 hr LC50 – Gambusia affinis (Mosquito fish) – 65 mg/L – 96hr
Pentyl acetate	No data available
Persistence and degradability	No data available
Bioaccumulative potential	No data available
Mobility in soil	No data available
Other adverse effects	No data available
Results from PBT and vPvB assessment	PBT/vPvB assessment not available as chemical safety assessment not required/ not conducted.

13. DISPOSAL CONSIDERATIONS

General information	Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solution to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.
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14. TRANSPORT INFORMATION

UN Number	UN 1210
UN Proper Shipping Name	Printing Ink Related Material
Transport Hazard Classes	
Subsidiary Risk	-
IMDG	3
Subsidiary Risk	-
IATA	3
Subsidiary Risk	-
Packing Group	III
Environmental hazards	
Environmental Hazards	No
Marine Pollutant	No
ADR/RID	
Hazard ID	33
Tunnel Category	(D/E)
IMDG	
EmS Code	F-E S-D
IATA	
Packing Instruction (Cargo)	366
Maximum Quantity	220 L
Packing Instruction (Passenger)	355
Maximum Quantity	60L

Further Information This product is not classified as dangerous for carriage

15. REGULATORY INFORMATION

COMMISSION REGULATION (EU) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC.

Further Information: For this product a chemical safety assessment was not carried out.

16. OTHER INFORMATION

Revision	Revision 1 6/24/2015: Major revision to include the requirements of the HCS/HazCom 2012 Final Rule. 2-Propanol hazards were added.
Further information	The information supplied in this Safety Data Sheet is designed only as guidance for the safe use, storage and handling of the product. This information is correct to the best of our knowledge and belief at the date of publication however no guarantee is made to its accuracy. This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any other process.
HMIS LABELLING	HEALTH 2, FLAMMABILITY 3, PHYSICAL HAZARD 0 CHRONIC HEALTH HAZARD *