Material Safety Data Sheet

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SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: 3M(TM) Light Cure Adhesive LC-1210
MANUFACTURER: 3M
DIVISION: Electronics Markets Materials Division
            Industrial Adhesives and Tapes
ADDRESS: 3M Center
          St. Paul, MN 55144-1000

EMERGENCY PHONE: 1-800-364-3577 or (651) 737-6501 (24 hours)

Issue Date: 11/23/2004
Supersedes Date: 07/15/2004
Document Group: 09-3719-3

Product Use:
Specific Use: adhesive

SECTION 2: INGREDIENTS

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>C.A.S. No.</th>
<th>% by Wt</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHENOXY ETHYL ACRYLATE</td>
<td>48145-04-6</td>
<td>60 - 100</td>
</tr>
<tr>
<td>ACRYLATE OLIGOMER</td>
<td>Trade Secret</td>
<td>15 - 40</td>
</tr>
<tr>
<td>BENZIL DIMETHYL KETAL</td>
<td>24650-42-8</td>
<td>1 - 5</td>
</tr>
<tr>
<td>N,N-DIMETHYL BENZOCAINE</td>
<td>10287-53-3</td>
<td>0.5 - 1.5</td>
</tr>
<tr>
<td>IODONIUM BORATE SALT</td>
<td>178233-72-2</td>
<td>0.5 - 1.0</td>
</tr>
</tbody>
</table>

SECTION 3: HAZARDS IDENTIFICATION

3.1 EMERGENCY OVERVIEW

Specific Physical Form: Viscous
Odor, Color, Grade: Light Yellow; slight acrylic odor
General Physical Form: Liquid

Immediate health, physical, and environmental hazards: Hazardous polymerization may occur. Contains inhibitor. Loss of inhibitor may render material unstable. Refer to Precautionary Storage and Handling Section. May cause allergic skin reaction.

3.2 POTENTIAL HEALTH EFFECTS
Eye Contact:
Moderate Eye Irritation: Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

Skin Contact:
Moderate Skin Irritation: Signs/symptoms may include localized redness, swelling, itching, and dryness.

Prolonged or repeated exposure may cause:
- Allergic Skin Reaction (non-photo induced): Signs/symptoms may include redness, swelling, blistering, and itching.
- Photosensitization: Signs/symptoms may include a sunburn-like reaction such as blistering, redness, swelling, and itching from minor exposure to sunlight.

Inhalation:
Vapors released during curing may cause irritation of the respiratory system. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

Ingestion:
Gastrointestinal Irritation: Signs/symptoms may include abdominal pain, nausea, diarrhea and vomiting.

May be absorbed following ingestion and cause target organ effects.

Target Organ Effects:
Prolonged or repeated exposure may cause:
- Liver Effects: Signs/symptoms may include loss of appetite, weight loss, fatigue, weakness, abdominal tenderness and jaundice.
- Kidney Effects: Signs/symptoms may include reduced or absent urine production, increased serum creatinine, lower back pain, increased protein in urine, and increased blood urea nitrogen (BUN).

SECTION 4: FIRST AID MEASURES

4.1 FIRST AID PROCEDURES

The following first aid recommendations are based on an assumption that appropriate personal and industrial hygiene practices are followed.

Eye Contact:  Flush eyes with large amounts of water. If signs/symptoms persist, get medical attention.

Skin Contact:  Remove contaminated clothing and shoes. Immediately flush skin with large amounts of water. Get medical attention. Wash contaminated clothing and clean shoes before reuse.

Inhalation: If signs/symptoms develop, remove person to fresh air. If signs/symptoms persist, get medical attention.

If Swallowed: Do not induce vomiting. Give victim two glasses of water. Never give anything by mouth to an unconscious person. Get immediate medical attention.

SECTION 5: FIRE FIGHTING MEASURES

5.1 FLAMMABLE PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autoignition temperature</td>
<td>No Data Available</td>
</tr>
<tr>
<td>Flash Point</td>
<td>(\geq 94 , ^\circ C) [Test Method: Estimated]</td>
</tr>
<tr>
<td>Flammable Limits - LEL</td>
<td>No Data Available</td>
</tr>
</tbody>
</table>
Flammable Limits - UEL

5.2 EXTINGUISHING MEDIA
Ordinary combustible material. Use fire extinguishers with class A extinguishing agents (e.g., water, foam).

5.3 PROTECTION OF FIRE FIGHTERS

Special Fire Fighting Procedures: Water may be used to blanket the fire. Wear full protective equipment (Bunker Gear) and a self-contained breathing apparatus (SCBA).

Unusual Fire and Explosion Hazards: Not applicable.

Note: See STABILITY AND REACTIVITY (SECTION 10) for hazardous combustion and thermal decomposition information.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Accidental Release Measures: Evacuate unprotected and untrained personnel from hazard area. The spill should be cleaned up by qualified personnel. Ventilate the area with fresh air. Contain spill. For larger spills, cover drains and build dikes to prevent entry into sewer systems or bodies of water. Collect as much of the spilled material as possible. Place in a closed container approved for transportation by appropriate authorities. Dispose of collected material as soon as possible.

In the event of a release of this material, the user should determine if the release qualifies as reportable according to local, state, and federal regulations.

SECTION 7: HANDLING AND STORAGE

7.1 HANDLING
Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water. For industrial or professional use only. Avoid contact with oxidizing agents.

7.2 STORAGE
Store away from heat. Store out of direct sunlight. Store away from oxidizing agents. Material is light sensitive. Store in original packaging.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 ENGINEERING CONTROLS
Use in a well-ventilated area.

8.2 PERSONAL PROTECTIVE EQUIPMENT (PPE)

8.2.1 Eye/Face Protection
Avoid eye contact.
The following eye protection(s) are recommended: Safety Glasses with side shields, Indirect Vented Goggles.

8.2.2 Skin Protection
Avoid skin contact.
Select and use gloves and/or protective clothing to prevent skin contact based on the results of an exposure assessment. Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible materials. Gloves made from the following material(s) are recommended: Fluoroelastomer (Viton), Nitrile Rubber.

8.2.3 Respiratory Protection
Under normal use conditions, airborne exposures are not expected to be significant enough to require respiratory protection.

8.2.4 Prevention of Swallowing
Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water.

8.3 EXPOSURE GUIDELINES
None Established

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific Physical Form:</td>
<td>Viscous</td>
</tr>
<tr>
<td>Odor, Color, Grade:</td>
<td>Light Yellow; slight acrylic odor</td>
</tr>
<tr>
<td>General Physical Form:</td>
<td>Liquid</td>
</tr>
<tr>
<td>Autoignition temperature</td>
<td>No Data Available</td>
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<tr>
<td>Flash Point</td>
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</tr>
<tr>
<td>Flammable Limits - LEL</td>
<td>No Data Available</td>
</tr>
<tr>
<td>Flammable Limits - UEL</td>
<td>No Data Available</td>
</tr>
<tr>
<td>Boiling point</td>
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</tr>
<tr>
<td>Density</td>
<td>1.14 g/cm³</td>
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<tr>
<td>Vapor Density</td>
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</tr>
<tr>
<td>Vapor Pressure</td>
<td>&lt;=0.1 mmHg [@ 25 ºC]</td>
</tr>
<tr>
<td>Specific Gravity</td>
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</tr>
<tr>
<td>pH</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Melting point</td>
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<tr>
<td>Solubility in Water</td>
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<tr>
<td>Evaporation rate</td>
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<tr>
<td>Volatile Organic Compounds</td>
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</tr>
<tr>
<td>Percent volatile</td>
<td>0 %</td>
</tr>
<tr>
<td>VOC Less H2O &amp; Exempt Solvents</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Viscosity</td>
<td>21000 centipoise [@ 25 ºC]</td>
</tr>
</tbody>
</table>

SECTION 10: STABILITY AND REACTIVITY

Stability: Stable.

Materials and Conditions to Avoid: Strong oxidizing agents; Reducing agents; Heat

Hazardous Polymerization: Hazardous polymerization may occur.
Other Stability: Contains inhibitor. Loss of inhibitor may render material unstable. Refer to Precautionary Storage and Handling Section.

Hazardous Decomposition or By-Products
 Substance | Condition
---|---
 Carbon monoxide | During Combustion
 Carbon dioxide | During Combustion

### SECTION 11: TOXICOLOGICAL INFORMATION

#### Component-Based Toxicology Information:

Results from an unpublished study: Benzil dimethyl ketal (CAS# 24650-42-8) was administered at dietary concentrations of 0 (control), 1200, 2000, 4000 and 8000 ppm for three months to groups of male and female Sprague-Dawley rats. Following exposure, animals from the high dose and control groups were observed for an additional one month recovery period. The liver and kidneys were target organs. Briefly, effects included a dose-related increase in kidney weight, accompanied by histopathological changes and proteinuria. All of these effects were not completely reversible following the recovery period. A dose-related increase in liver weight was observed; mild liver changes were also observed at the two highest doses. All these liver effects were found to be reversible following the recovery period.

### SECTION 12: ECOLOGICAL INFORMATION

#### ECOTOXICOLOGICAL INFORMATION
Not determined.

#### CHEMICAL FATE INFORMATION
Not determined.

### SECTION 13: DISPOSAL CONSIDERATIONS

**Waste Disposal Method:** Dispose of completely cured (or polymerized) wastes in a sanitary landfill. As a disposal alternative, incinerate uncured product in an industrial or commercial incinerator in the presence of a combustible material.

**EPA Hazardous Waste Number (RCRA):** Not regulated

> Since regulations vary, consult applicable regulations or authorities before disposal.

### SECTION 14: TRANSPORT INFORMATION

**ID Number(s):**

Not regulated per U.S. DOT, IATA or IMO.

> These transportation classifications are provided as a customer service. As the shipper YOU remain responsible for complying with all applicable laws and regulations, including proper transportation classification and packaging. 3M’s transportation classifications are based on product formulation, packaging, 3M policies and 3M’s understanding of applicable current regulations. 3M does not guarantee the accuracy of this classification information. This information applies only to transportation classification and not the packaging, labeling, or marking requirements. The original 3M package is certified for U.S. ground shipment only. If you are shipping by air or ocean, the package may not meet applicable regulatory requirements.
SECTION 15: REGULATORY INFORMATION

US FEDERAL REGULATIONS
Contact 3M for more information.

311/312 Hazard Categories:
Fire Hazard - No  Pressure Hazard - No  Reactivity Hazard - Yes  Immediate Hazard - Yes  Delayed Hazard - Yes

Section 313 Toxic Chemicals subject to the reporting requirements of that section and 40 CFR part 372 (EPCRA):

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>C.A.S. No</th>
<th>% by Wt</th>
</tr>
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<tbody>
<tr>
<td>PHENOXY ETHYL ACRYLATE (GLYCOL ETHERS)</td>
<td>48145-04-6</td>
<td>60 - 100</td>
</tr>
</tbody>
</table>

STATE REGULATIONS
Contact 3M for more information.

CHEMICAL INVENTORIES
The components of this product are in compliance with the chemical notification requirements of TSCA.

All applicable chemical ingredients in this material are listed on the European Inventory of Existing Chemical Substances (EINECS), or are exempt polymers whose monomers are listed on EINECS.

Contact 3M for more information.

INTERNATIONAL REGULATIONS
Contact 3M for more information.

This MSDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SECTION 16: OTHER INFORMATION

NFPA Hazard Classification
Health: 2  Flammability: 1  Reactivity: 1  Special Hazards: None

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

Revision Changes:
Section 2: Ingredient table was modified.
Section 15: Inventories information was modified.

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