MATERIAL SAFETY DATA SHEET

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY

PRODUCT NAME: 820 Resin

CHEMICAL NAME: Bisphenol-A Epoxy Resin Blend

MANUFACTURER: CASS POLYMERS OF MICHIGAN, INC.
815 WEST SHEPHERD STREET
CHARLOTTE MI 48813 USA

INFORMATION PHONE: (248) 588-2270
EMERGENCY PHONE: (703) 527-3887 (Call Collect)

2. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS.NO</th>
<th>EINECS/ELINCS No.</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bisphenol A Based Epoxy Resin</td>
<td>25085-99-8</td>
<td>Polymer</td>
<td>80% - 90%</td>
</tr>
<tr>
<td>Dodecyl/tetradecyl glycidyl ether</td>
<td>68609-97-2</td>
<td>Polymer</td>
<td>10% - 20%</td>
</tr>
</tbody>
</table>

Hazard Codes: *=Chronic Hazard 0=Minimal Hazard, 1=Slight Hazard, 2=Moderate Hazard, 3=Serious Hazard, 4=Severe Hazard

3. HAZARDS IDENTIFICATION

**Emergency Overview**
Moderate skin irritant. Mild eye irritant. Mild respiratory tract irritant. May cause skin sensitization.

EC Classification(s): Xi-Irritant
Risk Phrases: R36/38: Irritating to eyes and skin
R43: May cause sensitization with skin contact
(See Section 15-REGULATORY INFORMATION for complete risk phrases.)

ROUTES OF EXPOSURE
Eye Contact
Skin Contact
Ingestion

EXPOSURE STANDARDS
Exposure standards available for individual components only. See Section 8-EXPOSURE CONTROLS/PERSONAL PROTECTION for more information. Maintain air contaminant concentrations in the workplace at the lowest feasible levels.

HEALTH HAZARDS
Moderate skin irritant.
Mild eye irritant.
Mild respiratory tract irritant.
May cause skin sensitization.

TARGET ORGANS
Skin

SIGNS AND SYMPTOMS OF EXPOSURE (Acute effects)
Contact with eyes may cause mild irritation and discomfort. Contact with skin causes irritation, redness and discomfort which is transient. Inhalation of mists may cause irritation in the respiratory tract. Inhalation of vapors from heated material may cause irritation in the respiratory tract. Coughing and chest pain may result.

SIGNS AND SYMPTOMS OF EXPOSURE (Possible Longer Term Effects)
Repeated and/or prolonged exposure may cause allergic reaction/sensitization. Repeated and/or prolonged exposures may result in: adverse skin effects (such as rash, irritation or corrosion).

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE
Skin disorders and Allergies
CARCINOGENS UNDER OSHA, ACGIH, NTP, IARC, OTHER
This product contains no carcinogens in concentrations of 0.1 percent or greater.

4. FIRST AID MEASURES

Never give fluids or induce vomiting if patient is unconscious or is having convulsions.

Inhalation
Move effected persons to fresh air; if effects occur, consult a physician.

Skin Contact
Continued and thorough washing in flowing water for at least 15 minutes is imperative while removing contaminated clothing. Prompt medical consultation is essential. Wash clothing before reuse. Destroy contaminated leather items.

Eye Contact
Wash immediately and continuously with flowing water for at least 15 minutes. Remove contact lenses after the first 5 minutes and continue washing. Obtain prompt medical consultation, preferably from an ophthalmologist.

Ingestion
If swallowed, call a physician immediately. Remove stomach contents by gastric suction or induce vomiting only as directed by a physician or medical personnel. Do not give anything by mouth to an unconscious person.

Note to Physician
No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE FIGHTING PRECAUTIONS

Extinguishing Media
Water fog or fine spray. Carbon dioxide. Alcohol resistant foam. Dry chemical fire extinguishers.

Hazardous Combustion Products
May generate toxic or irritating combustion products. Sudden reaction and fire may occur if product is mixed with an oxidizing agent.

Protection of Firefighters
Wear positive-pressure self-contained breathing apparatus and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots and gloves.)

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions
Wear adequate personal protective equipment, see Section 8, EXPOSURE CONTROLS/PERSONAL PROTECTION.

Methods of Cleaning Up
Large spills: Contain with dike. Pump into suitable and properly labeled containers.
Small spills: Dilute with water and recover or use non-combustible absorbent material/sand and shovel into appropriate containers.

7. HANDLING AND STORAGE

STORAGE
Keep away from: oxidizers. Keep in cool, dry, ventilated storage areas and in closed containers.

HANDLING
Avoid contact with skin or eyes. Avoid breathing of vapors. Handle in well-ventilated workspace. When handling, do not eat, drink, or smoke.

OTHER PRECAUTIONS
Emergency showers and eye wash stations should be readily accessible. Adhere to work practice rules established by government regulations (e.g. OSHA).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Hazardous Component Control Parameters –

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS. No.</th>
<th>EINECS</th>
<th>Percent</th>
<th>Exposure Limits</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>-No Data Available-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

EYE PROTECTION
Chemical safety glasses. A full-face shield and vapor respirator is recommended for operations involving spraying or other operations placing this material under pressurized conditions.

HAND PROTECTION
Neoprene rubber gloves. Impermeable gloves. Nitrile rubber gloves. The breakthrough time of the selected
glove(s) must be greater than the intended use period.

RESPIRATORY PROTECTION
Not required under normal conditions and in a well-ventilated workplace. At elevated temperatures, a cartridge mask National Institute for Occupational Safety and Health (NIOSH) approved for organic vapors may be appropriate

PROTECTIVE CLOTHING
Long sleeved clothing.

ENGINEERING CONTROLS
No specific controls needed. Heated material

WORK AND HYGIENIC PRACTICES
Provide readily accessible eye wash stations and safety showers. Wash at the end of each work shift and before eating, smoking or using the toilet.

NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all requisite workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), as well as the instructions/specifications provided by the glove supplier.

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance:</td>
<td>Mobile Liquid</td>
</tr>
<tr>
<td>Color:</td>
<td>Off-White to Clear</td>
</tr>
<tr>
<td>Odor:</td>
<td>Epoxy Odor</td>
</tr>
<tr>
<td>Specific gravity:</td>
<td>1.14 – 1.16</td>
</tr>
<tr>
<td>Vapor pressure:</td>
<td>Not Determined</td>
</tr>
<tr>
<td>Boiling point/range:</td>
<td>Not Determined</td>
</tr>
<tr>
<td>Freezing point/range:</td>
<td>Not Determined</td>
</tr>
<tr>
<td>Water solubility:</td>
<td>Liquid Components are Not Readily Soluble in Water</td>
</tr>
<tr>
<td>pH:</td>
<td>Not Determined</td>
</tr>
<tr>
<td>Flash point:</td>
<td>Not Determined</td>
</tr>
<tr>
<td>Auto-ignition temp.:</td>
<td>&gt;300 deg.C</td>
</tr>
<tr>
<td>Flammability-LFL:</td>
<td>Not Determined</td>
</tr>
<tr>
<td>Flammability-UFL:</td>
<td>Not Determined</td>
</tr>
<tr>
<td>% volatile:</td>
<td>&lt;1%</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY
Stable

CONDITIONS TO AVOID (if unstable)
Not applicable

INCOMPATIBILITY (Materials to Avoid)
Oxidizing Agents (i.e. perchlorates, nitrates etc.). Sodium or Calcium Hypochlorite. Reaction with peroxides may result in violent decomposition of peroxide possibly creating an explosion.

HAZARDOUS DECOMPOSITION PRODUCTS (from burning, heating, or reaction with other materials).
Carbon Monoxide in a fire. Carbon Dioxide in a fire. Irritating and toxic fumes at elevated temperatures.

HAZARDOUS POLYMERIZATION
Will not occur

CONDITIONS TO AVOID (if polymerization may occur)
Not applicable

11. TOXICOLOGICAL INFORMATION

Acute toxicity
This finished product has not been tested to determine individual toxicological/ecological limits. Individual components of this mixture have been independently tested by the raw material manufacturers and any known results have been presented below. The results for the individual components may not be representative of the toxicity of this finished product.

<table>
<thead>
<tr>
<th>Ingredient Name</th>
<th>CAS No.</th>
<th>%</th>
<th>Test</th>
<th>Result</th>
<th>Route</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dodecyl/tetradecyl glycidyl ether</td>
<td>68609-97-2</td>
<td>10% - 20%</td>
<td>LD50</td>
<td>19.2 g/kg</td>
<td>Oral Dermal</td>
<td>Rat Rabbit</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>LC50</td>
<td>&gt; 4g/kg</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

-No Further Data Available-

Ingestion
This material has a low potential for toxic effects due to ingestion.

Skin Contact
Prolonged or widespread skin contact is not likely to cause toxic effects.
Skin contact has caused allergic skin reactions in certain sensitized individuals.

Eyes
May cause slight temporary eye irritation with local redness. Mechanical irritation possible due to solid filler materials.

Inhalation
May cause allergic respiratory response upon exposure to heated vapors.

**Chronic Exposure**

Carcinogen
This material contains no known or suspected carcinogens in levels above 0.1%

Mutagen
This material contains no known or suspected mutagens in levels above 0.1%

Reproductive Hazard
This material contains no known or suspected reproductive hazards in levels above 0.1%

### 12. ECOLOGICAL INFORMATION

**Persistence/degradability**
This material contains components that show little or no evidence of biodegradability. Caution should be taken to prevent release to the environment. See Section 13 for disposal information.

#### Ecotoxicity Data:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS No.</th>
<th>%</th>
<th>Test</th>
<th>Concentration</th>
<th>Result</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bisphenol A Based Epoxy Resin</td>
<td>25085-99-8</td>
<td>80% - 90%</td>
<td>LC50</td>
<td>3.1 mg/L*</td>
<td>LC50</td>
<td>Fathead Minnow</td>
</tr>
</tbody>
</table>

* Toxicity effects are noted at concentrations above the level of normal water solubility

-No Further Data Available-

Individual components of this mixture have been independently tested by the raw material suppliers and any known results have been presented above. The results for the individual components may not be representative of the ecological toxicity of this finished product. This finished product has not been tested to determine individual toxicological/ecological limits. Caution should be taken to prevent release to the environment. See Section 13 for further information.

### 13. DISPOSAL CONSIDERATIONS

**Disposal**
The generation of waste should be avoided or minimized wherever possible. Preferred method of disposal includes incineration under controlled conditions in accordance with all local and national laws and regulations. Untreated material is not suitable for disposal. Waste, even small quantities, should never be poured down drains, sewers or watercourses. Waste must be disposed of in accordance with federal, state and local environmental control regulations. This material, when properly mixed and cured with its hardener component at the proper mix ratio, may be landfilled.

**Contaminated packaging**
Empty containers can only be disposed of when the remaining product adhering to the container walls has been removed. Hazard warning labels should be removed from the container only after it has been properly emptied.

### 14. TRANSPORT INFORMATION

**Land/Air/Sea/Rail**

- Proper Shipping Name: Liquid Plastic, NOI
- UN Number: Not Regulated
- Hazard Class: Not Regulated
- Packing Group: Not Regulated

### 15. REGULATORY INFORMATION

**US FEDERAL REGULATIONS**

**TOXIC SUBSTANCES CONTROL ACT (TSCA)**
All components are included in the EPA Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

**TOXIC SUBSTANCE CONTROL ACT (TSCA) 12(b) COMPONENT(S)**
None

Irritant. Sensitizer.

**EPA SARA Title III Section 312 (40CFR370) hazard class**
Immediate Health Hazard. Delayed Health Hazard.

**EPA SARA Title III Section 313 (40CFR372) toxic chemicals above "de minimis" level are**
None
STATE REGULATIONS

PROPOSITION 65 SUBSTANCES (component(s) known to the State of California to cause cancer and/or reproductive toxicity and subject to warning and discharge requirements under the "Safe Drinking Water and Toxic Enforcement Act of 1986")
None

NEW JERSEY TRADE SECRET REGISTRY NUMBER(S)
None

CANADIAN REGULATIONS

DSL
Included on Inventory.

WHMIS HAZARD CLASSIFICATION
Class D Division 2B- Skin Sensitizer

WHMIS INGREDIENT DISCLOSURE LIST
None

WHMIS TRADE SECRET REGISTRY NUMBER(S)
This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.
None

WHMIS SYMBOL(S):

EUROPEAN ECONOMIC COMMUNITY (EEC)

EINECS/ELINCS MASTER INVENTORY
Included on EINECS inventory or polymer substance, monomers included on EINECS inventory or no longer polymer.
Xi

EU Labeling Classification: Xi-Irritant

Risk Phrases:
R36/38: Irritating to eyes and skin
R43: May cause sensitization with skin contact

Safety Phrases:
S24 Avoid contact with skin.
S37 Wear suitable gloves.

16. OTHER INFORMATION

Definitions:
ACGIH: American Conference of Government Industrial Hygenists
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
TLV: Threshold Limit Value
TWA: Time-Weighted Average
LD50: Lethal Dose (50%)- The minimum dose required for lethal effects in 50% of a given population of test specimens.
LC50: Lethal Concentration (50%)- The minimum concentration required for lethal effects in 50% of a given population of test specimens
NIOSH: National Institute for Occupational Safety and Health
WHMIS: Workplace Hazardous Material Information System
DSL: Domestic Substances List

To the best of our knowledge, the information contained herein is accurate. Final determination of the suitability of any material is the sole responsibility of the users. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist.