SAFETY DATA SHEET

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product Name: ELVACITE® ACRYLIC RESIN - POLY(nBMA/iBMA) BASED

Product Description: Polymer based on n-Butyl methacrylate and iso-Butyl methacrylate. This data sheet covers the following grades: ELVACITE® 2046.

CAS No.: 9011-53-4

Identified use(s): Manufacture of inks, paints and varnishes.

Uses advised against: None known.

Manufacturer: Lucite International, Inc., 7275 Goodlett Farms Parkway, Cordova, TN 38016-4909

Phone: 1-800-4-LUCITE

msdsinfo@lucite.com

Emergency Phone No.: 1-800-424-9300 (Transport Emergency)

1-877-886-2143 (Medical Emergency)

2. HAZARDS IDENTIFICATION

Hazard classification: Combustible dust

Label elements:

Signal word: Warning

Precautionary statement(s):

May form combustible dust concentrations in air.

Low toxicity under normal conditions of handling and use.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical identity of the substance: Poly(n-Butyl methacrylate/iso-Butyl methacrylate)

CAS No.: 9011-53-4

4. FIRST AID MEASURES

Description of first aid measures:

Inhalation: IF INHALED: Remove person to fresh air and keep comfortable for breathing.

Skin Contact: IF ON SKIN: Wash with plenty of water. If skin irritation or rash occurs: Get medical attention. Molten material can cause severe burns. Do NOT try to peel molten polymer from the skin. Cool rapidly with water.

Eye Contact: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Ingestion: IF SWALLOWED: rinse mouth. Do NOT induce vomiting. Obtain medical attention if ill effects occur.

Most important symptoms and effects, both acute and delayed: Not applicable.

Indication of any immediate medical attention and special treatment needed: None necessary.
5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
Water spray, foam, dry powder or CO₂.

Unsuitable Extinguishing Media
Do not use water jet.

Special hazards arising from the substance
Combustible but not readily ignited. May form combustible dust concentrations in air. Combustion or thermal decomposition will evolve toxic, irritant and flammable vapors. By analogy with similar materials, the product may decompose if heated to temperatures above 302°F (150°C).

Special protective equipment and precautions for fire fighters
A self contained breathing apparatus and suitable protective clothing should be worn in fire conditions.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Caution - spills may be slippery.
Avoid release to the environment.
Sweep up and shovel into waste drums or plastic bags. Wash the spillage area with water.

7. HANDLING AND STORAGE

HANDLING
Product as supplied: Avoid contact with eyes. Avoid prolonged skin contact. Unlikely to represent a dust hazard under normal handling conditions.

Process Hazards
The product may be suitable for a wide range of industrial applications and therefore it is impossible to make detailed recommendations regarding all process hazards. The following constitutes general advice: Extra care should be taken to prevent burns from contact with hot material.
Thermal processing requires adequate ventilation to remove any monomer decomposition products, and use of inert atmosphere may be required in some processes to safely decompose the resin when it is used as a binder.
Any thermal processing must consider the time-temperature decomposition of the resin. All polymers degrade to some extent at their processing temperature, an effect which increases with increasing temperature.
It is therefore impossible to be precise about which substances may be evolved. However, it is only the minor components which vary substantially. The major components are given in Section 10. If the product is to be used in applications for which the hazards are not fully understood it is recommended to consult the supplier before use.

STORAGE
Acrylic polymers are supplied in either bags or bulk containers. Keep containers in a clean, cool and dry area away from heat sources. Natural ventilation is adequate.

8. EXPOSURE CONTROLS/PERSOAL PROTECTION

Control parameters

<table>
<thead>
<tr>
<th>Substance</th>
<th>CAS No.</th>
<th>OSHA PEL TWA</th>
<th>ACGIH TWA</th>
<th>ACGIH STEL</th>
<th>Company Std. TWA</th>
<th>Company Std. STEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulates (Total dust) (Respirable dust)</td>
<td></td>
<td>15 mg/m³</td>
<td>Not established.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The following values apply to substances which may be evolved during thermal processing.</td>
<td></td>
<td>5 mg/m³</td>
<td>Not established.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n-Butyl methacrylate</td>
<td>97-88-1</td>
<td>Not established.</td>
<td>Not established.</td>
<td>50 ppm</td>
<td>50 ppm</td>
<td>100 ppm</td>
</tr>
<tr>
<td>iso-Butyl methacrylate</td>
<td>97-86-9</td>
<td>Not established.</td>
<td>Not established.</td>
<td></td>
<td>50 ppm</td>
<td>100 ppm</td>
</tr>
</tbody>
</table>
Appropriate engineering controls
Do not eat, drink or smoke at the workplace. Provide adequate ventilation, including appropriate local extraction, to ensure that the occupational exposure limit is not exceeded. Consideration should be given to the work procedures involved and the potential extent of exposure as they may determine whether a higher level of protection is required. The following information is given as general guidance.

Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection
Wear eye/face protection. Safety spectacles/goggles/full face shield.

Skin protection
Not normally required.

Respiratory protection
A suitable dust mask or dust respirator with filter type P3 or FFP3 (EN143 or EN149) may be appropriate. In the unlikely event of formation of particularly high levels of dust a self contained breathing apparatus may be appropriate.

Thermal hazards
Wear thermal insulating gloves when handling hot masses. Wear suitable respiratory protective equipment if exposure to levels above the occupational exposure limit is likely. A suitable mask with filter type A may be appropriate. In the unlikely event of formation of particularly high levels of vapor a self contained breathing apparatus may be appropriate.

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form</td>
<td>Beads</td>
</tr>
<tr>
<td>Color</td>
<td>White</td>
</tr>
<tr>
<td>Odor (Value)</td>
<td>Typically methacrylate</td>
</tr>
<tr>
<td>Boiling Point (°C)</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Flash Point (°C)</td>
<td>300</td>
</tr>
<tr>
<td>Relative Evaporation Rate (Ether = 1)</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Flammable Limits</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Vapor pressure (Pascal)</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Vapor Density (Air=1)</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>1.08</td>
</tr>
<tr>
<td>Solubility (Water)</td>
<td>Negligible.</td>
</tr>
<tr>
<td>Solubility (Other)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Partition Coefficient (n-Octanol/water)</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Viscosity (mPa. s)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Explosive Properties</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>Not applicable.</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reactivity</td>
<td>Non-reactive material.</td>
</tr>
<tr>
<td>Chemical stability</td>
<td>Stable under normal conditions.</td>
</tr>
<tr>
<td>Hazardous Reactions</td>
<td>None known.</td>
</tr>
<tr>
<td>Conditions to avoid</td>
<td>Avoid dust generation. Keep away from heat.</td>
</tr>
<tr>
<td>Materials to avoid</td>
<td>None known.</td>
</tr>
<tr>
<td>Hazardous decomposition product(s)</td>
<td>n-Butyl methacrylate, iso-Butyl methacrylate, Carbon dioxide, Carbon monoxide.</td>
</tr>
</tbody>
</table>
11. TOXICOLOGICAL INFORMATION

Acute toxicity
Ingestion Low oral toxicity.
Inhalation unlikely to be hazardous by inhalation. High concentrations of vapor from hot operations may be harmful, cause irritation of the respiratory tract and slight narcotic effects.

Skin corrosion/irritation
Serious eye damage/irritation unlikely to cause skin irritation. Dust may cause irritation.

Skin sensitization data
Contains: (n-Butyl methacrylate, iso-Butyl methacrylate, 2,4-Diphenyl-4-methyl-1-pentene). During normal handling this will not constitute a hazard. If the polymer matrix is destroyed e.g. when the product is dissolved in organic solvent, chemical residues will be released from the polymer matrix. Under these conditions, they may produce an allergic reaction in persons already sensitised.

Carcinogenicity data

<table>
<thead>
<tr>
<th>CHEMICALS</th>
<th>IARC</th>
<th>NTP</th>
<th>OSHA</th>
<th>ACGIH</th>
</tr>
</thead>
<tbody>
<tr>
<td>None.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Chronic exposure This type of material has been in use for many years with no evidence of adverse effects.

12. ECOLOGICAL INFORMATION

Ecotoxicity The product is predicted to have low toxicity to aquatic organisms.
Persistence and degradability The product is non-biodegradable in soil. There is no evidence of degradation in soil and water.
Bioaccumulative potential The product has low potential for bioaccumulation.
Mobility The product is predicted to have low mobility in soil.

13. DISPOSAL CONSIDERATIONS

The waste is considered to be non-hazardous. Clean scrap may be reprocessed. Certain packages are returnable. Please consult your local office for further details. Ensure that all packaging is disposed of safely.

Disposal methods May be disposed of by landfill in accordance with local regulations. Incineration may be used to recover energy value.

14. TRANSPORT INFORMATION

DOT (DEPARTMENT OF TRANSPORTATION) Not Classiﬁed as Dangerous for Transport.
UN No. Not applicable.
Proper Shipping Name Not applicable.
Class Not applicable.
Packing group Not applicable.
Environmental hazards Not applicable.
Special precautions for user Not applicable.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

15. REGULATORY INFORMATION

US Federal Regulations
SARA 302 - Extremely Hazardous Substances None.
SARA 313 - Toxic Chemicals None.
US State Regulations
California

SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER None known.

16. OTHER INFORMATION

The following sections contain revisions or new statements: 9, 11
Date of preparation: 10 -March- 2017

Inventory Status
European Union To the best of our knowledge all chemicals in this product comply with REACH regulations.
United States (TSCA) Listed in TSCA
Canada (DSL/NDSL) Listed in DSL
Japan (ENCS) Listed in ENCS
Philippines (PICCS) Listed in PICCS
Australia (AICS) Listed in AICS
South Korea (KECI) Listed in KECI
China (IECSC) Listed in IECSC
Taiwan (TCSI) Listed in TCSI
New Zealand (NZIoC) Listed in NZIoC

Compliance with other Regulatory Chemical Inventories cannot be assumed, please contact supplier for further information.

LEGEND
Note: Not all of the following are necessarily contained in this Safety Data Sheet:
LTEL: Long Term Exposure Limit
STEL: Short Term Exposure Limit
TWA: Time Weighted Average
PEL: Permissible Exposure Levels
OSHA: Occupational Safety and Health Administration
SARA: Superfund Amendments and Reauthorisation Act
WHMIS: Worker Hazardous Materials Information System

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MEDICAL USE: CAUTION: DO NOT USE IN MEDICAL APPLICATIONS INVOLVING IMPLANTATION IN THE HUMAN BODY.
Lucite International Inc. has performed no clinical testing on the use of this product in any medical application. Lucite International Inc. has no data to support the use of this product in any medical application. This product was not designed or manufactured for use in implantation in the human body or in contact with internal body fluids or tissues. Lucite International Inc. has neither sought, nor received, approval from any regulatory agency for the use of this product in implantation in the human body or in contact with internal body fluids or tissues.

It is the responsibility of the end-product manufacturer to identify all market and use-specific regulations and to ensure compliance with these regulations.

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