LMK Silicate Resin
Safety Data Sheet
prepared to UN GHS Revision 3

1. Identification of the Substance/Mixture and the Company/Undertaking

1.1 Product Identifier
Silicate Resin

Revision Date: 06/16/2015
Supercedes Date: New SDS

1.2 Relevant identified uses of the substance or mixture and uses advised against
Monocomponent industrial coating - Industrial use.

1.3 Details of the supplier of the safety data sheet

Manufacturer: LMK Technologies
1779 Chessie Lane
Ottawa, IL USA 61350

Datasheet Produced by: Quality and Safety Department
info@lmktechnologies.com

1.4 Emergency telephone number:
CHEMTREC 1-800-424-9300 (Inside US)
CHEMTREC +1 703 5273887 (Outside US) HEALTH
- Pittsburgh Poison Control 1-412-681-6669

2. Hazard Identification

2.1 Classification of the substance or mixture
Carcinogenicity, category 2
Eye Irritation, category 2
Respiratory Sensitizer, category 1
STOT, repeated exposure, category 2
STOT, single exposure, category 3, RTI
Skin Irritation, category 2
Skin Sensitizer, category 1
2.2 Label elements

Symbol(s) of Product

![Danger Symbol]

Signal Word
Danger

Named Chemicals on Label
4,4’ MDI, POLYMERIC MDI, 4,4 MDI HOMOPOLYMER, 2,2, 2,4 MDI

GHS HAZARD STATEMENTS

<table>
<thead>
<tr>
<th>Hazard Statement</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Causes skin irritation.</td>
<td>H315</td>
<td></td>
</tr>
<tr>
<td>May cause an allergic skin reaction.</td>
<td>H317</td>
<td></td>
</tr>
<tr>
<td>Causes serious eye irritation.</td>
<td>H319</td>
<td></td>
</tr>
<tr>
<td>May cause allergy or asthma symptoms or breathing difficulties if inhaled.</td>
<td>H334</td>
<td></td>
</tr>
<tr>
<td>May cause respiratory irritation.</td>
<td>H335</td>
<td></td>
</tr>
<tr>
<td>Suspected of causing cancer.</td>
<td>H351</td>
<td></td>
</tr>
<tr>
<td>May cause damage to organs through prolonged or repeated exposure.</td>
<td>H373</td>
<td></td>
</tr>
</tbody>
</table>

GHS PRECAUTION PHRASES

<table>
<thead>
<tr>
<th>Precaution Phrase</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not breathe dust/fume/gas/mist/vapours/spray.</td>
<td>P260</td>
</tr>
<tr>
<td>Wear protective gloves/protective clothing/eye protection/face protection.</td>
<td>P280</td>
</tr>
<tr>
<td>Wear respiratory protection.</td>
<td>P284</td>
</tr>
<tr>
<td>In case of inadequate ventilation wear respiratory protection.</td>
<td>P285</td>
</tr>
<tr>
<td>IF ON SKIN: Wash with plenty of soap and water.</td>
<td>P302+352</td>
</tr>
<tr>
<td>IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.</td>
<td>P304+340</td>
</tr>
<tr>
<td>IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing.</td>
<td>P305+351+338</td>
</tr>
<tr>
<td>IF exposed or concerned: Get medical advice/attention</td>
<td>P308+313</td>
</tr>
<tr>
<td>Get medical advice/attention if you feel unwell.</td>
<td>P314</td>
</tr>
<tr>
<td>If skin irritation occurs: Get medical advice/attention.</td>
<td>P332+313</td>
</tr>
<tr>
<td>If skin irritation or rash occurs: Get medical advice/attention.</td>
<td>P333+313</td>
</tr>
<tr>
<td>If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.</td>
<td>P341</td>
</tr>
<tr>
<td>If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.</td>
<td>P342+311</td>
</tr>
</tbody>
</table>

2.3 Other hazards
Not applicable

Results of PBT and vPvB assessment:
The product does not meet the criteria for PBT/VPvB in accordance with Annex XIII.
3. Composition/Information On Ingredients

3.2 Mixtures

Hazardous Ingredients

<table>
<thead>
<tr>
<th>CAS-No.</th>
<th>Chemical Name</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>9016-87-9</td>
<td>POLYMERIC MDI</td>
<td>25-50</td>
</tr>
<tr>
<td>101-68-8</td>
<td>4,4' MDI</td>
<td>25-50</td>
</tr>
<tr>
<td>25686-28-6</td>
<td>4,4 MDI HOMOPOLYMER</td>
<td>2.5-10</td>
</tr>
<tr>
<td>26447-40-5</td>
<td>2,2, 2,4 MDI</td>
<td>2.5-10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAS-No.</th>
<th>GHS Symbols</th>
<th>GHS Hazard Statements</th>
<th>M-Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>9016-87-9</td>
<td>GHS07-GHS08</td>
<td>H315-317-319-332-334-335-351-373</td>
<td>0</td>
</tr>
<tr>
<td>101-68-8</td>
<td>GHS07-GHS08</td>
<td>H315-317-319-332-334-335-351-373</td>
<td>0</td>
</tr>
<tr>
<td>25686-28-6</td>
<td>GHS07-GHS08</td>
<td>H315-317-319-332-334-335-351-373</td>
<td>0</td>
</tr>
<tr>
<td>26447-40-5</td>
<td>GHS07-GHS08</td>
<td>H315-317-319-332-334-335-351-373</td>
<td>0</td>
</tr>
</tbody>
</table>

Additional Information: The text for GHS Hazard Statements shown above (if any) is given in Section 16.

4. First-aid Measures

4.1 Description of First Aid Measures

AFTER INHALATION: Give oxygen or artificial respiration if needed. Remove person to fresh air. If signs/symptoms continue, get medical attention.

AFTER SKIN CONTACT: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. If skin irritation persists, call a physician.

AFTER EYE CONTACT: Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

AFTER INGESTION: DO NOT induce vomiting. Never give anything by mouth to an unconscious person. If swallowed, call a poison control centre or doctor immediately.

4.2 Most important symptoms and effects, both acute and delayed

May cause sensitization by skin contact. Irritating to eyes and skin. May be harmful if swallowed.

4.3 Indication of any immediate medical attention and special treatment needed

No information available on clinical testing and medical monitoring. Specific toxicological information on substances, if available, can be found in section 11.

5. Fire-fighting Measures

5.1 Extinguishing Media:

Carbon Dioxide, Dry Chemical, Foam

UNUSUAL FIRE AND EXPLOSION HAZARDS: Humid air and/or water will produce carbon dioxide which will pressurize the container. Contamination may result in dangerous pressure increases - closed containers may rupture.

5.2 Special hazards arising from the substance or mixture

No Information

5.3 Advice for firefighters

In the event of fire, wear self-contained breathing apparatus. Wear suitable protective equipment. Water reactive Dry chemical (on small fires) Extinguishing media - large fires Evacuate personnel to safe areas. The product is not flammable. Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Use NIOSH approved respiratory protection. Do NOT use water jet. Use water spray to cool unopened containers.

6. Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation. Evacuate personnel to safe areas.
6.2 Environmental precautions

Do not allow material to contaminate ground water system. Prevent product from entering drains. Keep the container open.

6.3 Methods and material for containment and cleaning up

Prevent further leakage or spillage if safe to do so. Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).

6.4 Reference to other sections

Please refer to disposal requirements or country specific disposal requirements for this material. See Section 13 for further information.

7. Handling and Storage

7.1 Precautions for safe handling

INSTRUCTIONS FOR SAFE HANDLING: Keep containers dry and tightly closed to avoid moisture absorption and contamination. Prepare the working solution as given on the label(s) and/or the user instructions. Ensure all equipment is electrically grounded before beginning transfer operations. Do not use sparking tools. Wash thoroughly after handling. Do not get in eyes, on skin, or on clothing. Use only with adequate ventilation/personal protection. Avoid breathing vapors, mist or gas.

PROTECTION AND HYGIENE MEASURES: Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday. When using, do not eat, drink or smoke.

7.2 Conditions for safe storage, including any incompatibilities

CONDITIONS TO AVOID: Heat, flames and sparks. Keep from any possible contact with water.

STORAGE CONDITIONS: Keep container closed when not in use. Store in a dry, well ventilated place away from sources of heat, ignition and direct sunlight.

7.3 Specific end use(s)

No specific advice for end use available.

8. Exposure Controls/Personal Protection

8.1 Control parameters

Ingredients with Occupational Exposure Limits (US)

<table>
<thead>
<tr>
<th>Name</th>
<th>%</th>
<th>ACGIH TLV- TWA</th>
<th>ACGIH TLV- STEL</th>
<th>OSHA PEL- TWA</th>
<th>OSHA PEL- CEILING</th>
<th>OEL Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLYMERIC MDI</td>
<td>25-50</td>
<td>N/E</td>
<td>N/E</td>
<td>N/E</td>
<td>N/E</td>
<td>N/E</td>
</tr>
<tr>
<td>4,4' MDI</td>
<td>25-50</td>
<td>0.005 PPM</td>
<td>N/E</td>
<td>N/E</td>
<td>0.2 MGM3</td>
<td></td>
</tr>
<tr>
<td>4,4 MDI HOMOPOLYMER</td>
<td>2.5-10</td>
<td>N/E</td>
<td>N/E</td>
<td>N/E</td>
<td>N/E</td>
<td>N/E</td>
</tr>
<tr>
<td>2,2, 2,4 MDI</td>
<td>2.5-10</td>
<td>N/E</td>
<td>N/E</td>
<td>N/E</td>
<td>N/E</td>
<td>N/E</td>
</tr>
</tbody>
</table>

FURTHER INFORMATION: Refer to the regulatory exposure limits for the workforce enforced in each country.

8.2 Exposure controls

Personal Protection

RESPIRATORY PROTECTION: In order to avoid inhalation of spray-mist and sanding dust, all spraying and sanding must be done wearing adequate respirator. Use only with ventilation to keep levels below exposure guidelines reported in this document. User should test and monitor exposure levels to ensure all personnel are below guidelines. If not sure, or not able to monitor, use State or federally approved supplied air respirator. For silica containing coatings in a liquid state, and/or if no exposure limits are established above, air-supplied respirators are generally not required.

EYE PROTECTION: Safety glasses with side-shields.

HAND PROTECTION: Gloves should be discarded and replaced if there is any indication of degradation or chemical...
breakthrough. Impervious gloves Request information on glove permeation properties from the glove supplier.

**OTHER PROTECTIVE EQUIPMENT:** Ensure that eyewash stations and safety showers are close to the workstation location. Lightweight protective clothing

**ENGINEERING CONTROLS:** Avoid contact with skin, eyes and clothing. Ensure adequate ventilation, especially in confined areas.

### 9. Physical and Chemical Properties

#### 9.1 Information on basic physical and chemical properties

**Appearance:** Yellowish Liquid

**Physical State**

Liquid

**Odor**

Slightly Musty

**Odor threshold**

pH

N/D

Melting point / freezing point (°C)

N/D

Boiling point/range (°C)

270 F (132 C) - 597 F (314 C)

Flash Point, (°C)

210

**Evaporation rate**

**Flammability (solid, gas)**

Upper/lower flammability or explosive limits

Not determined

Vapour Pressure, mmHg

N/D

Vapour density

**Relative density**

**Solubility in / Miscibility with water**

Reacts With Water

**Partition coefficient: n-octanol/water**

**Auto-ignition temperature (°C)**

**Decomposition temperature (°C)**

Unknown

**Viscosity**

**Explosive properties**

**Oxidising properties**

#### 9.2 Other information

**VOC Content g/l:**

0

**Specific Gravity (g/cm3)**

1.2

### 10. Stability and Reactivity

#### 10.1 Reactivity

Water reactive

#### 10.2 Chemical stability

Stable under normal conditions.

#### 10.3 Possibility of hazardous reactions
10.4 **Conditions to avoid**  
Heat, flames and sparks. Keep from any possible contact with water.

10.5 **Incompatible materials**  
Never allow product to get in contact with water during storage. Strong oxidizing agents.

10.6 **Hazardous decomposition products**  
Carbon dioxide (CO2), carbon monoxide (CO), oxides of nitrogen (NOx), dense black smoke.

### 11. Toxicological Information

#### 11.1 Information on toxicological effects

**Acute Toxicity:**
- **Oral LD50:** N/D
- **Inhalation LC50:** N/D

**Irritation:** Unknown

**Corrosivity:** Unknown

**Sensitization:** Unknown

**Repeated dose toxicity:** Unknown

**Carcinogenicity:** Unknown

**Mutagenicity:** Unknown

**Toxicity for reproduction:** Unknown

If no information is available above under Acute Toxicity then the acute effects of this product have not been tested.

Data on individual components are tabulated below:

<table>
<thead>
<tr>
<th>CAS-No.</th>
<th>Chemical Name</th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Vapor LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>9016-87-9</td>
<td>POLYMERIC MDI</td>
<td>&gt;10000 mg/kg, oral, rat</td>
<td></td>
<td>310 mg/m3, inh, 4 hr, rat</td>
</tr>
<tr>
<td>101-68-8</td>
<td>4,4' MDI</td>
<td>15000 mg/kg oral</td>
<td></td>
<td>43 ppm vapor 4 hrs</td>
</tr>
<tr>
<td>25686-28-6</td>
<td>4,4 MDI HOMOPOLYMER</td>
<td>Not Available</td>
<td></td>
<td>Not Available</td>
</tr>
<tr>
<td>26447-40-5</td>
<td>2,2, 2,4 MDI</td>
<td>15000 mg/kg oral</td>
<td></td>
<td>43 ppm vapor 4hrs</td>
</tr>
</tbody>
</table>

**Additional Information:**
May cause sensitization by skin contact. Irritating to eyes and skin. May be harmful if swallowed.
12. Ecological Information

12.1 Toxicity:
- EC50 48hr (Daphnia): Unknown
- IC50 72hr (Algae): Unknown
- LC50 96hr (fish): Unknown

12.2 Persistence and degradability: Unknown

12.3 Bioaccumulative potential: Unknown

12.4 Mobility in soil: Unknown

12.5 Results of PBT and vPvB assessment: The product does not meet the criteria for PBT/VPvB in accordance with Annex XIII.

12.6 Other adverse effects: Unknown

<table>
<thead>
<tr>
<th>CAS-No.</th>
<th>Chemical Name</th>
<th>EC50 48hr</th>
<th>IC50 72hr</th>
<th>LC50 96hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>9016-87-9</td>
<td>POLYMERIC MDI</td>
<td>No information</td>
<td>No information</td>
<td>No information</td>
</tr>
<tr>
<td>101-68-8</td>
<td>4,4' MDI</td>
<td>No information</td>
<td>No information</td>
<td>No information</td>
</tr>
<tr>
<td>25886-28-6</td>
<td>4,4 MDI HOMOPOLYMER</td>
<td>No information</td>
<td>No information</td>
<td>No information</td>
</tr>
<tr>
<td>26447-40-5</td>
<td>2,2, 2,4 MDI</td>
<td>No information</td>
<td>No information</td>
<td>No information</td>
</tr>
</tbody>
</table>

13. Disposal Considerations

13.1 WASTE TREATMENT METHODS: Do not burn, or use a cutting torch on, the empty drum. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of in accordance with local regulations. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport Information

14.1 UN number: None

14.2 UN proper shipping name: Not Regulated

14.3 Transport hazard class(es): None

14.4 Packing group: N/A

14.5 Environmental hazards: Unknown

14.6 Special precautions for user: Unknown

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code: Unknown

15. Regulatory Information

15.1 Safety, health and environmental regulations/legislation for the substance or mixture:
U.S. Federal Regulations: As follows -

**CERCLA - Sara Hazard Category**

This product has been reviewed according to the EPA ‘Hazard Categories’ promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Acute Health Hazard, Chronic Health Hazard

**Sara Section 313:**

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLYMERIC MDI</td>
<td>9016-87-9</td>
</tr>
<tr>
<td>4,4’ MDI</td>
<td>101-68-8</td>
</tr>
</tbody>
</table>

**Toxic Substances Control Act:**

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

No TSCA 12(b) components exist in this product.

**U.S. Clean Air Act:**

EPA Coating Category:

EPA VOC Content Limit (g/l):

Product VOC Content (g/l)

Thinning Recommendations:

Application Recommendations:

Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea. May be harmful if swallowed.

U.S. State Regulations: As follows -

**New Jersey Right-to-Know:**

The following materials are non-hazardous, but are among the top five components in this product.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>BENZOATE ESTERS</td>
<td>120-55-8</td>
</tr>
<tr>
<td>ISOCYANATES,Rx PRODUCT OF POLYOL WITH METHYLENEDIPHENYL DIISOCYANATE</td>
<td>59675-67-1</td>
</tr>
</tbody>
</table>

**Pennsylvania Right-To-Know**

The following non-hazardous ingredients are present in the product at greater than 3%.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>BENZOATE ESTERS</td>
<td>120-55-8</td>
</tr>
<tr>
<td>ISOCYANATES,Rx PRODUCT OF POLYOL WITH METHYLENEDIPHENYL DIISOCYANATE</td>
<td>59675-67-1</td>
</tr>
<tr>
<td>BENZOATE ESTERS</td>
<td>27138-31-4</td>
</tr>
</tbody>
</table>

**California Proposition 65:**

Warning: The following ingredients present in the product are known to the state of California to cause Cancer:

No Proposition 65 Carcinogens exist in this product.
Warning: The following ingredients present in the product are known to the state of California to cause birth defects, or other reproductive hazards.

No Proposition 65 Reproductive Toxins exist in this product.

**International Regulations: As follows -**

* Canadian DSL:
  
  No Information

15.2 Chemical Safety Assessment:

No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

16. Other Information

**Text for GHS Hazard Statements shown in Section 3 describing each ingredient:**

- H315 Causes skin irritation.
- H317 May cause an allergic skin reaction.
- H319 Causes serious eye irritation.
- H332 Harmful if inhaled.
- H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- H335 May cause respiratory irritation.
- H351 Suspected of causing cancer.
- H373 May cause damage to organs through prolonged or repeated exposure.

**Reasons for revision**

- No Information

- No Information