SECTION 1: Identification

1.1. Identification

Product name: ExSil® 100 - HIGH ELONGATION 2-COMPONENT ELASTOMER MOLDING GRADE
Product code: EM2-EX100
Product form: Mixture
Physical state: Liquid
Synonyms: 2-COMPONENT SILICONE RTV; VINYL, METHYL MODIFIED SILICA IN POLY(DIMETHYLSILOXANE), MONOHYDRIDE, MONOVINYL TERMINATED; 2-part REPROGRAPHIC SILICONE ELASTOMER
Chemical family: SILICONE

1.2. Recommended use and restrictions on use

Recommended use: Chemical intermediate

1.3. Supplier

GELEST, INC.
11 East Steel Road
Morrisville, PA 19067
USA
T 215-547-1015 - F 215-547-2484 - (M-F): 8:00 AM - 5:30 PM EST
info@gelest.com - www.gelest.com

1.4. Emergency telephone number

Emergency number: CHEMTREC: 1-800-424-9300 (USA); +1 703-527-3887 (International)

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification
Not classified

2.2. GHS Label elements, including precautionary statements

GHS US labeling
No labeling applicable

2.3. Hazards not otherwise classified (HNOC)

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS-US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part A: Poly(dimethylsiloxane), monohydride, monovinyl terminated</td>
<td>(CAS No.) 1801976-54-4/104780-63-4</td>
<td>&gt; 65</td>
<td>Not classified</td>
</tr>
<tr>
<td>Part A: Vinyl, methyl modified silica</td>
<td>(CAS No.) 68988-89-6</td>
<td>&gt; 30</td>
<td>Not classified</td>
</tr>
<tr>
<td>Part B: Hydride Modified Silica Q Resin</td>
<td>(CAS No.) 68988-57-8</td>
<td>&lt; 2</td>
<td>Not classified</td>
</tr>
</tbody>
</table>

Full text of hazard classes and H-statements: see section 16

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general: Remove contaminated clothing and shoes. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). If possible show this sheet; if not available show packaging or label.

First-aid measures after inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If you feel unwell, seek medical advice.

First-aid measures after skin contact: Wash with plenty of soap and water. Get medical advice/attention.

First-aid measures after eye contact: Immediately flush eyes thoroughly with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention.

Print date: 04/10/2019
EN (English US)
SDS ID: EM2-EX100
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4.2. Most important symptoms and effects (acute and delayed)
Symptoms/effects after inhalation : No information available.
Symptoms/effects after skin contact : May cause mild skin irritation.
Symptoms/effects after eye contact : May cause mild eye irritation.
Symptoms/effects after ingestion : No information available.

4.3. Immediate medical attention and special treatment, if necessary
No additional information available

SECTION 5: Fire-fighting measures
5.1. Suitable (and unsuitable) extinguishing media
Unsuitable extinguishing media : None known.

5.2. Specific hazards arising from the chemical
Fire hazard : Irritating fumes and organic acid vapors may develop when material is exposed to elevated temperatures or open flame.

5.3. Special protective equipment and precautions for fire-fighters
Firefighting instructions : Exercise caution when fighting any chemical fire. Use water spray or fog for cooling exposed containers.
Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection. Avoid all eye and skin contact and do not breathe vapor and mist.

SECTION 6: Accidental release measures
6.1. Personal precautions, protective equipment and emergency procedures
6.1.1. For non-emergency personnel
Protective equipment : Wear protective equipment as described in Section 8.
Emergency procedures : Evacuate unnecessary personnel.

6.1.2. For emergency responders
Protective equipment : Do not attempt to take action without suitable protective equipment. Equip cleanup crew with proper protection. For further information refer to section 8: “Exposure controls/personal protection”.

6.2. Environmental precautions
Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up
For containment : Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.
Methods for cleaning up : Clean up any spills as soon as possible, using an absorbent material to collect it. Sweep or shovel spills into appropriate container for disposal.

6.4. Reference to other sections
See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage
7.1. Precautions for safe handling
Precautions for safe handling : Avoid all eye and skin contact and do not breathe vapor and mist. Use only outdoors or in a well-ventilated area.
Hygiene measures : Wash contaminated clothing before reuse. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

7.2. Conditions for safe storage, including any incompatibilities
Storage conditions : Keep container tightly closed.
Storage area : Store in a well-ventilated place. Store away from heat.

SECTION 8: Exposure controls/personal protection
8.1. Control parameters
No additional information available
8.2. Appropriate engineering controls

Appropriate engineering controls: Provide local exhaust or general room ventilation.

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment:

Avoid all unnecessary exposure. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

Hand protection:

Neoprene or nitrile rubber gloves

Eye protection:

Chemical goggles. Contact lenses should not be worn

Skin and body protection:

Wear suitable protective clothing

Respiratory protection:

Where exposure through inhalation may occur from use, respiratory protection equipment is recommended. NIOSH-certified organic vapor (black cartridge) respirator.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Liquid</td>
</tr>
<tr>
<td>Appearance</td>
<td>Clear liquid, Viscous.</td>
</tr>
<tr>
<td>Molecular mass</td>
<td>(mixture)</td>
</tr>
<tr>
<td>Color</td>
<td>Translucent</td>
</tr>
<tr>
<td>Odor</td>
<td>No data available</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>Refractive index</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative evaporation rate (butyl acetate=1)</td>
<td>No data available</td>
</tr>
<tr>
<td>Melting point</td>
<td>&lt; -60 °C</td>
</tr>
<tr>
<td>Freezing point</td>
<td>No data available</td>
</tr>
<tr>
<td>Boiling point</td>
<td>&gt; 205 °C</td>
</tr>
<tr>
<td>Flash point</td>
<td>&gt; 121 °C</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>&lt; 1 mm Hg @ 20°C</td>
</tr>
<tr>
<td>Relative vapor density at 20 °C</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative density</td>
<td>1.12</td>
</tr>
<tr>
<td>% Volatiles</td>
<td>&lt; 3 %</td>
</tr>
<tr>
<td>Solubility</td>
<td>Insoluble in water.</td>
</tr>
<tr>
<td>Log Pow</td>
<td>No data available</td>
</tr>
<tr>
<td>Log Kow</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>A:10,000-15,000 cSt; B:500-1500 cSt</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosion limits</td>
<td>No data available</td>
</tr>
</tbody>
</table>

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available
ExSil® 100 - HIGH ELONGATION 2-COMPONENT ELASTOMER MOLDING GRADE
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10.2. Chemical stability
Stable in sealed containers stored under a dry inert atmosphere.

10.3. Possibility of hazardous reactions
B-part is reactive with metal salts and precious metals.

10.4. Conditions to avoid
Heat. Open flame. Sparks.

10.5. Incompatible materials

10.6. Hazardous decomposition products

SECTION 11: Toxicological information

11.1. Information on toxicological effects
- Acute toxicity: Not classified
- Skin corrosion/irritation: Not classified
- Serious eye damage/irritation: Not classified
- Respiratory or skin sensitization: Not classified
- Germ cell mutagenicity: Not classified
- Carcinogenicity: Not classified
- Reproductive toxicity: Not classified
- Specific target organ toxicity – single exposure: Not classified
- Specific target organ toxicity – repeated exposure: Not classified
- Aspiration hazard: Not classified
- Symptoms/effects after inhalation: No information available.
- Symptoms/effects after skin contact: May cause mild skin irritation.
- Symptoms/effects after eye contact: May cause mild eye irritation.
- Symptoms/effects after ingestion: No information available.

SECTION 12: Ecological information

12.1. Toxicity
No additional information available

12.2. Persistence and degradability
No additional information available

12.3. Bioaccumulative potential
No additional information available

12.4. Mobility in soil
No additional information available

12.5. Other adverse effects
- Effect on the ozone layer: No additional information available

SECTION 13: Disposal considerations

13.1. Disposal methods
- Sewage disposal recommendations: Do not dispose of waste into sewer.
- Product/Packaging disposal recommendations: Incinerate. Dispose in a safe manner in accordance with local/national regulations.
- Ecology - waste materials: Avoid release to the environment.

SECTION 14: Transport information

14.1. UN number
Not regulated for transport.

14.2. UN proper shipping name
Not applicable
14.3. Additional information

Other information : No supplementary information available.

Transport by sea
No additional information available

Air transport
No additional information available

SECTION 15: Regulatory information

15.1. US Federal regulations

Part A: Vinyl, methyl modified silica (68988-89-6)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

Part B: Hydride Modified Silica Q Resin (68988-57-8)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

Part A: Poly(dimethylsiloxane), monohydride, monovinyl terminated (1801976-54-4/104780-63-4)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations

CANADA

Part A: Vinyl, methyl modified silica (68988-89-6)
Listed on the Canadian DSL (Domestic Substances List)

Part B: Hydride Modified Silica Q Resin (68988-57-8)
Listed on the Canadian DSL (Domestic Substances List)

Part A: Poly(dimethylsiloxane), monohydride, monovinyl terminated (1801976-54-4/104780-63-4)
Listed on the Canadian NDSL (Non-Domestic Substances List)

EU-Regulations
No additional information available

Part B: Hydride Modified Silica Q Resin (68988-57-8)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations

Part A: Vinyl, methyl modified silica (68988-89-6)
Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

Part B: Hydride Modified Silica Q Resin (68988-57-8)
Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENC (Existing & New Chemical Substances) inventory
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

Part A: Poly(dimethylsiloxane), monohydride, monovinyl terminated (1801976-54-4/104780-63-4)
Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

SECTION 16: Other information
ExSil® 100 - HIGH ELONGATION 2-COMPONENT ELASTOMER MOLDING GRADE
Safety Data Sheet

Abbreviations and acronyms:
- Abbreviations: ND: Not Determined, No Data; NA: Not Applicable; LD: Lethal Dose; LC: Lethal Concentration; ATE: Acute Toxicity Estimates; H: hour; °C unless otherwise stated; mm: millimeters Hg, torr; PEL: permissible exposure level; TWA: time weighted average; TLV: threshold limit value; TG: Test Guideline; NIOSH: National Institute for Occupational Safety and Health; IARC: International Agency for Research on Cancer; NTP: National Toxicology Program; HMIS: Hazardous Material Information System; CAS No.: Chemical Abstract Service Registration Number; EC No.: European Commission Registration Number; EC Index No.: European Commission Index Number; OECD: The Organisation for Economic Co-operation and Development; GHS: The Globally Harmonized System of Classification and Labelling; APF: Assigned Protection Factor.

Hazard Rating

Health: 1 Slight Hazard - Irritation or minor reversible injury possible
Flammability: 1 Slight Hazard - Materials that must be preheated before ignition will occur. Includes liquids, solids and semi solids having a flash point above 200 F. (Class IIIB)
Physical: 0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.

Prepared by safety and environmental affairs.

Date of issue: 01/19/2016
Revision date: 10/17/2018
Version: 1.1

SDS US (GHS HazCom 2012) - Custom
According to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

The information contained in this document has been gathered from reference materials and/or Gelest, Inc. test data and is to the best knowledge and belief of Gelest, Inc. accurate and reliable. Such information is offered solely for your consideration, investigation and verification. It is not suggested or guaranteed that the hazard precautions or procedures described are the only ones which exist. Gelest, Inc. makes no warranties, express or implied, with respect to the use of such information and assumes no responsibility therefore. Information on this safety data sheet is not intended to constitute a basis for product specifications.

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Gelest® ExSil® 100

High Elongation Elastomer – Molding Grade

Gelest® ExSil® 100 is a two-component ultra high elongation silicone elastomer with tear resistant properties.

Typical Properties

Note: The values below are typical and are not intended for use in preparing specifications. Please contact a Gelest representative when writing specifications.

<table>
<thead>
<tr>
<th>Cured Properties</th>
<th>Units</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elongation</td>
<td>%</td>
<td>5000</td>
</tr>
<tr>
<td><strong>Tensile Strength</strong></td>
<td>MPa</td>
<td>6-7</td>
</tr>
<tr>
<td><strong>Tear Strength</strong></td>
<td>kN/m</td>
<td>42</td>
</tr>
<tr>
<td>Elongation @ Tear Failure</td>
<td>%</td>
<td>2000</td>
</tr>
<tr>
<td>Durometer</td>
<td>Shore A</td>
<td>15</td>
</tr>
<tr>
<td>Specific Gravity (Part A)</td>
<td>g/mL</td>
<td>1.12</td>
</tr>
<tr>
<td>Refractive Index ($n_D^{25}$)</td>
<td></td>
<td>1.41</td>
</tr>
<tr>
<td>Volatiles (4 hours/150°C)</td>
<td>wt%</td>
<td>≤ 0.1</td>
</tr>
<tr>
<td>Critical Surface Tension</td>
<td>mN/m</td>
<td>23 - 24</td>
</tr>
<tr>
<td>Contact Angle, Water</td>
<td>°</td>
<td>105 - 100</td>
</tr>
<tr>
<td>Volume Resistivity</td>
<td>ohm*cm</td>
<td>2.90E+14</td>
</tr>
</tbody>
</table>

Features & Benefits

- Self-sealing
- High elongation
- High recovery
- Low extractables
- High tear strength
- Flowable and moldable
- High oxygen permeability
- Long-term thermal stability

Applications

- Diaphragms
- Microfluidics
- Vibration damping
- High performance seals
- Septa with easy penetration and good resealability
- Optical and electrical interconnects
Processing & Fabrication:
Thoroughly mix Part A and Part B in a 100:1 ratio. Try to avoid introducing bubbles. For critical applications, de-air mix under vacuum. The pot-life is 24 hours at 25°C. Avoid entrapping air during transfer and casting. Cure at 100°C for 8 hours or at room temperature for 72 hours. ExSil® 100 can be self-bonded by exposure to oxygen plasma and pressing surfaces together in a dry atmosphere.

<table>
<thead>
<tr>
<th>ExSil®100 Part</th>
<th>Viscosity (cSt)</th>
<th>Silicone Elastomer</th>
<th>Extractables (wt%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base (Part A)</td>
<td>12,000 - 14,000</td>
<td>Resin Reinforced Silicone</td>
<td>4.2</td>
</tr>
<tr>
<td>Activator (Part B)</td>
<td>800 - 1,000</td>
<td>Silicone - 100°C Strip</td>
<td>3.1</td>
</tr>
<tr>
<td>Activated Mix</td>
<td>12,000 - 14,000</td>
<td>Gelest® ExSil® 100</td>
<td>0.2</td>
</tr>
</tbody>
</table>