Liquid Silicone Rubber for Moldmaking
Hassle-free processing with Shin-Etsu
Easy Transfer and Releasable Molds

Shin-Etsu’s liquid silicone rubber for moldmaking is an excellent material that can be used to make replicas with a wide variety of different materials including polyester and epoxy resins, urethane foam, wax, gypsum and low-temperature composite. This moldmaking liquid silicone rubber can be counted on to precisely reproduce the shape of the original model.

Due to the ease of casting with liquid silicone rubber, it is used widely for producing replicas in industrial applications or even just for fun.

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Shin-Etsu moldmaking liquid silicone rubber products have the following overall characteristics.

**1. Workability**
Make silicone rubber molds easily and quickly by mixing the base compound with a curing agent and then pouring it into a mold. The workable time and the cure time can both be adjusted as necessary.

**2. Ease of mold release**
Mold releasing agents such as soapy water or wax are unnecessary because molds made of liquid silicone rubber release easily from the master or cast parts on their own.

**3. Dimensional stability**
Molds made with liquid silicone rubber exhibit very little shrinkage and superior dimensional stability.

**4. Flowability**
Liquid silicone rubber can faithfully reproduce the tiniest of details in the master such as fingerprints and wood grain because of its superior flowability.

**5. Heat and chemical resistance**
Moldmaking liquid silicone rubber exhibits excellent resistance to both heat and chemicals.

**6. Deep section curability**
Moldmaking liquid silicone rubber cures uniformly throughout the mold, irrespective of thickness.

**7. Non-exothermic**
Moldmaking liquid silicone rubber cures at room temperature. In addition, since no heat is generated during the curing process, the liquid silicone rubber does not adversely affect the master.
## Typical examples of moldmaking

<table>
<thead>
<tr>
<th>Methods</th>
<th>Processes</th>
<th>Applications</th>
</tr>
</thead>
</table>
| **General molds** | A silicone rubber mold is created from a master and then material such as liquid resin or gypsum is poured into the cured mold to make a replica. | ● Pouring process  
A mold is made by pouring the liquid silicone rubber directly onto the master. This process offers the advantages of having few steps and requiring a minimal amount of time.  
|                | ● Lamination process (skin molding method)  
A mold is made by laminating the silicone rubber onto the master to create a skin of an even thickness and then it is reinforced with a material such as gypsum or resin. The process offers the advantages of requiring a minimal amount of silicone rubber and yielding a lightweight mold. | Fine handicrafts, furniture parts, ornaments and welder moldings |
| **Inverted molds** | A silicone rubber mold is created from a master into which liquid resin, paraffin or gypsum is poured to make a replica of the master. This method is used to create molds which are then used to create subsequent molds as part of the inversion process. These subsequent molds are used to create simple metal molds and sand molds. | ● Inverted molds used in electroforming  
Master → silicone rubber mold → resin mold → electroforming → electrocasting mold  
|                | ● Lost wax mold  
Master → silicone rubber mold → wax mold → sand mold → casting. | Automotive parts and toys |
| **High precision molds** | A high-precision silicone rubber mold is created using a vacuum casting device. The mold is placed into a vacuum tank and a liquid resin such as urethane or epoxy is poured into the crevices of the mold under a vacuum to create a precise resin mold that produces defect-free parts. | ● Vacuum pouring process  
Master → pour liquid silicone rubber inside a vacuum tank → after the curing is finished, the rubber is cut open using a surgical scalpel to create a split mold → the split mold is placed again in the vacuum tank and a liquid resin is poured into the mold under a vacuum → the resin is cured in a thermostatic tank → the cast part is removed. The vacuum casting process is the optimal method to use when high-precision replicas are required. It offers the advantage of cutting the number of days and the cost involved in creating small lot prototypes.  
|                | ● Inverted molds made from low-temperature composite  
Master → silicone rubber mold → heat-resistant gypsum mold → injection mold. | Precision cast parts and cast ornaments such as golf club heads |
|                | ● Prototype models of small-lot resin moldings, automotive parts, household electrical appliances and office equipment | Food samples and toys |
Shin-Etsu liquid silicone rubber can be divided into two curing types based on the reaction used to cure the silicone. Condensation-cure materials utilize atmospheric moisture and release alcohol during vulcanization. Addition-cure materials rely on heat to cure and produce no byproducts. These two types of materials have different characteristics and should be selected depending on the requirements of the application.

### General molds (Condensation-cure products)

**KE-12, KE-14 and KE-17**

These products meet general use mold making requirements. All are characterized by low viscosity and superior workability. CAT-RM is a fast curing agent that can be used for making thick molds under room temperature curing conditions. CAT-RT is a slow curing agent that cures from the surface and cannot be used in deep section or thick molds. However, KE-17 cured with CAT-RT prevents uneven coloration of dye-coated replicas. Polyester, urethane and epoxy resins are poured into molds made with these products to make buttons, accessories, dolls and art objects. Polyvinyl chloride sol is used to make food samples, while wax is used in the making of ornamental candles or lost-wax molds. These products can be used in a wide range of applications incorporating low-temperature composite inverted molds using gypsum.

### Putty-like molds (Addition-cure products)

**KE-1222-A/B**

KE-1222-A/B is a putty-like addition-cure silicone rubber. You can achieve curing in a short period of time (5 to 10 minutes) by mixing equal amounts of A and B. The two components should be quickly mixed together by hand and pressed against the master to make the mold.
Welder molds (Condensation-cure products)

● KE-24 and KE-26
These products are used as moldmaking molds in welder molding of synthetic leathers using polyvinyl chloride sheeting or urethane sheeting. KE-24 and KE-26 are high viscosity liquids that cure into a light blue silicone rubber. These three-component products cure with the addition of curing agent CAT-24 and CAT-RM in combination. All of these products can be used to create a mold which is hard enough to maintain its shape when pressure and heat are applied to the mold.

High strength molds (Condensation-cure products)

● KE-1414, KE-1415, KE-1416 and KE-1417
These products all have the high tensile strength, high tear strength and elongation characteristics of silicone rubber. KE-1414, KE-1415 and KE-1416 cure with the addition of 5% of the CX-32-1714 curing agent, and KE-1417 with the addition of 5% of the CAT-1417-30 or CAT-1417-40 curing agents. Curing time can be reduced by increasing the curing agent to 7%.
These condensation-cure products are highly durable in regards to polyester and foamed/non-foamed rigid urethane resins. They are appropriate for use in the moldmaking of intricate and detailed objects such as furniture, large handicrafts and fiber reinforced plastic (FRP) items. KE-1417 has enhanced durability to resist urethane resins. Due to the high viscosity of these materials, de-air process is necessary to ensure defect-free parts.
For complex castings (High strength, addition-cure products)

**KE-1310ST, KE-1314-2 and KE-1310T**

All three are addition-cure products that form translucent rubbers with high strength, high tear strength and high elongation. Add curing agents and mix to cure: KE-1310ST cures with addition of 10% CAT-1310S or CAT-1310L; KE-1314-2 cures with addition of CAT-1314S or CAT-1314L.**

KE-1314-2 is an oil-bleed type, which facilitates easier ejection of castings and greater mold durability. Like KE-1310ST, KE-1310T is an addition-cure product which cures to form translucent rubber with high strength, high tear strength and high elongation. Use curing agent CX-32-1649 for enhanced durability, especially when working with epoxy resin castings.

*For these two products, other curing agents are available in addition to the standard curing agents listed. Please contact our Sales Department for details.

KE-1310ST, KE-1314-2 and KE-1310T are all translucent, so they can be used to create split molds that allow you to see the master through the mold. In their uncured state, all three are high viscosity, and should be deaerated using a vacuum deaerator before pouring the liquid silicone rubber over the master. Addition-cure liquid silicone rubbers may not cure properly if they come in contact with certain substances that may be present in masters or mold frames, or with certain substances in the air. (For details, see “Curing inhibition with addition-cure products” on p.20.) Shin-Etsu offers curing agents designed to combat faulty curing. Contact our Sales Department for details.

**KE-1603-A/B and KE-1606**

KE-1603-A/B and KE-1606 are high transparency products for moldmaking.
### General Characteristics

**Condensation-cure type**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>KE-12</th>
<th>KE-14</th>
<th>KE-17</th>
<th>KE-24</th>
<th>KE-26</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Before curing</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appearance</td>
<td>White</td>
<td>Grayish white</td>
<td>Grayish white</td>
<td>Grayish white</td>
<td>Grayish white</td>
</tr>
<tr>
<td>Viscosity Pa·s</td>
<td>10</td>
<td>15</td>
<td>13</td>
<td>75</td>
<td>60</td>
</tr>
<tr>
<td>Curing agent</td>
<td>CAT-RM 0.5%</td>
<td>CLC-229 5.0%</td>
<td>CAT-RM 0.5%</td>
<td>CAT-RM 0.5% and CAT-24 4.5%</td>
<td>CAT-RM 1.0% and CAT-24 4.5%</td>
</tr>
<tr>
<td>Standard added amount</td>
<td>30</td>
<td>30</td>
<td>60</td>
<td>180</td>
<td>120</td>
</tr>
<tr>
<td>Pot life workable time at 23°C min⁻¹</td>
<td>23 x 8</td>
<td>23 x 24</td>
<td>23 x 24</td>
<td>23 x 24</td>
<td>23 x 24</td>
</tr>
<tr>
<td>Standard curing time</td>
<td>23 x 72</td>
<td>23 x 72</td>
<td>23 x 72</td>
<td>23 x 72</td>
<td>23 x 72</td>
</tr>
<tr>
<td>Curing inhibition</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

| **After curing** |       |       |       |       |       |
| Time to make test piece °Cvh | 23 x 72 | 23 x 72 | 23 x 72 | 23 x 72 | 23 x 72 |
| Appearance | White | Grayish white | Grayish white | Grayish white | Grayish white |
| Density 23°C g/cm³ | 1.28 | 1.16 | 1.17 | 1.32 | 1.40 |
| Hardness Durometer A | 40 | 30 | 50 | 83 | 88 |
| Tensile strength MPa | 2.5 | 3.5 | 2.0 | 6.0 | 7.5 |
| Elongation at break % | 170 | 280 | 140 | 65 | 70 |
| Tear strength kN/m | 3 | 3 | 3 | 3 | 3 |
| Linear shrinkage %⁺ | 0.5 | 0.5 | 0.3 | 1.0 | 1.0 |
| Special characteristics | Easy to work with | Easy to work with | Easy to work with | High hardness | High hardness |

*1 The workable time of liquid silicone rubbers indicates how long the material will remain fluid at 23 °C. However, work should be carried out in the shortest possible time because viscosity increases with time.

*2 The curing time of condensation-cure type liquid silicone rubbers will vary depending on temperature and humidity. It also varies depending on the size of the cured item.

Measurement conditions (JIS K 6249) (Not specified values)
The curing time of condensation-cure type liquid silicone rubbers will vary depending on temperature and humidity. It also varies depending on the size of the cured item.

The workable time of liquid silicone rubbers indicates how long the material will remain fluid at 23 °C. However, work should be carried out in the shortest possible time because viscosity increases with time.

### Table:

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Appearance</strong></td>
<td>Grayish white</td>
<td>Translucent</td>
<td>Grayish white</td>
<td>Grayish white</td>
<td>Grayish white</td>
<td>Grayish white</td>
<td>Translucent</td>
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<tr>
<td><strong>Viscosity Pa.s</strong></td>
<td>52</td>
<td>25</td>
<td>25</td>
<td>45</td>
<td>35</td>
<td>45</td>
<td>20</td>
</tr>
<tr>
<td><strong>Pot life workable time at 23°C min</strong></td>
<td>35</td>
<td>90</td>
<td>40</td>
<td>40</td>
<td>90</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td><strong>Standard curing time °C×h</strong></td>
<td>23×24</td>
<td>23×24</td>
<td>23×24</td>
<td>23×24</td>
<td>23×24</td>
<td>23×24</td>
<td>23×24</td>
</tr>
<tr>
<td><strong>Curing inhibition</strong></td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td><strong>Time to make test piece °C×h</strong></td>
<td>23×72</td>
<td>23×72</td>
<td>23×72</td>
<td>23×72</td>
<td>23×72</td>
<td>23×72</td>
<td>23×72</td>
</tr>
<tr>
<td><strong>Appearance</strong></td>
<td>Grayish white</td>
<td>Translucent</td>
<td>Grayish white</td>
<td>Grayish white</td>
<td>Grayish white</td>
<td>Light blue</td>
<td>Reddish brown</td>
</tr>
<tr>
<td><strong>Density 23°C g/cm³</strong></td>
<td>1.16</td>
<td>1.07</td>
<td>1.14</td>
<td>1.19</td>
<td>1.19</td>
<td>1.13</td>
<td>1.13</td>
</tr>
<tr>
<td><strong>Hardness Durometer A</strong></td>
<td>36</td>
<td>35</td>
<td>30</td>
<td>20</td>
<td>15</td>
<td>30</td>
<td>40</td>
</tr>
<tr>
<td><strong>Tensile strength MPa</strong></td>
<td>4.3</td>
<td>4.8</td>
<td>4.3</td>
<td>4.2</td>
<td>3.0</td>
<td>3.6</td>
<td>5.0</td>
</tr>
<tr>
<td><strong>Elongation at break %</strong></td>
<td>260</td>
<td>230</td>
<td>300</td>
<td>400</td>
<td>450</td>
<td>300</td>
<td>260</td>
</tr>
<tr>
<td><strong>Tear strength kN/m</strong></td>
<td>13</td>
<td>17</td>
<td>15</td>
<td>18</td>
<td>16</td>
<td>23</td>
<td>25</td>
</tr>
<tr>
<td><strong>Linear shrinkage %</strong></td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td><strong>Special characteristics</strong></td>
<td>Viscosity and cure speed can be adjusted with curing agent.³</td>
<td>Translucent</td>
<td>Curing agent for skin-molding is available.⁴</td>
<td>Hardness 20</td>
<td>Hardness 15</td>
<td>Improved urethane resistance Hardness 30</td>
<td>Improved urethane resistance Hardness 40</td>
</tr>
</tbody>
</table>

**Measurement conditions (JIS K 6249)**

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¹ The workable time of liquid silicone rubbers indicates how long the material will remain fluid at 23°C. However, work should be carried out in the shortest possible time because viscosity increases with time.

² The curing time of condensation-cure type liquid silicone rubbers will vary depending on temperature and humidity. It also varies depending on the size of the cured item.

³ For X-32-2256, we offer a special curing agent used to adjust viscosity and cure speed.

⁴ For skin-molding with KE-1414, please use curing agent CX-32-2077 (Standard added amount : 5%).
### General Characteristics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>KE-1300T</th>
<th>KE-1310ST</th>
<th>KE-1310T</th>
<th>KE-1314-2</th>
<th>KE-1316</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Appearance</strong></td>
<td>Translucent</td>
<td>Translucent</td>
<td>Translucent</td>
<td>Translucent</td>
<td>Translucent</td>
</tr>
<tr>
<td><strong>Viscosity Pa·s</strong></td>
<td>95</td>
<td>75</td>
<td>70</td>
<td>75</td>
<td>35</td>
</tr>
<tr>
<td><strong>Curing agent</strong></td>
<td>CAT-1300 10.0%</td>
<td>CAT-1310S 10.0%</td>
<td>CAT-1310L 10.0%</td>
<td>CX-32-1649 10.0%</td>
<td>CAT-1314S 10.0%</td>
</tr>
<tr>
<td><strong>Pot life workable time</strong></td>
<td>23×24</td>
<td>23×24</td>
<td>–</td>
<td>23×24</td>
<td>23×24</td>
</tr>
<tr>
<td><strong>Finger touch method</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Standard curing time</strong></td>
<td>60×2</td>
<td>60×2</td>
<td>60×4</td>
<td>60×2</td>
<td>60×4</td>
</tr>
<tr>
<td><strong>Time to make test piece</strong></td>
<td>60×2</td>
<td>60×2</td>
<td>60×4</td>
<td>60×2</td>
<td>60×4</td>
</tr>
<tr>
<td><strong>Appearance</strong></td>
<td>Translucent</td>
<td>Translucent</td>
<td>Translucent</td>
<td>Translucent</td>
<td>Translucent</td>
</tr>
<tr>
<td><strong>Density 23°C g/cm³</strong></td>
<td>1.09</td>
<td>1.08</td>
<td>1.08</td>
<td>1.08</td>
<td>1.08</td>
</tr>
<tr>
<td><strong>Hardness Durometer A</strong></td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td><strong>Elongation at break %</strong></td>
<td>5.0</td>
<td>5.5</td>
<td>5.7</td>
<td>5.5</td>
<td>5.0</td>
</tr>
<tr>
<td><strong>Tear strength kN/m</strong></td>
<td>400</td>
<td>350</td>
<td>320</td>
<td>350</td>
<td>350</td>
</tr>
<tr>
<td><strong>Linear shrinkage %</strong></td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td><strong>Special characteristics</strong></td>
<td>Improved urethane resistance</td>
<td>Improved epoxy resistance</td>
<td>Oil bleed</td>
<td>Low viscosity, low hardness</td>
<td></td>
</tr>
</tbody>
</table>

**Measurement conditions (JIS K 6249)**

*1 The workable time of liquid silicone rubbers indicates how long the material will remain fluid at 23 °C. However, work should be carried out in the shortest possible time because viscosity increases with time.

*2 Standard curing time will vary depending on the size of the cured item.

*3 For KE-1310ST and KE-1314-2, we offer a special curing agent used to adjust cure speed and hardness. Please contact our sales department.

*4 For KE-1316, we offer a special curing agent used to adjust hardness and cure speed and impart adhesiveness. Please contact our sales department.
### Addition-cure type

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td><strong>Appearance</strong></td>
<td>Grayish white</td>
<td>Colorless transparent</td>
<td>Colorless transparent</td>
<td>A:Blue B:Deep flesh tone</td>
<td>Grayish white</td>
<td>Translucent</td>
</tr>
<tr>
<td><strong>Viscosity Pa</strong></td>
<td>170</td>
<td>A:85/B:50</td>
<td>60</td>
<td>Putty</td>
<td>35</td>
<td>4</td>
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<tr>
<td><strong>Curing agent Standard added amount</strong></td>
<td>CAT-1600</td>
<td>10.0%</td>
<td>A:B=1:1</td>
<td>CAT-RG</td>
<td>10.0%</td>
<td>A:B=1:1</td>
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<tr>
<td><strong>Pot life workable time</strong> Finger touch method at 23℃ min</td>
<td>150</td>
<td>90</td>
<td>200</td>
<td>5</td>
<td>150</td>
<td>240</td>
</tr>
<tr>
<td><strong>Standard curing time</strong> °C×h</td>
<td>23×24</td>
<td>23×24</td>
<td>23×24</td>
<td>–</td>
<td>23×24</td>
<td>– °6</td>
</tr>
<tr>
<td><strong>Curing inhibition</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### After curing

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Appearance</strong></td>
<td>Blue</td>
<td>Colorless transparent</td>
<td>Colorless transparent</td>
<td>Dark brown</td>
<td>Grayish white</td>
<td>Translucent</td>
</tr>
<tr>
<td><strong>Density 23℃ g/cm</strong>²</td>
<td>1.27</td>
<td>1.03</td>
<td>1.03</td>
<td>1.72</td>
<td>1.20</td>
<td>1.04</td>
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<tr>
<td><strong>Hardness Durometer A</strong></td>
<td>45</td>
<td>28</td>
<td>28</td>
<td>80</td>
<td>30*4 (Asker C)</td>
<td>8*5 (Asker C)</td>
</tr>
<tr>
<td><strong>Tensile strength MPa</strong></td>
<td>6.5</td>
<td>3.5</td>
<td>4.3</td>
<td>–</td>
<td>3.4</td>
<td>1.1</td>
</tr>
<tr>
<td><strong>Elongation at break %</strong></td>
<td>200</td>
<td>450</td>
<td>350</td>
<td>–</td>
<td>750</td>
<td>800</td>
</tr>
<tr>
<td><strong>Tear strength kN/m</strong></td>
<td>15</td>
<td>12</td>
<td>12</td>
<td>–</td>
<td>–</td>
<td>10</td>
</tr>
<tr>
<td><strong>Linear shrinkage %</strong></td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td><strong>Special characteristics</strong></td>
<td>High hardness*³</td>
<td>High transparency Mix ratio 1:1</td>
<td>High transparency Mix ratio 10:1</td>
<td>Rapid cure</td>
<td>Putty type</td>
<td>For printing on curved surfaces</td>
</tr>
</tbody>
</table>

Measurement conditions (JIS K 6249)

*1 The workable time of liquid silicone rubbers indicates how long the material will remain fluid at 23 ℃. However, work should be carried out in the shortest possible time because viscosity increases with time.

*2 Standard curing time will vary depending on the size of the cured item.

*3 KE-1600: Hardness can be increased to 70 by performing an aging process (150 ℃×30 min) after the standard cure time elapses.

*4 Hardness measured by Asker C hardness tester.

*5 For KE-1308, we offer a special curing agent used to adjust hardness. Please contact to our sales department.

*6 The hardness of KE-1308 is affected by cure temperature. To achieve the prescribed hardness, we recommend 120 °C×30 min.
Making a single side silicone rubber mold using the pouring process

More liquid silicone rubber is used with the pouring process in comparison with the lamination process, but it is less involved and simplifies the moldmaking process. This process can be used to make a wide range of items such as buttons, broaches, handrails and ornamentation.

1. Place the master within a frame and secure it to the bottom.
2. Weigh out the required amounts of base compound and curing agent.
3. Mix the base compound and curing agent together.
4. Extract remaining trapped air with a vacuum chamber.
5. Pour in the liquid silicone rubber until the master is completely covered and carry out secondary de-airing to eliminate all bubbles from the liquid silicone rubber. If you do not have a vacuum chamber, use a brush to spread the liquid silicone rubber uniformly over the surface of the master first until all air pockets on the surface have been removed and then pour in the rest of the liquid silicone rubber.
6. Once the rubber cures completely, pull the master from the frame. The silicone mold is now complete.
7. Pour the casting resin into the silicone rubber mold and let it cure. You can lengthen the life of the silicone rubber mold if you apply a releasing agent as necessary.

Making a split mold using the lamination process

This method is more labor intensive than the pouring method, but it requires less liquid silicone rubber. In addition, you can make lightweight silicone rubber molds containing a reinforcing material. This moldmaking method can be used when you want to make large three-dimensional objects or objects with intricate shapes.

Exactly how many pieces the mold should be split into depends on the shape of the master.

Secure the master. Mix the base compound and curing agent together.
Depressurize and carry out de-airing as necessary.
Use a brush to apply two to three layers of liquid silicone rubber. Since the liquid silicone rubber tends to collect in recesses and thin out over protrusions, the work should be performed so that the curing time is set at 10 to 20 minutes from the time of application. It is also best to wait until the applied liquid silicone rubber has hardened enough so that it has lost its flowability before applying another coat.

Once the liquid silicone rubber has hardened but is still slightly sticky, apply reinforcing material such as glass cloth or gauze, and then apply an additional two to three coats of liquid silicone rubber.

Once the liquid silicone rubber has completely hardened, apply a backing material such as gypsum or polyester to enhance the strength of the mold.
Once the backing material has completely cured, remove the master.
Pour a casting resin into the silicone rubber mold and allow it to cure.
Once the replica resin has been completely cured, remove it from the mold and the replica is finished.
Making a single side silicone rubber mold using the pouring process

More liquid silicone rubber is used with the pouring process in comparison with the lamination process, but it is less involved and simplifies the moldmaking process. This process can be used to make a wide range of items such as buttons, broaches, handrails and ornamentation.

Making a Silicone Rubber Mold

1. Secure the master. Mix the base compound and curing agent together. Depressurize and carry out de-airing as necessary.

2. Use a brush to apply two to three layers of liquid silicone rubber. Since the liquid silicone rubber tends to collect in recesses and thin out over protrusions, the work should be performed so that the curing time is set at 10 to 20 minutes from the time of application. It is also best to wait until the applied liquid silicone rubber has hardened enough so that it has lost its flowability before applying another coat.

3. Once the liquid silicone rubber has hardened but is still slightly sticky, apply reinforcing material such as glass cloth or gauze, and then apply an additional two to three coats of liquid silicone rubber.

4. Once the liquid silicone rubber has completely hardened, apply a backing material such as gypsum or polyester to enhance the strength of the mold.

5. Once the backing material has completely cured, remove the master. Pour a casting resin into the silicone rubber mold and allow it to cure.

6. Once the replica resin has been completely cured, remove it from the mold and the replica is finished.

Making a split mold using the lamination process

This method is more labor intensive than the pouring method, but it requires less liquid silicone rubber. In addition, you can make lightweight silicone rubber molds containing a reinforcing material. This moldmaking method can be used when you want to make large three-dimensional objects or objects with intricate shapes. Exactly how many pieces the mold should be split into depends on the shape of the master.
Making a silicone rubber mold using the vacuum pouring method

This method can be used to make highly precise molds because work is performed in a vacuum. The vacuum casting method is a good choice when you are making anything from detailed and intricately shaped objects to large parts and challenging split molds.

1. Affix the gate, which serves as the opening for pouring in the casting resin, to the master.

2. Build a frame with the gate oriented downward.

3. Thoroughly mix the base compound with a curing agent while depressurizing and de-airing.

4. Continue de-airing under the depressurized conditions.

5. Under depressurized conditions, pour in liquid silicone rubber until the master is completely covered.

6. Depressurize and defoam, and then allow the mold to stand for the specified time. If you are using an addition-cure material, then the curing time can be shortened by applying heat.

7. Once the curing is finished, remove the frame. Cut open the silicone rubber mold and remove the master.

8. Spray the silicone rubber mold with a releasing agent as necessary.
Making a Silicone Rubber Mold

Making a silicone rubber mold using the vacuum pouring method. This method can be used to make highly precise molds because work is performed in a vacuum. The vacuum casting method is a good choice when you are making anything from detailed and intricately shaped objects to large parts and challenging split molds.

Affix the gate, which serves as the opening for pouring in the casting resin, to the master.

Build a frame with the gate oriented downward.

Thoroughly mix the base compound with a curing agent while depressurizing and de-airing.

Continue de-airing under the depressurized conditions.

Under depressurized conditions, pour in liquid silicone rubber until the master is completely covered.

Depressurize and defoam, and then allow the mold to stand for the specified time. If you are using an addition-cure material, then the curing time can be shortened by applying heat.

Once the curing is finished, remove the frame. Cut open the silicone rubber mold and remove the master.

Spray the silicone rubber mold with a releasing agent as necessary.

Assemble the mold, place boards on both sides and fix them securely into place using rubber rings and clamps and place a plastic stopper in the gate.

Depressurize and defoam the specified amount of casting resin.

Mix the defoamed casting resin.

Pour in the casting resin which has been mixed via the plastic stopper under a depressurized state.

Once atmospheric pressure has been restored, the resin will flow into the mold. Cure the resin under the specified conditions (temperature and humidity).

Split the cured mold, and remove the poured item. Cut off the gate and file down the area.
Moldmaking liquid silicone rubber can be classified according to its curing method as either a condensation-cure product or an addition-cure product. Condensation-cure products and the addition-cure products differ in many ways. (Refer to Table 1 for information on how to correctly handle each type.)

Table 1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Condensation-cure type</th>
<th>Addition-cure type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curing speed</td>
<td>Increasing the amount of the curing agent will accelerate curing, while decreasing the amount will slow it down. Since condensation-cure products are used at room temperature, results can be affected by atmospheric temperature and humidity.</td>
<td>The specific amount of a curing agent cannot be changed. Curing starts at room temperature, but the curing can be accelerated by heating to a temperature between 40°C to 150°C.</td>
</tr>
<tr>
<td>Shrinkage</td>
<td>Slightly higher than addition-cure products</td>
<td>Minimal</td>
</tr>
<tr>
<td>Curing inhibition</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Primer</td>
<td>PRIMER-S or PRIMER-T</td>
<td>PRIMER-NO.4</td>
</tr>
<tr>
<td>Diluent</td>
<td>RTV-THINNER</td>
<td>RTV-THINNER</td>
</tr>
<tr>
<td>Cure accelerator</td>
<td>CAT-RS</td>
<td>X-93-405</td>
</tr>
<tr>
<td>Cure retardant</td>
<td>WETTER-NO.5</td>
<td>SEIGYOZAI-NO.6-10</td>
</tr>
</tbody>
</table>

KE-1310ST: effects of the addition of a curing accelerator or curing retardant

<table>
<thead>
<tr>
<th>Composition</th>
<th>KE-1310ST (CAT-1310S) 100(10) 100(10)</th>
<th>KE-1310ST (CAT-1310L) 100(10) 100(10) 100(10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-93-405 (accelerator)</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>SEIGYOZAI-NO.6-10</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Workable time at 23°C min</td>
<td>50</td>
<td>130</td>
</tr>
<tr>
<td>Time until set hardness is achieved: measured at a thickness of 10 mm</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Curing time at 60°C h</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 2 Curing temperature and curing time of KE1300 (addition-cure type)

<table>
<thead>
<tr>
<th>Composition</th>
<th>KE-1310ST (CAT-1310L) 100(10) 100(10) 100(10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-93-405 (accelerator)</td>
<td>1.0</td>
</tr>
<tr>
<td>SEIGYOZAI-NO.6-10</td>
<td>–</td>
</tr>
<tr>
<td>Workable time at 23°C min</td>
<td>140</td>
</tr>
<tr>
<td>Time until set hardness is achieved: measured at a thickness of 10 mm</td>
<td>3</td>
</tr>
<tr>
<td>Curing time at 60°C h</td>
<td>3</td>
</tr>
</tbody>
</table>

KE-1310ST (CAT-1310L): properties

<table>
<thead>
<tr>
<th>Curing conditions: 60°Cx6h</th>
<th>KE-1310ST (CAT-1310L) 100(10) 100(10) 100(10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardness Durometer A</td>
<td>41</td>
</tr>
<tr>
<td>Elongation at break %</td>
<td>350</td>
</tr>
<tr>
<td>Tensile strength MPa</td>
<td>6.0</td>
</tr>
<tr>
<td>Tear strength kN/m</td>
<td>25</td>
</tr>
</tbody>
</table>

KE-1310ST (CAT-1310L): properties

<table>
<thead>
<tr>
<th>Curing conditions: 60°Cx6h</th>
<th>KE-1310ST (CAT-1310L) 100(10) 100(10) 100(10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardness Durometer A</td>
<td>41</td>
</tr>
<tr>
<td>Elongation at break %</td>
<td>350</td>
</tr>
<tr>
<td>Tensile strength MPa</td>
<td>6.0</td>
</tr>
<tr>
<td>Tear strength kN/m</td>
<td>25</td>
</tr>
</tbody>
</table>

(Not specified values)
Condensation-cure products cure at room temperature and become an elastomer in 8 to 24 hours. You can accelerate curing by increasing the amount of curing agent. However, there is a limit to how much the curing agent can be increased or decreased (see Figures 1 and 2). The curing speed is faster at higher temperatures and higher humidity, while it is slower at lower temperatures and lower humidity (see Figure 3). If you want to accelerate curing by heating, do it at temperatures of 50°C or lower.

Addition-cure products cure at room temperature in the same way as condensation-cure products, but curing will proceed quickly if the material is heated to between 40°C to 150°C (see Table 2). However, silicone rubber molds expand when heated and contract when cooled. To enhance the accuracy of the dimensions, make sure to warm the rubber mold to the same temperature used during curing before you pour the resin into the silicone rubber mold. In addition, changing the amount of curing agent will not change the curing speed but it will adversely affect physical properties after curing is finished. Thus the measurement of the curing agent must be done as accurately as possible.

### Table 1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Condensation-cure Products</th>
<th>Addition-cure Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pot life</td>
<td>350</td>
<td>130</td>
</tr>
<tr>
<td>Workable time</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Curing speed</td>
<td>6.0</td>
<td>40</td>
</tr>
<tr>
<td>Shrinkage</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Diluent</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>Primer</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Curing time at 60°C</td>
<td>2 h</td>
<td>1 h</td>
</tr>
<tr>
<td>Time until set hardness is achieved: measured at a thickness of 10 mm</td>
<td>41 h</td>
<td>30 min</td>
</tr>
<tr>
<td>Workable time at 23°C</td>
<td>2 h</td>
<td>10 min</td>
</tr>
</tbody>
</table>

### Table 2

<table>
<thead>
<tr>
<th>Curing temperature °C</th>
<th>Curing time</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>Within 24 h</td>
</tr>
<tr>
<td>50</td>
<td>2 h</td>
</tr>
<tr>
<td>70</td>
<td>1 h</td>
</tr>
<tr>
<td>100</td>
<td>30 min</td>
</tr>
<tr>
<td>150</td>
<td>10 min</td>
</tr>
</tbody>
</table>

### Figures

- **Figure 1**: Amount of curing agent added and curing speed with KE-12 (condensation-cure type) at 20°C.
- **Figure 2**: Amount of curing agent added and curing speed with KE-1417 (condensation-cure type) at 23°C.
- **Figure 3**: Temperature and curing speed of KE-1417.
Additives used to control curing speed

Cure accelerators and retardants are available that control the workable time or curing time depending on the needs of your specific project. The characteristics of different accelerators and retardants are shown in Table 3. Use these agents only after carefully checking their handling precautions.

Table 3

<table>
<thead>
<tr>
<th>Additives</th>
<th>Characteristics</th>
<th>Applicable products</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAT-RS</td>
<td>Curing accelerator for use only with condensation-cure products</td>
<td>KE-12, KE-17, KE-24, KE-1414, KE-1415, KE-1416</td>
</tr>
<tr>
<td>X-93-405</td>
<td>Curing accelerator for use only with addition-cure products</td>
<td>All addition-cure products</td>
</tr>
<tr>
<td>WETTER-NO.5</td>
<td>Curing retardant for use only with condensation-cure products</td>
<td>All condensation-cure products</td>
</tr>
<tr>
<td>SEIGYOZAI-NO.6-10</td>
<td>Curing retardant for use only with addition-cure products</td>
<td>All addition-cure products</td>
</tr>
</tbody>
</table>

Handling precautions

1. The additives which are used with the condensation-cure products and the addition-cure products differ and cannot be used interchangeably. For example, if you mistakenly use a condensation-cure additive with an addition-cure product, then curing will be inhibited.
2. When you use a curing accelerator or curing retardant, make sure you add the standard amount to the designated curing agent. If you only use a curing accelerator or curing retardant without a curing agent, no curing will occur.
3. Substantial effects are obtained with the addition of minute amounts of accelerator or retardant. Thus these agents must be carefully and accurately measured. If you add too much curing accelerator, the mixture may cure during mixing. Conversely if you add too much curing retardant, the curing speed will slow down drastically and complete curing may not be achieved even after several days.

Diluent RTV-THINNER

It may be desirable, depending on the working conditions, to lower the viscosity of the liquid silicone rubber without appreciably changing the physical properties of the rubber after curing is finished. In such cases, an RTV-THINNER can be used as a diluent. For example, you can halve the viscosity by adding 10% RTV-THINNER, (the RTV-THINNER is a silicone containing no volatile substances). However, refer to Figure 4 for the proper amount to add because an excess amount of the diluent will adversely affect the physical properties of the rubber. It is recommended that no more than 10% diluent be added to avoid deterioration in physical properties.

Changes in properties with the addition of diluent

- Viscosity of the base compound: decreased (considerable effect)
- Workable time (curing time): prolonged (minimal effect)
- Hardness and tensile strength: decreased (considerable effect)
- Elongation: increased (minimal effect)
### Bonding

Moldmaking liquid silicone rubber bonds to few materials because of its superior releasability. Thus the surface of a material must be pretreated with a primer in order to bond liquid silicone rubber to a mold frame or backing material. The primer, which is a liquid, can be applied with a brush. However keep in mind that different primers are used with condensation-cure products versus addition-cure products (see Table 5). If you want to bond a cured silicone rubber mold to a part of another material, bond pieces of silicone rubber together or repair a torn piece of rubber, use one of the silicone rubber bonding agents shown in Table 6.

#### Method of use

Paint the primer using a brush.

Pour in the release agent.

Set for approximately 30 minutes in an air-dried mold frame.

Remove the mold frame.

#### Table 5  Primer for two-component liquid silicone rubber

<table>
<thead>
<tr>
<th>Primer</th>
<th>Appearance</th>
<th>Specific gravity at 25°C</th>
<th>Viscosity at 25°C mm²/s</th>
<th>Liquid silicone rubber to use with</th>
<th>Bonding material</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRIMER-NO.4</td>
<td>Colorless transparent</td>
<td>0.78</td>
<td>0.6</td>
<td>Addition-cure type</td>
<td>Metals &amp; plastics</td>
</tr>
<tr>
<td>PRIMER-S</td>
<td>Colorless transparent</td>
<td>0.84</td>
<td>15</td>
<td>Condensation-cure type</td>
<td>Metals</td>
</tr>
<tr>
<td>PRIMER-T</td>
<td>Colorless transparent</td>
<td>0.86</td>
<td>10</td>
<td>Condensation-cure type</td>
<td>Plastics</td>
</tr>
</tbody>
</table>

#### Table 6 Typical silicone rubber bonding agents

<table>
<thead>
<tr>
<th>Product name</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>KE-42-KE-45</td>
<td>Condensation-cure one-component bonding agents: Bonding agents of this type can be used as they are when squeezed out of the tube. Time is required for inner areas to cure, because these agents cure from the surface down to the inner areas.</td>
</tr>
<tr>
<td>KE-66-KE-67-KE-68</td>
<td>Condensation-cure two-component bonding agents: These bonding agents cure within 24 hours when the curing agent CAT-RC(2%) is added. KE-66 has low viscosity, KE-67 has medium viscosity and KE-68 is a non-liquid paste.</td>
</tr>
<tr>
<td>KE-1800-TA/TB</td>
<td>Bonding agents for use exclusively with addition-cure materials such as KE-1310ST and KE1600: KE-1800-TA/TB is a translucent bonding agent and the TA and TB components are mixed in a 1:1 ratio. This agent cures within 24 hours at room temperature and in approximately 10 minutes when heated to 150°C</td>
</tr>
</tbody>
</table>
Curing inhibition with addition-cure products

(1) What is curing inhibition?
An liquid silicone rubber addition-cure product may not cure on surfaces where it comes into contact with certain types of substances. It may fail to cure entirely if certain types of substances have been mixed into the rubber. This phenomenon, which is known as “curing inhibition,” occurs because the substance inhibits the catalytic function of the liquid silicone rubber.

(2) Cure inhibiting substances
Possible cure inhibitors are substances which contain sulfur, phosphorus, nitrogen compounds, water and organometallic salts. Specific examples of cure-inhibiting substances
- Organic rubber (natural rubber and synthetic rubbers such as chloroprene rubber, nitrile rubber and EPDM).
- Soft polyvinyl chloride resin
- Amine-hardening epoxy resin
- Isocyanates of urethane resin
- Rubber clay and oil clay
- Liquid silicone rubber condensation-cure products Examples : (KE-42, KE-45, KE-66, KE-12, KE-17 and KE-1414)
- Some adhesive tape bonding agents, adhesives, paints (such as polyester paints), waxes, solder fluxes and pine resin

(3) Preliminary cure check and countermeasures
If there is any possibility of cure inhibition, apply a small amount of liquid silicone rubber to the master to perform a preliminary check. Also do not use the mixing vessels or any other tools or equipment before thoroughly washing them with a solvent and thoroughly drying them. If curing is definitely inhibited, it may be possible to stop it by treating the master with a coat of acrylic paint or a coat of BARRIER-COAT NO.7. If that does not stop the inhibition, then use an liquid silicone rubber condensation-cure product.

BARRIER-COAT NO.7

BARRIER-COAT NO.7 is a low viscosity liquid which can be applied with a brush or sprayed on. Applying it to the master will prevent curing inhibition and it can also be used to prevent bonding between different pieces of liquid silicone rubber. However, BARRIER-COAT NO.7 cannot be used as a bonding primer because it has no bonding properties.

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Specific gravity at 25°C</th>
<th>Viscosity at 25°C mPa•s</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorless transparent liquid</td>
<td>0.88</td>
<td>11</td>
<td>Acrylic resin:10% + Toluene:90%=100%</td>
</tr>
</tbody>
</table>

Thixotropic agent X-93-702

X-93-702 can increase a viscosity and stop the flowability of addition- or condensation-cure liquid silicone rubbers for use with mold frames. When thixotropy is required due to manufacturing process, for example with imitation stone or wood, or with skin molds, add 0.5 parts X-93-702 to 100 parts main agent.

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Specific gravity at 25°C</th>
<th>Viscosity at 25°C mm²/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorless transparent liquid</td>
<td>1.05</td>
<td>270</td>
</tr>
</tbody>
</table>
### Causes of Poor Moldmaking and Solutions

<table>
<thead>
<tr>
<th>Problem</th>
<th>Causes</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The liquid silicone rubber does not cure</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1) Too much or too little curing agent has been added.</td>
<td>Add the specified amount of curing agent.</td>
<td></td>
</tr>
<tr>
<td>(2) Curing agent is not suitable.</td>
<td>Use the correct curing agent.</td>
<td></td>
</tr>
<tr>
<td>(3) Inadequate mixing.</td>
<td>Mix thoroughly.</td>
<td></td>
</tr>
<tr>
<td>(4) Curing inhibition for addition-cure products</td>
<td>(a) Treat the surface of the master with BARRIER-COAT NO.7. &lt;br&gt;(b) Use a special mixing spatula and container. Work in an environment free from any cure inhibiting substances.</td>
<td></td>
</tr>
<tr>
<td>(5) The room temperature is too low for the liquid silicone rubber to cure.</td>
<td>Raise the room temperature to between 20°C and 30°C.</td>
<td></td>
</tr>
<tr>
<td>(6) The liquid silicone rubber has been stored for too long or is from an old production lot.</td>
<td>Do not store liquid silicone rubber for periods of longer than 3 months. Use the liquid silicone rubber within 1 month after opening.</td>
<td></td>
</tr>
<tr>
<td>(7) The liquid silicone rubber has been improperly stored and deteriorated over time.</td>
<td>Keep liquid silicone rubber in a cold, dark location and avoid storage under high temperatures and high humidity or where it can be exposed to direct sunlight.</td>
<td></td>
</tr>
<tr>
<td><strong>Cannot increase the number of moldmaking cycles</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1) Rubber mold has been insufficiently aged.</td>
<td>Pour the resin only after the rubber has cured completely. Post-cure the rubber mold by heating it at 50°C×1~4h.</td>
<td></td>
</tr>
<tr>
<td>(2) Resin poured is not suitable for use with the liquid silicone rubber.</td>
<td>Switch to the optimal liquid silicone rubber.</td>
<td></td>
</tr>
<tr>
<td>(3) The resin is inadequately mixed or mixed at an incorrect compounding ratio causing problems such as abnormal heat release.</td>
<td>Eliminate the causes related to the resin.</td>
<td></td>
</tr>
<tr>
<td>(4) The rubber mold service cycles are too frequent.</td>
<td>The durability of the rubber mold will be improved if it is not used too often and is allowed to stand unused.</td>
<td></td>
</tr>
<tr>
<td>(5) The barrier coat agent is inappropriate.</td>
<td>Examine the barrier coat agent which is used.</td>
<td></td>
</tr>
<tr>
<td><strong>The liquid silicone rubber bonds to the master</strong></td>
<td>The liquid silicone rubber may adhere to the master if it is made of glass, ceramic or stone.</td>
<td>Treat the surface with liquid soap, a synthetic detergent water solution or BARRIER-COAT NO.7.</td>
</tr>
<tr>
<td><strong>Air bubbles remain present in the rubber mold.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1) The rubber mold has not been properly defoamed.</td>
<td>Completely defoam the mold. Use a vacuum defoamer.</td>
<td></td>
</tr>
<tr>
<td>(2) Air bubbles are released by a wooden master into the mold.</td>
<td>Treat the wooden master with a filler.</td>
<td></td>
</tr>
<tr>
<td>(3) Condensation is present on the master.</td>
<td>Dry the master.</td>
<td></td>
</tr>
<tr>
<td><strong>The silicone rubber mold is deformed.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1) The rubber mold has been insufficiently aged.</td>
<td>After the liquid silicone rubber has cured, thoroughly age the mold.</td>
<td></td>
</tr>
<tr>
<td>(2) The rubber mold has been improperly stored.</td>
<td>Reset the master and store the resulting mold properly.</td>
<td></td>
</tr>
</tbody>
</table>
## Packaging

<table>
<thead>
<tr>
<th>Product name</th>
<th>1kg</th>
<th>10kg</th>
<th>20kg</th>
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<tr>
<td><strong>Condensation cure</strong></td>
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<td>KE-12</td>
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<td>KE-14</td>
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<td><strong>Addition cure</strong></td>
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<td>KE-1308</td>
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</table>
Storage and Handling Precautions

1. Store in a dry and cool place (1℃ to 30℃, out of direct sunlight) with good ventilation. Keep away from heat and flame.
   If products are stored too long or if they are contaminated with or come in contact with certain cure-inhibiting substances, they may not cure fully. It is recommended to keep the product in a dry and cool place before use.

2. Liquid silicone rubber for mold making base compound contains fillers which may settle to the bottom of the container. Thus, it is recommended to mix, stir, and defoam thoroughly before use. If the product is not dispersed enough, it may adversely affect the properties of the rubber.

3. Use the curing agent recommended by us. You may have some troubles when using other curing agents.

4. Addition-cure liquid silicone rubber products may not cure properly if they are contaminated with or come in contact with certain cure-inhibiting substances (e.g., sulfur, phosphorus, nitrogen compounds, water, organometallic salts).

5. Be sure to clean the substrate to remove dirt, grime, moisture, and oil from the surface.

6. Please use appropriate primers for substrates.

Safety and hygiene

1. When handling the products, take care to avoid contact with the skin and mucous membranes by wearing protective glasses and protective gloves. In case of skin contact, immediately wipe off with dry cloth and then flush thoroughly with soap and water.

2. Uncured liquid silicone rubber may irritate skin and mucous membranes. Take care to avoid eye contact or prolonged contact with the skin. If there is accidental eye contact, immediately flush with water for at least 15 minutes and then seek medical attention.

3. When handling the products, make sure that the work area is well ventilated and avoid inhaling the vapors. Please avoid using in a place with poor ventilation or possibility of inhaling vapors. If you become uncomfortable by inhaling the vapors, move to an area with fresh air immediately.


5. Be sure to read the Safety Data Sheets (SDS) for these products before use. SDS are available from the Shin-Etsu Sales Department.
The data and information presented in this catalog may not be relied upon to represent standard values. Shin-Etsu reserves the right to change such data and information, in whole or in part, in this catalog, including product performance standards and specifications without notice.

Users are solely responsible for making preliminary tests to determine the suitability of products for their intended use. Statements concerning possible or suggested uses made herein may not be relied upon, or be construed, as a guaranty of no patent infringement.

The silicone products described herein have been designed, manufactured, and developed solely for general industrial use only; such silicone products are not designed for, intended for use as, or suitable for, medical, surgical, or other particular purposes. Users have the sole responsibility and obligation to determine the suitability of the silicone products described herein for any application, to make preliminary tests, and to confirm the safety of such products for their use.

Users must never use the silicone products described herein for the purpose of implantation into the human body and/or injection into humans.

Users are solely responsible for exporting or importing the silicone products described herein, and complying with all applicable laws, regulations, and rules relating to the use of such products. Shin-Etsu recommends checking each pertinent country's laws, regulations, and rules in advance, when exporting or importing, and before using, the products.

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The development and manufacture of Shin-Etsu Silicones are based on the following registered international quality and environmental management standards.

- Gunma Complex: ISO 9001, ISO 14001 (JCQA-0004, JCQA-E-0002)
- Naoetsu Plant: ISO 9001, ISO 14001 (JCQA-0141, JCQA-E-0064)
- Takefu Plant: ISO 9001, ISO 14001 (JCQA-0141, JCQA-E-0064)

https://www.shinetsusilicone-global.com/