TECHNICAL DATA SHEET

PRODUCT: ADDITION CURE SILICONE RUBBER

DESCRIPTION

Addition cure silicone rubber is a more advanced type of RTV (Room Temperature Vulcanising) silicone than the more cost effective 'Condensation Cure' silicone.

Addition cure silicone should be used in applications where very accurate dimensional reproduction of an original part is required such as in rapid prototyping, where higher temperature tolerance is required or where the maximum number of repetitive releases will be possible.

Our addition cure silicone has been chosen for its excellent dimensional reproduction; it is incredibly low shrink and therefore can be used to make a mould for prototype parts that interconnect (like a nut and bolt) to engineering tolerances. It has excellent styrene and polyurethane resistance and a high tear strength.

Features:
- Very accurate reproduction of dimensions (very low shrinkage)
- Translucent
- High tear strength
- Styrene and PU resistant

USES

Use our Addition Cure Silicone Rubber to produce accurate moulds of complicated parts, precisely reproducing the dimensions of the original part. Completed silicone moulds can be used for repetitive casting applications, ceramics, vacuum casting and general mould making.

PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Units</th>
<th>Rubber</th>
<th>Catalyst</th>
<th>Combined</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
<td>-</td>
<td>Silicone Rubber</td>
<td>Clear Liquid</td>
<td>Translucent Liquid</td>
</tr>
<tr>
<td>Appearance</td>
<td>-</td>
<td>Translucent Viscous Liquid</td>
<td>Clear Liquid</td>
<td>Translucent Viscous Liquid</td>
</tr>
<tr>
<td>Viscosity @20 °C</td>
<td>mPa.s.</td>
<td>70,000</td>
<td>200-300</td>
<td>50,000</td>
</tr>
<tr>
<td>Density @20 °C</td>
<td>g/cm³</td>
<td>1.08</td>
<td>1.07</td>
<td>1.08</td>
</tr>
</tbody>
</table>

POT LIFE & CURE

<table>
<thead>
<tr>
<th>Pot-Life (200g) @ 25°C</th>
<th>Demould Time @ 20°C</th>
<th>Demould Time @ 60°C</th>
<th>Demould Time @ 70°C</th>
<th>Demould Time @ 80°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>120 minutes</td>
<td>24 hours</td>
<td>2 hours</td>
<td>1 hour</td>
<td>30 mins</td>
</tr>
</tbody>
</table>

CURED PROPERTIES

<table>
<thead>
<tr>
<th>Shore Hardness</th>
<th>Linear Shrinkage</th>
<th>Tensile Strength</th>
<th>Elongation at Break</th>
<th>Tear Strength</th>
<th>Service Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>500x20x5 mm (%)</td>
<td>ISO 527-2:1993 (MPa)</td>
<td>ISO 527-2:1993 (%)</td>
<td>ISO 34 (N/mm)</td>
<td>-60°C – 250°C</td>
</tr>
<tr>
<td>40</td>
<td>0.1</td>
<td>5.9</td>
<td>370</td>
<td>14.0</td>
<td></td>
</tr>
</tbody>
</table>
### MIXING RATIO

| 100 p.b.w. Addition Cure Silicone Rubber | 10 p.b.w. Addition Cure Silicone Rubber Catalyst |

### SET-UP BOX PREPARATION

Make sure the set-up box and the part to be moulded are not made of any of the inhibiting materials listed and are thoroughly clean.

### INHIBITING MATERIALS

Addition cure silicone rubbers are susceptible to cure inhibition by a number of products and materials. Take special care to ensure that the uncured silicone does not come into contact with any of the following materials or substances otherwise you may well find that the silicone does not cure at all in the contaminated areas.

Products with a high moisture content or a high sulphur content are potentially the most damaging.

**Inhibiting Substances**

- Wood-mastic epoxy resin
- Natural rubber
- Silicone sealants
- Neoprene adhesive
- Vinyl adhesive
- Transparent wood glue
- Flexible compact PUR
- Plasticised PVC film*
- Foam latex and latex gloves*
- Cyanoacrylate adhesive* (super glue)
- Polyester resin
- Adhesive tape
- Coachwork polyester mastic
- Shellac
- Transparent PVC tubing*
- Condensation cure RTV
- CAF (all types)

* PARTICULARLY ACTIVE

### MIXING

Mix thoroughly together both parts of the system ensuring the container used is at least five times the volume of the material being mixed e.g. For a 2 Kg mix use a 10 litre container. Due to the difference in viscosity of the two components extra care should be taken when mixing to ensure a homogeneous mix. When you think the mixture is homogeneous, mix again to ensure thorough mixing. Before use the mixed silicone should be correctly degassed in a vacuum chamber to remove air trapped within the mix that will seriously impair the surface finish quality of the resulting mould.

### DE-GASSING

When the material is thoroughly mixed it should be placed in a vacuum chamber to de-gas. When vacuum degassing the material will expand to approximately five times its original volume and then collapse, it is at this point that the material has been successfully vacuumed. If no vacuum chamber is available it might be possible to de-gas the mixed silicone using the ‘stretch-pour’ method whereby the silicone is poured into the mould by means of a very small hole in the bottom of a vessel containing the mixed silicone. The vessel should be positioned at a height of more than 1m above the set-up box and allowed to pour into a corner of the set-up box in a very thin trickle.

### POURING

Pour carefully in one place in to the set-up box to avoid air inclusion. Once pouring is complete place the set-up box back in to the vacuum chamber (if possible) and degas again.

### CURING

If curing at room temperature leave the mould for 24 hours. If curing at elevated temperatures the mould should be allowed to stand for 10 minutes before being
placed in the oven at the appropriate temperature. Shrinkage of the silicone will increase when cured at elevated temperatures.

### EXPANSION OF CURED MOULD

If the silicone mould will be used at elevated temperatures it should be understood that the mould will expand to a degree. The amount of expansion for a given temperature can be calculated as follows:

\[
L_o = \text{Original length} \\
L = \text{Length at temperature} \\
T = \text{Temperature of silicone mould} \\
\text{Coefficient of expansion} = 2.6 \times 10^{-4} \text{ (mm/mm)/}^\circ\text{C} \\
T_{\text{room}} = 20^\circ\text{C}
\]

\[
(L - L_o) = \text{Coeff} \times (T - T_{\text{room}}) \times L_o
\]

*Example: Increase in length of a 500 mm mould at 60°C

\[
(L - L_o) = 2.6 \times 10^{-4} \times (60-20) \times 500 = 5.2\text{mm}
\]

### STORAGE

Both the silicone and the catalyst should be stored at room temperature in their original containers with the lids tightly sealed.

Our technical advice, whether verbal, or in writing is given in good faith, but without warranty - this also applies where proprietary rights of third parties are involved. It does not release you from the obligation to test the products supplied by us as to their suitability for the intended processes and uses.

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