MOLDMAKING

SILICONE RUBBER FOR MOLDMAKING, PROTOTYPE CASTING AND PAD PRINTING
SIMPLY FLEXIBLE MOLDMAKING WITH SILICONES

Making a boat hull, a chocolate, a bronze sculpture or a prototype? Silicone rubber is the material of choice for moldmaking in many different situations.

The following pages will show you how to use silicones to make your project a reality.

Rigid vs. flexible molds
WHY SILICONE ELASTOMERS?

ELASTOSIL® M silicone rubber products have unique properties that pay off – especially in moldmaking and prototyping. The diverse product range means you can find the right moldmaking compound to meet your special requirements no matter what the task.
“I’ve used different materials at other locations. But with silicone, it was love at first sight. It’s easy to mix, easy to use, feels good and accurately reproduces the details on the original.”

Prof. Annamaria Baciu,
restorer for the Old Casino,
Arad, Romania

**WHY ELASTOSIL® M?**

ELASTOSIL® M products are two-part, room-temperature-vulcanizing (RTV-2) silicone molding compounds. ELASTOSIL® M silicone rubber grades are known for their quality and are used in an extraordinarily wide range of applications.

“Silicone gives us a chance to create something hyperrealistic for the first time.”

Brigitte Frank,
head of the makeup and hairstyling team,
Munich Kammerspiele
ELASTOSIL® MOLDMAKING AND PAD PRINTING APPLICATIONS

- Pads for pad printing on keyboards, toys, athletic gear and automobile components
- Reproduction of artworks for restoration and for museums
- Prototyping (visualization, working and preseries models) and small-scale production
- Vacuum bags for infusion and prepreg processes in composite molding
- Lifecasting, masks, prosthetics and moldmaking for theater and film

- Molds for concrete and artificial stone in facade elements, face brick, tiles and plumbing fixtures
- Molds for jewelry / the lost wax process
- Molds for cakes, cake decoration, chocolates, desserts, etc.
- Molds for manufacturing tire production molds and for developing new tires
- Creative moldmaking: molds for candles and soap, crafting and DIY
WHAT MOLDMAKING TECHNIQUES ARE THERE?

Silicone moldmaking compounds are suitable for reproducing surface details or entire objects with outstanding accuracy.

Uses range from single and multi-part block and skin molds to casting, impression and spreading techniques.

This versatility makes it exceptionally easy to find the right moldmaking technique for every need.
MOLDMAKING TECHNIQUE 1: BLOCK MOLDS

1. Casting Technique

**One-Part**
- Quick and easy to produce
- No parting lines that need to be reworked at a later time

**Two-Part**
- Quick and easy to produce
- No parting lines that need to be reworked at a later time

**ADVANTAGES:**
- Molds are highly stable and ready for immediate casting

2. Impression Technique

**One-Part**
- Lower demolding forces relative to 1-part block mold

**Two-Part**
- Lower demolding forces relative to 1-part block mold

**ADVANTAGES:**
- Molds are highly stable and ready for immediate casting

Demolding

- Roll out the silicone and press the model into the silicone surface
- Demolding
MOLDMAKING TECHNIQUE 2: SKIN MOLD

ADVANTAGES:
Low demolding forces, suitable even for extreme undercuts and cavities

1. Casting Technique

One-Part
- No parting lines that need to be reworked at a later time

Two-Part
- Lower demolding forces than for a 1-part mold

2. Brush Application

One-Part
- No parting lines that need to be reworked at a later time

Two-Part
- Lower demolding forces than for a 1-part mold

One-Part
- Apply silicone rubber

Two-Part
- Demold casting

Multi-Part
- Pour silicone rubber into mold

Demold casting
MOLDMAKING TECHNIQUE 3: SPECIALTY TECHNIQUES

ENDLESS POSSIBILITIES:
Silicone rubber can be used for developing an extraordinarily wide range of methods and techniques

1. Electroplating
2. Vacuum bags for composite molding
3. Printing pads for pad printing
4. Silicone molds for vacuum casting
5. Silicone molds for metal and glass casting
WHICH SILICONE RUBBER PRODUCT IS RIGHT FOR ME?

ELASTOSIL® M offers optimum solutions to a variety of applications. The following pages will help you find them.

Key Considerations
A few basic questions will help you find the right silicone rubber product. The crosslinking mechanism is one of the most important ones. Other important factors that will help you select a product, however, include pot life, reproduction material and desired number of copies.

Quick Selection Guide
The quick selection guide will give you some initial recommendations for the product that’s right for your application.
WHICH CURING METHOD IS MOST SUITABLE?

Addition-curing ELASTOSIL® M products are characterized by the following:

- Maximum reproduction accuracy
- Dimensional stability (no shrinkage)
- Multiple copies can be made from a single mold
- Suitable for rapid curing, which can be further accelerated through the application of heat (crosslinking between 15 °C and 200 °C)
- No volatile reaction products
- Ready for use immediately after demolding
- Curing can be disrupted by substances that block the platinum catalyst (inhibition).

Condensation-curing ELASTOSIL® M products are characterized by the following:

- A cost-effective option for making highly faithful reproductions
- No risk of inhibition
- Crosslinking occurs at temperatures ranging between 15 °C and 70 °C; relative humidity needs to be above 40%.
- Shrinkage of the cured rubber is between 0.4-0.8%, depending on the grade and amount of catalyst.

Like all silicone moldmaking compounds, ELASTOSIL® M silicone rubber products are two-part compounds. Mixing the two components initiates the crosslinking process. Our portfolio contains two product groups that differ in terms of their crosslinking mechanism and specific advantages.

Mixing for addition:
A + B (1:1, 9:1 or 10:1)

Mixing for condensation:
Base + hardening agent
100 + 2-5% (standard)
   + 1-2% (specials)
KEY CONSIDERATIONS

In order to find the right ELASTOSIL® silicone rubber, it helps to consider the following questions:

- Do the dimensions of the replica need to be faithful?
- What material will the replica be made of?
- How quickly does the mold need to be ready?
- Will I be working on vertical surfaces or overhead?
- Is good flowability important?
- How hard or soft does the finished mold need to be?
- Will the mold be subject to strong forces?
- Are there special requirements?
REPRODUCTION MOLDING

Quick Selection Guide

For copies made of metal alloys:

- Shrinkage:
  - No: ELASTOSIL® M 4370 A/B
  - Yes: ELASTOSIL® M 4470

Reset selection
REPRODUCTION MOLDING
Quick Selection Guide

For copies made of wax

Shrinkage

Yes

No

Shore A hardness

Medium

Soft

Very soft

ELASTOSIL® M 4514

ELASTOSIL® M 4512

ELASTOSIL® M 4511 A/B

ELASTOSIL® M 4600 A/B

No

Yes

Shore A hardness

Medium

Soft

Very soft

ELASTOSIL® M 4514

ELASTOSIL® M 4512

ELASTOSIL® M 4511 A/B

ELASTOSIL® M 4600 A/B

Reset selection
REPRODUCTION MOLDING

Quick Selection Guide

ELASTOSIL® M 4600 A/B
Soft

ELASTOSIL® M 4601 A/B
Medium

ELASTOSIL® M 4643 A/B
Hard

For food molds
Shore A hardness

Reset selection
REPRODUCTION MOLDING

Quick Selection Guide

For copies made of casting resins

Shrinkage

No

Shore A hardness

Yes

Shore A hardness

Soft

Medium

Medium/Hard

Hard

Very Hard

ELASTOSIL® M 4670 A/B

ELASTOSIL® M 4643 A/B

ELASTOSIL® M 4642 A/B

ELASTOSIL® M 4601 A/B

ELASTOSIL® M 4514

ELASTOSIL® M 4541

ELASTOSIL® M 4512

ELASTOSIL® M 4511

Reset selection
CONSTRUCTION MOLDING (Concrete and Gypsum Casting)

Quick Selection Guide

- **Shore A hardness**
  - Soft
    - ELASTOSIL® M 4600
  - Medium
    - ELASTOSIL® M 4630 A/B
  - Medium/hard
    - ELASTOSIL® M 4635 A/B
PAD PRINTING
Quick Selection Guide

- Antistatic properties
  - No
  - Yes

- Shrinkage
  - No
  - Yes

- Shore A hardness
  - Medium/hard
  - Soft

- No Shrinkage
  - ELASTOSIL® RT 629 A/B
  - ELASTOSIL® RT 620 A/B
  - ELASTOSIL® RT 623 A/B

- Yes
  - ELASTOSIL® RT 402
PROTOTYPE MOLDING

Quick Selection Guide

Polyamide

No

Oil bleed

Oil bleeding intensity

Medium

Strong

ELASTOSIL® M 4670 A/B

ELASTOSIL® M 4641 A/B

ELASTOSIL® M 4644 A/B

ELASTOSIL® M 4645 A/B

PU / EP and other

Yes

Repro material (material from which the prototype is to be made)

Reset selection
# PRODUCT OVERVIEW

## CONDENSATION-CURING MOLDMAKING COMPOUNDS

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<td>ELASTOSIL® M 1470</td>
<td>Kneadable</td>
<td>Hard</td>
<td>Pink</td>
<td>Paste T40</td>
<td>4 – 5</td>
<td>70</td>
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<td>ELASTOSIL® M 3502</td>
<td>Spreadable, non-sag</td>
<td>Medium</td>
<td>White</td>
<td>T 21/T 51</td>
<td>Spreadable</td>
<td>8 – 10</td>
<td>&gt;23</td>
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<tr>
<td>All-purpose</td>
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<tr>
<td>ELASTOSIL® M 4400</td>
<td>Pourable, all-purpose</td>
<td>Medium</td>
<td>Yellow</td>
<td>T 37/T 40</td>
<td>25,000</td>
<td>90/40</td>
<td>&gt;3</td>
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<td>ELASTOSIL® M 4440</td>
<td>Resin-resistant, all-purpose</td>
<td>Medium/hard</td>
<td>White</td>
<td>T 37/T 40</td>
<td>25,000</td>
<td>60/50</td>
<td>4.5</td>
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<td>ELASTOSIL® M 4503</td>
<td>Highly elastic, excellent mechanical strength</td>
<td>Medium</td>
<td>White</td>
<td>T 35</td>
<td>40,000</td>
<td>90</td>
<td>&gt;20</td>
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<td>All-purpose / casting resins</td>
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<tr>
<td>ELASTOSIL® M 4511</td>
<td>Excellent flowability with low viscosity, casting resin resistance and excellent mechanical properties in a broad Shore hardness range</td>
<td>Very soft</td>
<td>White</td>
<td>T 21/T 51</td>
<td>25,000</td>
<td>60/90</td>
<td>&gt;18</td>
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<td>ELASTOSIL® M 4512</td>
<td>Soft</td>
<td>White</td>
<td>T 21/T 51</td>
<td>30,000</td>
<td>80/90</td>
<td>&gt;24</td>
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<td>ELASTOSIL® M 4514</td>
<td>Medium</td>
<td>White</td>
<td>T 21/T 51</td>
<td>35,000</td>
<td>60/90</td>
<td>&gt;25</td>
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<td>ELASTOSIL® M 4541</td>
<td>Medium/hard</td>
<td>White</td>
<td>T 21/T 51</td>
<td>40,000</td>
<td>60/90</td>
<td>&gt;30</td>
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<td>Pad printing</td>
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<td>ELASTOSIL® RT 402</td>
<td>Antistatic, ink-resistant</td>
<td>Soft</td>
<td>Gray</td>
<td>T 12</td>
<td>15,000</td>
<td>75</td>
<td>&gt;3</td>
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<td>Low melting metal alloys</td>
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<tr>
<td>ELASTOSIL® M 4470</td>
<td>Excellent thermal stability and thermal conductivity</td>
<td>Hard</td>
<td>Reddish brown</td>
<td>T 37/T 40</td>
<td>15,000</td>
<td>90/40</td>
<td>&gt;4</td>
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* Shore A hardness:
  - Very soft: < 15
  - Soft: 15 – 20
  - Medium: 21 – 30
  - Medium/hard: 31 – 40
  - Hard: > 40

Additional product data can be found in the Moldmaking Product Overview

Find your representative:


Please select product group Silicone Rubber
## PRODUCT OVERVIEW

**ADDITION-CURING MOLDMAKING COMPOUNDS – ALL-PURPOSE**

Linear shrinkage < 0.1%

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<tr>
<td><strong>All-purpose</strong></td>
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<tr>
<td>CENUSIL® M 810 All-purpose molding grade, very low hardness</td>
<td>Very soft</td>
<td>White</td>
<td>1:1</td>
<td>3,000</td>
<td>4</td>
<td>40</td>
<td>15</td>
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<tr>
<td>CENUSIL® M 820 All-purpose molding grade, low hardness</td>
<td>Soft</td>
<td>White</td>
<td>1:1</td>
<td>6,000</td>
<td>4</td>
<td>40</td>
<td>20</td>
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<tr>
<td>ELASTOSIL® M 4115 A/B Low viscosity, 1:1</td>
<td>Medium</td>
<td>Translucent</td>
<td>1:1</td>
<td>2,500</td>
<td>1</td>
<td>12</td>
<td>5</td>
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<tr>
<td>ELASTOSIL® M 4119 A/B Low viscosity, super-fast cure, 1:1</td>
<td>Soft</td>
<td>Translucent</td>
<td>1:1</td>
<td>3,500</td>
<td>0.5</td>
<td>7</td>
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<tr>
<td>ELASTOSIL® M 4125 F A/B Low viscosity, fast cure, 1:1</td>
<td>Medium</td>
<td>White</td>
<td>1:1</td>
<td>6,000</td>
<td>2</td>
<td>15</td>
<td>25</td>
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<tr>
<td>ELASTOSIL® M 4600 A/B Low hardness and high mechanical strength</td>
<td>Soft</td>
<td>Translucent</td>
<td>10:1</td>
<td>15,000</td>
<td>12</td>
<td>90</td>
<td>&gt; 20</td>
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<tr>
<td>ELASTOSIL® M 4601 A/B Good flowability and high mechanical strength</td>
<td>Medium</td>
<td>Reddish brown</td>
<td>9:1</td>
<td>10,000</td>
<td>12</td>
<td>90</td>
<td>&gt; 30</td>
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<tr>
<td>ELASTOSIL® M 4642 A/B Excellent resin resistance, low viscosity and very high mechanical strength</td>
<td>Medium/hard</td>
<td>Dark red</td>
<td>10:1</td>
<td>15,000</td>
<td>12</td>
<td>90</td>
<td>&gt; 30</td>
<td>•</td>
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<tr>
<td>ELASTOSIL® M 4643 A/B Good resin resistance, high Shore hardness and very high mechanical strength</td>
<td>Medium/hard</td>
<td>Grey</td>
<td>9:1</td>
<td>25,000</td>
<td>12</td>
<td>90</td>
<td>&gt; 10</td>
<td>•</td>
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<tr>
<td>VARIO® 15 All-purpose tool box system: blend desired hardness with 2 bases, adjust desired reactivity with 2 catalysts: CAT Vario and CAT VARIO F</td>
<td>Soft</td>
<td>Translucent</td>
<td>10:1</td>
<td>3,000</td>
<td>6/0.25</td>
<td>150/2</td>
<td>15</td>
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<td>VARIO® 40</td>
<td>Hard</td>
<td>Translucent</td>
<td>10:1</td>
<td>10,000</td>
<td>6/0.25</td>
<td>150/2</td>
<td>15</td>
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** Compliant with relevant FDA regulations if processed correctly

Additional product data can be found in the Moldmaking Product Overview

Find your representative:

www.wacker.com/h/en-de/distributor-and-sales

Please select product group Silicone Rubber

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## PRODUCT OVERVIEW

### ADDITION-CURING MOLDMAKING COMPOUNDS – THE SPECIALISTS 1

Linear shrinkage < 0.1 %

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<tr>
<td><strong>Concrete Casting</strong></td>
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<tr>
<td>CENUSIL M 830</td>
<td>Low viscosity, translucent, fast curing</td>
<td>Medium</td>
<td>Translucent</td>
<td>1:1</td>
<td>8,000</td>
<td>14</td>
<td>60</td>
<td>&gt;20</td>
<td>•</td>
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<tr>
<td>ELASTOSIL® M 4630 A/B</td>
<td>Low viscosity and high mechanical strength</td>
<td>Medium</td>
<td>White</td>
<td>10:1</td>
<td>10,000</td>
<td>12</td>
<td>90</td>
<td>&gt;30</td>
<td>•</td>
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<td>ELASTOSIL® M 4635 A/B</td>
<td>Low viscosity, medium hardness and high mechanical strength</td>
<td>Medium/hard</td>
<td>White</td>
<td>10:1</td>
<td>15,000</td>
<td>12</td>
<td>90</td>
<td>&gt;30</td>
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<tr>
<td><strong>Rapid prototyping</strong></td>
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<td>ELASTOSIL® M 4641 A/B</td>
<td>High mechanical strength, &quot;dry&quot; system</td>
<td>Hard</td>
<td>Translucent</td>
<td>10:1</td>
<td>30,000</td>
<td>12</td>
<td>90</td>
<td>&gt;25</td>
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<tr>
<td>ELASTOSIL® M 4644 A/B</td>
<td>High mechanical strength, slight oil bleeding</td>
<td>Medium/hard</td>
<td>Translucent</td>
<td>10:1</td>
<td>50,000</td>
<td>12</td>
<td>80</td>
<td>&gt;25</td>
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<td>ELASTOSIL® M 4645 A/B</td>
<td>High mechanical strength, considerable oil bleeding</td>
<td>Medium/hard</td>
<td>Translucent</td>
<td>10:1</td>
<td>35,000</td>
<td>12</td>
<td>80</td>
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<td>ELASTOSIL® M 4670 A/B</td>
<td>Rapid prototyping, high mechanical strength, excellent polyamide casting resin stability</td>
<td>Hard</td>
<td>Beige</td>
<td>10:1</td>
<td>80,000</td>
<td>12</td>
<td>90</td>
<td>&gt;12</td>
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<td><strong>Pad printing</strong></td>
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<td>ELASTOSIL® RT 620 A/B</td>
<td>Ink resistance, low base hardness, very high mechanical strength</td>
<td>Soft</td>
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<td>10:1</td>
<td>6,000</td>
<td>4</td>
<td>35</td>
<td>&gt;12</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ELASTOSIL® RT 623 A/B</td>
<td>Ink resistance, very high mechanical strength</td>
<td>Medium/hard</td>
<td>Reddish brown</td>
<td>9:1</td>
<td>10,000</td>
<td>5</td>
<td>30</td>
<td>&gt;30</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ELASTOSIL® RT 629 A/B</td>
<td>Antistatic, ink resistance, high mechanical strength</td>
<td>Medium/hard</td>
<td>Turquoise</td>
<td>10:1</td>
<td>8,000</td>
<td>3</td>
<td>40</td>
<td>25</td>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Shore A hardness:

** Compliant with relevant FDA regulations if processed correctly

Additional product data can be found in the Moldmaking Product Overview

Find your representative:
www.wacker.com/h/en-de/distributor-and-sales
Please select product group Silicone Rubber

*Compliant with relevant FDA regulations if processed correctly.
## PRODUCT OVERVIEW

### ADDITION-CURING MOLDMAKING COMPOUNDS – THE SPECIALISTS 2

**Linear shrinkage < 0.1 %**

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Special effects – toolbox system, 4 bases with 4 additives</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>ELASTOSIL® FX Gel 30</td>
<td>Gel-like</td>
<td>Translucent</td>
<td>1:1</td>
<td>5,000</td>
<td>0.75</td>
<td>8/12</td>
<td>1.5</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>ELASTOSIL® FX 10</td>
<td>Very soft</td>
<td>Translucent</td>
<td>1:1</td>
<td>5,000</td>
<td>0.75</td>
<td>8/12</td>
<td>&gt;3.5</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ELASTOSIL® FX 20</td>
<td>Soft</td>
<td>Translucent</td>
<td>1:1</td>
<td>6,000</td>
<td>0.75</td>
<td>8/12</td>
<td>&gt;5.5</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>ELASTOSIL® FX 28</td>
<td>Medium</td>
<td>Translucent</td>
<td>1:1</td>
<td>10,000</td>
<td>&lt;1h</td>
<td>10/15</td>
<td>&gt;25</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

**Vacuum bag**

- ELASTOSIL® C 1200 A/B
  - Vacuum bag for composite molding, sprayable, high mechanical strength
  - Medium
  - Blue/ translucent
  - 1:1
  - 25,000
  - 1
  - 20
  - 25
  - ●
  - ●
  - For prepreg use

**Casting low-melting metal alloys / coating pressure rollers**

- ELASTOSIL® 4370 A/B
  - High heat resistance and good thermal conductivity
  - Hard
  - Reddish brown
  - 9:1
  - 8,000
  - 6
  - 80
  - >4
  - ●
  - ●
  - ●
  - ●

Additional product data can be found in the Moldmaking Product Overview.

*Shore A hardness:
- Very soft: < 15
- Soft: 15 – 20
- Medium: 21 – 30
- Medium/hard: 31 – 40
- Hard: > 40

**Compliant with relevant FDA regulations if processed correctly.

** Additional product data can be found in the Moldmaking Product Overview.

Find your representative:
www.wacker.com/h/en-de/distributor-and-sales
Please select product group Silicone Rubber
PRODUCT OVERVIEW
ADDITIVES

We also offer specialty additives that complement our ELASTOSIL® M product line.

Generating Adhesion to Substrates
WACKER® primers allow you to bond ELASTOSIL® M elastomers with each other or with other materials, such as wood, metal or thermoplastics.

Repairing and Bonding
ELASTOSIL® RTV-1 can be used for repairing cracked molds.

<table>
<thead>
<tr>
<th>Bonding</th>
<th>Primer</th>
<th>ELASTOSIL® M Grades</th>
<th>Bonds To:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WACKER®</td>
<td>G 790</td>
<td>Addition-curing</td>
<td>Absorbent surfaces and metal</td>
</tr>
<tr>
<td></td>
<td>G 795</td>
<td>Addition-curing</td>
<td>Absorbent surfaces and metal</td>
</tr>
<tr>
<td>WACKER®</td>
<td>FD</td>
<td>Condensation-curing</td>
<td>Absorbent surfaces and metal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Addition-curing</td>
<td>Absorbent surfaces, wood or metal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Repairing</th>
<th>Adhesive</th>
<th>Curing System</th>
<th>Consistency</th>
<th>Self-Leveling?</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELASTOSIL®</td>
<td>E4</td>
<td>Acetic-acid-curing</td>
<td>Paste-like</td>
<td>No</td>
</tr>
<tr>
<td>E41</td>
<td>Acetic-acid-curing</td>
<td>Spreadable</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>E43</td>
<td>Acetic-acid-curing</td>
<td>Spreadable</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>E43 N</td>
<td>Neutral-curing</td>
<td>Spreadable</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>A07</td>
<td>Amine-curing</td>
<td>Paste-like</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

Color
Transparent ELASTOSIL® M grades can be formulated in different colors through the addition of ELASTOSIL® FL pigments. ELASTOSIL® Red color concentrate is often used for modifying the color of the tin catalyst of condensation-curing grades. Doing so gives the user a clear means of judging when the catalyst has been uniformly distributed during the mixing process.

Dilution
ELASTOSIL® M grades can be diluted through the addition of WACKER® AK 35 or WACKER® AK 100 silicone fluids, thereby making them softer.

Thickening
Condensation-curing ELASTOSIL® M grades become more paste-like through the addition of WACKER Thickening Agent C. For addition-curing ELASTOSIL® M grades, we recommend adding WACKER Stabilizer 43.

Modifying Pot Life and Curing Time
Addition of WACKER Inhibitor PT 88 extends the pot life of addition-curing ELASTOSIL® M grades. WACKER Catalyst EP accelerates crosslinking.
1. Safety
Always read the safety data sheet for each of our products. This document contains relevant information on how to stay safe and healthy when working with our products. You will receive a safety data sheet (MSDS) with the product, but you can also download it from www.wacker.com.

2. Storage
In order to avoid compromising quality, please note the following:
- The optimum storage temperature lies between 5 °C and 30 °C.
- Seal opened containers as tightly as possible immediately after taking out your material.
- Use up the material remaining in the containers as quickly as possible.
- Make a note of the use by date indicated on the label.
- The product is not necessarily unusable once the use by date has passed; simply check to make sure the desired properties of the material have not changed.

3. Pretreating Models
Silicone rubber does not stick to many materials. Nevertheless, we recommend pretreating the surface of the model:
- Remove any dust, dirt or oil.
- Secure or remove any loose parts.
- Seal any cracks, gaps or other damage to the surface using model putty or mastic.
- Seal any porous or highly absorbent surfaces.
- Protect sensitive surfaces that could discolor or be stained, or that could be destroyed during the demolding process. Please contact us if needed.
- Silicone rubber forms chemical bonds with models made of glass, porcelain, ceramic, silicone rubber, etc. In these cases, apply a release layer such as a soap solution, Vaseline, paraffin or a liquid or diluted wax (freshly cured).
4. Prep the Material
- For addition-curing ELASTOSIL® M grades only: check if the batch numbers are identical for A and B component.
- For all colored ELASTOSIL® M grades: in order to ensure even distribution of the pigments, mix each individual grade in its container prior to use. This step does not apply to transparent grades.
- Weigh out the components using different mixing tools:
  - For addition-curing products: A + B components
  - For condensation-curing products: base product + hardening agent
- Weigh out all additives used (pigment pastes, silicone fluid, thickening agents, etc.). Seal all containers immediately after removing the required amount product.

5. Mixing and Dearating
- If you would like to deaerate the blended silicone rubber in a vacuum container, prepare this container prior to mixing.
- Deaeration should be performed under reduced pressure (10 to 20 mbar) in a vacuum chamber.
- Carefully mix the components, making sure no materials remain in the corners and along the bottom; scrape the interior walls of your mixing vessel.
- Crosslinking starts now, as well as the processing window.

6. Applying the Silicone Rubber
- Pour the liquid, deaerated silicone rubber into the mold in a thin stream from the lowest possible height. If the material has not been deaerated, pour it into the mold from as high up as possible. Keep the position of the stream as constant as possible.
- For spreadable silicone rubber, first apply a thin, bubble-free coating using a stiff, short-bristled brush; apply the actual layer after this.
- Kneadable silicone rubber is usually applied by hand.

7. Curing
- Wait until the specified curing time has elapsed before demolding.
- For addition-curing ELASTOSIL® M grades, curing can be accelerated with heat.

TIPS AND TRICKS
Advice on handling, storage and processing
<table>
<thead>
<tr>
<th>Troubleshooting</th>
<th>Problem</th>
<th>Frequent Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>All ELASTOSIL® M grades</td>
<td>Curing takes too long</td>
<td>• Processing temperature too low or incorrect dosing</td>
</tr>
<tr>
<td></td>
<td>Entraped air, bubbles, holes</td>
<td>• Material insufficiently deaerated; crosslinked too fast</td>
</tr>
<tr>
<td></td>
<td>Cured rubber is not homogeneous</td>
<td>• Material not mixed adequately</td>
</tr>
<tr>
<td>Condensation-curing ELASTOSIL® M grades</td>
<td>Curing takes too long</td>
<td>• Incorrect mixing ratio</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Too little moisture in the base component</td>
</tr>
<tr>
<td></td>
<td>Cured rubber is too soft and sticky</td>
<td>• Byproducts cannot escape/evaporate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Incorrect mixing ratio</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Temperature too high during crosslinking</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Too little moisture in the base component</td>
</tr>
<tr>
<td></td>
<td>Entraped air, bubbles, holes</td>
<td>• Temperature too high during crosslinking (over 90°C) / cured too quickly</td>
</tr>
<tr>
<td></td>
<td>Surface is sticky, insufficiently cured</td>
<td>• Ambient humidity is too low</td>
</tr>
<tr>
<td>Addition-curing ELASTOSIL® M grades</td>
<td>Curing takes too long</td>
<td>• Incorrect mixing ratio</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Presence of inhibiting substances* or temperature too low</td>
</tr>
<tr>
<td></td>
<td>Properties of the cured rubber (hardness, mechanical characteristics, etc.) are not suitable</td>
<td>• Incorrect mixing ratio</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Presence of inhibiting substances*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Failure to stir material carefully enough before taking it from the container</td>
</tr>
<tr>
<td></td>
<td>Material cures too fast</td>
<td>• Incorrect mixing ratio</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Temperature too high</td>
</tr>
<tr>
<td></td>
<td>Cured rubber is sticky</td>
<td>• Presence of inhibiting substances*</td>
</tr>
<tr>
<td></td>
<td>Uncured material on the surface of the model</td>
<td>• Presence of inhibiting substances* (contact inhibition)</td>
</tr>
<tr>
<td></td>
<td>Entraped air, bubbles, holes</td>
<td>• Model surface was damp</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Water contamination</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Curing was too fast</td>
</tr>
</tbody>
</table>

* These include sulfur and sulfur-containing compounds such as EPDM, amine-cured epoxy resins, organometallic or organotin compounds or substances that contain these compounds (such as tin catalysts for condensation-curing silicone rubber).
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CONNECTING THE BEST

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CREATING TOMORROW’S SOLUTIONS

A Diverse Array of Products for Growing Markets
Our product portfolio ranges from silicones, binders and polymeric additives all the way up to bioengineered pharmaceutical actives. Rounding these out is hyperpure silicon for semiconductors and solar applications.

Innovations that Improve Quality of Life
As a technology leader focusing on sustainability, WACKER promotes products and ideas that offer considerable value-added potential to ensure that current and future generations enjoy a better quality of life, based on energy efficiency and protection of the climate and environment.

Global Knowledge for Local Markets
When you work with WACKER, you have 100 years of chemistry expertise at your disposal, with access to the research findings and best practices of our experts throughout the world. Our knowledge base consists of a network of 23 technical centers, 14 training centers and our basic research center.

And most importantly: we are there wherever you need us – worldwide. Our local specialists know your markets and speak your language. Working with them, you will find innovative solutions that win over your customers and make you more competitive.

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All figures are based on fiscal 2020.
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