WACKER

CREATING TOMORROW'S SOLUTIONS

MOLDMAKING I CONCRETE MOLDING

SHAPING ARCHITECTURE WITH SILICONES

Silicone moldmaking compounds have been used for decades in architecture to make high-quality imitation marble, stone and wood features from concrete, gypsum and casting resins. Molds made from ELASTOSIL® M silicone rubber faithfully reproduce complex shapes and the finest surface details.

Casting in Silicone Molds

Artificial stone elements are widely employed in restorations, renovations and new builds because they are cost-effective and can act as a lightweight solution. Molds made from ELASTOSIL® M silicone rubber are used to cast concrete, glass-fiber-reinforced concrete and gypsum elements for indoor and outdoor applications. Concrete elements for ventilated facades, for instance, can be used to structurally separate the thermal insulation and weathering protection from the rest of the building. This opens up vast scope for creative designs, while allowing technically sound and economically viable renovations to be carried out over the long term. In the area of decorative architecture, silicone molds offer countless opportunities to make imitation stone or wood and to cast complex, custom-designed concrete parts (pillars, mantelpieces, vanities, etc).

Stamping Mats for Styling Surfaces

ELASTOSIL® M silicone rubber is used to make stamping mats for textured concrete surfaces. These are either applied directly to the wall or floor or inserted into the formwork. Concrete surfaces can thus be given the texture of wood or other natural substances and molded into any shape.

Advantages of ELASTOSIL® M

- High reproduction accuracy and maximum dimensional stability (addition-curing ELASTOSIL® M grades)
- Very good resistance to concrete
- Easy processing at room temperature
- No expensive equipment needed
- Highly stable mechanical properties
- Large number of casts possible
- Excellent mold release, even without release agent

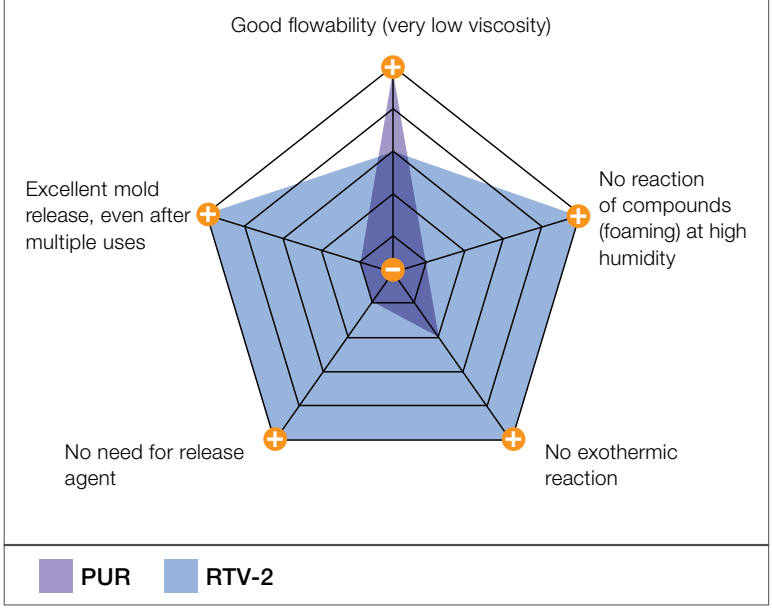
Product Properties

	Description	Hardness [Shore A]	Mix ratio	Mixing viscosity [mPa s]	Tensile strength [N/mm]	Elongation at break [%]	Tear strength [N/mm]	Color
Addition-Curing Grades								
ELASTOSIL® M 4600	Low hardness and high mechanical strength	20	10:1	15,000	7.0	800	> 20	Translucent
ELASTOSIL® M 4630	Low viscosity and high mechanical strength	28	10:1	10,000	6.5	700	> 30	White
ELASTOSIL® M 4635	Low viscosity, medium hardness and high mechanical strength	37	10:1	15,000	7.0	480	> 30	White
CENUSIL® M 830	Low-viscosity 1:1 system, fast curing	26	1:1	8,000	5.0	500	> 20	White
WACKER® Stabilizer 43 for working (on site) on vertical surfaces (skin molds, spreading technique)								
Condensation-Curing Grades								
ELASTOSIL® M 3502	Skin molds, spreadable, very high elasticity and mechanical strength	26	5% T 21/T 51	Non-sag	4.5	450	> 23	White
ELASTOSIL® M 4512	Soft, good casting resin, stability, very high elasticity and mechanical strength	20	5% T 21/T 51	25,000	3.5	500	> 24	White
ELASTOSIL® M 4514	Soft, good casting resin, stability, very high elasticity and mechanical strength	25	5% T 21/T 51	25,000	4.5	450	> 25	White
WACKER® Thickening Agent C for working (on site) on vertical surfaces (skin molds, spreading technique)								

Property Profile of RTV-2 Silicone Moldmaking Compounds Versus PUR Elastomers

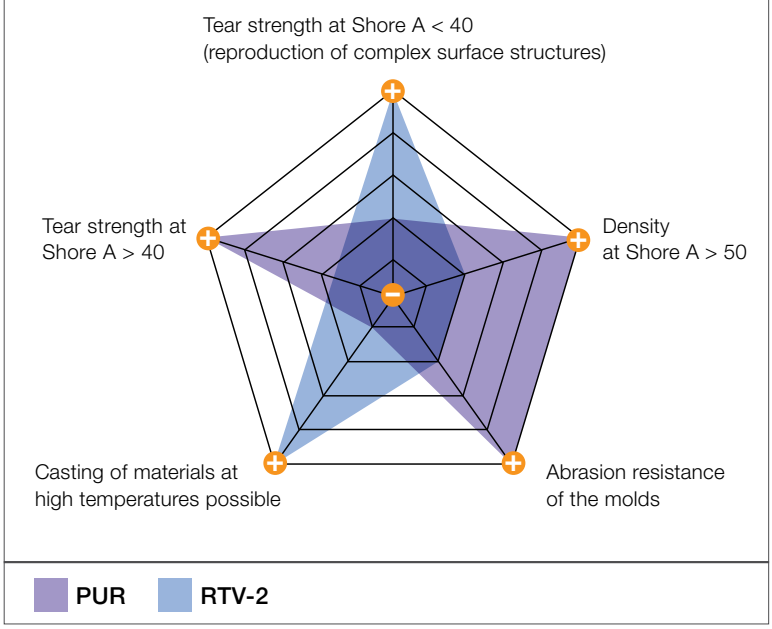
Both PUR elastomers and RTV-2 silicone rubbers find broad application in architectural molding. More information about the specific property profile of each material is presented below.

Figure 1: Ease of Handling



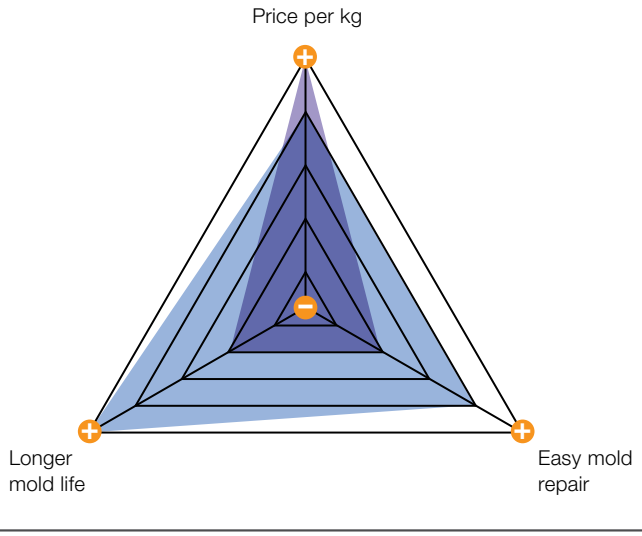
While PUR elastomers can attain very low viscosities, silicone elastomers offer good pourability plus excellent release properties, even when multiple copies have been made.
Using silicone elastomers eliminates one processing step as there is no need for release agent.
High humidity levels can cause foaming of PUR elastomers but do not affect addition-curing silicone elastomers.
Since no exothermic reaction occurs with silicone elastomers, the processing parameters for concrete casting are easier to handle.

Figure 2: Technical Profile



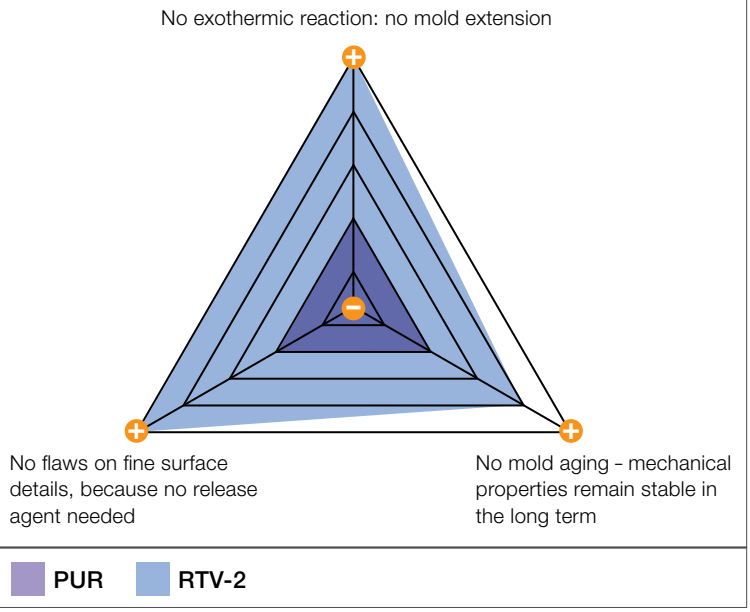
As for the technical profile, it is important to understand that silicone elastomers offer excellent tear strength combined with low hardness and high flexibility. Very complex surface designs are therefore possible.

Figure 3: Cost Aspects



Cost-wise, it is important not only to consider the per kg price of the mold material but also to factor in the number of possible copies and the ease with which molds can be repaired. Shorter processing times and the elimination of release agent also lower the overall costs of working with silicones.

Figure 4: Molding Result



When it comes to the copying process, silicone elastomers offer clear advantages over PUR because fine surface details and complex shapes with deep undercuts can be reproduced without the need for release agent, which could otherwise be a source of flaws. Furthermore, because the excellent mechanical properties of addition-curing silicone elastomer molds are retained over the long term, the molds continue to produce great results even after large numbers of copies have been made.

ELASTOSIL®

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