DOW CORNING

Step-By-Step Product Selection Guide

SILICONE MOLDMAKING MATERIALS FROM DOW CORNING

EUROPE AND ASIA EDITION

Create quality reproductions, time after

If you're looking for an easy-to-use moldmaking material that will deliver consistently superior results, look no further. With silicone moldmaking materials from Dow Corning, you can create tough-but-flexible molds to reproduce intricate details and deliver high-quality replicas, again and again.

time.

Our products can be used with masters made of stone, glass, wood, metal, wax, ceramic, plaster and clay. And they're compatible with a wide range of casting materials.

Each moldmaking product from Dow Corning consists of two components: a liquid silicone rubber base and a catalyst or curing agent. There are two basic cure types — condensation cure and addition cure. Within each cure type, we offer several products in a range of viscosities with variable cure times. To identify the product(s) best suited to your application, start by using the product selection tree and typical moldmaking variables chart in Step 1 on the next page.

The closest thing to a reproduction from a silicone mold is the original itself.

Dow Corning makes a variety of products to meet a variety of needs:

Reproduction

- Figurines
- Collectibles
- Jewelry
- Candles
- Artifacts

Molding

- Prototypes
- Industrial tooling
- Furniture

Creating

- Silicone rubber pads for transfer printing
- Robotic skins for animated creatures

Architectural fabrication

- Concrete casting
- Reconstituted stone
- Crown molding, finials, brackets and more

STEP 1 Narrow the field to match your needs

Silicone Moldmaking Materials from Dow Corning

- Are easy to use
- Reproduce intricate details
- Hold severe undercuts
- Feature excellent release characteristics
- Provide good resistance to most chemicals
- Offer tailorable working times and cure rates
- Resist tearing with repeated use
- Are flexible to reduce demolding and stress problems
- Work in a wide range of service temperatures

Condensation Cure Products

***Dow Corning*® and *Silastic*® Brand Silicone Rubbers**

- For molding figurines, decorative reproduction and making transfer pads
- Provide outstanding resistance to inhibition
- Use tin catalyst
- Offer variable cure times at room temperature

***Dow Corning*® 3133 RTV Silicone Rubber.** General purpose, low tear strength, low durometer, white.

***Dow Corning*® 3110 RTV Silicone Rubber.** General purpose, low tear strength, medium durometer, low mixed viscosity, easy to work with, fills tiny crevices, vacuum de-airing isn't always required, white.

***Silastic*® 3496 Base/81 Curing Agent.** High tear strength, low durometer, very good resistance to polyester resin, suited for reproduction of figurines.

Silastic® 3481 RTV High Strength Moldmaking Silicone Rubber. High tear strength, low durometer. Well-suited for one-part molds.

***Dow Corning*® 3112 RTV Silicone Rubber.** General purpose, low tear strength, high durometer, white.

***Silastic*® 3497 Base/81 Curing Agent.** High tear strength, low durometer, very good resistance to polyester resin, suited for reproduction of figurines.

***Silastic*® 3483 RTV High Strength Moldmaking Silicone Rubber.** Medium tear strength, low durometer.

***Dow Corning*® 3120 RTV Silicone Rubber.** Low tear strength, high durometer, excellent heat stability, red.

***Silastic*® 3498 Base/81 Curing Agent.** High tear strength, low durometer, very good resistance to polyester resin, suited for reproduction of figurines.

***Silastic*® 3487 RTV High Strength Moldmaking Silicone Rubber.** Medium tear strength, very low durometer, low mixed viscosity. Well-suited for one-part molds.

Addition Cure Products

***Silastic*® Brand Silicone Rubbers**

- For engineering design, prototyping, architectural fabrication and making transfer pads
- Use platinum catalyst
- Cure can be heat accelerated
- Exhibit virtually no shrinkage when cured at room temperature
- Offer better chemical resistance

***Silastic*® M RTV Silicone Rubber.** Medium tear resistance, high durometer, high inhibition resistance, demoldable in 16 hours, regal blue.

***Silastic*® P-1 RTV Silicone Rubber.** High tear strength, suited for production of print pads, can be colored.

***Silastic*® T-2 RTV Silicone Rubber.** Translucent/ colorless, low viscosity, medium durometer, high inhibition resistance.

***Silastic*® S RTV Silicone Rubber.** High tear resistance, low durometer, low viscosity, high inhibition resistance, high elongation.

***Silastic*® T-2 Base/T-2 High Durometer Curing Agent.** Higher durometer version of Silastic T-2.

***Silastic*® S-2 RTV Silicone Rubber.** High tear resistance, medium durometer and low viscosity, suited for reproduction of reconstituted stone.

***Silastic*® T-4 RTV Silicone Rubber.** High tear strength, high durometer, translucent, suited for prototype design.

***Silastic*® V RTV Silicone Rubber.** High tear strength, high durometer, suited for architectural and prototype design.

Typical Moldmaking Variables

	Condensation Cure Products										Addition Cure Products						
	Dow Corning® / *Silastic*® Silicone Rubber										*Silastic*® Silicone Rubber						
	3481	3483	3487	3110	3112	3120	3133	3496	3497	3498	M	P-1	S	S-2	T-2	T-4	V
Pattern Characteristics																	
Simple, no undercuts	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Complex, some undercuts	●	●	●					●	●	●	●	●	●	●	●	●	●
Complex, deep undercuts								●	●	●	○	●	●	●	●	●	●
Vertical surfaces, large or immovable objects	●	●	●							●		●	●	●	●	●	●
Compatibility with Casting Materials																	
Polyesters	●	●	●	○	○	○	○	●	●	●	○	●	●	●	○	○	○
Polyurethane, rigid	●	●	○	○	○	○	○	○	●	●	●	●	●	●	●	●	●
Polyurethane, foam	○	○		○	○	○	○		○	○	●	○	○	○	●	●	●
Epoxies				○	○	○	○				○	○	○	○	○	○	○
Low-melt metals				○	○	●	○				○	○	○	○	○	○	○

● Recommended ○ Can be used

STEP 2

Take a closer look at your cure options

Working and Cure Times at Room Temperature (23ºC, 73ºF)

	Catalyst or Curing Agent	Base/Catalyst Mixing Ratio, By Weight	Approximate Working Time[1]	Approximate Demold Time[2]
Condensation Cure	***Silastic*® 3481 High Strength Moldmaking Silicone Rubbers**			
	Silastic® 81 NW Curing Agent	100:5	1.5 – 2 hrs	24 hrs
	Silastic® 81-R NW Curing Agent	100:5	1.5 – 2 hrs	24 hrs
	Silastic® 81-F NW Curing Agent	100:5	30 – 45 min	6 hrs
	Silastic® 81-VF NW Curing Agent	100:5	8 – 10 min	2 hrs
	***Silastic*® 3483 High Strength Moldmaking Silicone Rubbers**			
	Silastic® 83 NW Curing Agent	100:5	1.5 – 2 hrs	24 hrs
	***Silastic*® 3487 High Strength Moldmaking Silicone Rubbers**			
	Silastic® 87-S Curing Agent	100:5	1.5 – 2 hrs	24 hrs
	***Dow Corning*® 3110 Silicone Rubber**			
	Dow Corning® S Tin NW Catalyst	10:1	2 hrs	7 hrs
		20:1	3 hrs	12 hrs
	***Dow Corning*® 3112 Silicone Rubber**			
	Dow Corning® S Tin NW Catalyst	10:1	1 hrs	8 hrs
		20:1	2 hrs	12 hrs
	***Dow Corning*® 3120 Silicone Rubber**			
	Dow Corning® S Tin NW Catalyst	10:1	1 hr	8 hrs
		20:1	2 hrs	12 hrs
	***Silastic*® 3133 Silicone Rubber**			
	Silastic® 81-F NW Curing Agent	100:5	30 – 45 min	6 hrs
	***Silastic*® 3496 Base**			
	Silastic® 81 NW Curing Agent	100:5	2 – 3 hrs	24 hrs
	Silastic® 81-R NW Curing Agent	100:5	2 – 3 hrs	24 hrs
	Silastic® 81-F NW Curing Agent	100:5	1 – 1.5 hrs	8 hrs
	***Silastic*® 3497 Base**			
	Silastic® 81 NW Curing Agent	100:5	2 – 3 hrs	24 hrs
	Silastic® 81-R NW Curing Agent	100:5	2 – 3 hrs	24 hrs
	Silastic® 81-F NW Curing Agent	100:5	1 – 1.5 hrs	8 hrs
	***Silastic*® 3498 Base**			
	Silastic® 81 NW Curing Agent	100:5	2 – 3 hrs	24 hrs
	Silastic® 81-R NW Curing Agent	100:5	2 – 3 hrs	24 hrs
	Silastic® 81-F NW Curing Agent	100:5	1 – 1.5 hrs	8 hrs
Addition Cure	***Silastic*® Silicone Rubbers**			
	Silastic® M Base and Curing Agent	10:1	1 hr	16 hrs
	Silastic® P-1 Base and Curing Agent	10:1	45 min	8 hrs
	Silastic® S Base and Curing Agent	10:1	45 min	7 hrs
	Silastic® S-2 Base and Curing Agent	10:1	1 hr	6 – 8 hrs
	Silastic® T-2 Base and Curing Agent	10:1	2.5 hrs	10 hrs
	Silastic® T-2 Base and High Durometer Curing Agent	10:1	1 hr	12 hrs
	Silastic® T-4 Base and Curing Agent	10:1	1.5 hrs	12 hrs
	Silastic® T-4 O Base and Curing Agent	10:1	1.5 hrs	12 hrs
	Silastic® V Base and Curing Agent	10:1	1 – 1.5 hrs	6 – 8 hrs

[1] The time it takes for the catalyzed mixture to become nonflowable.
[2] The point at which the rubber can be demolded.
These technical characteristics are typical properties. These values are not intended for use in preparing specifications.

Once you've narrowed the field to a few materials, it's time to look at your cure options.

Silastic® silicone rubbers are available with a selection of curing agents, bringing options to adapt to your mold preparation or usage.

Each *Silastic* RTV addition cure silicone rubber has its own special curing agent. For best results, these products should be used at the specified mix ratios.

The chart at left can help you determine the mix ratios, working times and cure times most compatible with your equipment capabilities and application requirements.

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STEP 3 Focus on your specific performance objectives

When you've determined which products have the general performance and cure capabilities you need, review the following typical properties charts to see how these products match up with the specific properties you require.

Typical Properties† Condensation Cure Materials

	Silastic® High Strength Moldmaking Silicone Rubber			*Dow Corning*® Silicone Rubber				*Silastic*® Bases[2]		
	3481	3483	3487	3110	3112	3120	3133	3496	3497	3498
As Supplied										
Specific Gravity	1.21	1.16	1.15	1.14	1.30	1.45	1.15	1.16	1.21	1.23
Curing Agent used	81-NW, 81-F NW, 81-R NW, 81-VF NW Curing Agent	83-NW Curing Agent	87-S Curing Agent	S Tin NW Catalyst	S Tin NW Catalyst	S Tin NW Catalyst	81-F NW Curing Agent	81-NW, 81-F NW, 81-R NW Curing Agent	81-NW, 81-F NW, 81-R NW Curing Agent	81-NW, 81-F NW, 81-R NW Curing Agent
As Catalyzed										
Appearance	All White	White	White	White	White	Red	Beige	Off White	Off White	Light Beige
Viscosity, mPa.s	20,000-36,400	16,000	15,000	16,000	27,000	30,500	20,000	11,400-14,600	16,200-19,000	14,700-17,100
As-Cured Physical Properties[1]										
Durometer Hardness, Shore A, points	24, 23, 19, 25	13	8	45	58	56	16	13, 15, 12	23, 24, 18	28, 27, 23
Tensile Strength, MPa	4.7, 4.6, 4.6, 4.1	3.9	2.6	2.7	4.4	4.0	3.2	3.6, 3.7, 4.0	4.8, 4.8, 4.2	4.9, 4.7, 4.9
Elongation, percent	544, 543, 622, 438	680	650	170	127	128	534	689, 585, 765	568, 528, 582	537, 483, 568
Tear Strength, die B, N/mm	26, 24, 26, 25	25	13	<5	<7	7	<5	28, 28, 27	23, 25, 27	30, 23, 27
Linear Shrink, percent	0.2-0.4 (all)	0.2-0.4	0.2-0.4	0.2-0.4	0.4-0.6	–	0.2-0.4	0.2-0.4 (all)	0.2-0.4 (all)	0.2-0.4 (all)

† These values are not intended for use in preparing specifications. [1] Based on sample thickness of 125 mils, cured 24 hours at room temperature. [2] Cured for 7 days @ 23°C (73°F)

Typical Properties† Addition Cure Materials

	Silastic® Silicone Rubber								
	M	P-1	S	S-2	T-2	T-2 HDCA[3]	T-4	T-4 O	V
As Supplied									
Specific Gravity	1.29	1.12	1.12	1.13	1.12	1.12	1.1	1.1	1.35
As Catalyzed									
Appearance	Regal Blue	Off White	Green	Off White	Translucent	Translucent	Translucent	Translucent	Purple
Viscosity, mPa.s	90,000	13,500	12,800	12,000	55,000	55,000	35,000	35,000	19,000
As-Cured Physical Properties[1]									
Durometer Hardness, Shore A, points	59	25	26	20	42	47-53	40	40	38
Tensile Strength, MPa	4.5	7.5	6.9	6.3	5.5	5.5-6.9	6.7	6.5	6.3
Elongation, percent	250	850	900	600	300	250	400	375	500
Tear Strength, die B, N/mm	16	23	25	23	21	23-25	27	32	32
Linear Shrink, percent									
After 24 hrs @ 25°C (77°F)	Nil[2]	Nil[2]	Nil[2]	Nil[2]	Nil[2]	Nil[2]	Nil[2]	Nil[2]	Nil[2]
After 7 days @ 25°C (77°F)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

† These values are not intended for use in preparing specifications. [1] Based on sample thickness of 125 mils, cured 24 hours at room temperature.
[2] Shrinkage not measurable after curing 24 hours at room temperature. [3] T-2 HDCA — T-2 Base/T-2 High Durometer Curing Agent; Cure 2 hrs @ 60°C (140°F). [4] T-4 O — T-4 Base/T-4 O Curing Agent.

Other Dow Corning products
for the moldmaking industry.

***Silastic*® Thixo Additive:**
Silastic® Thixo Additive can be used with *Silastic*® 3481, 3483, 3487, 3498, P-1, S, S-2, T-2, T-4 and V products. Adding 1%-3% of this additive will give them a paste-like consistency. After applying and curing a thin layer of moldmaking material base without the additive, a thicker layer can be applied with a spatula, e.g., on vertical surfaces, to obtain the final mold. When stored below 20ºC (68°F), *Silastic* Thixo Additive may solidify; apply heat to re-liquefy by placing the closed container into hot water.

***Dow Corning*® 732 Multipurpose Sealant, Clear:**
This one-part adhesive cures at room temperature and can be used to repair torn molds.

***Dow Corning*® 734 Flowable Sealant:**
This one-part room-temperature coating can be used for painting silicone robotic skins. It can be easily pigmented and diluted with solvents.

Silicone Oil (PDMS) 50 cSt Fluid:
This product can be used as a thinner to lower mixed viscosity and also to adjust the hardness of the cured silicone. It can also be used as a release agent. Users must conduct their own trials to establish the optimum silicone oil viscosity and amount to meet their specific need.

***Syl-Off*® 4000 Catalyst:**
This cure accelerator can be used to speed room-temperature cure of all addition cure (platinum cure) moldmaking silicone rubbers. It can also be used as a surface treatment to prevent inhibition.

Dow Corning offers a variety of additional products designed specifically for complex moldmaking applications. For assistance in selecting the right products, contact your Dow Corning representative.

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How to Contact Us

For general assistance or more information about product selection, call your Dow Corning sales representative or distributor. For technical support or moldmaking advice, call one of our primary locations or visit our website at **dowcorning.com/moldmaking.**

Your Global Connection

Dow Corning's worldwide network of offices offers global accessibility. Visit **dowcorning.com/ContactUs** or call your local Dow Corning Moldmaking expert.

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