Rapid prototyping and composite materials manufacturing

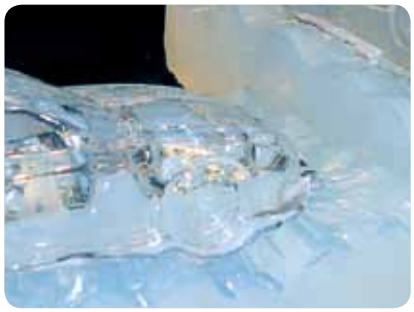
Bluestar Silicones. Delivering Your Potential.

BLUESTAR SILICONES

Glass-like transparent silicone molds for rapid prototyping

Moldmaking at room temperature for rapid prototyping

High transparency grades will not hide the object inside the mold. Reproducing with artificial resins (PU, Epoxy, PES) will not detriment mold quality. Pulling the object out of the mold will not damage the mold. All of this is **RTV 3040** family.



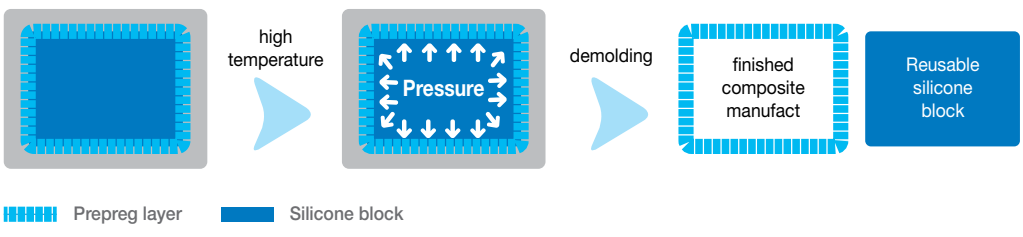
Silicone range for rapid prototyping

BLUESIL™ RTV A BLUESIL™ RTV B	3040 A				
	3040	3040 SB	3040 HARD	3040 1:1	3040QC
Special Feature	standard	self-bleeding	higher hardness	1:1 mix ratio	quick cure
Mix ratio A:B	10:1	10:1	10:1	1:1	10:1
Hardness [Sh.A]	38	38	44	37	35
Working Time [min]	75	75	75	60	50
Demolding Time [h]	12	12	24	12	6
Mix Viscosity [mPa.s]	42000			56000	42000
Tensile Strength [MPa]	5.2	5.2	5.5	5.5	5.5
Elong. at Break [%]	350	350	330	400	300
Tear Strentgh [KN/m]	19	19	22	22	20

Silicone pressure intensifiers for thermal expansion molding

Thermal expansion molding is a low-cost manufacturing method for fabricating fiber-reinforced-resin composite structures. In its simplest form, the tooling is **self-pressurized by thermal expansion of solid silicone blocks** inside a closed hard mold box.

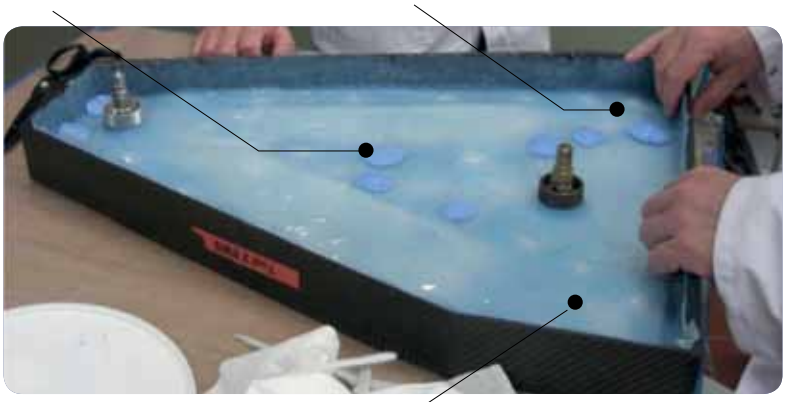
BLUESIL™ RTV 3428 (see main characteristics of this material in the general molding sheet) can easily do the job: thanks to its volumetric thermal expansion coefficient α of about $5*10^{-4}$ /°C and a Young modulus of about 1MPa, the elastomer allows for a pressure increase of about 0.05 bar every 10°C of heating.



Silicones for composite materials manufacturing – vacuum resin infusion bag

When naming SILICONE to the composite industry, the term was initially linked to “anti-adherence” or “no paintability”.
BLUESIL™ RTV 3720 could make a mind-change when its 0,5 mm-thick film could be stretched up to 5 times its length: its potential as vacuum bag was immediately discovered.
BLUESIL™ RTV 3720 can be sprayed onto the mold so that, after curing, a thin silicone film is readily available, adapting to every spot of the mold surface. Such film is a **silicone vacuum bag** that can be repeatedly used, and disposed only when the mold itself is not needed anymore.
The mold construction is carried out as usual, and cast after cast instead of a new plastic bag the same silicone bag is applied, which contains already the vacuum valve and the sealing tape... that is the silicone itself.

The preparation of a vacuum bag with silicone is just different: you make **one bag for several production cycles.** If the silicone bag good, the economical return is granted! After **spraying or casting RTV 3720,** you may need to reinforce sharp corners of the bag: RTV 3535P is a silicone paste that, after kneading just in your hands, can be applied as a mastic on the silicone bag.
If the bag should be composed of multiple silicone layers, these can be attached together by means of **CAF 3, the silicone glue.** Finally, to prevent the silicone bag from moving out of the mold frames, the bag can be treated with RT Gel, a bicomponent **silicone adhesive** that adheres chemically to the bag: thanks to its tack, the silicone bag is vacuum-tightly attached to the mold frame.



Silicone property	▶	Silicone advantage in Resin Infusion
Applicable by spray/brush	▶	Time saving (i.e. no bag clamping)
Silicone is self-sealing	▶	No need for sealing tape (i.e. butyl tape)
Resin resistance Good mechanical properties	▶	Reusable > minor disposal efforts
Elasticity self-release	▶	Easy demolding No need for release agents

BLUESIL™ RTV	3720	3720 SC	3535P
Hardness [Sh.A]	20		35
Working Time [min]	3	**60**	3
Demolding Time [min]	**15**	**150**	15
Mix Viscosity [MPa]	40000	40000	**putty**
Recommended Application	spray	brush big molds	bag protection

BLUESIL™ RTV 3720 is sold also in bi-cartridges!

For detailed commercial contacts please visit our website:
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