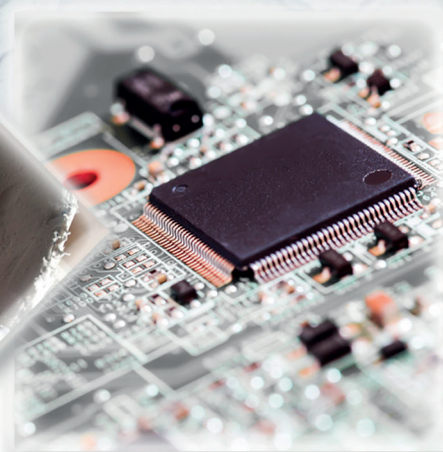


SILICONE ELASTOMERS



CHEMICAL SPECIALTIES
ESQUIM S.A.

RTV-2 Condensation Rubber

Silicone elastomer in two components, which crosslink when mixed at room temperature, thus obtaining a flexible and elastic end product with excellent mechanical properties.

Silicone MoldMaking

Elastomer and the catalyst chosen are widely used to produce molds for reproducing models made in wax, ceramic, wood, metal, stone, plaster, etc., in materials such as polyester resins, polyurethane, reconstructed stone, alabaster, plaster, etc. A wide range of mechanical properties may be obtained when applied with different catalyst to cover all customer needs.

- *High fidelity and good reproduction to the objects*
- *Good mechanical properties*
- *Excellent heat stability*
- *Flexible at low temperatures (-40°C)*
- *Low compression set*
- *High dielectric strength*
- *Low flammability*
- *Pigmentability*

PRODUCT	Physical Properties		CATALYST (5% add-on RTV)
	Appearance	Viscosity (cps)	
ESQUIM RTV-1301	Red	60.000	CAT-1301
ESQUIM RTV-1351	Grey	25.000	CAT-1301
ESQUIM RTV-590E	Beig	7.000	CAT-590
ESQUIM RTV-101	Beig	12.000	CAT-101
ESQUIM RTV-121	Beig	7.000	CAT-121
ESQUIM RTV-131	Beig	8.000	CAT-121
ESQUIM RTV-141	Beig	10.000	CAT-121
ESQUIM RTV-801	White	20.000	CAT-801
ESQUIM RTV-235	White	20.000	CAT-235
ESQUIM RTV-491	White	30.000	CAT-431 CAT-421 CAT-451
ESQUIM DP-069B	White	22.000	CAT-070B
ESQUIM RTV-471	White	30.000	CAT-471
ESQUIM RTV-15P	White	29.000	CAT-15P
ESQUIM RTV-435	White	45.000	CAT-435
ESQUIM RTV-609	White	40.000	CAT-609
ESQUIM RTV-3059	Translucent	40.000	CAT-3059
ESQUIM RTV-599TX	White	Paste	CAT-599TX



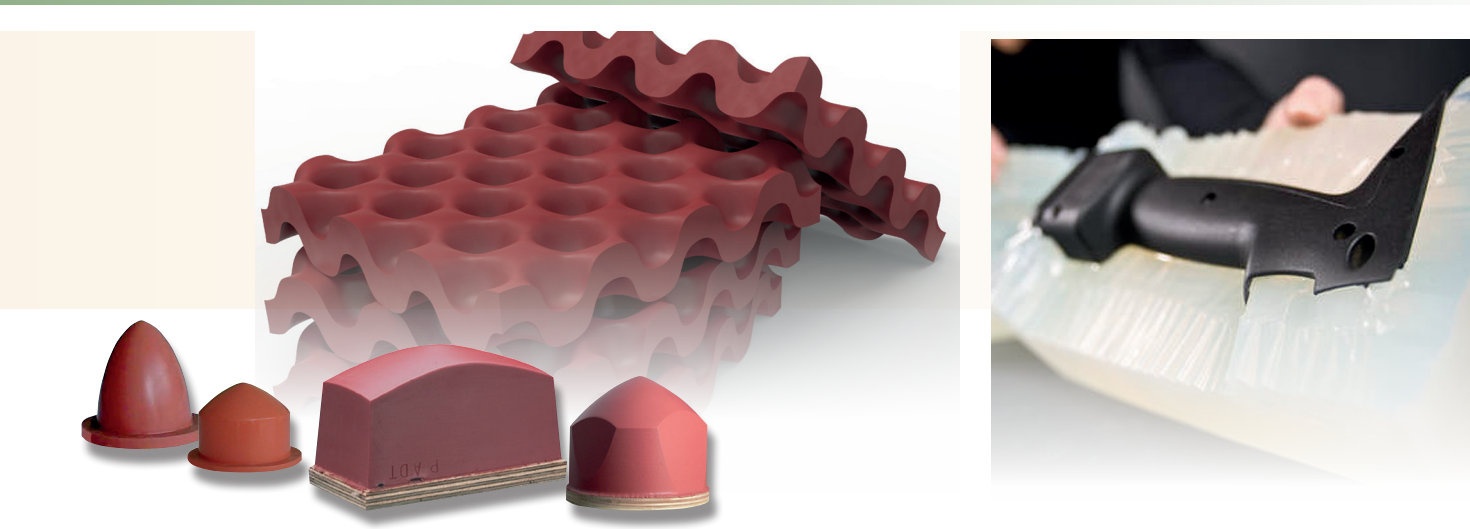
Mechanical Properties						FEATURES
Approx. Working time, h	Approx. Demolding time, h	Hardness, ShA	Tensile strength, Kg/cm ²	Elongation, %	Tear strength, Kg/cm	
1	3	55	38	100	<10	High hardness, low tear strength High thermal stability and heat dissipation for casting low-metal alloys
2	5	50	40	110	<10	General purpose, high hardness, low tear strength
1	3	10	20	210	<5	General purpose, low tear strength Widely used for rapid prototyping
1h 30	3	8	20	210	<5	
7min	20 min	10	20	210	<5	
7min	20 min	15	20	210	<5	
7min	20 min	22	20	100	<5	
2	10	17	30	250	16	General purpose, medium tear strength Designed for small series
3	24	15	32	500	17	
3	22 24 24	22 16 12	40 35 34	350 400 500	22 22 22	General purpose, high tear strength Versatile for all types of casting materials
2	22	17	39	410	23	Suitable for all those applications where an aggressive casting is required, such as polyester resins or reconstructed stone Can be made nonflowable with thixotropic agents
2	15	17	45	400	23	
2	24	15	40	400	22	
3	24	25	40	300	20	Product with high degree of hardness Suitable for polyurethane pieces Can be made nonflowable with thixotropic agents
3	24	18	35	350	19	Polyvalent material and very resistant Using ESQUIM AD-TX as a thixotropic agent, this product is suitable for vertical surfaces replication
3	24	15	35	370	19	Particularly suitable when translucent mold is required. Using ESQUIM AD-TX as a thixotropic agent, this elastomer is also used in the production of vertical molds Widely used for special effects
3	24	19	35	350	19	Paste for vertical applications

RTV-2 Condensation Rubber

Silicone Specialties

- *Wide range of products according to hardness, tensile and tear strength, elongation and flowability*
- *Different curing and demolding times to choose according to requirements*
- *Resistance of the properties to extreme conditions: heat and cold, low or high dampness, dip in water, oil, ozone, UV and pollution*
- *Good electric insulator*
- *High degree of performance as a mechanical sealant with long-term flexibility, elasticity, resistance to the aging, cracks and deformation for compression*

PRODUCT	Applications				
	Prototypes production	Pad Printing	Special effects	Electronic potting, encapsulation	Podology
ESQUIM RTV-1301	●	●		●	
ESQUIM RTV-1351	●	●		●	
ESQUIM RTV-1371	●	●		●	
ESQUIM RTV-201		●			
ESQUIM RTV-590E	●			●	
ESQUIM RTV-101	●			●	
ESQUIM RTV-121	●			●	
ESQUIM RTV-131	●			●	
ESQUIM RTV-141	●			●	
ESQUIM RTV-8637/14	●		●		
ESQUIM RTV-8585	●		●		
ESQUIM RTV-8579/2	●		●		
ESQUIM RTV-143/2			●	●	
ESQUIM RTV-143/3			●	●	
ESQUIM DP-133					●
ESQUIM DP-145					●
ESQUIM DP-125					●
ESQUIM RTV-170					●
ESQUIM DP-178					●
ESQUIM RTV-901					●



Physical Properties		Mechanical Properties								FEATURES
Apperance	Viscosity (cps)	Catalyst	Catalist weight by 100 base mixing	Approx. Working time h	Approx. Demolding time, h	Hardness, ShA	Tensile strength, Kg/cm ²	Elongation, %	Tear strenth, Kg/cm	
Red	60.000	CAT-1301	5	1	3	55	38	100	6	Suitable for applications requiring high degree of hardness and temperature
Grey	40.000	CAT-1301	5	2	5	50	40	110	5	Appropriate for applications with high hardness requirements
Grey	80.000	CAT-1301	5	2	5	68	30	80	7	
White	1.500	CAT-201	5	1	3	Sh00 40	8	200	<5	Product designed for low hardness requirements
Beig	7.000	CAT-590	1	3	5	10	20	210	<5	General use, low tear strength
Beig	12.000	CAT-121	5	7 min	20 min	8	20	210	<5	Rapid product range suitable for prototypes production and electronic encapsulation
Beig	7.000	CAT-121	5	7 min	20 min	10	20	210	<5	
Beig	8.000	CAT-121	5	7 min	20 min	15	20	210	<5	
Beig	10.000	CAT-121	5	7 min	20 min	22	20	100	<5	
Translucent	20.000	CAT-8637/14	5	1	10	10	-	350	14	Translucent range ideal for prototyping when viewing inside the mold is a requirement
Translucent	35.000	CAT-SRE	5	30 min	3	15	-	200	14	
Translucent	10.000	CAT-SRE	5	1	5	16	-	-	3	
Translucent	5.000	CAT-431	5	2	24	18	-	-	-	High transparency for figurines or decorative fillers
Translucent	5.000	CAT-431	5	2	24	18	-	-	-	High transparency product with adhesion promoter for stained-glass windows and encapsulates
Pink	Paste	CAT-901	3	3 min	15 min	5	23	380	5	Used to produce orthoses in podology applications
Pink	Paste	CAT-901	3	3 min	15 min	10	23	380	5	
Pink	Paste	CAT-901	3	3 min	15 min	15	25	320	5	
Grey	Paste	CAT-901	3	3 min	15 min	25	28	250	5	
Grey	Paste	CAT-901	3	3 min	15 min	35	28	180	5	
Pink	Paste	CAT-901	3	3 min	15 min	25	28	250	5	

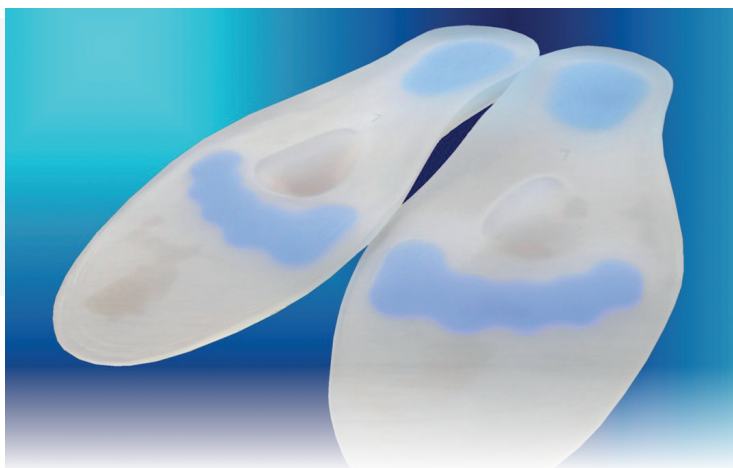
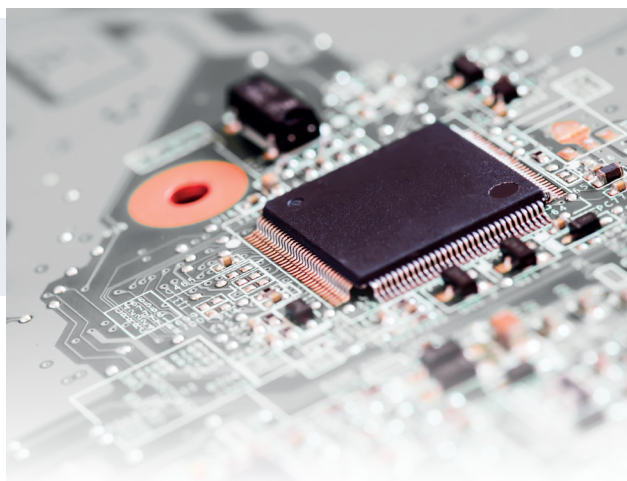
Addition Rubber

Silicone elastomer in two components, which crosslink when mixed at room temperature through a polyaddition reaction, thus obtaining a product with excellent mechanical properties.

Silicone Specialties

- *No by-product reaction*
- *No shrinkage*
- *Temperature greatly influences the working time*
- *Good mechanicals properties*
- *Heat stability (180°C)*
- *Flexible at low temperatures (-40°C)*
- *Low compression set*
- *High dielectric strength*
- *Low flammability*
- *Pigmentability*

PRODUCT	Applications				
	Moldmaking	Prototypes production	Orthopedic templates	Electronic potting, encapsulation	Flexible coatings
ESQUIM RTV-172D					●
ESQUIM RTV-7007	●	●		●	
ESQUIM RTV-7002	●	●		●	
ESQUIM RTV-7002T	●	●	●	●	
ESQUIM RTV-7005	●	●		●	
ESQUIM RTV-7006 A&B	●	●		●	
ESQUIM RTV-7131 A&B		●	●	●	
ESQUIM RTV-143 A&B		●	●	●	
ESQUIM RTV-204 A&B	●	●	●	●	
ESQUIM DP-165 A&B				●	
ESQUIM RTV-7030 A&B				●	●
ESQUIM DP-286 A&B				●	
ESQUIM RTV FOAM			●		●
ESQUIM DP-269 A&B				●	



Physical Properties		Mechanical Properties								FEATURES
Apperance	Viscosity (cps)	Catalyst	Catalist weight by base mixing	Aprox. Working time, h	Aprox. Demolding time, h	Hardness, ShA	Tensile strength, Kg/cm ²	Elongation, %	Tear strength, Kg/cm	
Translucent	100.000	C-DP172B	100:10	>48	150°C 5-10 min	50	30	200	-	Resistance to high and low temperatures on flexible textile coatings
Translucent	70.000	CAT-7007	100:10	1	24	40	75	400	23	High strength silicone moldmaking rubber
Translucent	45.000	CAT-7002	100:10	1	24	40	57	300	21	
Translucent	42.000	CAT-7002T	100:10	3	24	37	55	310	20	
Translucent	25.000	CAT-7005	100:10	1h 30	24	25	25	200	14	General purpose, medium tear strength
Translucent	25.000	A&B	1:1	1h 30	24	25	25	200	14	
Translucent	1.500	A&B	1:1	25°C 15 min 60°C 5 min	25°C 30 min 60°C 10 min	Sh00 45	-	-	-	Suitable for encapsulating applications
Translucent	2.000	A&B	1:1	25°C 30 min 60°C 10 min	25°C 60 min 60°C 15 min	8	10	600	2	High elongation, ideal for heel cushions and toe separators
Translucent	2.500	A&B	1:1	25°C 3h 60°C 15 min	25°C 5h 60°C 30 min	7	16	600	3	
Black	2.500	A&B	1:1	>48	60°C 3h	37	-	-	-	General purpose encapsulant with good flame resistance
Translucent	600	A&B	1:1	50 min	3	200 th mm	-	-	-	Silicone dielectric gel suitable for sealing and protecting electronic devices
Beig	150.000	A&B	1:1	>48	150°C 5 min	35	55	400	12	LSR for composite insulator
Beig	6.000	A&B	1:1	5 min	20 min	Sh00 25	-	-	-	RTV-2 silicone foam
Translucent	30.000	A&B	1:1	60°C 15 min	60°C 60 min	68	-	-	-	High hardness and high consistency

Additives for Silicones Rubber

ESQUIM has developed a wide range of additives for its silicones rubber.

Specific catalysts

Confer specific properties according to customer needs.

PRODUCT	DESCRIPTION	CHARACTERISTICS
ESQUIM CAT-SRE	Organotin-based catalyst	Increases curing and demolding time of the RTV-2C respect to usual catalyst. Provides an increase in final hardness
ESQUIM CAT-ER	Organotin-based catalyst	Very short demolding time

Thixotropic Agent

Additive providing the elastomer with the consistency adapted for vertical applications.

PRODUCT	DESCRIPTION	CHARACTERISTICS
ESQUIM AD-TX	Thixotropic liquid	Increases the consistency of certain elastomers turn them into not fluid pastes

Pigment pastes

ESQUIM PG is a range of silicone-based pigment paste specially developed for coloring aqueous free products based on silicone.

PRODUCT	COLOUR	DENSITY g/cm ³	THERMAL STABILITY, °C
ESQUIM PG-001	Red	1,0	240
ESQUIM PG-002	White	1,8	280
ESQUIM PG-003	Green	1,0	250
ESQUIM PG-004	Blue	1,0	280
ESQUIM PG-005	Yellow	1,0	200
ESQUIM PG-006	Brown	1,7	200
ESQUIM PG-007	Black	1,5	320
ESQUIM PG-008	Orange	1,0	200
ESQUIM PG-009	Gold	1,3	260
ESQUIM PG-010	Silver	1,0	300

Viscosity reducer

Non reactive additive to act as a plasticizer or to reduce viscosity.

PRODUCT	DESCRIPTION	CHARACTERISTICS
ESQUIM FS-50	Viscosity reducer for RTV1, RTV2	Reduces base viscosity and cured RTV hardness

Masterbatch

Product designed to increase the mechanical properties of the RTV-2.

PRODUCT	DESCRIPTION	CHARACTERISTICS
ESQUIM DL-2001C	Compound of superficially modified pyrogenic silica	High mechanical properties concentrate used as formulation RTV base

Degassing for polyester

PRODUCT	DESCRIPTION	CHARACTERISTICS
ESQUIM AD-2565	30% of active polymers silicone free	Prevents and removes bubbles formed in the processed polyester



Releases agents

Releases agents give non-stick properties, making it easier to produce the pieces more quickly and cleanly.

PRODUCT	DESCRIPTION	CHARACTERISTICS
ESQUIM D-142	Ready-to-use silicone-free release agent in aqueous solution	Suitable for releasing different kind of resins such as phenolics, polyester, rubber, etc. Barrier coat used to prevent inhibition in addition cure systems
ESQUIM D-92R	Silicone-free release agent in spray form	Excellent to release parts or articles that require post-finishing or painting
ESQUIM D-72	Aqueous emulsion, silicone free, based on synthetic waxes	Excellent release characteristics. Does not carbonize or gum at mold temperature
ESQUIM D-12B	Solvent based release agent based on waxes Silicone free product, ready to use	Highly effective as a release agent for all those materials that need to be post painted or glued
ESQUIM FNS-15	Medicinal white mineral oil	Release and lubricating agent for skin contact and indirect food contact materials

Primer agents

Additives developed to improve the adhesion of RTV and heat cure silicones in steel, cooper, wood, plastic, etc.

PRODUCT	DESCRIPTION	CHARACTERISTICS
ESQUIM I-72	Primer for RTV-1, RTV-2C	Improves the adhesion between condensation rubber in many substrates such as steel, cooper, wood and plastic, etc.
ESQUIM DP-186A	Primer for RTV-2A, LSR, HTV	Adhesion promoter between silicone elastomers and metal and non-metallic substrates
ESQUIM DP-186B	Primer for RTV-2A, LSR, HTV	Black primer that acts as an adhesion promoter between silicone elastomers and metallic and non-metallic substrates
ESQUIM DP-179A	Primer for RTV and HTV	Primer to improve the adhesion between RTV-HTV and many metals, ceramics and some plastics

Silicone solvents

Product designed to eliminate cured silicones and surfaces preparation.

PRODUCT	DESCRIPTION	CHARACTERISTICS
ESQUIM DP-026A	Digester of cured silicones	Allows to eliminate any unwanted parts of the mold
ESQUIM MS-02	Surface assistant	Cleaner plastic and metallic surfaces

Silicone multipurpose

PRODUCT	DESCRIPTION	CHARACTERISTICS
ESQUIM S-196	RTV-1 silicone sealant	Adhesive used to repair damaged molds

RTV-2 MoldMaking

Silicone elastomer are widely used in moldmaking for reproducing wax models, ceramic, wood, metal, stone, plaster, etc. in materials such as polyester resins, polyurethane, artificial stone, alabaster, gypsum, etc. A wide range of mechanical properties depending on the different catalysts applied, according to requirements.

RTV Silicone Rubber Molding Techniques

There are different types of molding techniques, which will be given in large part by the geometry of the original model.

MODEL FEATURES	MOLDING TECHNIQUES	APPLICATION TECHNIQUE
FLAT BACK FEW UNDERCUTS	BLOCK MOLDING IN 1 PART	POURED OR SPATULA
FULLY STRUCTURED FEW UNDERCUTS	BLOCK MOLDING IN 2 OR MORE PARTS	POURED OR SPATULA
FLAT BACK ACCENTUATED UNDERCATS	SKIN MOLDING IN 1 PART	POURED OR SPREAD
FULLY STRUCTURED ACCENTUATED UNDERCATS	SKIN MOLDING IN 2 OR MORE PARTS	POURED OR SPREAD



How to use

● Substrate Preparation

The surface of the original should be clean and free of loose material. With porous substrates, a release agent or barrier coat may be needed to seal the surface before casting the silicone.

● Mixing

Pour into a clean container corresponding parts by weight of base and catalyst (see precautions inhibition of cure) and mix together until the curing agent is completely dispersed in the base. Can be mixed manually or using a mechanical stirrer, but not for a long mix or allow the mixture to temperatures above 35° C period. It is always preferable to mix small quantities to ensure a good mix of base and curing agent.

It is recommended to remove trapped air by placing the mixture in a vacuum chamber, allowing it thereupon completely expand and collapse. Keep the mixture for 1 to 2 minutes in the vacuum chamber and then proceed to an examination; if there are no air bubbles you can use. Airing the mixture in vacuum produce a volume increase of 3-5 times so you should use a large container.

Note: If no vacuum de-airing equipment is available, air entrapment can be minimized by mixing a small quantity of base and curing agent then using a brush, painting the original with a 1-2 mm layer. Leave at room temperature until the surface is bubble free and the layer has begun to cure. Mix a further quantity of base and curing agent and proceed as follows to produce a final mold.

● Mixture application and curing

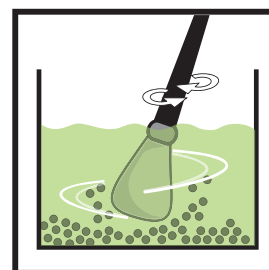
Pour the mixed as soon as possible onto the original, avoiding air entrapment. The catalyzed material will cure to a flexible rubber within 18 to 24 hours at room temperature (22-24° C), forming a flexible rubber mold can be easily separated from the original (depending on the chosen elastomer and catalyst different working and curing times are obtained). If the temperature is significantly lower, the cure time will be longer.

Crosslinking Condensation: due to the type of reaction occurring during the process, the volatile alcohols generated cause a contraction of the pieces (<1%). For the reaction to proceed properly minimum percentage of humidity of 40% is required to achieve a free hardening adhesive.

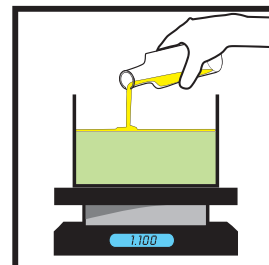
Crosslinking addition: in the vulcanization process no by-products are obtained, so that the shrinkage is minimal.

Inhibition of cure

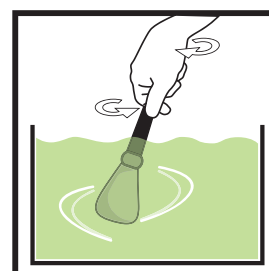
All addition cured silicone elastomers are susceptible to cure inhibition when are in contact with certain materials and chemicals. Inhibition has occurred if the elastomer is only partially cured after 24 hours, or has a sticky surface in contact with another material. Amines and sulphur containing materials are strong inhibitors, as are organo tin salts used in condensation cure silicone elastomers. It is strongly recommended that mixing containers, mold construction materials, originals and release agents be checked for any inhibition effect before use.



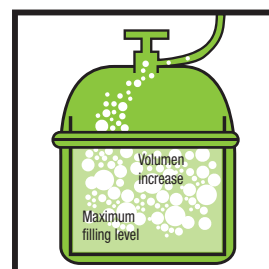
Homogenize the product



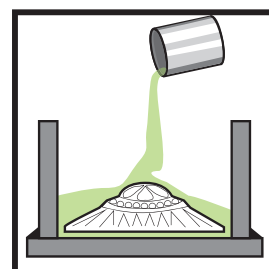
Weigh the second product



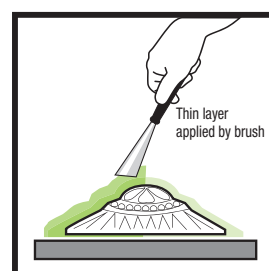
Mix both components



Remove the air



Pour the mixture from the highest point of model



Spread the product on the almost cured thin film



c/ Industria, 15
Polígono Industrial Sud
08440 Cardedeu - Barcelona - Spain
Tel: +34 93 871 11 93
Fax: +34 93 871 13 01
www.esquim.com
esquim@esquim.com