

XIAMETER® RTV-4250-S Kit Green

High strength silicone moldmaking rubber

FEATURES

- Outstanding release properties
- If required the product cure can be heat accelerated
- Fast thick section cure at room temperature
- Medium hardness
- High inhibition resistance
- High tear resistance
- Very high elasticity, for easy removal of complex replica parts
- Very low shrinkage and good dimensional stability
- Can be used for high temperature casting applications
- Can be made thixotropic (non-flowable) for vertical surface replication
- Fast RTV cure, very fast cure with even, low heat
- Very low viscosity for easy mixing and de-airing
- Fast, RTV cure
- Low durometer hardness

COMPOSITION

- Liquid, two-component material consisting of a base and a curing agent, which when mixed, cure at room or elevated temperatures by an additional reaction.

APPLICATIONS

- XIAMETER® RTV-4250-S Kit Green is a high strength for detailed reproduction of surfaces and objects for prototype design and production tooling, as well as artistic and renovation applications. Its low durometer also makes it ideal for pad print applications.

TYPICAL PROPERTIES

Specification Writers: These values are not intended for use in preparing specifications. Please contact your local XIAMETER® sales representative prior to writing specifications on this product.

Test	Unit	Value
Base and Curing Agent Applications:		
Base		
Viscosity	mPa.s	26,000
Color		Off white
Curing Agent		
Viscosity	mPa.s	140
Color		Green
Base and Curing Agent mixture (100:10 by weight)		
Mixed viscosity	mPa.s	13,500
Working time	minutes	40-60
Curing time	hours	7
Cured for 24 hours at 23°C (73.4°F)		
Hardness (Shore A)		25
Tensile strength	MPa	7.0
Elongation at break	%	850
Tear strength	kN/m	23
Relative density at 23°C (73.4°F)		1.12
Linear shrinkage	%	<0.1
Moldmaking Rubber Applications:		
As Supplied		
Base Color		Off-white
Viscosity	cp	28,000
Curing Agent Color		Green
Viscosity	cp	140
As mixed – 100 parts Base to 10 parts Curing Agent by Weight		
Viscosity		12,800
Specific Gravity		1.12
As Cured – 24 hours at 77°F (25°C)		
Durometer Hardness, Shore A	points	26
Tensile Strength	psi	1000
Elongation	percent	900
Tear Strength, Die B	ppi	140
Linear Shrink	percent	<0.1

DESCRIPTION

XIAMETER RTV-4250-S Kit Green is a two-component material consisting of XIAMETER RTV-4250-S Kit Green. A range of materials can be cast into the cured silicone mold: plaster, polyurethane, polyester and other reactive resins are materials typically used.

HOW TO USE

Substrate preparation

The surface of the original should be clean and free of loose material. XIAMETER RTV-4250-S Kit Green releases well from most substrates after cure. With porous substrates, a release agent or barrier coat may be needed to seal the surface. Release coatings such as petroleum jelly or others can be used.

In all cases, it is advisable to check before casting that no discoloration or adhesion occurs between the product and the original mold or frame.

Moldmaking Rubber

Applications:

Application

Thoroughly shake/stir the curing agent before use. Weigh out 100 parts of base and 10 parts of curing agent in a clean container. Accurate weighing is essential, as inaccuracies can cause a significant decrease in performance of the cured rubber (the base to curing agent ratio must be between 100:9.5 and 100:10.5). Mix until the curing agent is completely dispersed in the base and a uniform color is obtained.

Heat generated by mixing should be minimized. Mix suitably small quantities to ensure adequate working time. (See Table I.) Entrapped air should be removed in a vacuum chamber,

allowing the mixture to completely expand and then collapse. After three additional minutes of vacuum, the mix should be inspected and can be used if free from air bubbles. A volume increase of two to three times will occur on vacuum de-airing of the mixture, so a suitably large container should be chosen.

Pour the mixed basic and curing agent onto the master, avoiding air entrapment. The catalyzed mixture will typically cure to a flexible rubber within six to eight hours at room temperature (see Table I), and the part can be demolded. Heat accelerating the cure is possible, but this will produce some apparent shrinkage of the mold due to differences in the volume contraction on cooling between the silicone rubber and the original. The higher the curing temperature, the greater the likelihood of differences in dimensions.

Moldmaking Rubber

Applications:

Inhibition of Cure

All addition-cure silicone elastomers are susceptible to cure inhibition when in contact with certain materials and chemicals. Mixing containers, mold construction materials, masters and release agents should be checked for any inhibition effect before use by properly mixing base and curing agent and applying a small amount against the surfaces. Inhibition has occurred if the elastomer is only partially cured after 16 hours, or has a sticky surface in contact with another material. Amines and sulfur-containing materials are strong inhibitors, as are organotin salts used in condensation-cure silicones. Wet or moist surfaces can cause gas bubbles to form

during cure in the silicone adjacent to the substrate surface.

Base and Curing Agent Applications:

Mixing

The product contains a pigment which acts as an indicator for proper measuring and mixing. Thoroughly shake/stir the curing agent before use so that any sedimented pigment is redispersed.

Weigh 100 parts of base and 10 parts of curing agent in a clean container, then mix together until the curing agent is completely dispersed in the base. Hand or mechanical mixing can be used, but do not mix for an extended period of time or allow the temperature to exceed 35°C (95°F). Mix sufficiently small quantities to ensure thorough mixing of base and curing agent.

It is strongly recommended that entrapped air be removed in a vacuum chamber, allowing the mix to completely expand and then collapse. After a further 1-2 minutes under vacuum, the mix should be inspected and can be used if free of air bubbles. A volume increase of 2-3 times will occur on vacuum de-airing the mixture, so a suitably large container should be chosen.

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 1-2mm 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.

The base/curing agent ratio MUST be between 100:9.5 and 100:10.5.

Base and Curing Agent

Applications:

Pouring the mixture and curing

Pour the mixed base and curing agent as soon as possible onto the original, avoiding air entrapment. The catalyzed material will cure to a flexible rubber within 68 hours at room temperature (2224° C/ 71.675.2° F) and the mold can then be removed. If the working temperature is significantly lower, the cure time will be longer. Heat accelerating the cure is possible, but this will produce some apparent shrinkage of the mold due to differences in volume contraction on cooling between the silicone rubber and the original. The higher the curing temperature, the greater the likely differences in dimensions.

Table 1: Pot life and cure time

Temp. °C (°F)	Working time minutes	Time to cure
5 (41)	>360	>24 hours
10 (50)	280	20 hours
15 (59)	165	12 hours
20 (68)	105	10 hours
25 (77)	45	7 hours
30 (86)	30	4 hours
40 (104)	-	40 minutes
50 (122)	-	20 minutes

Base and Curing Agent

Applications:

Additional Information

Inhibition of cure

All addition-cured silicone elastomers are susceptible to cure inhibition when 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 organotin salts used in condensation cure silicone elastomers. Wet or moist surfaces can cause gas bubbles to be formed during cure in the silicone adjacent to the substrate surface. It is strongly recommended that mixing containers, mold construction materials, originals and release agents be checked for any inhibition effect before use.

Base and Curing Agent

Applications:

Use at high temperatures

Molds produced from XIAMETER RTV-4250-S Kit Green have a long life at elevated temperatures. However, continuous use above 200°C (392°F) will result in loss of elasticity over a period of time. Use above 250°C (482°F) is not recommended. When heated, a mold made of SILASTIC S Base will expand producing a small change in copy dimensions.

Base and Curing Agent

Applications:

Reproduction of vertical surfaces

If a skin mold is required of a vertical object or surface and cannot be made by normal pouring techniques, the catalyzed mixture can be made nonflowable by the addition of XIAMETER® RTV-3011 Thixo Additive

1. Prepare the original as described earlier.

2. Brush the original with a thin layer of catalyzed mixture. Repeat the operation when the first layer has started to cure, to achieve a coating thickness of >2mm. Leave to cure at room temperature until the material is tacky.

3. Prepare a new catalyzed mixture of XIAMETER RTV-4250-S Kit Green and add 3% by weight of XIAMETER RTV-3011 Thixo Additive and mix thoroughly until a paste consistency is reached. De-airing of the mixture is not required.

4. Using a spatula, cover the coated original with the thixotropic coating until all undercuts are filled; leave to cure for 8 hours at room temperature.

5. Construct a support mold using polyester resin or plaster and allow to set in contact with the silicone coating. Carefully remove the support mold. Peel the rubber off the original and place in the support mold.

Base and Curing Agent

Applications:

Resistance to casting materials

The chemical resistance of fully cured XIAMETER RTV-4250-S Kit Green is excellent, and similar to all addition-cure silicone elastomers. It should be noted however that ultimately, resins and other aggressive casting materials will attack silicone molds, changing physical properties, surface release and possibly mold dimensions. Molds should be checked periodically during long production runs.

Note:

XIAMETER RTV-4250-S Kit Green is an industrial product and must not be used in food molding, dental and human skin molding applications.

PRODUCT SAFETY INFORMATION

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED IN THIS DOCUMENT. BEFORE HANDLING, READ PRODUCT AND MATERIAL SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL, ENVIRONMENTAL, AND HEALTH HAZARD INFORMATION. THE MATERIAL SAFETY DATA SHEET IS AVAILABLE ON THE XIAMETER WEB SITE AT WWW.XIAMETER.COM.

Both base and curing agent can be sensitive to moisture and contamination. Ensure containers are tightly closed after.

STORAGE**Moldmaking Rubber****Applications:**

Product should be stored at or below 90°C (32°F) in original, unopened containers.

Base and Curing Agent**Applications:**

Product should be stored at or below 25°C (77°F) in original, unopened containers.

The most up-to-date shelf life information can be found on the XIAMETER Web site in the Product Detail page under Sales Specification.

LIMITATIONS

This product is neither tested nor represented as suitable for medical or pharmaceutical

uses. Not intended for human injection. Not intended for food use.

LIMITED WARRANTY INFORMATION – PLEASE READ CAREFULLY

The information contained herein is offered in good faith and is believed to be accurate. However, because conditions and methods of use of our products are beyond our control, this information should not be used in substitution for customer's tests to ensure that our products are safe, effective, and fully satisfactory for the intended end use. Suggestions of use shall not be taken as inducements to infringe any patent.

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Your exclusive remedy for breach of such warranty is limited to refund of purchase price or replacement of any product shown to be other than as warranted.

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Table I: Special Use Considerations Regarding Working and Cure Times

Temperature		°C	Typical working Times,minutes	Typical Time To Demold
°F				
50		10	280	20 hours
68		20	105	10 hours
77		25	45	7 hours
86		30	30	4 hours
104		40	<10	40 minutes
122		50	<5	20 minutes