

# XIAMETER<sup>®</sup> RTV-4251-S2 Kit

## High strength silicone moldmaking rubber

### FEATURES

- Outstanding release properties
- Low viscosity allowing easy mixing and degassing
- Fast thick section cure at room temperature
- If required the product cure can be heat accelerated
- Medium hardness
- 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 (nonflowable) for vertical surface replication

### APPLICATIONS

- XIAMETER<sup>®</sup> RTV-4251-S2 Kit is suited for detailed reproduction of surfaces and objects, particularly suited for reproductions in plaster, polyurethane and concrete.

### TYPICAL PROPERTIES

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

Test	Unit	Value
<b>Base</b>		
Viscosity	cp/mPa.s	12,000
Color		Off white
<b>Curing Agent</b>		
Viscosity	cp/mPa.s	120
Color		Transparent
<b>Base and Curing Agent mixture (100:10 by weight)</b>		
Viscosity	cp/mPa.s	9,000
Working time at 23°C (73.4°F)		60
<b>Cured for 24 hours at 23°C (73.4°F)</b>		
Hardness (Shore A)		20
Tensile strength	psi	913
Tensile strength	MPa	6.3
Elongation at break	%	600
Tear strength, Die B	ppi	131
Tear strength, Die B	kN/m	23
Specific gravity 25°C (77°F)		1.13
Linear shrinkage	%	<0.1

### DESCRIPTION

XIAMETER RTV-4251-S2 Kit is a two-component material consisting of a XIAMETER RTV-4251-S2 Base, which when mixed with the XIAMETER RTV-4251-S2 Curing Agent cures at room temperature by an addition reaction. A range of materials can be cast into the cured silicone mold: plaster, polyurethane, and concrete are materials typically used.

loose material. If necessary, and in particular with

porous substrates, use a suitable release agent such as petroleum jelly or soap solution.

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

### Mixing

Weigh 100 parts of XIAMETER RTV-4251-S2 Base and 10 parts of XIAMETER RTV-4251-S2 Curing Agent in a clean container, then mix together

### HOW TO USE

#### Substrate preparation

The surface of the original should be clean and free of

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 the 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 if free of air bubbles, can then be used. 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

### **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 6-8 hours at room temperature (22-24° C or 71.6-75.2° 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.

### **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 organo tin 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.

#### **Use at high temperatures**

Molds produced from XIAMETER RTV-4251-S2 Kit 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 XIAMETER RTV-4251-S2 Kit will expand producing a small change in copy dimensions.

### **Reproduction of vertical surfaces**

If a skin mold is required of a vertical object or surface and cannot be made by normal pouring techniques, XIAMETER RTV-4251-S2 Base as a catalyzed mixture can be made non-flowable by the addition XIAMETER® RTV-3011 Thixo Additive.

1. Prepare the original as described earlier.
2. Brush the original with a thin layer of catalyzed product. 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-4251-S2 Base 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 a 1cm thickness of the thixotropic coating until all undercuts are filled; leave to cure for 12 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.

### **Resistance to casting materials**

The chemical resistance of fully cured XIAMETER RTV-4251-S2 Kit 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-4251-S2 Kit 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](http://WWW.XIAMETER.COM).

### **STORAGE**

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.

XIAMETER RTV-4251-S2 Base and XIAMETER RTV-4251-S2 Curing Agent can be sensitive to moisture and contamination. Ensure that containers are tightly closed after use.

### **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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