XIAMETER® RTV-4130-J Kit

High strength, flexible, silicone potting, encapsulating and moldmaking rubber

FEATURES

- Outstanding release properties
- High durometer hardness
- Very low shrinkage and good dimensional stability
- Good cut-growth resistance
- Can be used for high temperature casting applications
- Room temperature cure within 24 hours
- Heat-accelerable cure

BENEFITS

- Long mold life
- Highly detailed reproductions
- Simplified handling

COMPOSITION

- Two-part silicone rubber supplied as a pourable fluid that cures to a firm, flexible elastomer

APPLICATIONS

- XIAMETER® RTV-4130-J Kit is suited for prototype design, production tooling, molds used to reproduce art objects, novelties and furniture components in urethane and other plastics

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.

CTM[1]	Test	Unit	Value
Aviation & Aerospace Moldmaking			
Base and Curing Agent mixture (100:10 by weight)			
	Mixed viscosity	mPa.s	85,000
	Color		Green
	Working time at 23°C (73.4°F)	minutes	120-80
	Curing time	hours	18-24
Cured for 24 hours at 23°C (73.4°F)			
	Hardness (Shore A)		56
	Tensile strength	MPa	5.5
	Elongation at break	Percent	250
	Tear strength	kN/m	15
	Relative density at 23°C (73.4°F)		1.29
	Linear shrinkage	%	0.1
Moldmaking Rubber			
Base and Curing Agent mixture (10:1 by weight)			
CTM 0176	Appearance,		
	base		White
	curing agent		Dark green
As Catalyzed			
CTM 0176	Appearance	Green	
CTM 0050	Viscosity[2] at 25°C (77°F)	poise	900
CTM 0092A	Snap Time[3] at 25°C (77°F)	hours	3
CTM 0092A	Cure Time[4] at 25°C (77°F)	hours	24
As Cured 24 hours at 25°C (77°F) – Physical Properties[5]			
CTM 0099	Durometer Hardness, Shore A	points	56
CTM 0137A	Tensile Strength	psi	900
CTM 0137A	Elongation, Die C	%	250
CTM 0159A	Tear Strength, Die B	ppi	90
CTM 0022	Specific Gravity at 25°C (77°F)		1.28
CTM 0157	Linear Shrink		Nil
CTM 0137A	Tensile Strength at 150% Elongation	psi	610

[1]CTMs (Corporate Test Methods) correspond to standard ASTM tests in most instances. Copies of CTMs are available upon request.
[2]Brookfield Viscometer Model HAF, spindle #6 at 5 rpm.
[3]Time required to become nonflowable.
[4]Based on sample mass of one cubic inch.
[5]Based on sample thickness of 125 mils.

DESCRIPTION

XIAMETER RTV-4130-J Kit is a two-component material consisting of XIAMETER RTV-4130-J Base, which when mixed with XIAMETER RTV-4130-J Curing Agent, cures at room temperature by an addition reaction. XIAMETER RTV-4130-J Kit base is white and its curing agent is green to aid inspection for uniform blending. A ratio of ten parts base to one part curing agent is provided for easy mixing. A range of materials can be cast into the cured silicone mold: plaster, polyurethane, polyester and other reactive resins are the materials typically used.

HOW TO USE

Substrate/pattern preparation

Certain contaminants sometimes used in moldmaking operations can prevent XIAMETER RTV-4130-J Kit from curing. Patterns to be molded should be thoroughly cleaned to remove grease, oil and other surface contaminants. Care should also be taken to ensure that corners, crevices and draws are free from dirt or particles of foreign matter. A light “blow over” with compressed air is advised when the pattern has convoluted draws or undercuts. Then the original model or pattern should be placed in a light frame of cardboard, foil, wood or other material. There should be approximately 1/4-inch clearances on all sides and over the top of the pattern. The pattern should be attached securely to the bottom of the frame so it does not float.

If necessary, and in particular with porous substrates, a pattern release agent should then be wiped or sprayed on the pattern. A light coat of release agent on the sides and underside of the top of the frame will facilitate release**.**

Addition of curing agent

Thoroughly stir XIAMETER RTV-4130-J Curing Agent before use.

Weigh 100 parts of XIAMETER RTV-4130-J Base and 10 parts of XIAMETER RTV-4130-J 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. For best curing results, use metal cans, clean glassware or unwaxed paper containers when mixing the base and curing agent.

It is strongly recommended that entrapped air be removed in a vacuum chamber, by applying a vacuum of 28 to 29 inches of mercury. Under such a vacuum, the material will expand to three to four times its original volume. As the froth collapses, the mixture will recede to its original volume. The vacuum should be held one or two minutes longer before releasing.

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.

Pressure casting may be substituted with equal success.

Working Time

XIAMETER RTV-4130-J Kit remains a flowable, pourable material for two hours after the curing agent is added.

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 18-24 hours at room temperature (22-24° C/ 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. However, this will increase the shrinkage from nil to 0.3 percent. The higher the curing temperature, the greater the likely differences in dimensions. As a guide, a 5mm section of XIAMETER RTV-4130-J Kit will heat cure in 30 minutes at 65°C (149°F) or in 12 minutes at 100°C (212°F) once the material has reached this temperature. Vulcanization will not be accelerated at the center of the piece until the entire mass has reached the elevated temperature.

Inhibition of cure

XIAMETER RTV-4130-J Kit is formulated to have greater resistance to inhibition. However, localized inhibition of cure may be encountered at the interface when XIAMETER RTV-4130-J Kit comes in contact with certain contaminants during the curing process. Among materials found to cause inhibition are amines, sulphur containing and organometallic salt-containing compounds (such as organic rubbers), and condensation cure RTV silicones.

Surfaces previously in contact with any of the above materials may also cause inhibition. If in doubt, test for compatibility by brushing a small amount of catalyzed XIAMETER RTV-4130-J Kit over a localized area of the surface to be reproduced. Inhibition has occurred if the rubber is gummy or uncured after the curing period has elapsed. 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-4130-J 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.

Resistance to casting materials
The chemical resistance of fully cured XIAMETER RTV-4130-J 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-4130-J 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.

STORAGE

Product should be stored at or below 43°C (109.4°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

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