



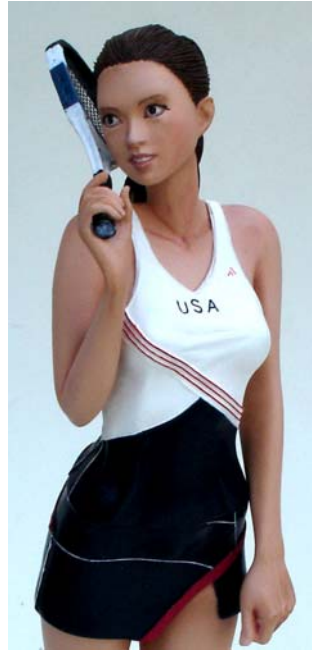

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VAGABOND MODEL-CAST CATALOG

Glenmarc manufactures VAGABOND MODEL-CAST, a unique line of free-pour, quick-cast, polyurethane casting resins. It is a two-component system that is ideally suited for a wide range of finished part applications. Wood and metal product manufacturers, model-makers, pattern-makers and mold-makers will find many applications in which VAGABOND MODEL-CAST will reduce material and tooling costs, increase production rates and provide a superior end product. VAGABOND MODEL-CAST is available in various degrees of hardness, flexibility, strength and gel times. We can recommend the formula that is suitable for your needs. VAGABOND MODEL-CAST has a de-mold time of four to five minutes which permits efficient production rates. It's low reaction temperature and relatively high flash points provide for safer handling than polyester resins. The low viscosity of VAGABOND MODEL-CAST components result in absolute replication of detail and permit the introduction of low cost fillers to reduce material costs. Our customers are currently using VAGABOND MODEL-CAST for the following products and applications:

Aeronautic model kits
Anatomical models
Anthropological replicas
Architectural models
Automotive model kits
Clock, mirror and picture frames
Decorative wall and shelf items
Doll Houses
Electronic potting compounds
Figurine model kits and bases
Furniture patterns and replacement parts
Industrial part fabrication

Lamp bases
Locomotive model kits
Miniatures
Musical instrument components
Pistol grips and rifle stocks
Plaques and trophy bases
Prototypes and masters
Sealing and adhesive applications
Taxidermy replicas
Toy prototypes
Vacuum forming tools
Wood and rock replicas



VAGABOND MODEL CAST-RESINS have been my choice for over ten years, It has allowed me to create award winning resin figurine sculptures as shown above. These were created with VAGABOND MODEL-CAST Resin formula 36XXX, and the molds made from VAGABOND VGI1000 RTV silicone. The Resins are very easy to work with and the durability of the cured resin is great, never gets brittle even after many years of use, VAGABOND MODEL-CAST is the only resins I will trust with my creations.

... **Eduardo – Local Chicago Artist**

VAGABOND MODEL-CAST FORMULA LIST

36XXX OFF WHITE

This low odor, low viscosity formula flows easily into molds for excellent detail replication. It is our most popular formula for projects such as model car, model airplane, model railroad, science fiction and action figure kits. The off-white color will pigment to a pastel color. Mix ratio 1 to 1 by volume.

| | | |
|---------------------------------|------------------------------|--|
| 36XXXR Off-white Regular | 2 minute gel time | +/- 70D shore hardness |
| 36XXXM Off-white Medium | 2 1/2 minute gel time | +/- 70D shore hardness |
| 36XXXS Off-white Slow | 3 minute gel time | +/- 70D shore hardness (Most Popular) |

43321 ODORLESS WHITE

This odorless, low viscosity formula flows easily into molds for excellent detail replication. It is our most popular formula for decorative items and when you prefer an odorless product. The white color will pigment to a pastel color. Mix ratio 1 to 1 by volume.

| | | |
|--------------------------------------|--------------------------|--|
| 43321R Odorless white Regular | 2 minute gel time | +/- 70D shore hardness |
| 43321S Odorless white Slow | 3 minute gel time | +/- 70D shore hardness (Most Popular) |

2011 CLEAR REGULAR

This odorless, low viscosity formula flows easily into molds for excellent detail replication. Although it is not water clear it is our most popular formula when you want to achieve a true solid color or a see-through effect. Mix ratio 1 to 1 by volume.

| | | |
|---------------------------|--------------------------|-------------------------------|
| 2011 Clear Regular | 2 minute gel time | +/- 70D shore hardness |
|---------------------------|--------------------------|-------------------------------|

2-C TAN or 3521S BLACK

This hard, strong formula has a slightly higher viscosity and works well for projects such as tooling and creating masters. The tan formula will pigment to a dark pastel color. Mix ratio 1 to 1 by volume.

| | | |
|--------------------|--------------------------|-------------------------------|
| 2C Tan | 2 minute gel time | +/- 70D shore hardness |
| 2C Slow | 3 minute gel time | +/- 70D shore hardness |
| 3521S Black | 2 minute gel time | +/- 70D shore hardness |

4032H TAN or 4032H BLACK

This hard, strong formula is popular for its high impact strength. The medium viscosity formula works well for projects requiring strength with good detail replication. The tan formula will pigment to a dark pastel. Mix ratio 1 to 1 by volume

| | | |
|--------------------|--------------------------|-------------------------------|
| 4032H Tan | 2 minute gel time | +/- 70D shore hardness |
| 4032H Black | 2 minute gel time | +/- 70D shore hardness |

193FLEX

This odorless, low viscosity formula is popular when you want a product with some flex or give to it. Although it is not water clear it can be pigmented to a true solid color or a see-through effect. Mix ratio 1 part A to 2 part B by volume.

| | | |
|-----------------|--------------------------|-------------------------------|
| 193 Flex | 2 minute gel time | +/- 50D shore hardness |
|-----------------|--------------------------|-------------------------------|

Q28 HI-TEMP

This hard, strong, formula has a slightly higher viscosity and is fast setting. It works well for projects that require high temperatures. Mix ratio 1 to 1 by volume.

| | | |
|--------------------|--------------------------|-------------------------------|
| Q28 Hi-temp | 1 minute gel time | +/- 80D shore hardness |
|--------------------|--------------------------|-------------------------------|

VAGABOND MODEL-CAST formulas are low viscosity of 70 cps to aid into flowing easily into molds for exact detail replication. Most VAGABOND MODEL-CAST formulas are mix ratio one to one by volume, except 193FLEX which is mixed one to two by volume. The ratio instructions are indicated on the product label. VAGABOND MODEL-CAST has a demold time of four to five minutes which permits efficient production rates. Gel times are approximate and based on a working temperature at or above 70 degrees F. VAGABOND MODEL-CAST can be pigmented and painted. Use a non-water based paint or primer to seal before painting. Fillers can be used to increase or decrease weight of finished parts. We recommend using RTV silicone rubber mold material with a release agent or barrier coat to prolong mold life. VAGABOND MODEL-CAST can be used with latex, polyurethane, polyethylene, fiberglass or other mold materials if a suitable release agent is used. For more information please see VAGABOND MODL-CAST general use instructions brochure.

Material Safety Data Sheets are provided with every shipment please read before use. Please read our brochure and follow all instructions and guidelines provided.

The information contained in this brochure is based on sources believed to be accurate to the best knowledge of Glenmarc Industries, Inc. It is offered in good faith, but without guarantee since conditions of use are beyond our control. Glenmarc Industries, Inc. assumes no legal responsibility. The user assumes all risks of use.

PRODUCT INFORMATION VGI1000 RTV SILICONE RUBBER

DESCRIPTION

VGI1000 is an extremely high tear, high tensile strength, two-part, tin catalyzed Room Temperature Vulcanizing silicone rubber. It is designed for VAGABOND MODEL-CAST RESINS, or any polyurethane casting resin, polyurethane foam, polyester and epoxy parts. It is also excellent for casting waxes, gypsum and concrete. VGI1000 is a good electrical insulator where high mechanical stresses are involved. It is a superior product with the following advantages over other RTV silicones:

Extremely high tear strength: VGI1000 is especially good for molds with deep undercuts and for those molds that require flexing for part removal.

Low shrinkage: VGI1000 offers exceptional reproduction capability and is particularly valuable in the production of many-sided molds where exact registrations are required.

Excellent chemical resistance: VGI1000 exhibits extremely long mold life due to unique processing techniques that were developed to meet the rigors of polyester and polyurethane casting.

Excellent shelf life: VGI1000 retains its dimensional stability and resists embrittlement on aging.

Low Viscosity: The low viscosity of VGI1000 allows for easy mixing and de-airing to ensure a smooth, even flow.

Color-coded catalyst: The blue VGI1000 activator ensures homogenous mixing and eliminates mold loss resulting from inadequate stirring.

Long pot life: VGI1000 gives good overnight cure despite having a working time of two hours. It is relatively insensitive to temperature and humidity fluctuations.

Variable rate cure: Several activators are available for special or unusual applications.

Insensitive to inhibition: VGI1000 is not inhibited by most common mold-making substrates, eliminating the need to use mold sealers.

Good dielectric properties: VGI1000 provides excellent insulating characteristics over a wide temperature range and is especially suitable for applications where mechanical stresses are involved.

Low Cost: VGI1000 has a low specific gravity, which means less of it is required than rubber with a higher specific gravity. When the long mold life is combined with the low specific gravity, VGI1000 is a cost effective, high performance RTV silicone rubber.

TYPICAL PROPERTIES

| | |
|---------------------------|---------------------|
| Uncatalyzed Compound Base | Activator |
| Color | Off-white Blue |
| Viscosity (cps) | 50,000 – 70,000 350 |
| Specific gravity | 1.10 .99 |
| Working time (minimum) | 1.5 – 2.5 hours |
| Cure time | 16 – 18 hours |
| Shelf life | 6 months |

Cured Rubber (7 days @70 degrees F & 50% R.H.)

| | |
|------------------------------|-------------------|
| Hardness, Shore A | 32+ or – 4 |
| Tensile strength (ASTM D412) | 525 + or – 25 psi |
| Elongation (ASTM D412) | 300 + or – 25% |
| Tear, Die B (ASTM D624) | 120 + or – 10 ppi |
| Shrinkage | 0.1% |
| Specific gravity | 1.10 |
| Dielectric strength | 500 volts/mil |
| Dielectric constant @ 100 Hz | 3.3 |
| Dissipation factor @ 100 Hz | 0.1.9 |
| Volume resistance | 1 x 10.15 ohms/cm |

| <u>PRODUCT</u> | <u>QUANTITY</u> | <u>PRICE (YEAR 2010)</u> |
|--|-----------------|--------------------------|
| <u>RTV SILICONE RUBBER AND THINNER</u> | | |
| VGI1000W1LB A&B RTV Silicone Rubber kit | 1 LB | 15.00 |
| VGI1000W10LB A&B RTV Silicone Rubber kit | 10 LB | 135.00 |
| VGI1000W50LB A&B RTV Silicone Rubber kit | 50 LB | 365.00 |
| VGI1000BW01LB RTV Activator only | .1 LB | 3.00 |
| VGI1000BW1LB RTV Activator only | 1 LB | 20.00 |
| VGITHINW1LB Thinner only | 1 LB | 12.50 |

PRODUCT INFORMATION FOR TINT PIGMENTS

PIGMENT PRODUCT INFORMATION

We manufacture high quality foam-tint pigments. They are formulated to mix great with any Polyurethane model cast resins. The color pigments are made to have excellent dispersion, consistent color, durable, long lasting, non-leaching, and easily mixable. We make eight colors Black, Blue, Brown, Green, Orange, Red, White, and Yellow. The colors can be mixed to achieve virtually any color, shade, and tone effects.

Usage

The pigment should be mixed into the 'B' side of the resin system prior to the final mixing of the 'A' side and the 'B' side. They should be stirred or mixed before use in case of settling to the bottom of the storage container. For coloring you would mix a maximum of 5% by weight into the 'B' side. To achieve a pastel color you would mix into any of our MODEL-CAST formulas that are white, off-white or tan (such as our 36XXX or 43321 formula). Different amounts of pigment will produce shades from light pastel to dark pastel. To achieve a true color you would typically mix 3% by weight in the 'B' side to any of our MODEL-CAST formulas that are clear (such as our 2011 formula). Using the maximum amount will achieve a solid true color. Using very small amounts will achieve a see-through effect. You can mix colors and add any quantity below the maximum of 5% by weight to achieve a variety of colors and shades.

| <u>PIGMENT COLORS</u> | <u>PART NUMBER</u> | <u>CONTAINER SIZE</u> | <u>PRICE(YEAR 2010)</u> |
|-------------------------------------|-----------------------|-----------------------|-------------------------|
| Foam-tint Pigment, Black | VPBLACKV8OZ | 1/2 PT (8 FL OZ) | 10.00 |
| Foam-tint Pigment, Blue | VPBLUEV8OZ | 1/2 PT (8 FL OZ) | 12.00 |
| Foam-tint Pigment, Brown | VPBROWNV8OZ | 1/2 PT (8 FL OZ) | 12.00 |
| Foam-tint Pigment, Green | VPGREENV8OZ | 1/2 PT (8 FL OZ) | 12.00 |
| Foam-tint Pigment, Orange | VPORANGEV8OZ | 1/2 PT (8 FL OZ) | 12.00 |
| Foam-tint Pigment, Red | VPREDV8OZ | 1/2 PT (8 FL OZ) | 12.00 |
| Foam-tint Pigment, White | VPWHITEV8OZ | 1/2 PT (8 FL OZ) | 12.00 |
| Foam-tint Pigment, Yellow | VPYELLOWV8OZ | 1/2 PT (8 FL OZ) | 12.00 |
| Foam-tint Pigment, Black | VPBLACKV16OZ | 1 PT (16 FL OZ) | 18.00 |
| Foam-tint Pigment, all other colors | VP <i>COLOR</i> V16OZ | 1 PT (16 FL OZ) | 20.00 |
| Foam-tint Pigment, Black | VPBLACKV32OZ | 1 QT (32 FL OZ) | 30.00 |
| Foam-tint Pigment, all other colors | VP <i>COLOR</i> V32OZ | 1 QT (32 FL OZ) | 35.00 |
| Foam-tint Pigment, Black | VPBLACKV1G | 1 GAL | 60.00 |
| Foam-tint Pigment, all other colors | VP <i>COLOR</i> V1G | 1 GAL | 80.00 |
| Foam-tint Pigment, Black | VPBLACKV5G | 5 GAL | 250.00 |
| Foam-tint Pigment, all other colors | VP <i>COLOR</i> V5G | 5 GAL | 350.00 |

The information contained in this product information sheet is based on sources believed to be accurate. It is offered in good faith, but without guarantee since conditions of use are beyond our control. The user assumes all risks.



VAGABOND MODEL-CAST RESINS YEAR 2010 PRICE LIST

| <u>QUANTITY</u> | <u>POUND</u> | <u>PRICE PER POUND</u> | <u>PRICE PER KIT/SET</u> |
|-------------------------|--------------|------------------------|--------------------------|
| 2-PT KIT all formulas | 2 | \$8.35 | \$ 16.70 |
| 2-QT KIT all formulas | 4 | 8.35 | 33.40 |
| 2-GL KIT all formulas | 17 | 6.10 | 103.70 |
| 10-GL KIT all formulas | 85 | 5.00 | 425.00 |
| 110-GL DRUM-SET #2-C | 950 | 3.80 | 3610.00 |
| 110-GL DRUM-SET #36-XXX | 950 | 3.90 | 3705.00 |
| 110-GL DRUM-SET #43-321 | 950 | 4.00 | 3800.00 |

NOTE:

1. PRICE REDUCTIONS: 10 or more 10-gallon kits \$0.10 per pound
2-3 drum-sets \$0.05 per pound
4-9 drum-sets \$0.10 per pound
2. PAYMENT TERMS: NET 30 - available on approved accounts
VISA, MC, AMEX, and PAYPAL accepted
3. SHIPPING TERMS: FOB Chicago, IL
UPS - Prepaid freight charges included on invoice
UPS collect provide UPS account number
Drum-set Collect via common carrier
4. Prices quoted on an individual basis for custom formulas. Various degrees of flexibility and hardness are available. Samples available upon request. Material Safety Data Sheets provided.
5. Most formulas are formulated to be mixed one to one by volume. Some special formulas are formulated to be mixed one to two by volume. The mixing ratios will be listed on the product label.
6. See our MISCELLANEOUS PRODUCT PRICE LIST for RTV silicone rubber, RTV thinner, release agents, pigments, a nitrogen blanket, measuring cups and empty containers.

MISCELLANEOUS PRODUCT YEAR 2010 PRICE LIST

| <u>PRODUCT</u> | <u>QUANTITY</u> | <u>PRICE</u> | |
|--|--------------------|-----------------------|--------|
| <u>RTV SILICONE RUBBER AND THINNER</u> | | | |
| VGI1000W1LB A&B RTV Silicone Rubber kit | 1 LB | 15.00 | |
| VGI1000W10LB A&B RTV Silicone Rubber kit | 10 LB | 135.00 | |
| VGI1000W50LB A&B RTV Silicone Rubber kit | 50 LB | 365.00 | |
| VGI1000BW01LB RTV Activator only | .1 LB | 3.00 | |
| VGI1000BW1LB RTV Activator only | 1 LB | 20.00 | |
| VGITHINW1LB Thinner only | 1 LB | 12.50 | |
| <u>RELEASE AGENT</u> | | | |
| Ultra 4 Paintable Spray Silicone Release Agent | 1 CAN | 12.50 | |
| <u>INERT GAS BLANKET</u> | | | |
| Bloxygen | 1 CAN | 9.95 | |
| <u>PIGMENT</u> | | | |
| <u>PIGMENT COLORS</u> | <u>PART NUMBER</u> | <u>CONTAINER SIZE</u> | |
| Foam-tint Pigment, Black | VPBLACKV8OZ | 1/2 PT (8 FL OZ) | 10.00 |
| Foam-tint Pigment, Blue | VPBLUEV8OZ | 1/2 PT (8 FL OZ) | 12.00 |
| Foam-tint Pigment, Brown | VPBROWNV8OZ | 1/2 PT (8 FL OZ) | 12.00 |
| Foam-tint Pigment, Green | VPGREENV8OZ | 1/2 PT (8 FL OZ) | 12.00 |
| Foam-tint Pigment, Orange | VPORANGEV8OZ | 1/2 PT (8 FL OZ) | 12.00 |
| Foam-tint Pigment, Red | VPREDV8OZ | 1/2 PT (8 FL OZ) | 12.00 |
| Foam-tint Pigment, White | VPWHITEV8OZ | 1/2 PT (8 FL OZ) | 12.00 |
| Foam-tint Pigment, Yellow | VPYELLOWV8OZ | 1/2 PT (8 FL OZ) | 12.00 |
| Foam-tint Pigment, Black | VPBLACKV16OZ | 1 PT (16 FL OZ) | 18.00 |
| Foam-tint Pigment, all other colors | VPCOLORV16OZ | 1 PT (16 FL OZ) | 20.00 |
| Foam-tint Pigment, Black | VPBLACKV32OZ | 1 QT (32 FL OZ) | 30.00 |
| Foam-tint Pigment, all other colors | VPCOLORV32OZ | 1 QT (32 FL OZ) | 35.00 |
| Foam-tint Pigment, Black | VPBLACKV1G | 1 GAL | 60.00 |
| Foam-tint Pigment, all other colors | VPCOLORV1G | 1 GAL | 80.00 |
| Foam-tint Pigment, Black | VPBLACKV5G | 5 GAL | 250.00 |
| Foam-tint Pigment, all other colors | VPCOLORV5G | 5 GAL | 350.00 |
| <u>MEASURING CUPS, EMPTY CONTAINERS AND VALVES</u> | | | |
| One ounce measuring cup | 100 PKG | 6.00 | |
| One pint empty container with cap | 1 EA | 1.00 | |
| One quart empty container with cap | 1 EA | 1.50 | |
| One gallon empty container with cap | 1 EA | 2.30 | |
| Five gallon empty container with 3/4" valve | 1 EA | 13.50 | |
| 3/4" Valve | 1 EA | 1.25 | |
| Wrench for five gallon cap | 1EA | 14.00 | |

VAGABOND MODEL-CAST GENERAL USE INSTRUCTIONS

1. All VAGABOND MODEL-CAST is formulated to be mixed one to one by volume, except 193FLEX which is mixed one to two by volume. The material will tolerate an off-ratio of five to ten percent without noticeable degradation of quality. The ratio instructions will be indicated on the product label.
2. VAGABOND MODEL-CAST is formulated to be stored and used at or above seventy degrees F. Material used at a lower temperature will gel slower. If the 'A' side temperature drops to forty degrees F or lower the extenders could separate out and the material will be compromised. The separation is reversible by raising the temperature to eighty to ninety degrees F and agitating the containers to mix the ingredients back into solution. Material used at higher than seventy degrees F will result in a faster gel time. Casting quality will not be effected.
3. VAGABOND MODEL-CAST components and all polyurethanes are very hygroscopic (They react to moisture in the air). Exposure to moisture can effect performance by causing a foaming action and separation of extenders. It is an indication of moisture presence in the material or filler if the material rises when the 'A' side and 'B' side are mixed together. Avoid as much as possible introduction of air and moisture during all stages of the casting evolution. Reseal containers immediately after pouring. We do not recommend using bottles with squirt or pump tops because they suck in air and the VAGABOND MODEL-CAST will absorb moisture from the air. Use only polyethylene, glass or un-coated paper cups for mixing. The wax coating on some paper cups and styrene foam cups are also incompatible. We sell one ounce plastic measuring cups which are compatible with polyurethane resins. The price is listed on our MISCELLANEOUS PRODUCTS PRICE LIST.
4. VAGABOND MODEL-CAST materials are very easy to mix with a minimum of mixing effort. The 'A' side of the material should be poured into the mixing cup first. The 'B' side of the material should be poured in on top of the 'A' side and stirred for about thirty seconds with a wooden stir stick to mix thoroughly. Large quantities can be stirred with a mixer blade attached to a drill motor. Care should be exercised to mix the material thoroughly but not to excess, which can cause air bubbles.
5. VAGABOND MODEL-CAST should be poured into the mold before the gel time that is specified for each formula. Most gel times are two to three minutes. You will find the gel times listed on our VAGABOND MODEL-CAST FORMULA LIST. Care should be taken to not disturb or move the mold when the resin begins to gel. De-mold the part when it no longer feels rubber-like to the touch. Normally this takes about four to five minutes. You will have to judge de-mold time for the amount of material poured and the size and shape of the part. If the part is left in the mold to long it will be difficult to de-mold and mold life will be shortened. Place the finished part on a wood insulated surface to completely cure. A metal or plastic surface will cause unequal cooling and possibly warping. We recommend curing for twenty-four hours at room temperature. Shrinkage is approximately one percent and depends on the size and shape of the part. Any sanding, painting or other finishing work can be done when the part is completely cured. Any paint that is not water based can be used. Water based paints will not adhere to the surface of the finished part.

FILLERS

A wide range of fillers can be used with VAGABOND MODEL-CAST. They can cut the cost of material, reduce shrinkage and decrease or increase the weight of the finished part. Fillers should be mixed equally into both sides of the system prior to final mixing of the 'A' side and the 'B' side. They should be stirred prior to final mixing because they tend to settle to the bottom of the storage container. The filler will increase the viscosity of the VAGABOND MODEL-CAST. The amount of filler used is limited only by your requirements for pourability and desired detail of the finished part. All fillers used must be dry. Porous fillers such as Perlite cannot be used because absorbed liquids cannot combine with other liquids. Wood, nutshells or sawdust fillers cannot be used because they contain moisture. We find that heating these fillers to dry them does not always work. Glass beads and glass bubbles work very well with VAGABOND MODEL-CAST.

PIGMENTS

We manufacturer foam-tint pigments. They should be mixed into the 'B' side of the system prior to the final mixing of the 'A' side and the 'B' side. They should be stirred often because they tend to settle to the bottom of the storage container. To achieve a pastel color you would mix a maximum of five percent by weight into any of our VAGABOND MODEL-CAST formulas that are white, off-white or tan, such as our 36XXX formula. Different amounts of pigment will produce shades from light pastel to dark pastel. To achieve a true color you would mix a maximum of two and a half percent by weight into any of our VAGABOND MODEL-CAST formulas that are clear such as our 2011 formula. Using the maximum amount will achieve a solid true color. Using very small amounts will achieve a see-through effect. You can mix colors and add any quantity below the maximum to achieve a variety of colors. The mixing ratios will be listed on the containers. The colors, quantities and prices are listed on our MISCELLANEOUS PRODUCT PRICE LIST.

MOLD MATERIALS, THINNER, RELEASE AGENTS AND BARRIER COATS

We recommend the use of RTV silicone rubber mold material. We carry GI1000 RTV Silicone Rubber. It is an extremely high tear, high tensile strength, two-component, tin catalyzed RTV silicone rubber. The low viscosity offers exceptional reproduction capability and allows for easy mixing and de-airing. It can be used without a release agent and obtain about thirty to fifty pulls. A release agent can double the amount of pulls. Molds should be warmed prior to use. A cold mold will have adverse effects. Product information and instructions are provided. The quantities and prices are listed on our MISCELLANEOUS PRODUCT PRICE LIST.

GI Thinner can also be used to prolong mold life. It is a water clear, low viscosity, non-reactive silicone fluid which can be added to the GI1000 RTV Silicone Rubber when making molds. It can also be wiped onto molds with a cloth to rejuvenate the mold and protect it while in storage. Product information and instructions are provided. The price is listed on our MISCELLANEOUS PRODUCTS PRICE LIST.

We recommend using a release agent to prolong mold life. We carry Ultra 4 Polyurethane Release Agent. It is an excellent paintable release agent that is suitable for use with silicone rubber molds. It is recommended that it be used sparingly for best results and is available in

convenient spray cans. It must be washed off with dish detergent prior to painting and finishing. The price is listed on our MISCELLANEOUS PRODUCT PRICE LIST.

VAGABOND MODEL-CAST is also formulated for use with latex, polyurethane, polyethylene, fiberglass and other mold materials if a suitable release agent is used. We recommend Mavcoat GHS Engineered Release Coating that is manufactured by Maverix Solutions, Inc. Mavcoat GHS Engineered Release Coating can be thinned with methylene chloride or VM&P Naptha. It is applied sparingly with a cloth or spray gun. It is not paintable and cannot be washed off. You can also use a liquid or paste wax release for these mold materials. The wax does have the disadvantage of requiring removal before painting and finishing.

A Barrier Coat is recommended for large production runs to increase mold life. You can obtain approximately three to four hundred pulls. A Barrier Coat is an alcohol-based lacquer that must be thinned with Barrier Coat Thinner. It is applied to the mold in a thin, uniform coat with a spray gun. It should be allowed to dry approximately three minutes before pouring VAGABOND MODEL-CAST into the mold. The Barrier Coat will chemically bond with the VAGABOND MODEL-CAST and become the base coat on the finished part. It cannot be washed off but is paintable. We do not carry Barrier Coat and Barrier Coat Thinner but we recommend Lilly Industrial Barrier Coat and Barrier Coat Thinner.

INERT GAS BLANKET TO PROTECT AND LENGTHEN SHELF LIFE

We carry Bloxygen. It uses a blend of Nitrogen, Carbon Dioxide and Argon gases to purge the air out of the VAGABOND MODEL-CAST containers and block oxygen from the liquid surface while in storage. The price is listed on our MISCELLANEOUS PRODUCT PRICE LIST.

STORAGE, SAFETY AND MATERIAL SAFETY DATA SHEETS

VAGABOND MODEL-CAST should be stored in the original containers in a dry and well ventilated area at room temperature of 70 Deg. F. The material can handle temperatures of 60 Deg. F. to 90 Deg. F. The containers should be kept tightly closed when not in use. Large quantities can be transferred to smaller empty containers you can purchase from us. The sizes and prices are listed on our MISCELLANEOUS PRODUCT PRICE LIST. Use the caps and pour spouts provided by us. Wash at the end of each working session and before eating, drinking or using the toilet. Wear safety goggles and rubber gloves. Never touch eyes or face with hands that have been contaminated with the product. Avoid prolonged breathing of the vapors and repeated contact with skin. Use adequate ventilation. We recommend a fan to bring in fresh air and a second fan to push out used air. Read and follow the instructions on the product label. Review and keep on file the Material Safety Data Sheets that are provided in every shipment of VAGABOND MODEL-CAST. They are also provided in downloadable PDF format at our website www.glenmarc.com.

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HOW TO MAKE A SILICONE MOLD

Measure components: Measure 10 parts by weight of VGI1000 base with 1 part by weight of VGI1000 activator in a container that will hold approximately four times the volume being used.

Mix thoroughly: Stir the mixture with a flat blade spatula or with a mechanical mixing device. Be sure to scrape the sides and bottom of the container to ensure the correct ratio of Base to Activator. Stir slowly until a uniform color is achieved without streaks.

De-aerate mixture: Place the mixed RTV silicone rubber into a de-aeration chamber capable of 28 to 29 inches of mercury vacuum. Allow the rubber to expand and collapse back to its original volume.

Maintain vacuum for an additional one to two minutes. Release the vacuum and remove the container from the de-aeration chamber.

Pour over released pattern: The part to be duplicated should be coated with a mold-parting agent to ensure easy separation. The part should be placed into a box that will contain the silicone rubber while it is a liquid. Slowly pour the mixed silicone rubber over the released pattern being careful to avoid the formation of air bubbles or entrapped air. Allow the rubber to flow around the part to a minimum depth of 3/8 to 1/2 inch.

Cure: Allow the rubber to vulcanize for 16 to 18 hours at a room temperature of 70 degrees F. Lower temperatures and / or low humidity will cause the cure-time to be longer. Higher temperatures and / or high humidity will cause the cure-time to be shorter.

De-mold: Partially disassemble the mold box and remove the cured block of RTV silicone rubber.

Carefully flex the mold to remove the original part.

Completed mold with pattern: The silicone mold is ready to be used with appropriate casting material to duplicate the original pattern.

EQUIPMENT AND HELPFUL INFORMATION

Scale: A scale is necessary to properly weigh the silicone rubber base and activator. Triple beam gram scales are most commonly used. Any accurate weighing device will work. Attempting to "eyeball" the base to activator on a volume base will usually fail.

Mixing containers: Containers must be clean and may be made of cardboard, metal, glass or plastic. To enable de-airing properly they must be approximately four times the mixed rubber volume to allow for expansion.

Mixing spatula: A flat blade of wood, metal or plastic can be used to thoroughly mix the base and activator. It must be capable of scraping the bottom and sides of the mixing container.

Mold frames and dams: Wood, cardboard or plastic strips and masking tape are all useful to construct frames and dams to contain the rubber in the desired shape around the pattern.

Paraffin wax: Melted wax applied quickly with a brush is an excellent medium to seal flat backed models to the mold box substrate or to seal narrow gaps in the mold dams. Heat wax with caution because it is flammable.

Brushes: A brush is used to apply RTV silicone when making "butter on" type molds and to apply melted paraffin wax, parting agent or mold sealer. Inexpensive brushes will work.

Plaster: Casting plaster is commonly used to construct rigid cases to support the flexible walls of RTV silicone molds. Tooling plaster is recommended because it maintains the best dimensional accuracy.

Art casting plaster will suffice in less critical situations. Some type of fibrous reinforcement such as hemp or chopped fiberglass may be added to thicken and strengthen the plaster. This would apply in situations where the plaster is applied with a trowel as a mold backup rather than poured into a contained mold box.

Clay: Clay is frequently employed to partially embed the original model in order to establish parting lines for multiple-piece molds. It is practical for use in "voiding out" areas inside the mold box in order to conserve RTV mold material. It can also serve as an emergency plugging material if the silicone rubber unexpectedly leaks from the mold box. Some silicone mold-making rubbers are totally incompatible with the sulfur contained in most clay. Be sure to use only sulfur-free clay.

Electric mixing motor: Electric drill motor mixers can be effectively used especially with larger batches of rubber. The drill motor should be fitted with a jiffy type mixer or comparable impeller blade. The motor should be operated at under 1000 rpm.

Vacuum pump and vacuum chamber: De-aeration of the mixed rubber to remove entrapped air is always recommended. Removing air bubbles assures uniformly dense molds that will resist distortion and surface voids. The pump must be able to develop a minimum of 28 to 29 inches of mercury vacuum. The chamber or bell jar should accommodate a mixing container that will hold four times the volume of catalyzed rubber to be de-aired. If a vacuum pump is not available, suspend the container with the mixed material above the pour area, pierce a small hole in the bottom of the container and allow a small stream of RTV to fill the pattern box. Material dispensed in this manner will retain very little entrapped air.

Compressed air: When RTV silicones are used in the "butter on" methods of mold making it may be difficult to remove pinhead bubbles that become trapped on the pattern surface. After the first thin layer of RTV silicone has been brushed onto the surface an air gun may be used to break the bubbles. The air also forces the material to penetrate into the detail of the pattern and wet the pattern surface. Relatively low air pressure of 15 to 30 psi is required. This procedure should be the first step in pouring any mold when the pattern has a highly complex or porous surface such as a deeply carved wood grain.

Primer: RTV silicone rubber will not bond well to other surfaces. When adhesion is desired for a mold pattern to remain permanently attached to the mold box a primer can be brushed onto the surface and allowed to dry for one hour before pouring the silicone into the box.

Parting agent: RTV silicone will bond to itself unless separated by a parting agent. You must use a parting agent when casting RTV parts into a RTV mold. You must use a parting agent when casting multiple-piece molds where the mold sections touch each other. Complex or porous surfaces require a parting agent because the RTV will penetrate and physically lock onto the surface. Applying a parting agent will seal some of the pores to allow easy release without affecting the visual detail on the mold surface. You can use a prepared parting agent or a solution of five parts petroleum jelly dissolved in ninety-five parts of solvent at room temperature.

Silicone mold repair: Damaged molds can be repaired with a silicone adhesive agent. It is a one component air-drying rubber and is available as a tub and tile caulking in most hardware and building material stores. A small quantity of RTV can be also be mixed and applied to the mold to repair tears.

Reinforcement fabric: Molds that will have to withstand rough handling or repeated flexing can be reinforced with fabric such as open mesh nylon or dacron cloth. Woven fiberglass cloth can be used but it will not stretch. A coating of approximately 1/16 inch of rubber should coat the surface of the pattern before the fabric is applied or the fabric weave will appear on the surface of the mold.

Clean-up solvent: Xylene, mineral spirits, acetone, MEK, camp stove fuel, white gas and naphtha are suitable solvents that can be used to clean up uncured material. Treat each solvent with respect to its vapor and / or flammability hazard.

Mold degradation: Polyurethane, polyester and epoxy resins will shorten RTV silicone mold life through chemical and thermal attack on the mold surface. Most molds can produce approximately forty molds without any preventative measures. Mold life can be extended in several ways. Occasionally "baking out" the empty mold at a temperature of 160 to 200 degrees F for two hours is helpful. Using a release agent in the mold before pouring in the resin can double mold life. Release agents are suitable for smaller production runs when only about forty to one hundred parts are required from a mold. Release agents must be washed off of the finished part in order for paint and wood finishes to adhere to the surface. Barrier coats will allow production of three hundred or more parts. They cannot be washed off and will become the outer surface of the finished part and will accept paint and wood finishes.

Fillers in casting resins: There are a lot of different fillers that are suitable for use in the various types of casting resins. Fillers give a broad range of effects to the finished casting. They can increase or decrease the weight and enhance surface texture and color. Fillers can lower the cost of the formulation and increase the strength and toughness of the finished part. Calcium Carbonate is commonly used and the most inexpensive filler. It is used to produce synthetic marble effects. Talc is a low cost, soft filler and can be used when the finished part will be sanded. Glass and Expanded Silicate Microspheres will produce lightweight castings. Their low density can result in casting mixes that are very economical. Phenolic Micro-balloons will produce lightweight castings and is suitable for finished parts that will be sanded or machined with cutting tools. Aluminum Trihydrate is used to produce fire retardant castings. It can be used in polyester resin to produce a translucent onyx look.

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