



Mold Making Materials

How to use TAP Urethane RTV Systems

Pour It On!

- Gaskets
- Bubble-Free Surface
- Simple Mix Ratios
- Plaque Molds
- Fine Detail Reproduction
- Economical
- Multiple Piece
- Excellent Tear Resistance
- Easy to Use
- Rubber Coatings
- Low Shrinkage
- 100% Solids



TAP Urethane RTV System consists of Side-A and Side-B liquids. After mixing, it cures at room temperature to a flexible, high strength, Shore-A 30 mold rubber (Example: household silicone sealant is approximately Shore 30). This system features easy releasing for casting gypsum plasters and waxes without release agents. It is also excellent for casting cement, epoxy, polyester, and urethane with proper release agents. It is a safe product to use when directions are carefully followed.

Side-A is a clear liquid with medium viscosity of 5000 cps and specific gravity of 1.02 g/cc. Side-B is a low viscosity blue/gray-amber translucent with a specific gravity of 1.00 g/cc. Part-B requires stirring before use and may darken with age, but this does not affect mold properties.

TAP Urethane RTV is an economical material for making brush-on, pour-on, and multi-part molds. With a long-working time and excellent bubble release for detail reproduction, it is a good all-around choice for mold makers.

Physical Properties of Urethane RTV System

- Mix Ratio**----- one Side-A to one Side-B
- Hardness, Shore A** ----- 30
- Pour Time** ----- 30 minutes
- Color (mixed)**----- Translucent blue/gray-amber
- Viscosity (mixed)**----- 2000 cips
- Cubic Inches per Pound**- 27.5
- Maximum Service Temp.** - 230-240°F
- Shrinkage During Cure** -- Nil
- Cure Time**----- 24-48 hours 77°F; ultimate properties: 7 days.
- Elevated temperature (up to 140°F)
- greatly accelerates cure. Avoid use below 60°F.
- Use of mold before cure may cause it to
- permanently stretch.
- Exotherm** ----- Minimal

Plaque Molds

• URETHANE RTV SYSTEM

1. **Prepare Model**... preparation depends on porosity of the model and amount of detail desired. Urethane RTV will enter minute crevices and penetrate porous surfaces. If mold release is not used, the mold will be difficult or impossible to remove from the model. TAP offers a number of different releases.

Most projects require releases for both the pattern and the mold. Test for compatibility by using small samples of the materials you will be using for your project.

For porous surfaces a good release is **TAP Wax Mold Release**. Apply it with a soft, short-bristled, brush and then remove excess wax with a stiff brush. Keep brush dry by wiping it with a cloth. Polish smooth areas with your hands or a soft rag. If applied properly, TAP Wax Mold Release will not leave residue or hide detail. RTV can be poured approximately five minutes after mold release dries.

To release nonporous surfaces, use **Pol-Ease 2300**. It is a blend of silicone oils and resins in a convenient aerosol spray. Spray it on the pattern or mold and then use a soft dry brush to distribute excess Pol-Ease and to coat any missed spots. An excessive coat of Pol-Ease can cause pinhole bubbles in the mold—however it

flashes off quickly and is ready for use 15 minutes after application. Its high quality and ease of use make it a perfect complement to the **TAP RTV Urethane System**.

- Determine Base of Model** (bottom of mold)... attach model securely to a solid base. Use a caulking material or Plasticene Modeling Clay to fill cracks and openings around the base and bottom of model. This prevents the mold material from seeping under the model. The bottom (base) of the model becomes the fill-opening of the mold. The back side of a plaque is its fill opening.
- Construct a Wall**... around the model with sides at least $\frac{3}{8}$ " to $\frac{1}{2}$ " higher and edges approximately $\frac{1}{2}$ " wider than the model. This extra thickness will avoid weak spots or distortion of the mold when casting. Be sure to seal the base and corners of the wall. Even a pinhole will allow the RTV to drain out. A hot-melt glue gun works well.
- Apply Mold Release**... to base, sides of housing, and model.
- Measure**... as per instructions on container... **measure accurately** (an error of 3% may cause material not to cure). Mix thoroughly and stir vigorously, blend material from sides and bottom of mixing container. The most common cause of an incomplete cure and mold failure is improper mixing. **If accurate ratio is not used or if it is not stirred thoroughly, then material may not cure properly or to its full strength.** To avoid uncured and sticky spots, transfer this mixture to another clean container and again stir vigorously. Do not *whip* mixture, as this action creates and traps excessive air bubbles.
- Pour**... the mixture into one corner of the model housing. To avoid trapping air bubbles on the surface of the model, pour a slow, thin stream until model is completely covered... (figure-A). If model has a lot of detail that would tend to trap air on its surface, apply Urethane RTV mixture with a brush in a thin layer before pouring the balance of the mixture over the model. Level mold housing and allow to cure for 24 hours before removal. After it has cured at room temperature for two to three hours, you can hasten the cure process by baking the mold at 140°F for one to two hours. Check the mold in 24 hours for proper cure. Using a mold before it is cured may cause it to permanently stretch. Remove mold from the model... (figure-B), apply a release agent if necessary. Fill mold with casting medium of your choice.

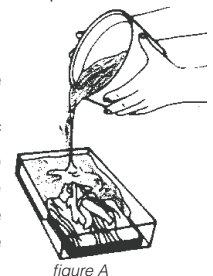


figure A



figure B

Ask your TAP salesperson for suggestions.

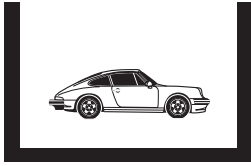
BLANKET and PLAQUE MOLDS

To use TAP's Urethane RTV to create a blanket mold, follow the instructions in Product Bulletin 7A, substituting Urethane RTV for Latex Mold Builder. Apply a thin skin coat and let it gel (about 2 hours) then apply a single heavy coat of urethane thickened of peanut butter consistency with Cab-O-Sil.

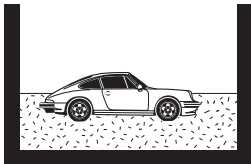
MULTIPLE PIECE MOLDS

Multiple-piece molds are necessary when there are undercuts or detail on all sides of the model (making a blanket mold impractical) or when the shape of the model would prevent the easy removal of a glove mold.

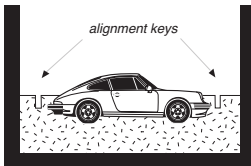
1. Prepare the model with mold release wax as described in step one for **Plaque Molds**.



2. Prepare a molding box with sides and a base which allow for a minimum clearance of 1/2 inch on all sides of the model, including the top and bottom. Acrylic is an excellent material for the box and can be sealed using double-sided masking tape or a glue gun. Do NOT use acrylic cement or silicone caulking material.



3. Embed approximately half of the model in Plasticene Clay. The depth of the embedment will be determined by where you want the parting line (seam created by the two mold halves). Be certain that the model is at least half an inch above the bottom of the box. Join the clay and the model at a smooth 90° angle, since this will be the seam line between the two halves of the mold. Smooth the surface of the clay to avoid trapping clay in the urethane.

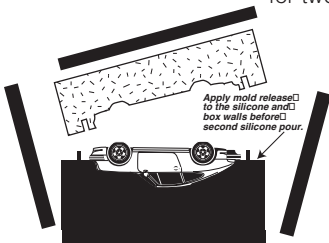


4. Create alignment keys by pushing a rod, dowel, or pencil into the clay at various locations around the model, to assure perfect alignment of the two mold halves when they are put together for casting.

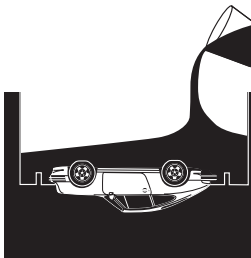
5. Apply a generous amount of mold release to the clay and the box. If any wax contacts the model, buff it off to retain the original detail of the model.



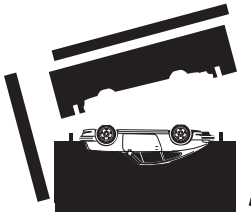
6. Mix the Urethane RTV according to the instructions and slowly pour into a corner of the mold. Make sure the urethane flows into the key holes and not over the top of them—trapping air inside. Allow the urethane to slowly flow over the details of the model, forcing air out as it goes. Pour until the top of the urethane is a minimum half inch above the highest point of the model. Allow to cure for twenty-four hours.



7. Disassemble the box and remove the clay, being careful not to remove the model from the cured urethane. Reassemble the box and apply mold release to the cured urethane and box walls. This is important because urethane will bond permanently to urethane.



8. Mix and pour urethane into the mold using the technique described in Step 6. Allow to cure for twenty-four hours.



9. Disassemble the box, separate the mold halves and remove the model. Drill a hole or holes for pouring the casting medium and drill vents to allow trapped air to escape, if necessary.



10. Use rubber bands to hold the mold together when you pour the casting material. Do not band together too tightly or you will deform the mold.

TAP Tips for Using Urethane RTV

Urethane RTV, Side-A, is a clear liquid with a long shelf-life in its unopened container. Once opened, however, Side-A reacts with air and eventually hardens—even if the lid is resealed. To extend the shelf life of an opened can, spray a blast of Poly Purge™ into the open can and then seal. Poly Purge™ drives out the air and replaces it with an inert, nonflammable gas. If Poly Purge™ is not used, the balance of the material (Side-A) should be used as soon as possible.

When resealing, remove any Side-A liquid that is in the rim on the lid, otherwise the container can be extremely difficult to reopen. Applying mold release wax to the rim can also help minimize sticking.

Be sure to thoroughly mix Side-B before combining Side-A.

Thorough mixing of Side-A and B is essential. Incomplete mixing is a common cause of mold failure.

Pol-Ease 2300 is the ideal mold release for casting in urethane molds. If the cast part is to be painted, the mold release must be removed. Dishwasher detergent is recommended for this. TAP also carries Rocket Release; a paintable aerosol release, leaving the part ready to receive paint. A third option is to use Silicone RTV which requires no mold release.

Wear eye protection and gloves when using this product.

CAUTIONS

Irritant. Uncured Urethane RTV may cause skin or respiratory irritation or sensitization if improperly handled. Avoid skin and eye contact with uncured material. If skin contact occurs, remove with waterless hand cleaner or alcohol, then wash with soap and water. In case of eye contamination, flood with water and call physician. Use only with adequate ventilation.

WARRANTY

TAP Products are manufactured to quality specifications, however they should be tested to determine their suitability for your application. Since we have no control over working conditions or methods, our liability does not exceed the value or replacement of this product. TAP Resin products are guaranteed for six months from date of purchase or nine months from code date on container.

WARNING

This product contains trace amounts of chemicals known by the state of CA to cause cancer, birth defects, or reproductive harm. Harmful If Swallowed. Call physician.

KEEP OUT OF THE REACH OF CHILDREN.

View all of TAP's how-to videos on plastic, fiberglass, mold-making, window films, and more at:
http://www.tapplastics.com/product_info/videos



the fantastic plastic place

Visit us online at tapplastics.com
 for store locations.