Resin Casting Clinic

Tools, Supplies, and Products

Products:

I've settled on the Smooth-On line of products. I've tried various others (Bare Metal Foil "Pourcast", Alumilite, Dow) but the Smooth-On product line is extensive and offers the most consistent results. This line offers a range of different silicone rubber products all offering different characteristics, a range of liquid plastic resins offering a variety of setting speeds and in black or white, thickening and thinning agents (for the silicone), pigments for tinting the plastic resin. It is also available over the counter in a retail location in Vancouver (Coast Fiber-Tek Products Ltd., 1306 Boundary Rd. Burnaby). It also seems to be reasonably priced.

I use **Smooth-On Mold Max 30** silicone rubber for mold making, and **Smooth-On Smooth-Cast 300** liquid plastic resin (polyurethane) for parts casting.

Tools:

- Digital Scale (measuring in 1/100 gram)
- Sharp hobby knife
- Old (or inexpensive disposable) hobby type paintbrushes
- Metal ruler (for cutting sheet styrene to make mold boxes)
- Plastic (translucent) measuring cup (for mixing silicone rubber)
- Small plastic cups (as come with cough syrup type medicines, for mixing plastic resin)
- Various hobby files (for cleaning castings)
- Optivisor or other vision aids (jeweller's loupe)
- Stir stick (for mixing silicone rubber, must be quite stiff)
- Tooth picks (round type)

Supplies:

- Sheet styrene (.040 thick, for making mold boxes)
- 220 grit sandpaper (for casting clean-up)
- Plastic garbage bags (non-stick disposable work surface)
- ACC type glue (for casting assembly)
- Liquid styrene cement (for assembly of mold boxes)
- Safety products (vinyl gloves, eye protection)
- Paper towels (site cleanliness)
- Small piece of plywood or other stiff material (to distribute weight over mold)
- A variety of object suitable as weights

This list is not exhaustive and is focused on the items needed for mold making and casting, but not the making of the master part or the finishing (assembly and painting) of the model.

Pointers for Creating Master Parts for Successful Casting

- Preparing a master part for casting requires a different 'planning process' than typical scratchbuilding; thought must be given to designing a part that can be successfully molded and cast. Using the casting process to build complex models (a hopper car with its complex end bracing for example) will require planning to figure out how to make the variety of master parts that can be made into successful molds that will then produce the castings that can be assembled into the final model.
- Most importantly, parts must be designed such that the mold can be removed from the master part; no element can be imbedded in the mold material (for example, a ladder with freestanding rungs). Compromises are required make a successful mold that you might not have to make for a 'pure scratchbuilt' part or model.
- On the other hand the cured silicone rubber mold material is very flexible and 'stretchy', meaning it can be stretched and pulled to get the mold off the master part and subsequent castings, even if the shape of the parts include significant 'undercuts' without causing damage to the mold (i.e. tearing the mold) or breaking the master or casting.
- Almost any amount of surface detail can be reproduced in the mold and then the casting, but details that result in deep and narrow openings in the mold will be difficult to cast because you will need to take the time (limited by the "gel" time of the resin) to work the resin into these cavities. This can be done with the help of a toothpick, and flexing the mold to "open" the deep cavities for easier pouring, but extra time is needed and the success rate in producing consistent satisfactory casting will be reduced.
- Master parts "must" have one flat surface that can be glued to the base of the of the mold box. The surface of the master part that is glued to the mold base will become the opening at the surface of the mold into which the liquid resin will be poured.
- I strongly suggest that the master part and the mold making process be designed so that the master part is not damaged or destroyed in the mold making process. The molds will not last forever and you will probably need, at some point, to replace worn out molds with new ones. Some damage may occur (a small detail not as securely attached may come out in the mold, for example) but preserving the master for future reuse is critical.
- Archer rivets must be sealed to the master part or they will come out with the mold…
- I use strip and sheet styrene for almost all of my master part building. This is an ideal material for this purpose; it can be glued together securely (see above), comes in great variety of model friendly dimensions, is stable over long periods, and accepts and works well with silicone rubber mold material without any additional preparation.
- Master parts do not have to be scratchbuilt, almost any existing part from any source can be molded and cast as long as a suitable mold can be made from the part.

Properties of Smooth-On Silicone Rubber

- Safety Concerns: Basic precautions are recommended including adequate ventilation and avoiding skin contact. Please read the instructions and MDSS for additional information.
- Mixing ratio is 10 parts silicone rubber to 1 part catalyst (by weight).
- The silicone rubber material is white and the catalyst is red; when mixed the material is pink. Stir in the catalyst to obtain a consistent even pink colour. Be sure to mix in the material on the sides and bottom of the container (use a clear or translucent plastic container for easy visibility.
- Mix steadily. Rapid aggressive stirring will mix in excessive air bubbles. Stir as gently as possible but some bubbles are unavoidable. The bubbles will rise to the surface so let the mixed material stand for a couple of minutes before proceeding and use the 'painting technique' to minimize 'bubble trouble'. The instructions suggest degassing in a vacuum chamber, but I don't have one and haven't found it really necessary.
- The mixed rubber material appears thick and viscous, but it will penetrate every crevice of the master part. It will pick up the difference between a matt finish (the natural surface texture of Evergreen styrene, for example) and a gloss finish (where you got a little extra styrene glue, for example), and transmit that texture difference to the cast part.
- No release agent is needed to release cured molds from masters made of plastic but I use a sealer on absorbent surfaces such as wood prior to molding (see instructions for additional information).
- Cure time is not really specified in the instructions other than "overnight (at least 16 hours)" (long night!) at room temperature. This seems about right.

- Remove the cured mold with some care to avoid damaging either the new mold or the master part. The cured rubber is tough and elastic
- Shelf life of the opened product seems to be good, but older material seems to get more viscous and will not let entrained air bubbles escape as easily, resulting in more 'bubble trouble' with molds made of older material.
- Smooth-On also offers a thickening agent which may be useful for applications such as rock molds, a thinning agent, and a curing accelerant, none of which I've tried.

Mixing silicone rubber mold material and preparing for pouring

What you need:

- Silicone rubber material (Part A) and catalyst (Part B)
- Digital scale accurate to 1/100 gram
- Plastic mixing cup
- Mixing implement (needs to be strong enough to mix thick viscous material)
- Disposable working surface (plastic bag)
- Paper towel
- Master part prepared for casting (in 'mold box', ready to go)
- Old or disposable paintbrush (small model type)

Prepare your working area. Because the silicone rubber is sticky and can be a little messy to work with, I use a disposable work surface such as a typical veggie store bag or garbage bag. Check the batteries in the digital scale and have all the other items ready to use. Check that the master part is completely ready (did you seal those Archer rivets?) and that the mold is 'watertight'.

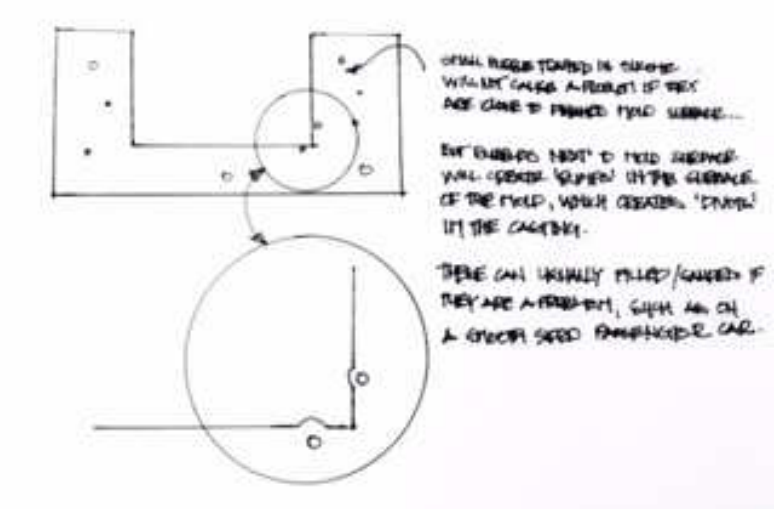
Mixing silicone rubber mold material;

- Place mixing cup on scale and turn scale on. This will 'zero' the scale with mixing cup in place on the scale.
- Pour the required volume of Part A into the mixing container (in grams). I don't have a good method of calculating the correct volume; I just go by 'eye' and experience. Note the weight of Part A on the scale and zero the scale. Add 1/10 the volume by weight of catalyst (Part B) (for example, if you pour 75 grams of A, add 7.5 grams of B). (note: I usually have a backup master part prepared for molding handy in case I mix more silicone than I need. This is usually some small part that I'm guessing I'll need a new mold for at some time in the future. If I mix too little I simply mix up a bit more in the same container)
- Mix mold materials steadily and evenly, trying not to entrain air into the mixture and making sure the material on the sides and bottom of the contained is properly mixed.

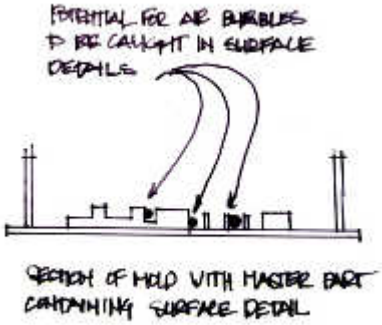
When mixed, the silicone is ready for immediate pouring.

Bubbles in the Mold

Air bubbles in the mold can cause a number of headaches. They can be caused by air being mixed into the mold material by the as Parts A and B are mixed, or by trapping air in the cavities in the master part as the silicone material is pour over the master in the mold box



Bubbles next to the ‘working surface’ of the mold will cause dimples in the surface of the finished casting. The size of the dimple depends on the size of the bubble and range from ‘scale bullet holes’ to large divots. They are annoying but they can be filled and sanded in the finishing process or you can decide that the presence of a ‘bullet hole’ or two in your station wall is not really an issue. This sort of bubble issue is usually the result of air that is mixed into the silicone in the mixing stage.



Master parts with a lot of surface detail will tend to trap air bubbles in their crevices if the silicone mold material is simply poured over master part in its mold box. This is particularly problematic if the mold has any number of ‘undercuts’ or has fine detail such as multi pane windows, or even predrilled dimples for future handrail installation. If you have a bubble in the mold, you have void into which resin will flow and harden in the casting process. Sometimes when working with new mold these hardened ‘bubbles’ of resin can be easily removed with a hobby knife, but as the mold ages the bubble will become more and more anchored to the to the rest of the casting.

The Painting Technique:

To reduce these problems at the source, use an old paintbrush to paint the mold material onto the detained surface of the master, working the silicone into the crevices and details of the part. Bubbles will be visible and can be teased out with the paintbrush. When the master part is evenly coated with silicone and no more bubbles are visible, the remaining silicone can be poured over the master. Be careful however, even the pouring can entrain more air in the silicone as it settles into the mold box.

Lifespan and Deterioration of Molds

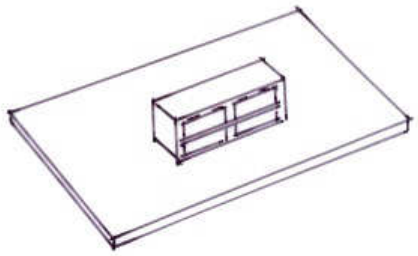
- Finished molds will last a “good long time”, but not indefinitely. The molds do not seem to deteriorate from age but from usage.
- There seems to be several different types of mold deterioration:

- **Loss of detail sharpness:**
  Molds with a lot of surface detail will eventually begin to lose some of the sharpness of the finer details. This seems to be progressive and is caused by tiny pieces of the mold getting stuck in the cured resin and being torn out when the cast part is removed from the mold. This typically happens in the sharpest details such as cast on handrails and deep sharp edged recesses in the mold. It is usually not noticeable at first but at some point you may suddenly realize that your most recent casting just isn't as 'sharp' as the earlier copies.
- **Tear outs:**
  A tear out is a failure of the mold in which a (usually) small piece of the mold will come away with the cast part. As a mold gets older and has been used for repeated castings, the silicone mold material begins to lose its ability to easily release the cured resin castings. I theorize that this is the result of a chemical interaction between the silicon and the liquid casting resin that slowly leads to changes in the silicone. Visually the silicone becomes a slightly lighter pink colour and feels a little drier, less soft and supple. You may notice that the cast parts don't 'pop out' of the mold quite as easily as they once did. This seems to start in areas in the mold that have greater exposure to the resin such as in the many little silicone protuberances that are created in the mold of a multi-pane window.
  As the mold becomes 'sticky' it will tend to tear out parts of the mold that are under the most 'stretch stress' in the unmolding process, typically inside windows and other such areas. When a portion of the mold is torn out, all subsequent castings made from this mold will have an extra blob of cured resin where the tear out occurred; very often this extra cured resin can be removed with a knife and files and the mold and casting can continue to be used (with that much more clean up required). Eventually however, and inevitably, the mold will suffer an 'unfixable' tear out, or so many tear outs that the clean-up becomes unreasonably difficult, or you will find yourself unable to remove a part from a mold.
- **Shrinkage or expansion of the mold:**
  Silicone rubber material will shrink or expand over time. Mold Max 30 is specified to shrink .002 in/in in 24 hours (a 12" long mold will shrink .024"), but in general seems to be much more dimensionally stable than some of the other products I've used in the past. In reality I've had greater problems with my mold expanding rather than shrinking…
  If all the molds shrank or expanded at the same rate this could be considered a 'manageable' if you're OK with your finished model being 1/100" longer or shorter than it should be, but often the car side mold shrinks or expands differently than the roof or floor mold, creating a bigger problem.
  If you find yourself using an old mold, make a test casting and check it against your master part. If the mold is not useable you'll need to make a new mold.

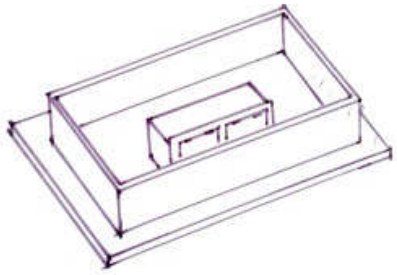
- All of this should make it clear the need to create master parts that do not need to be destroyed or damaged in the mold making process and can be used repeatedly to pour new molds with only minor repairs if required.

Pouring a One Piece Mold

Step 1 Glue the master or original part to a piece of .040 sheet styrene. This is the base of the future mold box and it should be big enough to allow at least ¾" around all sides of the master part. The part should be glued down with the undetailed flat surface glued to the .040 base.



Step 2 Construct a dam around the part. Place the dam sides about ½" from the master part (or less for small parts, more for larger parts) to ensure the mold has enough integral strength to not 'bow out' when the mold is filled with resin and a modest weight is placed on it in the casting process. He dam sides also have to be tall enough to allow adequate coverage of silicone material to be pour over the top of the part (again, more or less depending on the size of the part). This is the "mold box".



Step 3 Pour in the silicone rubber mold material. Start by painting mold material onto the exposed detailed sides of the master part with an old paintbrush, watching for and removing any bubbles that get trapped in the surface details. When the part is covered with brushed on mold material and you're satisfied that you've removed any bubbles, pour in the remaining mold material. Any air bubbles in the mold material should float to the surface and not affect the quality of the mold.

Step 4 Allow the mold to cure for at least 16 hours, break the dam and peel the mold off the master.

Properties of Smooth-On Smooth Cast 300 Liquid Plastic Resin

- Safety Concerns: Basic precautions are recommended including adequate ventilation and avoiding skin contact. Please read the instructions and MDSS for additional information. Some persons are apparently susceptible to an allergic type reaction to this material in which case it is recommended that contact with these materials be avoided.
- Mixing ratio is 100 Part A to 90 Part B by weight.
- Smooth Cast 300 has a pot life of about 2 minutes and is usually cured enough to remove from the mold in about 30 minutes. Other Smooth cast product lines have a longer pot life (and corresponding cure time). I've never really needed an extended pot time; if you are prepared with all tools and products ready, and molds ready for pouring, 2 minutes is long enough to pour 3 or 4 simple molds or a single complex mold. I also prefer the short cure time as it allows a single mold to produce several castings in a few hours.
- Smooth Cast 300 cures to a bright white colour, which can make it difficult to see imperfections in the castings. Smooth On produces a series of tinting additives that can be added to Smooth Cast 300; I haven't tried them mostly because I assume it would be an added step in the mixing process and I would lose a few seconds of pot life. Smooth On also produces a product that cures black but I have not tried this either.

- The cured product is tough and durable but will break if bent too much. It is flexible enough to avoid being brittle and can be sanded and drilled like 'ordinary' plastic.
- My experience with this material shows that it is stable, durable and will not deteriorate over time periods measured in years.
- Larger volumes of resin will cure faster than smaller volumes – small thin castings will take longer to become solid than larger, thicker castings.
- The liquid resin will stick to almost anything, except (fortunately) the silicone mold material and poly plastic used in certain plastic containers and plastic bags.
- The liquid resin generates heat as it cures, but with the small quantities usually involved in model castings this heat is barely noticeable.
- Once opened, this product has limited life span of a few weeks to a couple of months. I find it best to plan a 'program' of casting that will use up most of the resin in the kit within a couple of weeks of opening. In N scale, this is a lot of models, up to 25 passenger cars kits, for example.
- Once opened, the resin will absorb moisture from the air which will cause the resin to 'foam' as it cures and ruining the casting. Old resin may also result in castings that 'weep' a liquid onto their surface in the days after casting; paint applied to these casting will not dry properly and the castings cannot be salvaged. The lifespan of the resin materials can be extended by limiting exposure to the atmosphere.
    - Sealing the product opened containers tightly.
    - Opening the product containers as few times as possible. I decant approximately ¼ of the product containers into plastic squeeze bottles for immediate use and leave the product container sealed until more resin is needed.

Mixing Resin and Preparing for Pouring

What you need:

- Liquid plastic resin parts A and B
- Digital scale accurate to 1/100 gram
- Little plastic mixing cup
- Toothpick or similar mixing tool
- Disposable working surface (plastic bag)
- Paper towel
- Small piece of plywood and various weights
- Working molds, 'top pieces', and 'extra molds'

Prepare your working area. Because the cured resin does not stick to poly plastic, I use a plastic bag (typical veggie store bag or garbage bag) as a working surface. Check the batteries in the digital scale and have all the other items ready to use. Check the condition of all the molds you plan to use and arrange them on the working surface, and have 'top pieces' for each open mold prepared. I like to have an 'extra mold' handy to make use of any extra resin that you may have mixed but is not used in the mold(s) you are casting from, just so this resin is not wasted, typically some easy to pour mold for a part you can always use later.

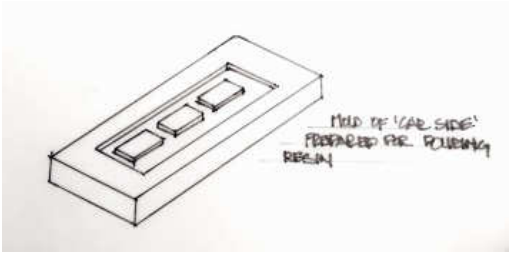
Mixing resin;

- Place mixing cup on scale and turn scale on. This will 'zero' the scale with mixing cup in place on the scale.
- Squeeze in the correct portions of resin Part A and Part B from the squeeze bottles; the correct ratio is 100A to 90B (9 grams of B for every 10 grams of A). You can 'zero' the scale for each part, but I usually do a quick calculation and keep pouring).
- Mix thoroughly with mixing stick. Resin Parts A and B are both colourless when they are fresh, but they have different densities and you can see when they are not thoroughly mixed, and then mix for a few more seconds. As the products ages one of the parts takes on a yellow tone and becomes more milky; this is a sign of the deterioration of the product but it does make it easier to judge the thoroughness of the mixing. (note: a little yellowing and murkiness does not seem the affect the quality of the casting, but at some point the product will start to fail)

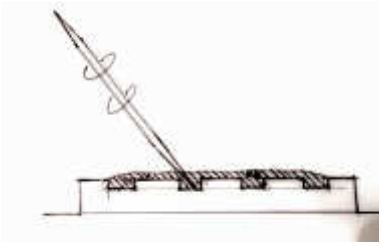
When mixed, the resin is ready for immediate pouring.

Casting in a 'One Piece' Mold

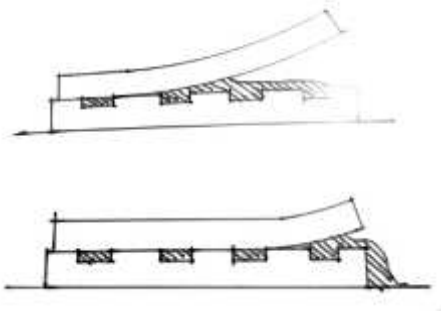
Step 1: Place the mold on a plastic bag on a flat surface



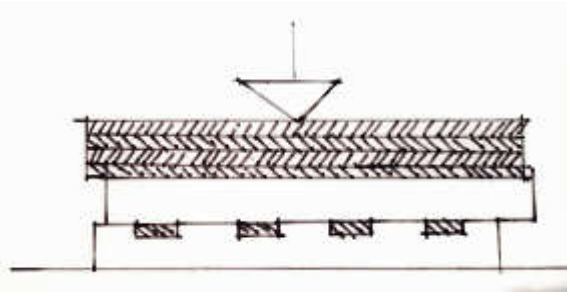
Step 2: Pour the plastic resin into the mold, overfilling slightly. This will help any bubbles floating on the surface get pushed out of the mold as the excess resin is squeezed out of the mold in the following step. Gently work the liquid resin into the details in the mold that might hold air bubbles with a toothpick, and pop any bubbles that gather on the surface or use the toothpick to push the bubbles to the edge of the mold.



Step 3: Apply the top of the mold – Start at one end of the mold and 'roll' the top piece down from one end to the other, squeezing out the excess resin in the process. The mold protuberances that will form the openings (windows) in the casting will support the top of the mold. Molds with no windows are actually harder to cast consistently because pressure on the mold top piece tends to make the centre of the casting to thin.

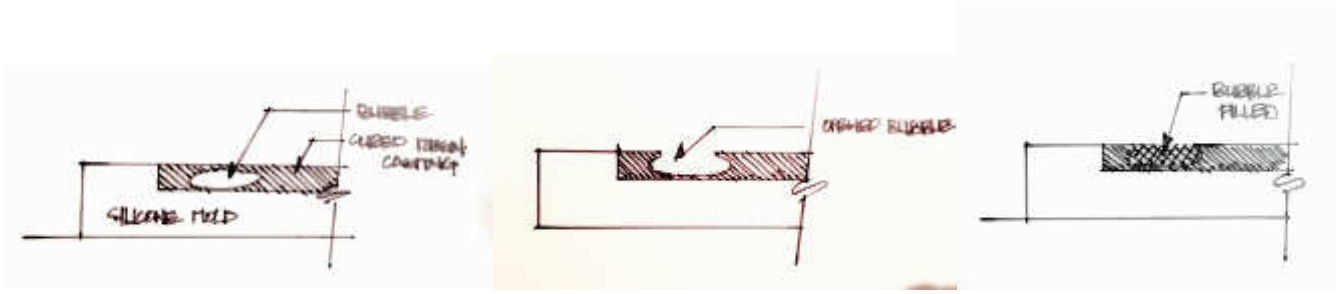


Step 4: Add a piece of plywood (or equivalent) and weight to compress the mold top piece evenly onto the mold. The amount of weight depends on the mold being cast; sometimes no extra weight is required at all after placing the mold top piece while larger molds will require several pounds to produce good consistent (not too thick) castings. Ideally the weight and pressure should not compress the mold so much that the casting is too thin, but just enough that the flash left in the 'window openings' is as thin as possible to make clean-up of the finished casting as easy as possible. Avoid placing excessive pressure on the top piece and then releasing the pressure; this may suck air back into the mold.



Step 5: Allow the casting to cure for at least 15 minutes, preferably 20. At this point the squeezed out excess resin should be solid and white in colour but still slightly soft and flexible; a poke with your fingernail will leave a slight impression. Gently remove the top piece and inspect the casting; if you're lucky you will see a casting with a smooth, flat surface with no bubbles. BUT it is very possible that you will have a least a couple of small, or even large, bubbles visible in the casting. THIS IS NOT A PROBLEM.

Step 6: If you see a bubble, do not disturb the casting; it is important that the surface of the casting that is in contact with mold (i.e. the detailed lower surface of the casting as you're looking at it) remains in 'attached' to the mold. The bubble will be in the middle of the casting with a thin layer of cured resin on both the detailed surface of the mold and on the top (open or rear side) casting. As long as this thin layer on the finished side of the casting remains 'attached' to the surface of the mold, the casting can be salvaged. Using a hobby knife, carefully remove the thin layer of resin on the top (visible) side of the casting. Add a drop or two (as required) of fresh mixed resin to fill the resulting opening (I generally use a toothpick to pick up a drop of resin squeezed out of whatever mold I'm working on next, rather than mixing fresh, if available). You may need to use a toothpick to work the resin into the bubble cavity to ensure the cavity is properly filled with resin. The added resin will fully bond to the casting.



Step 7: At about 30 minutes after the initial pouring the casting the resin part should be cured enough to be removed from the mold. Place the fresh casting flat side down on a flat surface to allow the resin to fully cure, as it may still be a little soft and 'bendy', particularly if the cross section of the castings is very thin. As long as you can remove the casting from the mold without distorting the casting it is usually safe to remove the casting and repour the mold if you are in the process of making multiple parts. Allow castings with thin cross sections to cure longer before removing them from the mold. Casting can be left in the mold indefinitely without any problem.

Clean-up, Assembly, and Finish

Casting Clean-up

The just completed casting will require clean-up, mostly the removal of flash from the perimeter of the part and any openings (windows and doors etc.). If the weight and pressure applied to the top piece of the mold was "correct" the flash in the window openings and perimeter of the casting will thin enough to clean up quickly with a deft pass of a sharp hobby knife (#11 blade).

I prefer to use a jeweller's loupe to inspect the progress of the deflashing process; the high magnification factor makes the smallest fragment of flash look like a bedsheet. The high magnification also helps spot any tiny beads of resin, the product of equally tiny and previously unseen bubbles in the mold, that are lodged in recesses and corners of the casting.

If the pressure and weight was not ideal it is possible that the flash in the window openings will be too thick to remove easily with a hobby knife alone. If you find yourself having to force the knife blade through a thick layer of flash, the chance of making an error increases significantly. In this case place the casting with the rear (flat, blank) surface down on a piece of 220 grit sandpaper. With fingers on the upper surface, move the casting in a circular motion so that the rear surface is gently sanded down. Check your progress regularly; it is easy to overdo this and accidentally remove too much material and damage details such as window mullions. The greatest downward force will be at your fingertips so you will need to move your fingers around on the casting to achieve an even result. When the thickness of the flash has been reduced sufficiently, finish the clean-up with a hobby knife as above.

The edges (perimeter) of the casting will also need to be 'dressed' with a knife and files as required to ensure that no flash or burrs will interfere with a neat, tight joint between adjoining parts. Drill out any holes needed for the installation of freestanding grab irons, handrails, or other details.

When possible, I prefer to use a "corner lap joint" because it produces a strong corner joint and it is makes it easy to hold the parts in position before (for test fitting) and while applying adhesive. However, it is important to clean out any excess resin at point 'A' (resulting from mold deterioration etc.) to ensure a perfect fit. I also ease the corner at 'B' for added insurance that the joint will fit tightly; bot are accomplished with Hobby files.

Assembly

I use CA type adhesives only for assembly of resin parts, and I prefer the super thin instant cure variety. More than once I have glued my model securely to my fingertips and found myself have carefully scrape a layer of skin off the model. The secret is to keep your fingers away from the seam being glued and to use minimal amounts of glue.

I place three or four drops of CA in a small disposable contained (such as a bottle cap) and apply it with a piece of strip styrene (or similar) cut to t a sharp point. As the point gets 'gummed up' with hardened CA cut a fresh point to ensure you have good control of the application of the CA.

Test fit all parts before applying glue, and make sure you have all the parts oriented properly. It's no help to test fit two parts only to discover after gluing that you've perfectly fitted the car side to the wrong side of the roof. Keep the CA debonder handy. When ready to apply CA to the joint, hold the parts in their permanent location with your fingers as far away from the seam to be joined as possible. Using the strip of styrene, pick up a TINY drop of CA and apply it to the joint to tack the two pieces together. The idea is to use a small drop to limit the movement through capillary action of the glue along the joint and to achieve a joint only strong enough to hold the two pieces together, in their correct positions, until you can apply a more generous droplet of CA to achieve a permanent, strong joint. I also use a variety of homemade jigs and squares made from styrene, and often made for specific purposes, to assist on hold parts in their correct positions. When the tack is deemed satisfactory, use the styrene strip to apply additional CA to secure the joint, keeping your fingers well away from the glue as it flows into the joint.

Preparation for Painting, Prime Coat, and Final Repairs

Resin has a reputation for being difficult to paint, but with some simple preparation most of the issues are easy to overcome. The surface to be painted must be cleaned and primed with a primer that adheres to the resin well. Some paints, such as Scalecoat products will not stick to raw resin at all.

All resin surfaces must be cleaned prior to painting. As no mold release agent is used in this process, the issue is mostly the removal of skin oils left by the handling of the castings. I use warm water (not hot!) and ordinary dish detergent, scrubbing lightly with an old toothbrush. It may be difficult to reach into the nooks and crannies of a structure model, for example, but do the best you can without damaging the model. Rinse well and allow to dry fully.

Somehow I discovered that **Testors Model Master** spray enamel rattle can paint sticks to resin without fail and makes an excellent primer coat. I use their 'military models' product line for this use, only because I am certain of the effectiveness of this particular product; other Testors products may work just as well but I have not tried them. I also like the matt finish that the military colours provide. I aim for a light even coat but this is difficult with a rattle can; if the coat is a little thin in some areas the result seems to be unaffected, and if applied to heavily the paint still dries to a thin coating that does not hide small details. I use FS30140 Light Earth for

most of my models (under CPR Tuscan, boxcar red) and FS36440 Flat Gull Grey under lighter colours. Allow this coating to dry thoroughly.

The flat finish of these paints is helpful in inspecting the model for imperfections prior to final paint; most small imperfections that were not visible on the bright white castings become much more visible after priming. Bubble divots and joint gaps can be filled with Squadron Green body putty and sanded out, and unnoticed flash removed. Some spot repriming may be required.

When all spot repairs are complete, the primer is completely dried, and the model has been inspected and wiped to remove any debris or dust, the final coat can be applied. I use an airbrush for final paint, but I see no reason why some structures and models that do not require a 'perfect' finish could not be brush painted. I use a variety of products, but have used Scalecoat for all CPR Tuscan and grey painting requirements until this point; The colours and finish are excellent. I am looking forward to trying Rapido's new range of colours; less toxic and way easier to clean.