

Tech Tips 004

A help series

Dedicated to the dissemination of Detail model building methods and techniques.

Materials and methods presented here are not intended as the best or only solutions to the modeling challenge(s) discussed, rather as methods and procedures which have a proven record of success in actual use. Please keep experimenting with new materials and techniques, as this is the only way to expand the fields of knowledge.

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Paint Finishing: Primers ~ Base coats ~ Masking ~ Between coats, Top coats ~ Buffing & Polishing new paint.

Glass smooth finishes CAN be obtained directly from aerosol paint cans. The unfortunate truth is most of us lack the patience and practice required to obtain such a finish. It is the pursuit of the near perfect finish, that has prompted this TECH-TIP. "004" will be an exploration of a variety of products and techniques, which can be counted on to improve the finishing quality of just about any model.

The golden rule of finishing states: ***THE FINISH CAN ONLY BE AS GOOD AS THE SUBSTRATE TO WHICH IT IS APPLIED.*** This analogy is like computer stuff:... "crap in crap out:" or in the case of paint finishing Paint over crap = a crappy paint job. If nothing else is remembered from this article please let it be this: ***You can NEVER cover a blemish, ding, dent, piece of lint or animal hair with a coat or coats of paint.*** When looking at a model prior to painting. I always tell myself "If I can see it now, I'll see it when it's finished. Surface preparation, is a most important part of a spectacular paint job. Spending the time sanding and polishing the substrates, will payoff in a finished product you can be very proud of. We have covered surface preparation in Tech-Tips 002 & 003, just remember to DO the prep work. Once satisfied with your prep work: Let's move on to Primers.

Primers: It's time to apply the very first coating to the model. Mount the model on a painting stick or other holding fixture. The holding fixture can be as simple as a piece of 1/2" wood dowel and a spent 18mm motor casing. If we have read the label on the cans of primer we know to wipe the entire surface down with a tackrag to remove the micro sanding dust. If Dupli-Color has been chosen we also know it has a 1 hour or 5 day recoat time. This will be acceptable if we watch the clock, and our sanding time. Shoot on 2 complete coats of primer, let dry 15 minutes. Sand with 220 grit sandpaper and "sight" for imperfections, tube lines, etc. Recoat (within the one hour time limit) with another 2 complete coats, repeat the sanding and recheck. This time switch from 220 to 400 grit sandpaper. Finish this second sanding with 600 grit and recheck the entire model for blemishes. Another coat or two should have the entire surface of the model flat gray and smooth as a babe's backside. We're ready for a base coat in WHITE.

I chose Dupli-Color primer for this example to show the approach to problem paints and primers. There are several primers out there that carry the "RECOAT ANYTIME" label we all want. Sherwin-Williams, Duron, and P.P.G. to name just a few. However as with most things that are really good, I find them difficult to find "ON THE SHELF" when needed, and most of the automotive companies, [Mattos and PPG] charge a hefty price (around 8.00 for a 12oz spray can of primer.) Choose wisely: Be sure the primer is high build, Sandable and of good quality. Stay away from the "one coat" or "Instant" primers. Ask the store owner which primers he sells the most of and if many problems have been reported with a particular type. "Recoat Time"; is not as important for primers as it is for color coats and clear coats.

Once the primer coat is as suitable as it's going to get, and within its label recoat time limit. Finial 600 grit wet sand, towel, and tack rag the complete model. It's time to basecoat.

Basecoats: Basecoats should be gloss white, semi-gloss at the very least. Check the label recoat times. From this point on, do not use anything that doesn't have the "RECOAT ANYTIME" label. Apply at least 2 light almost dry coats of white. The coating should be applied by a single pass, then rotate the model 1/4 turn, another single pass, 1/4 turn and so on until the entire model has a even white appearance. Wet sand the Basecoat with 400 and 600 grit sandpaper after the coat is dry. If the primer is reached during this sanding, recoat with white until an even overall gloss white has been achieved. If the model has a lot of panel etching or delicate surface detail, use the single pass spray pattern, keeping a wary eye on the engravings. If it appears we are losing some detail, stop. Wet sand the model and recheck the detail. If necessary, open the engraving with a needle in a pin vise, or an engraving tool. Try not to engrave into the primer again. Apply another light coating of white basecoat and again wet sand it to a smooth finish. At this point wet ultrafine Scotch-brite should do the fine finishing of the surfaces. The base coat is an important step, it "glosses up " the surface making it easier to notice blemishes not detectable in the flat primer coats. If a blemish is found and most likely there will be simply wet sand & Scotch-brite until you are satisfied with the basecoat.

Some of the many types of white I have tried as base coats are as follows: **Decrolon spray enamel:** Don't use it, it has a 1 hour /5day recoat time. **ColorWorks** by Illinois Bronze Paint Co.: **Be Careful** While the IBP Co. paints are recoat anytime, the company was bought out by Sherwin Williams, and than by Krylon about a year ago. Both the ColorWorks products produced by S&W and Krylon have the 1/hr / 5day recoat warning. All 3 ColorWorks types are currently on the shelf. **Duron spray enamel:** Duron has a special "EXTERIOR Furniture" White that has a RECOAT ANYTIME label. **Pittsburg Plate Glass Co, (P.P.G.):** P.P.G. has a Semi-gloss exterior white spray enamel that carries a RECOAT ANYTIME label. This one is rather expensive at \$8.69 for a 12 oz can. **Dupont "touch up" Spray polyurethane enamel.** from Mattos Inc.: This is another automotive "white Primer/touch-up" paint. Dupont is nearly as expensive as the PPG products, these 12 oz cans go for 7.95. It has a RECOAT ANYTIME label. **Dupli-Color spray enamel:** Inexpensive, but has a 1 hour / 7 day label. **KRYLON Interior/Exterior Paint #1501 Glossy White:** *This is the ONE to use,* it has the RECOAT ANYTIME label. Is run resistant and dry enough to be handled and sanded in one hour.

Please be sure to read every label of every can of primer and paint you buy. I have had very bad experiences buying the "same brand" of paint in what I thought was the same type can, only to totally destroy the paint job with an incompatible paint. Every Finish Failure I have experienced has been between a primer and white basecoat or a white basecoat and the color topcoats. Don't take for granted all products produced by a manufacturer are compatible, **they are not.** Make sure you buy only a specific product numbered paint to be sure it will be compatible with the material already applied to the model.

We should now have a model that is as blemish free as it will get, with an even coat of white. The final white coating should be allowed to air dry for a day or two. Please: Try to plan your model finishing far enough ahead to allow 2 or 3 WEEKS for the process. I Know! I know: lots of us build our models on the flying field. That's no excuse, plan head! Extended model finishing time may seem extreme but consider: Your model will likely survive (in whole or in part) at least a couple of years. Time spent now may allow this model to be a contest contender for most of its flyable life. It sure will look a good deal better while sitting on the front room mantel. Taking your time in the finishing phase will also allow time to "think through" the making, multi-color sequence, application of details and finally the decals.

Masking: Masking is almost an art form, I personally am not very good at fine line masking, I have seen some masking jobs that defy explanation, the lines are so sharp and clean one would think they were drawn with a pen. I have spent a good deal of time researching masking and masking materials. These are a few of the tid bits gleaned from countless "Finishing " articles and "Stuff" learned by good old trial and error. Before beginning the masking process I like to lightly rub the final basecoat with 600 grit DRY sandpaper and lightly buff this "tooth" with a Scotch-brite ultrafine pad. This gives the surface something for the masking and next color coat of paint to "Bit". Your masking will begin with the LIGHTEST color to be used. OH! by the way: Silver, Chrome, and All Simulated Metals finishes, are applied LAST.

Masking tape: Masking tape is great if you are painting a boat, car or full size airplane. It is practically useless for model masking, and its thickness and texture make it nearly impossible to get "fine lines" or a good "seal" at the edges with even the most expensive grades. Masking tape is usually only used to hold large pieces of paper mask over large portions of the big fins and body, and occasionally to hold "stuff" temporarily together.

3M Fine Line tape: Mainly a Sign Painter, and PinStriper's tape. 3M fine line tape in 1/4" and 1/2", are very useful for model masking. The materials "low tack" won't lift fresh paint and its thinner body builds less of a paint dam. It does have some negatives, it has a tendency to lift or let go, if left on for any length time, repressing just before painting will help. It is a good practice to give tape maskings a coat of matte clear to seal the edges before applying the color coat. Don't use this tape on corrugated parts as it will lift leaving an uneven line. 1/4" rolls sell for 3.96, and 1/2" for 5.14. at P.P.G., Mattos inc. or N. Glantz & Sons Sign supply.

Lithographers ruby tape: This is a very low tack tape, used in the offset lithographic industry. Because of its very low tack it is excellent for use on new paint, its transparent ruby red color makes it easy to see through during positioning. Ruby tape is very good for small areas and fine detail and will hold well during painting. The down sides are: At 15.00 per 12yd roll it is very expensive. While it has the holding power to remain down it also has a tendency to leave the slightest red tinge to the areas of direct contact, and has about the same paint dam as fine line tape.

Scotch magic tape: Yes; plain old "Scotch" magic transparent tape. Many professional modelmakers use the stuff almost exclusively. It is Excellent on canopies, and other clear parts. It has a small paint dam and peels fairly well with tweezers. Don't use it on fresh paint, it will lift it. The tack can be somewhat controlled by sticking the pieces to your finger several times before application. I use this method on PMC models frequently.

Parafilm- M: Testors Mastermodeler line has recently released a new masking material called Parafilm M: It is a self-adhesive, 2" x 25' roll of double sided material with an almost waxy consistency, and a stretchable backing material. The material is cut into pieces and stretched to about twice its length then allowed to relax. Stretching activates the adhesive and the material can be applied to compound curves, even into recesses as small as 1/64" wide. I have used this stuff on several models with very good results. It is not a cure-all for masking, and it is fairly hard to master (I think I wasted 2/3rds of the first roll before ever getting a decent line.) Once some practice has been weathered, it DOES give some very nice results, especially on those hard to tape curved surfaces. Get some and give it a try!!! Current cost is 7.95 per roll from the Micro-Mark catalog.

Brushable and Sprayable Masking Liquids: As with many "hobbist" materials, be very careful when you buy. I have 1 or 2 liquid masks I will recommend, the rest I won't even mention. Hobbico "MasterMask" and Parma #701 Liquid Mask are the only two "hobbist" types Recommended, I prefer to use Wyandotte GripMask, it's just a better product. All 3 are liquid rubber compound in a water base. GripMask is a professional "Spray" mask which can also be brushed. It is unfortunately only available in gallons

Where to Paint our Models: Most of us are not fortunate enough to have a room in the house, or enough support from the family to have an actual spray paint booth. (I must admit I have been truly blessed.) We are generally relegated to the garage or to fend for ourselves outdoors. While the garage is not all that bad, temperature and humidity control is the driving force when attempting to apply spray paints. I have two fairly cheap and portable spray Booths designs to share. Both have served me well, even as an apartment dweller. Either can be used inside or outside, if protected from the fowl weather. The First is a 24" x 24' x 48" rectangular "cabinet" with a continuous plastic side hinged door. This contraption is made from a heavy weight cardboard box, purchased from one of the "Mailing" package stores, Parcel Plus and The Paper Store come to mind. Packing tape all edges and corners, 1/4" foamcore can also be substituted for the cardboard. Either should be painted white inside and any color outside as a sealant. The addition of a 100watt bulb and the thermometer will help to achieve the proper 70-90 degree working temp. Add a Lazy Susan with a spent D motor casing epoxied to its center, you have a turntable that will allow full access to the entire model without touching it. A length of 1/2" hardwood dowel with an 18mm casing glued to one end will act as a 13mm motor, add a second spent 18mm and a spent D for 24mm models you can mount just about any model on a stick before the final tack rag wipe down, then onto the turntable until the next masking or color application. I usually put a 2' x 4' piece of plastic dropcloth under the

"paint chamber" to catch any overspray. Another option is to add a squirrel cage blower and dryer hose to exhaust the overspray outside. This feature also limits the amount of fumes expelled into the rest of the house (the wife or hubby will like that.)

The other "Spray Booth" is a 36" X 36" X 84" heavy 18 gage clear vinyl bag fitted over a folding tubular steel X frame, with snap front closures and the same squirrel cage blower mentioned above. This unit has a 30" x 30" center fold up work shelf 42" above the floor; and a large 30" X 30" turntable on the floor. I've used this chamber for the last 12 years on models up to 68" tall, and finspans of 30".

Color Coats or Top Coats: O.K. we've got the model basecoated, and Masked and in the chamber at 70 degrees and less than 30% humidity, lets put on some paint. Have we read the label(s)? I like to place the spray paint can in warm water for about 2 minutes this increases the can pressure which helps with the atomizing. Care must be taken when using this tip, if left in the water too long or the water is too hot, the can could explode! Spray on a light coat of color. Allow to tack up (about 10 minutes) and apply a second light color coat. This coat should be wet enough to spread out to a glossy finish and allowed to dry about an hour. After drying remove the masking with the use of tweezers. Be very careful not to dig into the new paint at this point.

Again Check the labels of every color you plan to use. If they don't have the recoat anytime message, DON'T USE THEM. Silvers and all the clearcoats are especially nasty. If for some really compelling reason you must use a color that doesn't have a recoat anytime label be very careful when and where this material is applied. I find it helpful to prep a "SAMPLE" of scrap body tube and fin material. Remember the material, fillers, basecoat, and other coating should be applied to the sample in identical conditions as the model. Paint the sample before applying a suspect finish to the model. If any reaction is observed on the sample do not use the material on the model.

Between Coats: I'm sure by now all the references made to 3M products, some out there may think I'm a 3M factory rep. or something. I am not. 3M has a very large, quality based product line and some of these products simply are the best. One such product is the #7448 Scotch-brite Ultrafine hand pads. Scotch-brite pads are a toothy plastic fiber produced in 6" x 9" sheets about 1/4" thick. They are used in the auto refinishing and furniture trades, in much the same way we would use steel wool. Unlike steel wool it can be cut into different shapes and sizes to fit the need. Scotch-brite can be used wet or dry and reused and or rewetted countless times. Pads of Scotch-brite outlast steel wool and fine grit sandpapers by the ream; it must literally wear away before another piece is needed. Find a source and buy some, (the last time I made a purchase from Harrington Automotive inc, a box of 20 pads went for around 19.00. **They are really worth every penny.**)

Between coats of color I have found a very light mist coat of "matte clear" will help smooth out some of the paint dam ridges between masking. I usually use Testors or Pactra matte clear however others may work fine: I'd test them before trying on the finished model. Allow the matte clear to dry a half hour or so. Check for lint other foreign matter in the coatings. Wet sand the model with a Scotch-brite pad to smooth out the surface irregularities, and hopefully some if not all the previous coating paint dam lines. Take care to go slowly and methodically. Make a special effort not to sand in any one spot for more than a stroke or two. It has been possible to actually smoothed out brush stroke lines with this method. Once satisfied with the smoothness of the finish, continue to mask the next section or color and repeat the process until all color coats have been applied. After the final color coat has been applied give the model a final matte clear coat and Scotch-brite the entire model to a near luster finish.

We have been talking a lot about Matte Clear in this section. A short explanation may be in order: The use of "matte clear" between coats of color is only a smoothing medium and sealing base. Most if not the majority of this material, will be removed by the sanding and polishing with the Scotch-brite pads. Matte clear is preferred to Gloss clear for several reasons: Mattes dry much faster. When applied over Gloss colors, it is easier to see that places haven't been missed, and it *seems* the solvents in the matte clear dissipate faster with less attack on the fresh color coat than gloss clears. We'll talk more about Clear Coats in another section of this article. For now, think of matte clear as a sanding medium.

The model is now ready for lettering and decal application. Yes that's right: Apply those darn decals now. Wipe the entire model down with a tack rag and keep a moist paper towel handy. Apply all the dry transfer lettering and water soluble decals. Blot the water dry and allow the model to set at least one full day;("24hours"). I like to let them set for 2 or 3 days.

When absolutely sure the decals are dry AND have not silvered, {lifted from the surface giving the decal a whitish or silvery look} spray on a medium wet Matte clear coat to seal the decals. If silvering has occurred, remove the effected decal and replace it before proceeding with this step.

Our model is now primed, painted, trimmed, detailed, and decaled: Can we go fly it now? NOPE! It's time to buff and polish this masterpiece. Buffing will be a light wet sanding with, you guessed it; ultrafine Scotch-brite pads. When pleased with the smoothness and luster of the model, set it down, grab your wallet and run on down to your local Automotive paint dealer/store. One more purchase and your finishing stock will be complete. WHAT NOW,: YOU ASK?? Why yes, another 3M product! This time a water based, silicone and wax free FINISHING MATERIAL. Product no. 05928 Finesse-it II. Finesse-it II is a liquid polishing compound unlike anything I have ever used before. I have seen, and worked out some fairly heavily orange-peeled "KRYLON" paint jobs, smoothing them to a glasslike finish. Paul and Andrew Miller, Jerry Flynn, and myself can all personally attest to these wonderful feats. It is NOT magic, it's chemistry! Oh! I'm sorry sorta lost my way for a minute... No! it's hard work, a lot of elbow grease, and a product that smoothes like nothing I can describe. You will need a bowl of clean water, some soft cotton undershirt type rags, and the Finesse-it II. Tear a small piece of cloth and dampen it in the water. Apply the glaze SPARINGLY with the damp cloth. While the glaze is still liquid, using a separate DRY soft cotton cloth buff the surface of the model with light to medium pressure. As the glaze begins to dry, reduce the pressure and polish to a high gloss. Repeat this process as many times as is necessary to obtain a glass smooth finish. Some care will need to be shown as Finesse-it II, does remove a tiny amount of the paint. If you decided to use Gloss clear: DO NOT USE Finesse-it II: it will remove the clear in clumps, (I have used Finesse-it II to remove old yellow clear coat from 10 year old models; believe, when I say don't use it over gloss clear.) Finesse-it II dulls chrome metallics, but has no other effect on other metals or metal colors. It is great over decals, and most mylars. I have also used Finesse-it to repolish mirror finished mylar and my Old, Old Cineroc, and other mirror finishes. Once you have seen what this stuff can do you will most likely never gloss clear coat anything again. Which bring us to one of modeling's burning questions:

To Clear Coat or NOT to Clear Coat??? Now this is a DILEMMA! How this question has been answered has spoiled many a fine, completely FINISHED scale model.

This author has been experimenting with clear coats since the late 60's and frankly they really haven't changed much. (Sorta like Igniters. OH! sorry --I got lost again) By far the vast majority of clear coats contain Xylene and Toluene the main ingredients of Lacquer thinner. Application of an Enamel over dry Lacquer is O.K. The reverse however is instant death to the underlying Enamel. Almost ALL aerosol paints are Enamels or acrylic Enamels. As you can see we are sort of working with an accident waiting to happen. Model spray paints are enamels and clear coats are lacquers. If you choose to gloss clear coat you are toying with disaster. If you apply just a LITTLE too much, in any of the coats you WILL cause a crazing and wrinkling all the way to the tube fillers materials.

If one must use gloss clear **Please** follow this procedure. Even with this procedure I cannot guarantee your model finish won't be ruined in an instant.

Be very sure the model has had 3 to 5 days to cure. Start with extremely light mist coatings, never let the surface become visibly wet. Spray and turn , spray and turn. Giving the solvents time to evaporate before continuing with the next misting. Once you have a solid clear coat, LET IT DRY for at least an hour. Scotch -brite the entire surface. Now repeat the first steps being just as careful as you were with the very first misting. Again let the coat dry an hour. Repeat the process one more time, this time let the model stand overnight. If all has gone well and NO wrinkles have appeared, let the clear coat cure the recommended dry time,(check the label, some will say 2, some will say 5 days). Then, and only then, wet scotch-brite to a gloss, find and apply a good quality wax.

Stick a fork in it; I believe it's done. One last word of warning: All Clear Coats including automotive polyurethane clears and even true urethanes WILL yellow over time. That length of time depends on how long the coating is exposed to UV radiation. In closing I hope some of this information will be helpful. If you have additional question please let me know, I'll try to get an answer. Keep um flyin, -looking like glass.