8-1 The rock castings, ground cover and trees are products sold by hobby shops that specialize in model railroad supplies. The tank is Doug DeCounter's Italeri Panzer I V.

Scale Color Theory

For years, most modelers have primarily concerned themselves with the full-size or prototype color in terms of accuracy and availability. The manufacturers, for the most part, have collectively provided modelers with the more popular colors, usually matched to some prototype paint chip sample or standard. In general, this has kept modelers quite content. But a growing number of conscientious modelers are becoming aware of the theory of Scale Color.

The Scale Color Theory is founded on the observation that our planet's atmosphere is not crystal clear or transparent at all. Modeler/researcher David Klaus in his excellent publication, *The IPMS Color Cross-Reference Guide*, has suggested an exercise in which you spray flat black paint on two cardboard squares, one 12 x 12 inches and the other 2 x 2 inches. Outdoors, in sunlight, lay the 12 x 12 card upright against a neutral background. Now back away, holding the 2 x 2 square at arm's length in front of you, until the two squares appear the same size. You will notice, while the black square in your hand remains unchanged, the larger square appears lighter, more grayish. This has been termed the Distance Effect. Under consistent lighting the intensity or tone of a given color or hue will diminish the further away from it you get. Although a fairly recent concept to modelers, accomplished landscape painters have observed the Distance Effect for a hundred years or more. You can see, in the artwork of John Constable for example, the foreground objects are rich and vibrant

in hue, yet, as you gaze further back into the painting, objects become more muted gray and less intense. He accomplished this by adding white, grays, and even browns into his colors to compensate for the Distance Effect.

How does this apply to models? Well, if you hold a 1/48-scale airplane 12 inches from your eyes, it is the same as observing the real thing 48 feet away. Naturally the Distance Effect causes the colors on the full-size aircraft to lighten or gray (remember the black squares) as opposed to the full-strength prototype color applied to the 1/48-scale model.

CREATING SCALE COLOR

One could conceivably spend endless time and effort achieving scale color by de-intensifying each hue with minor adjustments in that hue's pigment,and some may wish to do so. It would also seem natural to borrow from the landscape artists and add gray to a color, to deintensify it. However, most camouflage hues are low intensity, or loaded with a lot of gray. Adding more gray could change the color too much.

The broader, most acceptable solution, which yields excellent effects with minimal fuss, is to add white to camouflage colors in various proportions depending on the scale you are working in. White will reasonably tone down the camouflage colors, to impart the proper Scale Color Effect.

NOTE: The proportions themselves are not agreed upon by all, as the mere observation of color is, by nature, a unique experience for each of us. The proportions given here do reflect the conservative consensus of modelers worldwide.

SCALE OF CHOICE	*PERCENTAGE OF WHITE TO ADD*
1/32 and 1/35	7–10%
1/48*	10–25%
1/72 and 1/76	15–30%
1/87	20–35%
1/144	23–38%

A little more or less white will not spoil a thing.

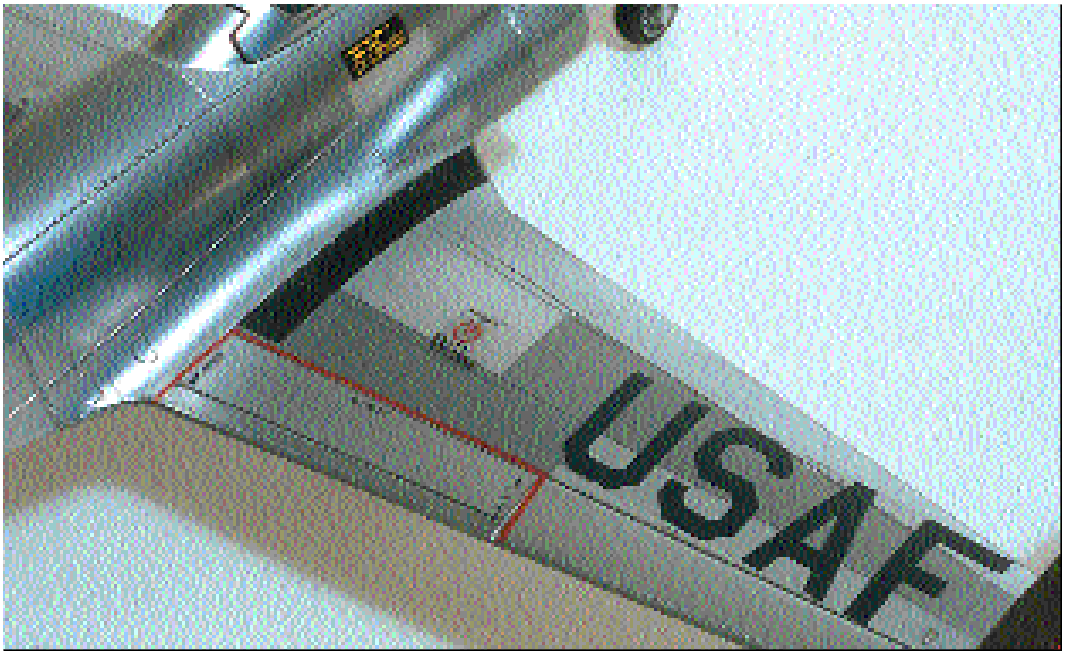
*As an example, a lot of 1/48-scale aircraft modelers prefer as much as 25% white additive.

Model Master II provides three whites for this purpose to be used in flat, semi-gloss and gloss applications as required:

No. 2142 FS 37925 Flat White

No. 2143 RLM 21 Semi-Gloss White

No. 2144 FS 17925 Gloss White



8-2 This is the type of incredible realism you can produce on a replica of an aluminum aircraft using Metalizer paints polished to a sheen that looks like real metal.

Shadow Effect

It is common to paint miniature figures with special washes and accent colors to emphasize the shadows on faces and the folds and wrinkles in cloth. You can use a similar technique to make the undercarriage of aircraft and the wheels, treads and undercarriage areas of armor appear to be highlighted. There's virtually no way to get enough "fill" light on the undercarriage of any model on display. Often those lower details just vanish in the shadows. You can use the "Shadow Effect" to bring some simulated light into those shadows. When you are painting aircraft, paint everything from the center of the fuselage down and the undersides of all the wings and stabilizers, and the wheels, treads and undercarriage of armor 20 percent lighter than the rest of the model. If you have already added white for the "Scale Color Effect," add 20 percent more for those areas that will be in perpetual shadow.

Scale Shine Effect

There is a "Scale Shine Effect" with clear finishes as well as with colors. Truly glossy or shiny paint will look unrealistic on a model because you are viewing the model from a greater distance than the prototype and because our real-world sun is 24, or 35, or 48, or 72 times larger than the sun in the "world" of our model. This "Overscale Sun" effect makes the highlights on a glossy model far too large. You can reduce that effect by using semi-gloss on smaller-scale models or

8-3 Use a soft cotton tee shirt or diaper to polish the buffing type of Metalizer paints.

a mixture of semi-gloss and gloss on large-scale models.

USING METALIZER PAINTS

The Model Master "Metalizer"paints include both "buffing" and "non-buffing" colors. The buffing colors are designed so they will respond to rubbing or polishing by producing more shine or more reflectance as you rub. It is important to apply any of these metallic paints to bare plastic to take maximum advantage of the already-polished plastic. These metallic paints will accentuate any imperfections on the model, so it is most important to be sure all the seams are filled with either dissolved plastic or Instant Plastic Adhesive so the seams are as hard as the surface of the model. Burnish the seams with a knife handle or the round part of a screw-driver blade so they are as shiny as the model. If you find glue-smeared fingerprints or other surface flaws,try polishing them away with a metal polish like Brasso.If the damage is too great,sand them very lightly with #600 wet-or-dry sandpaper wetted frequently. The sanded spots can then be polished with Brasso so the damaged surfaces look as shiny as the rest of the model. If necessary, panel lines can be rescribed by pulling a knife blade with the cutting edge backwards to chisel the line. Rivets can be replaced by applying a single dot of plastic cement with the point of a pin.

When the model is perfectly clean, spray the metallic paint full strength.Use several light coats to avoid any chance of puddles, runs or sags. The goal, here, is to get a smooth and even finish – we'll get to the shine later. When you are satisfied, set the model aside to dry overnight.

8-4 To produce the effect of different shades on indi - vidual panels on a black aircraft, mask the surrounding panels with Masking Tape and use a kitchen scrubber to lightly polish the unprotected panels.

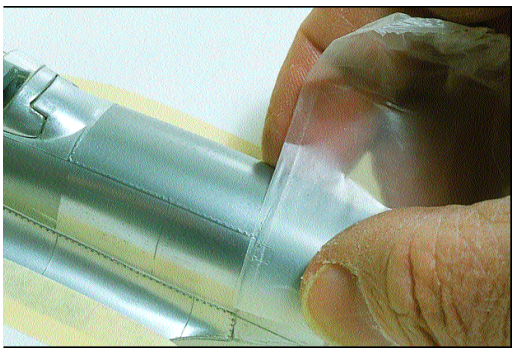
MULTI-PANEL METALIZER EFFECTS

The Model Master Metalizer"Buffing" paints can be polished so they shine like new and untarnished Aluminum Plate #1401, Stainless Steel #1402, Magnesium #1403, Titanium #1404,Gunmetal #1405,or Exhaust #1406 (there's also Dark Anodonic Gray #1412 and Burnt Metal #1415 shades). Use an old cotton tee shirt or a cloth diaper to polish the paint. The more you rub, the shinier it gets. It takes some practice,however, to know when to stop. When you've rubbed through the paint, you have rubbed too long, too hard, or simply not applied enough paint and you'll have to repaint at least that area. The finished model will look like a solid hunk of metal.

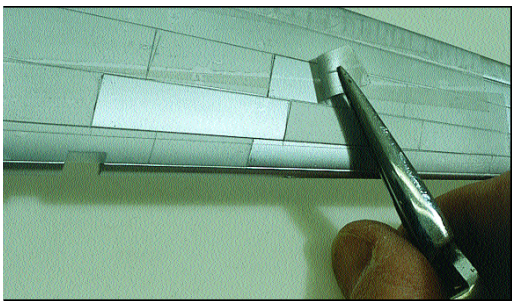
Unfortunately, real aircraft do not look like solid hunks of polished metal. They look like what they are, machines constructed of hundreds of individual metal panels. What makes this apparent is that there is the slightest difference in sheen from one panel to the next. You can duplicate that effect with the Metalizer paints in two ways: either polish one panel area more than the next or spray one panel a slightly darker color than the adjacent panel. Here is another

case where you must have a photograph of the prototype to see the effect you wish to create. Some older unpainted or bare metal aircraft have great differences in the colors of the panels, while newer aircraft have barely discernable differences.

For a replica of an older, well-used aircraft, paint the entire model a lighter shade (Aluminum Plate, for example), then cover some of the panels with wet white wrapping tissue for the masking material. Even the least-tacky masking tape will lift some of the pigment. Paint the remaining panels a darker shade (Stainless Steel, for example). Let the paint dry, remove the wet paper masks and, for a third color, mask a few of the lighter panels and polish the remaining light panels.

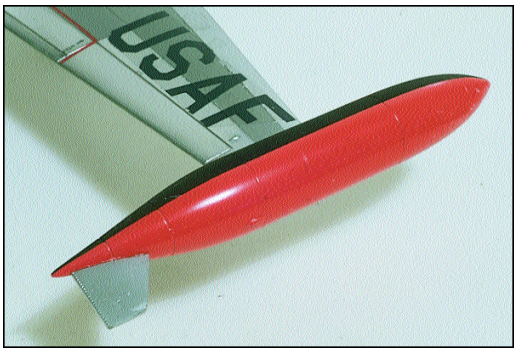


8-5 Use Parafilm M (shown) or damp paper to mask individual panels when you are using the non-buffing Metalizer paints. Paint the exposed panels with a darker color or with the buffing type of Metalizer.



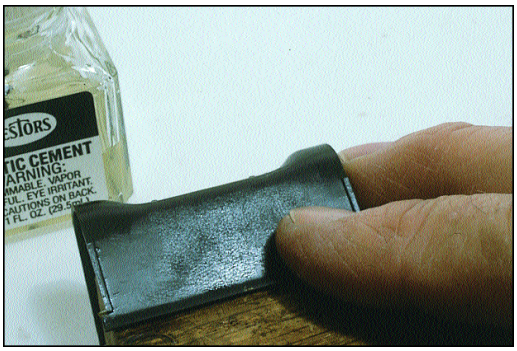
8-6 Use tweezers to remove the Parafilm M or masking material. Always pull the masking back over itself as shown to minimize the chances of lifting the layer of paint beneath it.

For a replica of new aircraft, apply just the lighter shade to match the prototype photo. When the paint is dry, mask a few of the panels with wetted wrapping tissue so you can polish the adjacent panels, polish those panels, then remove the masking.



8-7 The surface below any bright orange or white paint must be as free from flaws as the surface beneath Metalizer coverings. These colors seem to exaggerate any flaws.

When the polishing is complete,apply decals, but cut the clear decal film as close to the edge of the decal as possible because the clear film will be visible on the polished model. Finally protect both the shine and the decal with several very light coats of Model Master Metalizer Sealer.



8-8 Dab a coat of still-wet Testor Liquid Plastic Cement with your fingertip to simulate the rough surface of cast steel.

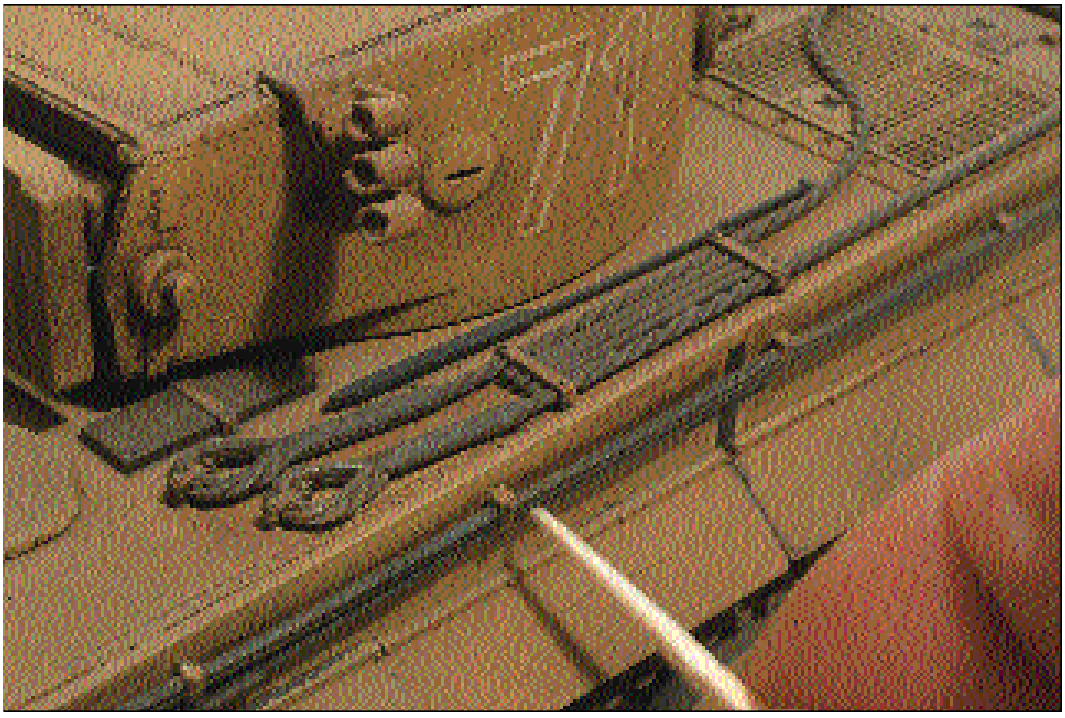
MORE SPECIAL PAINT EFFECTS

Cast metal has a texture that is seldom duplicated in the kits. It's easy enough to simulate,though, by covering the surface of the *unpainted* model with Testor #3520 Liquid Plastic Cement and, for the few seconds it is still wet, dabbing the model with a fingertip. You'll need to work quickly to avoid fingerprints. The rough Zimmerit texture on some German tanks is molded into the plastic in some kits. If not, you can use Model Master Red Putty, automobile "spot" putty (intended for filling small areas and available at shops that specialize in full-size automobile paint) or Squadron Shop's "Green Putty." Spread a thin layer over the surface of the unpainted model and use one of the throw-away paint brushes with its already-stiff bristles made even stiffer by trimming them to about 1/8 inch long and also trimming the edges so only about 1/8 inch of the bristles remains across the width of the brush. Work the brush into the still-wet putty. The putty dries almost instantly, so you can only work about a half a square inch or so of the surface at a time. A texture, like any other detail, must be matched to photographs or, better yet, a personal look at the effect you are trying to recreate.

The anti-skid panels on the walkways of some aircraft wings and on some armor can be simulated by sprinkling talcum powder over still-wet paint. The paint will probably have to applied with a brush to get it thick enough and wet enough to accept the talcum powder.

For colored wing tip and other warning lights, mix a drop of yellow or red paint with a puddle of clear window fluid and apply it to the lights.

Simulate rivet and bolt heads on landing gear and other areas with drops of gunmetal color paint applied with a sharpened toothpick.



8-9 Doug DeCounter used Plastruct plastic tube, with the ends chamfered to a sharp edge, to make the smoke dischargers on his Italeri Tiger I. The brackets are etchings from On the Mark.