Natural Metal Finishes

Part 1: The Basics

by Chris Bowie

Natural Metal Finishes

Natural metal finishes (NMF) are typically avoided by most modelers. But the reality is that new paint technology has made these finishes much easier than in the past—and in fact, I'm coming to believe that NMF may in fact be easier and faster than traditional camouflage schemes. I can typically build, paint, and decal a NMF aircraft in 3-4 days, working about 2-3 hours total a day. So take heart and tackle that shiny jet from the 1950s!

Kit Selection

NMF show *all* flaws and imperfections.

There are tricks you can use to minimize the preparation time (which I will discuss below), but the most important thing for your first effort is to start with a good kit with recessed panel lines. For example, in 1/48th scale, the Revell/Monogram F-86D is a reasonably-priced kit that fits great, as is the Tamiya F-84E or P-47. Basically, start with a good kit and you don't need to spend as much time sanding and polishing. After you've got a little experience under your belt, you can try doing that natural metal Monogram B-58 Hustler that needs to be completely scribed!

Also, the important thing is to try this and not achieve NMF nirvana on your first attempt. The key thing is to accept some flaws here and there—and I think you will find in the end that most other people really can't see them. So avoid advanced modeling syndrome!

Assembly

With a good kit, you can really minimize the amount of seam filling you need to do. For example, I've built the Tamiya P-47 (a truly outstanding kit) without using any filler at all.

When dealing with seams, I use sanding sticks (either purchased or made from basswood covered with wet-dry standpaper). You must back the sandpaper or you will create dips in the plastic through uneven pressure (which will show up when you apply the natural metal finish). I always wet sand to take away the grit and avoid clogging the sandpaper.

I spend time dry fitting and sanding where necessary. Basically, time spent here saves lots of time later. I will often flat sand the mating surfaces of two parts (say fuselage halves or drop tanks) to ensure that I get a solid joint.

I assemble my models using Ambroid ProWeld or Tenax 7R liquid glue. These glues dry very quickly. I will fit, for example, two fuselage halves together, brush the glue on, and then squeeze. Plastic melted between the two halves squeezes out. After this is dry (typically about 5 minutes), I then sand off the excess using a sanding stick with 220 grit, followed by 400 grit.

After I have the whole model assembled and the seams sanded, I will brush on each of the seams a coat of Tamiya flat aluminum, which dries in a matter of minutes. This highlights any flaws. If I spot a problem area, I use a toothpick to apply some gap filling superglue, which I then brush with accelerator. As soon as it is hard (10 seconds), I sand off the excess. If you wait more than an hour, the superglue goes very hard and is more difficult to remove. With a good kit, you should be able to assemble and finish the seams in an hour or so.

You can use putty if you insist with Alclad II or Floquil. It does not work with Testor's Metalizer and SNJ. With these products, the only filler you can use is superglue.

One key thing is to take advantage of natural seams to minimize the amount of filling you need to do. For example, at a wing root (assuming I have a good fit), I will just brush on the liquid glue (but not apply any pressure, since that would cause plastic to squirt out). If I have to apply, say, a nose to a fuselage, I will double check the fit, take off the edge off the nose and the fuselage joint by scraping the corner of each surface with a hobby knife (so that it looks like a panel line—see Figure 1), and then hold the two pieces gently together and apply the glue. Again, you don't want to apply pressure or you will fill in the seam—and then have to scribe it out. For scribing, I use my X-acto knife or my Bare-metal scribing tool.

Figure 2: Creating a panel line:

Options for Creating a Natural Metal Finish

I am first going to take you through the steps of my recommended approach using the latest paints (Alclad II), since I think this is the easiest and best approach. But I have tried every technique under the sun and will discuss the others later—I often combine all of these options in one model to achieve a truly variated metal surface.

All of the paints used are highly toxic and must be sprayed using an airbrush. To clean up the airbrush, I use laquer thinner, which is also highly toxic. You really need to use a spray booth when shooting these paints (and/or wear a mask and work in a well ventilated area)—otherwise you will put your health at risk

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Alclad II

Wet sand the seams with 600 grit wet-dry sandpaper. Wipe off the residue and prepare the model for painting. Shoot a coat of primer over the entire model and subassemblies. One of the key advantages of Alclad is that you can use a primer; with the other metal finish paints, you can only apply to bare polished plastic. Primer is your friend, since it fills in lots of those minor flaws and scratches that otherwise would be highlighted by the silver finish.

Figure 3: Examples of the four NMF alternatives in 1/48th scale. The F-80 was done about 20 years ago

using Floquil Platinum Mist. The Lightning was finished using SNJ metalizer and Testor's Metalizer. The P-47 was covered with Bare metal foil (lots of work). The F-104 was finished using Alclad II Chrome as the base and other Alclad II and Metalizer shades for the individual panels.

I typically use Floquil grey primer, but more recently have been using Gunze Sanyo Mr. Surfacer or Alclad Grey Primer. The advantage of the Alclad primer is that it is laquer based and dries very very quickly. So instead of having to wait a few hours (or overnight), you can fix flaws and then reprime.

When the primer is dry, inspect the model closely. Use the 600 grit wet and dry to do touch ups. Use the superglue with accelerator on areas that need filling and sand as necessary. Then reprime and let dry.

I usually then give the model and subassemblies a light wet sanding with 1800 grit from my paint polishing kit—you can get these sanding pads (item number 81601 soft touch pad set) from the Micro-Mark web site. When cleaned up, spray the entire model and subassemblies with Tamiya Gloss Black acrylic paint (X-1). Yes, this is correct: gloss black. To get a good glossy finish, I thin the Tamiya paint with rubbing alcohol at a 1:1 ratio (that is, one part paint to one part rubbing alcohol). Mist on a very thin coat over the entire model—it will dry in a minute or so. Then mist on another thin coat. These coats will not cover the model evenly—the idea is to gradually build up the layers. Keep misting on the coats. Then put on a slightly heavier wet coat or two and let the model dry overnight. It should be glossy black. When the model is dry, inspect it closely. The glossy finish will reveal flaws and such and you can repair these (using the sanding pads) and then respray. Typically, I try to keep my patience, sand out flaws in the color coat,

and then respray. Basically, it depends how much work you want to put into it. I eventually reach a point where I say good enough. You are now ready for the metal coat.

Alclad recently put out a gloss black undercoating, which I assume is laquer based. So it would have the advantage of drying very quickly (like a few minutes) so you don't need to wait overnight between coats. This way you could do more touchups in a shorter period. I guess in theory you could prime, sand, spray with the black undercoat, and then paint the metal coat all in one night.

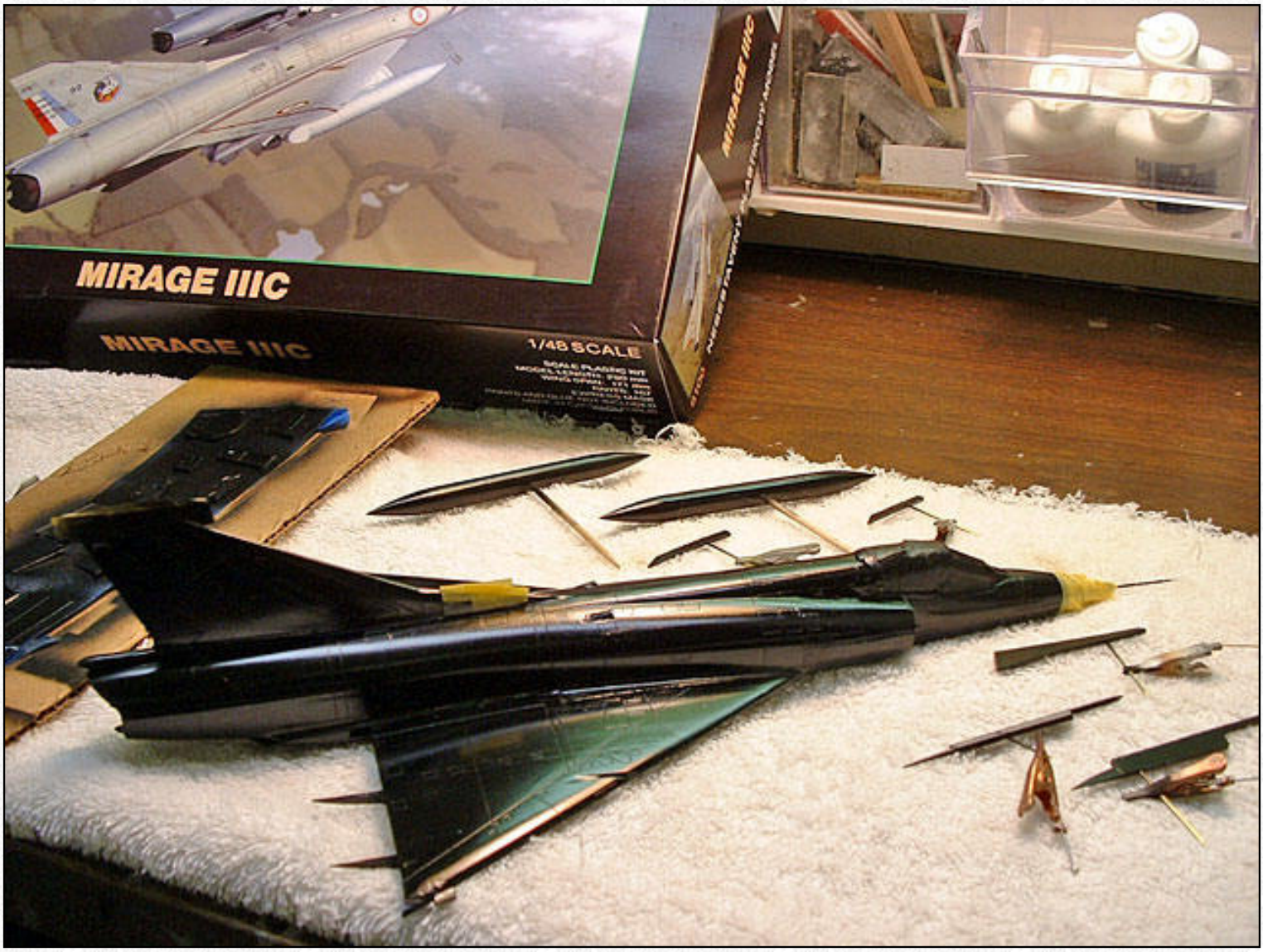

Figure 4: A Mirage III model after the gloss black base coat.

Alclad II comes in a wide variety of shades. I recommend using one of two colors for your overall base coat: Chrome or Polished Aluminum. These really look like you have dipped your model in a thin coat of metal. The other finishes (aluminum, white aluminum, dark aluminum, steel, etc) are fine, but I don't think they look quite as cool as the Chrome or Polished Aluminum for the base coat. These two paints create a finish similar to that from a brand new aircraft or a recently restored one. For example, at the USAF Museum at Wright Patterson AFB, they restored the B-58 Hustler about a decade ago and polished the entire surface of the aircraft using a powdered cleanser to clean away all the years of grit and grime. The shiny aircraft looks absolutely spectacular now (particularly since they are keeping it inside out of the weather).

To apply the Alclad II, apply several thin coats with your airbrush using about 12-15 pounds of pressure. You will witness an amazing transformation. Some fine pigment or mica is in the translucent Alclad II paint and it interacts somehow with the black to make the finish look like metal. It is really truly amazing. The Alclad II is ready for masking about 15 minutes after you airbrush it—the advantages of a laquer paint.

To be continued in Part Two

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Part 2: Advanced Techniques

by Chris Bowie

Figure 5: The author's Hasegawa F-104J painted with Alclad II Chrome as the base coat and varying shades of Alclad II and Testor's Metalizer for individual panel areas.

Advanced Natural Metal Techniques

Real metal airplanes use different sorts of metals and different grains, which affect their color. After applying the base coat, you can mask off individual panels and then spray them with other shades of Alclad II (see Figure 5). This creates a more realistic look. You can spray individual panels with the Polished Aluminum and other panels with the Chrome to get a multi-hued finish. Another approach is to first spray the aircraft gloss dark gray, mask off areas, and then spray black. Take off the masking and apply the Alclad II base coat—and the different undercoats create different colors. Or use the Chrome and Polished Aluminum—and paint other sections with Aluminum, White Aluminum, Dark Aluminum, and Steel. Or you can mask off sections and spray with different shades of Testor's Metalizer.

Figure 6: Alcad II is very durable. The lower P-51's black stripes (and all the tail markings) were masked off after the model was first painted with Alclad II. You can't do this using Metalizer paints, which are not as durable. The upper P-51 (with the red/yellow checked nose) was painted with Metalizer. The anti-glare panel had to be masked off and painted, then covered with tape before applying the Metalizer.

If your aircraft has painted areas, you can mask these off individually and spray. Again, the advantage of Alclad II is that it is durable enough to mask (see Figure 6). Finally, you may find a flaw that you are really unhappy with. You can mask this area off, resand, and then apply a new finish. This saves you from redoing the entire paint job.

Once done with the panels (which boils down to modeling stamina), I apply a wash (1 part gloss black acrylic paint, one part dishwashing liquid, and 10 parts water) to all of the panel lines and rivet holes. Let this dry and then rub away the excess with a wet Q-tip. The wash stays in the panel lines and accentuates them, while the soap in the mixture allows you to rub away the dried paint on the exterior (if the wash is too stubborn, dip the Q-tip in 409—the Alclad II paint, unlike acrylics, is not affected by the 409).

Then apply decals. With metal aircraft, you can't hide the decal film like you can with clear coats on painted aircraft. Typically, I cut off as much of the film as possible and just live with it where I can't remove it. I have seen folks apply a highly thinned coat of gloss clear or Testor's metalizer Sealer to the decal film to blend it in, but I have not had good success with this technique (since it reduces the shine of the metal finish).

Advanced Alclad II Techniques

The preceding will give you a very fine metal finish. You can go a step further and use post-shading techniques to make it even more realistic. On aircraft with a painted finish, you can create a more realistic finish by airbrushing the center of each panel with a mix of the base color and some white (you then overspray lightly with the base coat to blend in the area). This creates a variability in the surface that makes the aircraft look much more realistic. See the article by Gregg Cooper on HyperScale.

http://www.features02.kitparade.com/gekkogc_3.htm for a very well done overview of this technique.

I have been experimenting quite successfully with a variant of this technique using Alclad II that has generated some really impressive results (see Figure 7). I first paint the whole aircraft in Chrome (after applying the gloss black undercoat). I then spray the center of the panels with Aluminum (which is not translucent and thus appears lighter in shade). After this, I spray the whole aircraft with a light coat of Chrome. The result is a variability in the surface color that, to my mind, looks much more like a different toned metal surface than any other technique available.

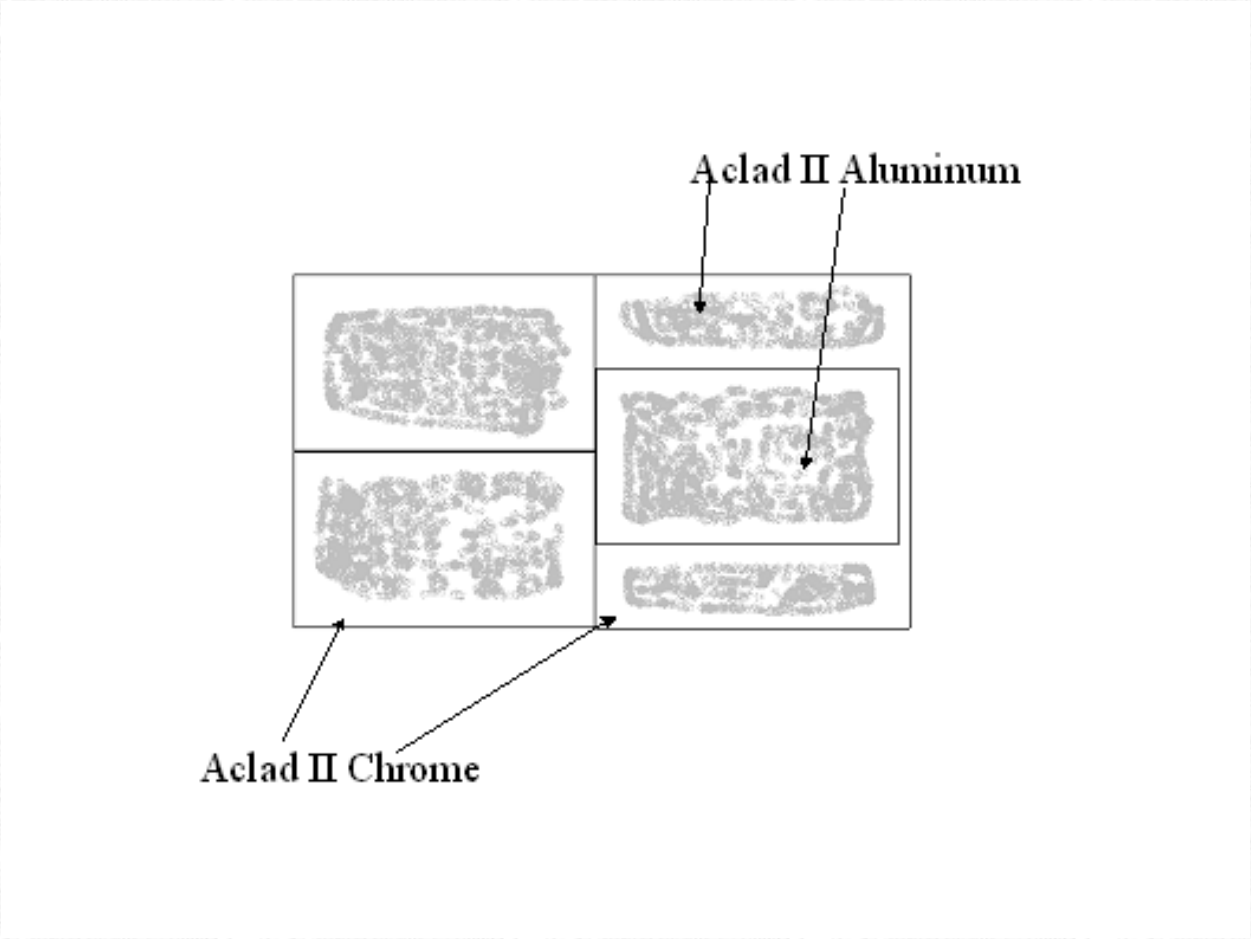

Figure 7: Advanced Alclad II Technique

Another variant of this technique is to spray the model gloss black and then airbrush the inner part of the panels in gloss dark gray (similar to the technique discussed in the first paragraph of this section). Let dry overnight and spray the entire model with Chrome or Polished Aluminum. Since the paint is translucent, the differing undercoat colors create a variability that looks more realistic. You can combine this technique with other colors for accenting panels or panel lines.

Figure 8: The author's Tamiya P-47 using the advanced Alclad II technique

Floquil

Floquil is a highly durable paint for model railways that provides an excellent metal finish (but does not compare to Alclad II). Floquil has three key colors: Old Silver, Bright Silver, and Platinum Mist. The advantages of the paint are its extreme durability (you can mask over it with no problem), it can be sprayed over putty if you desire, and you can create two different shades of metal from the same coat.

To apply Floquil, I assemble the model, wet-sand the seams, put on a coat of primer, wet sand with the 1800 grit, and then apply the silver coat. You can then mask off panels and rub them with Brasso or a polishing compound, which slightly changes the color of the panel. So with Old Silver, Bright Silver, and Platinum Mist you can get a total of six different shades.

Another Floquil technique is to paint the model with Floquil, rub it out with Brasso, and then mask off areas to spray with SNJ or metalizer. You don't get quite as good a surface as polished plastic, but it is better than over a primer.

Floquil is also an excellent choice if you are painting an aircraft that was painted silver (for anti-corrosion

purposes).

Figure 9: My Monogram B-58, which I built about 15 years ago (much puttying!). This was done with a base coat of Floquil Platinum Mist that was rubbed out using Brasso; the individual panels were painted using Testor's Metalizer

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I primarily use Floquil now for metal landing gear. After applying the paint and letting it dry, I apply my acrylic wash and then remove the excess. The wash accentuates the recesses and details and the paint is durable enough to stay on as I rub off the excess wash.

SNJ Metalizer

SNJ used to be the hottest metalizing product. Basically, you assemble the model as before, but you cannot use putty—only superglue as a filler. The paint can only be used on polished plastic—you cannot have an undercoat to get the best effect.

The first thing to do is to prepare the surface. You need a highly polished plastic surface for the best effect. I recommend wet sanding seams with 400, then 600 grit. Then wet sand these areas with 1800, 2400, 4000, 6000, 8000, and finally 12000 grit from your polishing kit. Then polish all of the plastic surfaces with Novus plastic polishing compound (very tedious). This takes a while.

Then you need to mask off any painted sections (like anti-glare panels), paint, wait for the paint to dry, and then mask over these areas. You then apply the SNJ with your airbrush, applying 4 thin coats (waiting about 10 minutes between coats). With this base coat, you can achieve three different shades. The first comes from just leaving the panel areas alone (masking them off with low tack masking tape or post-its). The second shade comes from polishing the base coat with a soft cloth. The third shade comes from using a soft cloth to polish the base coat with the metal powder provided by SNJ (make sure to wear a dust mask when doing so). The latter is the shiniest, most metal-like shade. Finally, you can then add additional shades using Testor's Metalizer.

The downsides of SNJ metalizer include: the labor needed to prepare the surface, the inability to use a primer, the need to mask off and airbrush painted sections separately, and the low durability of the paint. You can in theory use low-tack masking tape on SNJ, but it pulls of the silver coat. You can mask using Post-Its (or damp pieces of paper), but this is less satisfactory than using modeling tape on the Alclad II. Basically, with Alclad II you get an even shinier metal surface that is far more durable.

Testor's Metalizer

This is the original metalizer paint that was a revolution when it came out about 20 years ago. Basically, follow the same procedures as SNJ metalizer to prepare the surface. After spraying on a coat or two, let dry for 15 minutes and then polish. Testor's metalizer is less durable than SNJ, but comes in a much wider array of colors, including both buffing and non-buffing shades.

Accordingly, I use it to add additional panel shades to aircraft sprayed with Alclad II. I use Testor's metalizer particularly on hot jet aircraft sections (like the rear area of an F-100) or the afterburner cans, where I free-hand spray brass and darker shades to simulate heat coloring. You can mask off Testor's metalizer using Post-its or damp pieces of paper, but it is not very durable.

At the HyperScale web site http://www.kitparade.com/features00/f7ffirebomberjc_1.htm.

is an awesome example of a Metalizer finish. The modeler recommended painting the model with gloss enamel white, letting this dry, and then applying metalizer. He sprayed the interior of panels a light shade than the exterior areas—and the results are most impressive. In addition, this modeler applied the Metalizer Sealer after buffing out each section—this laquer-based clear would allow you to mask over each section. I do not use the sealer on NMF aircraft because it reduces the shine. I do use the sealer on painted aircraft to quickly create a gloss surface for decals, since it dries within minutes. In fact, you can begin decaling within 30 minutes of applying the sealer (I believe it must be a laquer-based paint). In any case, I have not tried these techniques with Metalizer since I've found the Alclad II so superior.

Metal Foil

This offers the best potential finish, but is very tedious to apply. I have done two 1/48th aircraft using Baremetal Foil—you can also use kitchen foil applied with a glue from Microscale. Basically, you apply the foil using an artist's stump (a pencil like tool made of rolled paper), and then trim the excess foil from the panel lines with an X-acto knife and remove. It takes a long time—but looks really good when it is done. It is difficult to apply to some curved areas (like the end of drop tanks).

I use metal foil for accents, such as the oleo struts on landing gear—or for some metal panels (just to add a different hue). Finally, I almost always use Baremetal Foil to mask canopies—you apply, rub it down to highlight the panel lines, cut away the excess, and then spray. Pull off the Baremetal Foil to reveal the clear area after painting. You can clean away the glue residue using "Goo Be Gone" (available at Granddad's or a craft store), which does not damage the clear plastic.

Chrome Plating

I have read articles on people who assemble models and then take them to a shop to have chrome plating added. This would be quite costly, but create a very realistic finish.

Conclusion

So there you have it—my 25 years of experience doing metal finishes (I've probably done 30 metal-finish aircraft in that time, since I love the 1950s). I recommend Alclad II, which is a dream come true: shiny metal finish, ability to use primer for surface preparation, quick drying, and highly durable. And using post-shading and undercoating techniques, you can make the finish even more realistic.

However, you can use Floquil, SNJ, Testor's Metalizer, and metal foil on the same model to create a varied paneled look—basically, you will find modeler endurance is the limiting factor. With Alclad II, an average modeler can create a metal finish quickly and easily that in previous years was only achievable by experts with a lot of time. With Alclad II, I've gotten to the point that I now actively seek out metal aircraft models instead of avoiding them. Indeed, I think you will find that you can do metal aircraft in less time than painted aircraft (since you don't need to apply any finish coats to the aircraft). The important thing is to give it a try.

Figure 10: My Hasegawa F-86 done in Alclad II. The various panels were post-shaded using Aluminum; the center panel on the wing was painted with Dark Aluminum. The recognition stripes were then masked off and painted (first Floquil Engine Black, which was masked off so that I could apply the Tamiya Flat Yellow). This shows you how durable the Alclad II is. I then applied the acrylic wash to bring out the panel lines (I used a pencil for the panel lines on the painted areas. Decals are an old set from Microscale (but have been recently put out by Meteor). I did not apply any sealer coat.

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