

# The Great Aluminum Cover-Up

## — how to paint the stuff

**Editors' Note.** Various potentially dangerous chemicals are used in cleaning and preparing aluminum for painting. Along with the author's suggestions, remember to provide proper ventilation of your work area and that many chemicals can damage skin and eyes. Also, acetone and lacquer thinner are highly flammable. 1-1-1 trichloroethylene may be more difficult to obtain in hobbyist quantities but is one of the non-flammable "safety solvents." Above all, if you are not sure of a chemical's risks, assume the worst. Either find out how to use them safely or don't use them!

Let's face it, aluminum is hard to paint. Sometimes we'd rather switch than fight.

Wood cabinets are great if you want the antique look, but it doesn't fit in well with the rest of your modern gear—and the shielding properties are not the best. Steel takes paint easily, but the material is hard to work with. Drilling is okay, but the stuff sure dulls a nibbling tool fast. Also, bending a fair-sized piece is more than my small brake can hack. Sheet steel is not the most readily available material for the home hobbyist, anyway. Aluminum is the ideal material to work with, if only it could be finished easier.

There is, of course, the trend toward plastic covering materials. Although dry transfers will adhere reasonably well to plastics, decals can be a problem. Also, the available textures and colors may not suit your needs.

There is the old standby of etching in a lye bath, but I get tired of all the satin aluminum panels staring me in the face, and sometimes gray stains which are not removable appear during the process. A good etch involves many of the same steps I'm going to

cover below, so why not paint? The fact is, it is possible to paint aluminum reliably.

I began to understand the secrets of painting aluminum when I started construction of a home-built airplane. Aircraft people worship aluminum for its structural properties, so they had to learn to put on finishes that would not come right off. The primary secret of this process is that *cleanliness is next to godliness!* You will not get paint to stick to aluminum if any grease or oil is left on the surface.

There are two types of cleaning agents useful for cleaning aluminum. One is a solvent cleaner, such as acetone or trichloroethylene. The other is a detergent cleaner. Although the latter is generally a more powerful degreasing agent, it does react with aluminum and it has other problems. The more powerful detergents are quite caustic and combine chemically with aluminum. This is not always bad, but you may not want that action. Also, whereas solvents will evaporate completely from a surface, the detergent may leave a soapy residue. (You may clean off this residue with a solvent.)

As a general rule, keep the aluminum panel or piece reasonably clean as you work with it. Of course, fingerprints are inevitable, but don't plop the piece in a grease smudge when you set it down, and *never* leave a piece of aluminum sitting on a concrete floor because concrete and aluminum react strongly.

When all the drilling, cutting, and filing are done, you are ready for finishing. Clean the part in a mild detergent. Rinse thoroughly with plenty of water. Wait—don't pick up that piece! Even if you think your hands are clean, oil will appear on your skin very rapidly. From this point until the piece is primed, it must not be handled with bare fingers. Although paper towels can be used if you are careful, I recommend wearing plastic or rubber gloves.

The next step is called chemical conversion. The idea is to replace the surface layer of aluminum with some chemical to which the paint will adhere better. Although there are special mixtures sold for this purpose, they are not usually easy to come by. The easiest and cheapest way I have found is to use a

product called Aluminum Jelly (although Naval Jelly also will work). This stuff is found in most hardware stores.

Brush the goop on, let it sit for a few minutes, and then rinse it off, using lots of water. You won't notice any change of appearance at this point. Next is a two-step cleaning process. Again use the mild detergent, followed again by a thorough rinse. Now, clean it with a solvent cleaner, such as lacquer thinner or trichloroethylene. Unfortunately, this immediately raises a problem. These solvents will probably dissolve your gloves! For this step you must use your bare hands, handling the aluminum part with a paper towel. Now we are ready to paint.

Aluminum must be primed with a zinc chromate primer. Don't settle for anything else. There are two kinds of zinc chromate primer. One is yellow, the other is green. The green stuff is recommended for aluminum, but unfortunately it is hard to get. The yellow kind is found in most hardware and paint stores, and will work, although it should be your second choice. Try to find the green primer at aircraft supply

stores. It is available in spray cans.

Applying the primer calls for a good spraying technique. The primer dries pretty fast, so you can give the piece a quick, light coat, wait one or two minutes, and then give it a heavy coat. This helps to prevent runs. If after the piece dries you have any runs, "orange peel," or dust in the finish, sand carefully with number 600 sandpaper. If you have to sand, remember to wear gloves, and do a follow-up by cleaning with isopropyl alcohol. This solvent will remove a reasonable amount of crud, while not dissolving the primer.

Now you are ready for painting. If spraying, I recommend that you buy the type sold for painting plastic model airplanes. There is a tremendous selection of colors available, both matte and glossy. More important, however, is the spray head. These spray

cans have heads with tiny holes which give an extremely fine spray, producing a very smooth finish. After spraying, allow at least twenty-four hours for drying, especially if you are dealing with more than one color.

Next, letter the panels with dry transfers or decals. Whichever you use, they should be protected by a clear finish. So, again from the model paint counter, use either a clear matte or clear gloss spray. Be careful when spraying a clear finish, because it is very easy to put it on too thick. Use very thin coats, especially on the matte. The matte will dry in a few hours. The gloss should be put on until it first begins to look shiny, and then it should not be handled for twenty-four hours.

There, that wasn't hard, was it? It was? Yes, but aren't the results worth it? ■



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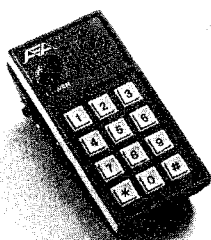
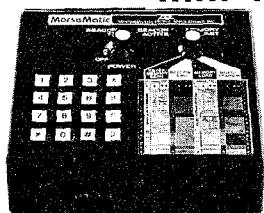
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