

Learn to Brush Paint Model Airplanes

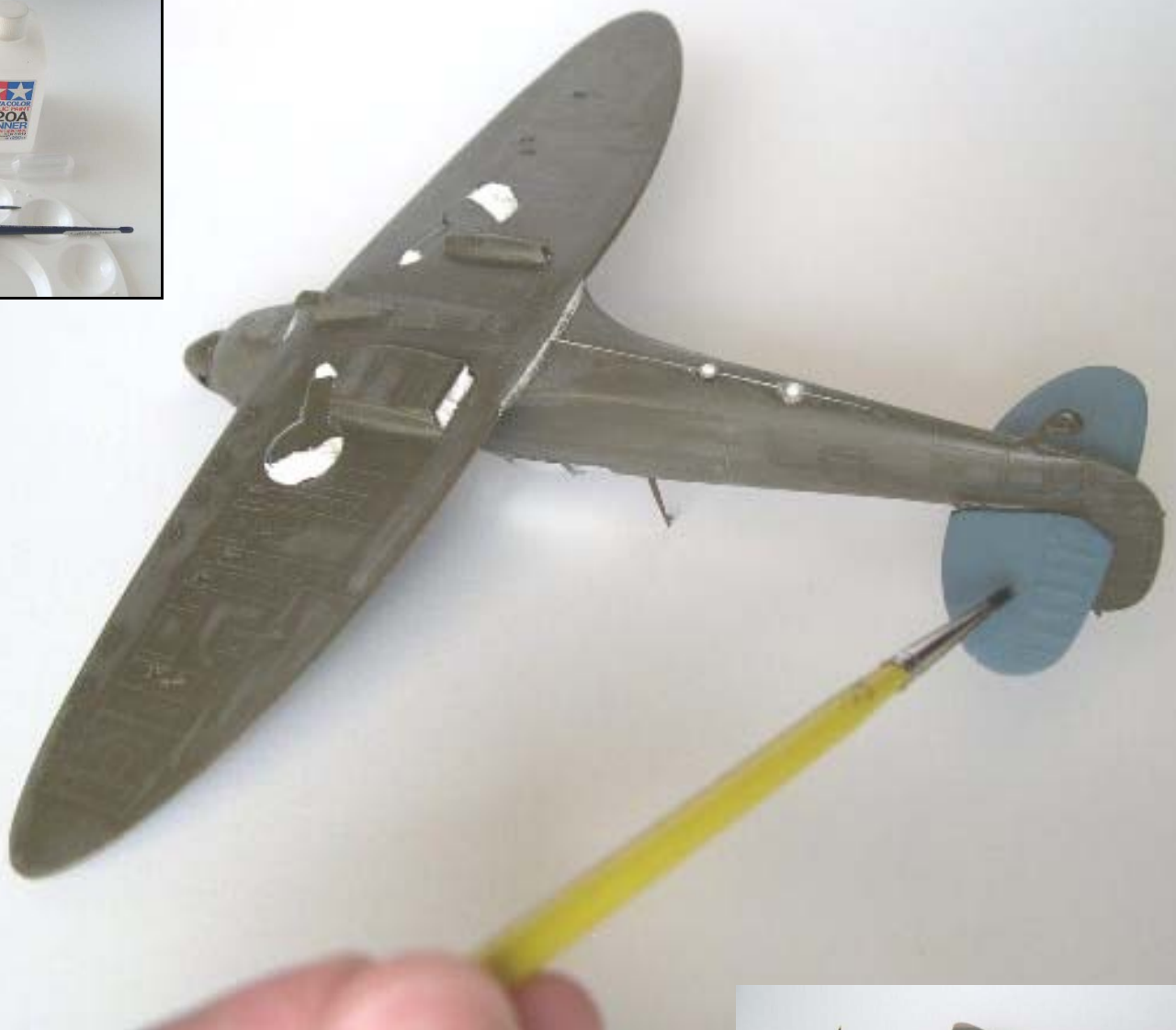


Table of Contents

<u>Model Paints.....</u>	<u>4</u>
<u>Brushes.....</u>	<u>6</u>
<u>Workspace Setup.....</u>	<u>7</u>
<u>Surface Preparation</u>	<u>9</u>
<u>Painting Procedure</u>	<u>10</u>
<u>Paintbrush Cleanup.....</u>	<u>14</u>
<u>Masking.....</u>	<u>15</u>
<u>Dry-brushing.....</u>	<u>17</u>
<u>Clear Coats.....</u>	<u>18</u>

Model Paints

Every paint has three main components: the pigment which is the color containing part, the resin which binds the pigment to the surface, and the solvent which holds everything together in the liquid form. There are two broad classes of paint, **enamels** and **lacquers**. Enamels undergo a chemical reaction (curing) as the solvent evaporates. In lacquers, the solvent evaporates without any curing.

Now hobby paints are generally **(oil-based) enamels**, or **aqueous (water-based) acrylic** lacquers. The hobby enamels (e.g. Testors, Model Masters, Humbrol) thin with mineral spirits, dry slowly and harden beautifully to a glossy finish. The hobby acrylics (e.g. Tamiya, PollyScale, Floquil, Vallejo) thin with water or alcohol, dry faster, and clean up easier. People tend to develop a preference for one or the other, so try both and see which you prefer.



Above: Assortment of enamel paints.



Above: Assortment of acrylic paints.



Right: Thinned alcohol for cleaning acrylic paints. *Left:* Future floor wax, for gloss coats over acrylic.

Another good solvent to know about is Future Floor Wax. Yes, Floor Wax. It's a liquid acrylic designed for floors. It works great as a gloss coat, and can be brushed straight from the bottle without thinning.

Brushes

The paintbrush is the simplest method of applying paint. They come in different shapes, *flat* and *round* being the most common. They also come in different sizes and materials. You'll need at least: a **broad flat brush** for large area coverage (1/4 inch or larger), a medium width **round brush** for general use (#1 or 2), and a **fine-point** brush for detail work (10/0).



Above: An assortment of model paintbrushes, acquired over time.

Below: You can get most models done with three brushes: a wide flat, a medium round, and a fine tip "spotter".



Workspace Setup

Having a convenient work area for painting will make your life much simpler.

It's best to use a sturdy workbench or table. Something that can be accidentally collapsed by a pet or child will not do. Make sure you have adequate ventilation in the room, especially if using enamel paints. Open a window and use a fan to help move air through the room.

One convenient accessory is a turntable for crafts, available from Target or others. It's basically a round stand that can rotate on its base. The one in the photo below is glued to a cheap stool for outdoor work, but you could just as easily place it on your worktable. This is convenient for painting with one hand while rotating the table with the other, so that all sides of the part get painted. I also have all the "bits" needed for painting in a plastic box "caddy" beneath the turntable. That way I can get all the necessary stuff to my paint area without making a large number of trips back and forth.



Above: Cheap stool and craft "turntable" make convenient painting stand.



Above: Plastic caddy. Got paint, thinner, cups for mixing, toothpicks for mixing, sticks, and plastic droppers to get paint or thinner.

You will also need adequate lighting. A good desk lamp with a swing arm will help prevent eyestrain. If you can get one with a built-in magnifier, so much the better.

Keep any reference photos of the model close by, you will refer to these very often during the painting process. Taping a diagram of the paint scheme on the wall over the worktable will help prevent lots of folding and unfolding later on.

Surface Preparation

The paint job will be only as good as the surface that it goes on. You will not hide unevenness, cracks, wood grain or anything else with the paint.

The most critical ingredient in getting a good surface is sandpaper. Use various grades from coarse (400 grit or so) down to fine (as small as 2000 grit). Do not use the bare sandpaper with only your hand over large surfaces, as this will leave unevenness in the surface. Get small sanding blocks for the hardware store: I like the ones that allow you to remove and change the paper. The open grit dry sandpaper works well for most of our purposes, although I also like to wet sand after primer coats.

If necessary, apply fillers to close up bigger gaps or holes. Use 400 grit paper on the filled area to remove excess filler. Sand with 3 or more grades, each finer than the last, until the surface is smooth to the touch. Look at the surface by angling it upwards to a light. When you think you are done, sand some more. On some of the better quality kits, the fit is so good that no filler is necessary; in those cases, you can still roughen the surface slightly with 2000 grit paper to help the paint stick.

Be careful not to sand too aggressively, especially on kits with raised panel lines, as this detail is easily removed. In spite of your best efforts, some detail may be removed in areas where you had to correct the fit with filler. In those cases, use a hobby knife to re-scribe the surface detail. Use a flexible metal ruler, or thin card, as a guide for your knife.

When the surface is smooth, it will need to be cleaned before painting. At this point, you should only handle the model with disposable plastic gloves (wear these when you paint also). The dirt and oils from your hands can affect the paint quality. Change your gloves from time to time; wash and dry your hands before pulling on new gloves.

Wash the model with soap and water, and air dry on paper towels. Use a hair dryer at medium setting to remove stubborn droplets and prevent watermarks.

Painting Procedure

These are the steps to take when brush painting a model airplane:

1. Make sure the parts are **smooth, clean and dry**. Paint will not cover up surface defects. See the section on Surface Prep.
2. Make sure the **brush is clean**. See the section on Brush Cleanup.
3. **Secure the part** to be painted. Mount it to scrap material with tape, a dab of hot glue, or blu-tack. This gives you both hands free to work with, and will allow you to paint more than one side of the part in one go.



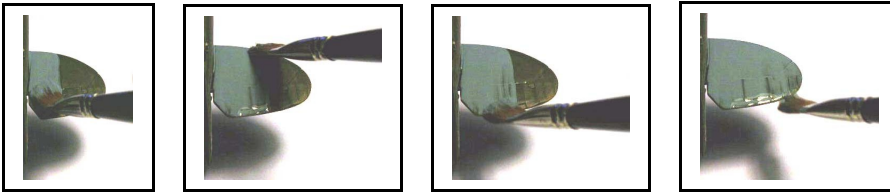
4. **Stir the paint** thoroughly with a toothpick.
5. Using a **straw or dropper**, add some paint to a clean small container or palette.



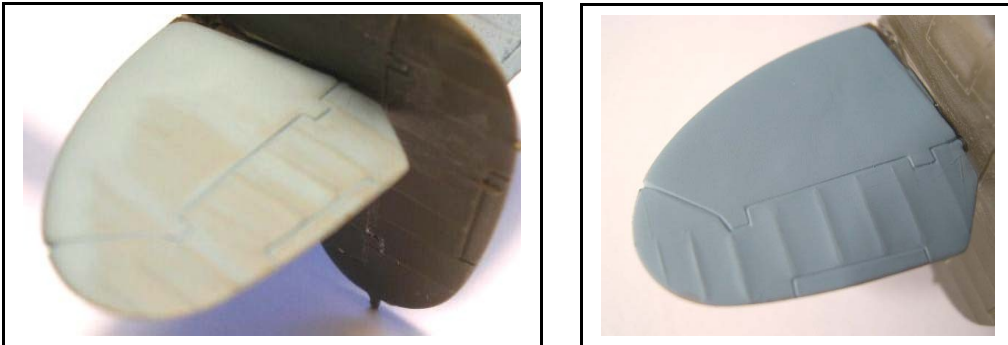
6. If required, add a few drops of thinner and stir with a toothpick.

7. **Dip the brush in thinner**, and shake or drip most of it off.
8. Dip the brush in the paint mixture. Load up the bristles, wipe of excess on the side of the container/palette. The paint should not be dripping out of the bristles.
9. Brush the model with **smooth even strokes**.
10. Use **as little overlap as possible** between strokes.

Below: Horizontal stab painted with 4 vertical strokes. Paint in a consistent direction for best results.



11. **Do not try to re-brush** areas already brushed. Give the paint a chance to level on its own.



Above: First coat of light-colored paint resulted in uneven coverage of the dark-colored plastic (left). After drying, second coat applied with perfect result (right).

12. Do not worry if you don't get complete coverage or paint thickness in one try. Wait till the paint is dry, then do a **second coat if necessary**. Some colors (e.g. white or yellow) may require 3 or more coats for complete coverage.
13. **Clean the brush and put it away**. See the section on Brush Cleanup.

The **keys** to getting a nice smooth paint job with a brush are:

- Use a brush with **soft bristles**. Sable is best; although expensive, if cared for it will last a long time and perform well. For a rough surface (e.g. wall or tire) a camel hair or synthetic brush is fine.
- Enamels tend to brush better than acrylics as they dry slower. If your acrylic paint is not brushing well, try adding a small amount of **thinner**, or liquid acrylic paint **retarder** (from the art supply store). Also, periodically dipping the brush in a container of water helps when brushing acrylics.
- **Practice on scrap plastic** before painting your first model. Recycled water or milk bottles work well for this, as well as excess sprue material from the kit. See example below.



Above: Test paint using Tamiya acrylic Red (X-7). The paint was thinned with just a couple of drops of Tamiya's acrylic thinner (about 10:1 paint:thinner). This was brushed onto a plastic water bottle with a ¼ inch flat sable brush. The brush was first dipped into a small container of pure thinner (excess shaken off), then into the paint mixture. The width of the area shown represents 3 vertical brush strokes. Note the smoothness of the paint job.



Above: Horizontal stabilizer painted with Model Master Acrylic (U.S. Navy Blue Gray). Same painting procedure as previous photo, two coats. Again, note the smooth even coverage, absence of brush marks, and no loss of surface detail.

Paintbrush Cleanup

After using the brush, clean up with the recommended thinner.

For acrylics, you can use dishwashing detergent and water. Run the brush under the tap, rubbing out the paint with your fingers.

For enamels, it's helpful to have two small containers with thinner. The first will be relatively dirty thinner, the second will be very clean thinner. Dip the brush in the first, swish it around, then dip in the second. Change the thinner in the second container with each change of colors.

After removing the paint, shape the bristles of the brush with your fingers so that they are not distorted (e.g. flatten the bristles on a flat brush). Store with the brushes in a cup-like container with bristles pointing upward and into the air.



Masking

Painting of scale models will often involve the use of **masks**. These masks simply block paint from areas where it doesn't belong. Models with military camouflage will often need masking.

Using the right **masking materials** will help ensure success. The mask material needs to stick well to the surface, but must be removable without pulling up any of the underlying base paint. Masks can be made with **tape, film, or liquid**.

Not all tapes are created equal. Of all the brands we've tried (many!), Tamiya masking tape is the best. This is yellow tape, available at the hobby shop in various widths, see below. This might be a little more expensive than regular white masking tape, but it will go down and come off without damaging your paint job. You can burnish down the edges to prevent paint creeping under. The extra expense is worth it. We've also had good luck with blue house-painter's masking tape.



Above: It can be difficult to get good coverage with yellow paint, especially over dark colors. Solution: paint the propeller tips yellow first, then after drying mask with tape, then paint the blades black.

Frisket film is another great masking material (see photo below). It's generally available in art supply stores, sometimes in the local drug store. It's a low-tack, clear film with a backing. It can easily be cut with a hobby knife to the required

shape. Since it comes in a large sheet, you can cover larger areas faster than with a roll of masking tape. The only disadvantage is that it doesn't go around compound curves really well, so at those points you can supplement it with masking tape.

Liquid masking films are very convenient. The bottle shown below is Micro Mask, available at your local hobby shop. Simply paint the liquid onto the surface needing a mask. When dry it forms a thin rubbery coating. Use a sharp knife to cut along the pattern, and remove the excess. This is obviously great for compound curves and surface detail. We use it all the time for masking off canopies (to paint the canopy frame).

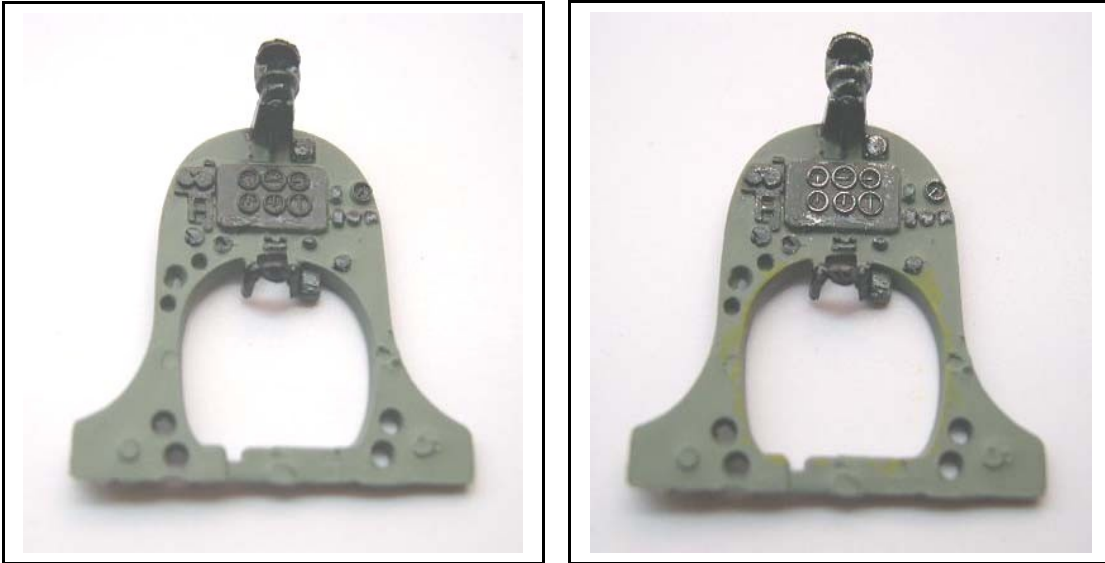


Above: Frisket Film, Micro Mask liquid mask, and Tamiya masking tape.

To make the masks, use a photo of the camouflage pattern of the real airplane as a guide. A full-size painting guide is included in the better kits. Secure a photocopy of the camouflage pattern that came with the kit to the top of the Frisket film, then cut with an X-acto knife. Another option is to get a sheet of glass (e.g. cheap picture frame glass), and cover it with overlapping strips of wide masking tape. Lay the pattern on top and cut out the masks as before.

Dry-brushing

Dry-brushing highlights the raised detail, or high-points. This is done by dipping the brush in paint, but then removing almost all of it by painting onto scrap material. When the brush seems fully dry or empty of paint, you are ready. Draw the brush across the raised detail, and it will leave just enough paint behind to create highlights.



Above: Instrument Panel from a Spitfire kit. Top photo, panel painted with base color (interior green) and instruments painted black. Bottom photo, black instruments highlighted with silver dry-brushing. Notice the huge improvement in contrast.

To create the right effect, you'll need to use the right dry-brush color with your base color. Here are some suggestions:

Base Color	Dry-brush Color
Interior Green (U.S.)	Flat Yellow
Interior Green (U.K.)	Flat White
Black	Silver
Dark Gray	Silver

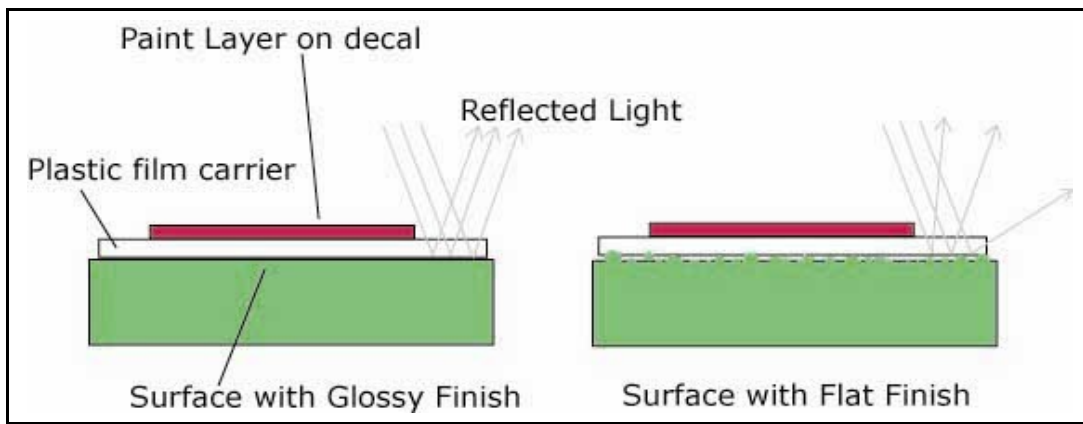
Clear Coats

A clear coat is a transparent coat of paint, generally applied as one of the later steps in the paint job. The clear coat could be glossy or flat. Seen through a magnifying glass, the surface of a flat coat looks rough compared to a gloss coat. This is generally accomplished by adding fine particles to a basic clear coat.

Now you may be asking yourself, why put on a coat of paint if you can see right through it? Actually, there are several good reasons for doing this.

The clear coat acts a final protective layer for the paint underneath it. In many cases, there may be several different colors applied to the piece, and each color can have a different level of gloss or shine. A uniform clear coat on top of all that gives a uniform shine to the finish. A gloss clear coat can make add "depth" and brilliance to the paint job, as commonly seen on real automobile finishes. With a model warplane or other service vehicle, the actual paint finish of the real thing might be flat, i.e. non-reflective (glossy airplanes are too easily found by the opposing forces). In that case, a flat clear coat gives a uniform (and controllable) level of dullness. Gloss and flat paints can be mixed to give semi-gloss finishes.

There is a specific application for gloss clear coats in model building, and that is for the decals used for the painted markings (e.g. national insignia). These decals are layers of paint on a plastic backing film. If applied over a flat-finished surface, reflected light gets randomly scattered through the clear plastic film, making it highly visible. The effect is called "silvering". However, a clear gloss coat sprayed on the model before the decals are applied reduces the scattering of light, making the plastic backing film less visible. Another coat of clear gloss after decal application helps seal them. If the real article has a flat finish, a flat clear coat is applied as the last step.



Above: Decal on glossy versus flat surface finish.

Future floor wax is an excellent clear coat for brush application. Apply with a wide brush, straight from the bottle. The Future will level itself very well. Clean up with Windex.

-End-