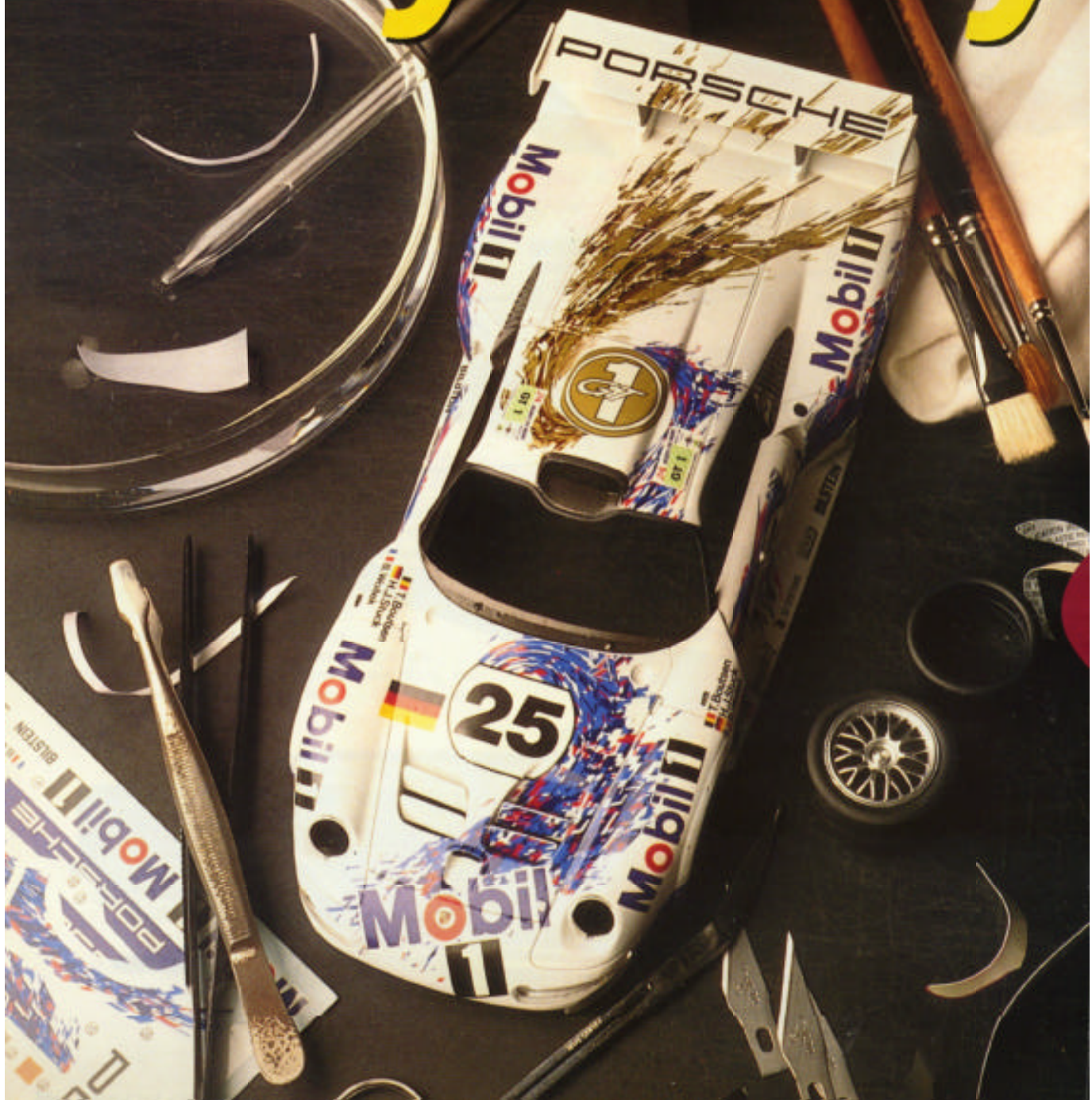


Decaling the

# Whyte Way



**S**OME WATER, sheets of paper towel, splish, splash, how hard can it be to apply decals? Well, for me, leaning new techniques and honing them to the limit is what modeling is all about.

If your index finger is your favorite decal positioning tool and water is your only solvent, then you may want to consider taking your decaling technique to the next level.

### A sandwich by another name

Before learning how to apply decals, we must understand what they are. Water-slide decals are simple in composition. They consist of several layers of colored ink printed on a clear carrier film. This clear film is affixed to paper backing with a water-soluble adhesive sandwiched in between.

Traditionally, the clear carrier film covered the entire sheet, connecting all the graphics. More recently, the film covered each graphic individually with a narrow, clear border. In both cases, modelers had to trim the clear area away from the edge of each graphic. Many new-generation decals have little or no clear showing around the edges, adding to their ease of application and realism. After all, if the graphics you are replicating have no clear borders, why should there be borders around the graphics on your model?

Kit manufacturers commonly print water-slide decals by a lithography process because it is more cost effective. In general,

## How to apply decals to build more realistic models

BY DOUG WHYTE

aftermarket decals are printed by a silkscreen process that lends itself well to high quality and small volume runs. Silkscreening allows manufacturers the ability to control color levels and achieve fine detail.

### Implements of construction

To properly apply decals, you need tools, nothing too sophisticated and probably nothing that isn't on your workbench already (see **Photo 1**). They fall into three



**1** Here are the tools needed for decal application. The eyedropper in the petri dish is great for adding setting solution to the surface of a decal. The eyedropper can also be used to remove excess liquid.

basic categories: cutting, positioning, and drying. Each marking must be cut from the main decal sheet, then trimmed. This task is accomplished with either scissors or a hobby knife. The positioning tools are more varied as they include tweezers, stiff brushes, and a closed-cell foam block. Drying tools can be either absorbent, like paper towel, or full blown, like a hair dryer.

Aside from the tools, you need some other supplies. Softening and sealing solutions are required to make the decals flexible so they can mold themselves to the contours of the model. Micro Sol and Micro Set are two popular softening solutions. A clear top coat may be desirable as well to seal and protect the decals. Of course, you also need water. It comes in three forms: vapor, liquid, and frozen hard as a rock. Obtain the liquid.

### Map out your trip

To be decal-friendly, the surface of your model must be smooth, glossy, and clean. A painted surface, preferably polished, is best. Think of the subsequent decal as a final coat of paint. With the surface ready to accept the decal, map out the sequence in which, the decal will be applied. Every application is different. Start with the largest graphic and progress to the smallest. Or, determine if there is a dominant piece that orients the positioning of the others. Sequence is important; plan ahead or pay later. Start

applying decals before putting the body on the chassis or installing the windows. The process can be messy, so it's best to protect other finished assemblies. Use one of two theories when decaling graphic-heavy race cars: 1) Work on one side at a time to avoid mixing up the decals, or 2) Alternate applying decals from one side to the other while the previous decal dries. Pick one method and stick with it.

### Measure twice, cut twice

Having chosen your first victim, cut the basic shape from the main decal sheet. Then make a second cut close to the edge of the graphic to remove any clear edges from around the circumference of the piece. By making the second cut, you will create a clean edge, better replicating either a decal or a paint graphic on the real car. The clear film of aftermarket decals rarely extends beyond the edge of the colored ink. Gene Sisemore of Slix Decals says you shouldn't be able to find any clear to trim from Slix decals. This firm maintains a close tolerance on the registration of both the color and the clear seal coat.

There are several schools of thought on trimming and tools. I prefer surgical scissors for cutting around curves because they give me more control than a hobby knife (**Photo 2a**). The scissors I use are dedicated specifically to decals to avoid getting nicks in the blades. I like to think they have a more exciting life trimming out Jimmy Spencer stock car graphics than they might have in an operating room. A hobby knife with lots of fresh blades can be used as well (**Photo 2b**), depending on the application. Fresh blades are the key here as they require little pressure to trim out the subject. Change blades often and use the dulled blades for future construction projects.

From race cars, like Tamiya's Porsche GT1, to street rods, like Revell-Monogram's 1932 Ford, most of the kits we build include decals. Mastering decal application techniques is an important part of building better models.

**2a** After cutting the decal's basic shape from its sheet, you can remove the clear borders with a pair of surgical scissors (they work especially well around curves). This paint is only dedicated to cutting decals so the blades stay free of nicks.



**2b** A hobby knife with a sharp No. 11 blade also works well for cutting away a decal's clear borders. Change blades often so you always use sharp blades.



Test fit the decals dry and try to visualize any problems that might occur when they are applied. You have now reached the cutting edge of decal application. Pun intended.

### Taking a dip

You'll need a shallow tray of warm water. I prefer a glass petri dish for two reasons: a) the low profile means I'm less likely to spill water all over my work area, and b) I can place the dish on a dark or light surface to contrast the decals I'm working with. Matthew Wells of Scale Motorsport uses a plastic case that once held hot-glue sticks. This is also clear and low in profile, plus it has a lid that closes tight.

Drop the decal into the water and make sure it is completely submerged (**Photo 3**). Manufacturers generally recommend soaking times of 30 seconds to two minutes. Always follow the manufacturers' instructions, whether they be for decals or solutions. Remove the decal from the water, place it on a paper towel, and pat both sides with paper towels to remove excess water (**Photo 4**). Give the decal some time to soften. As it softens, it will begin working its way free of the backing paper. Soak and apply one decal at a time. An entire sheet of decals soaked all at once would lead to many loose decals floating in the dish, a situation akin to herding cats.

### The acid test

This next step is very straightforward. Using a dedicated brush, swab acid over the

printed and polished surface where the decal is to be applied (**Photo 5**). Here, science is our friend, thanks to Greg Krasel of Microscale, who developed a product called Micro Set. It is an excellent setting solution that is just a bit acidic. If you have any reservations about using this product, test it on a scrap piece first. Not all setting and softening solutions are compatible with all decals. Some may make inks run. Micro Set has many benefits. First, it preps the surface by killing any oils on the paint. Second, it forms a lubricating layer between the decal and the surface. Micro Set lubricates better than water alone, which makes positioning the piece easier. Third, it softens the decal to help it conform to the shape of the body. Finally it improves adhesion.

Microscale also makes Micro Sol, a setting solution for more extreme situations. In addition to softening the decal, it helps draw the decal over highly irregular surfaces. Greg Krasel says Micro Sol gives decals a "vacuumformed" look, making them look painted on. Other brands of setting solutions are available. Again, test, test, test, if you have any doubts. Some solvents have been known to cause some decal inks to run. Aftermarket manufacturer Fred Cady recommends Microscale products diluted 50 percent with water for use with Fred Cady Design decals.

Bring the decal and backing to the model and lay it in position with a tweezers. Next, using a dry, synthetic sable chisel-edge brush, hold the decal in place and slide the



**3** Soak only one decal at a time in a shallow dish. Where else but Scale Auto Enthusiast could you find flames under water?



**4** Move the decal from the dish to a paper towel. Pat both sides with another paper towel to remove excess water droplets.



**5** Prep the surface by brushing on a setting solution such as Microscale's Micro-Set. The solution kills any oils on the paint and forms a lubricating layer between the decal and the model.

paper backing from beneath it (**Photo 6**). Avoid touching the decal with your fingers (wet decals stick to fingers). At this point, the decal should be floating on a layer of water and setting solution.

Fold a paper towel to a point so no edges of the towel will touch the model and use it to blot up any excess liquid from the surface (**Photo 7**). The edges of a paper towel are more apt to leave lint on the surface. Next, use the dry chisel edge brush again, this time to fine tune the position of the decal and to remove any air bubbles from beneath the decal by pushing them out with the bristles. Work from the center to the outside edges (**Photo 8**).



**6** To position the decal on the model, hold it in place with a dry brush and slide the paperbacking from beneath it with a tweezers.



**7** Use a folded paper towel or polishing cloth to blot the decal dry.



**8** Using a chisel-edge brush and working from the center of the decal to its outer edges, squeegee out any air bubbles. Also use the brush to fine tune the position of the decal. Let the setting solution work; as it dries, the decal will conform to the shape of the surface.

Now that the decal is in place, apply setting solution to the top of the decal and allow the decal to soften for better adhesion (**Photo 9**). After a few minutes, the decal will become soft and rubbery. Any intervention at this point could tear it. Whisk away any drops of solution with a paper towel or polishing cloth.

If the graphic is being applied to a compound curve and there are folds at the edges of the decal, you may have to cut darts into the folds at the edges of the decal, you may have



**9** Apply setting solution to the top of the decal as well and allow it to soften. As the decal softens, it will conform to the model's surface.



**10** It is difficult for the decal to conform to the shape of the fender and folds have formed at the decal's edges. It may be necessary to cut darts into the fold to allow the decal to lay flat. Several small darts are better than one big one.

to cut darts into the folds to relieve the tension and allow the piece to lay flat (**Photo 10**). This is a judgement call; the solution may pull the decal onto the surface without the folds causing a problem. Several small darts are better than one big one. When cutting darts into a decal, use a stiff chisel edge brush and/or a foam block to work the edges into place.

#### When the going gets ugly, the ugly get blow dried

As the drying period begins, the decal will most likely become wrinkled. This is normal, but scary. Be patient. Let the solution do the work, and don't try to press the wrinkles down. As the drying period progresses, the wrinkles will level out and the decal will become stronger. This can take hours. A hair dryer can be used to speed up this process. Keep it at a safe distance from the model, so you don't over-heat the plastic, paint, or decal. All laws of physics apply here, and none can be broken. Evaporation takes just so long. If the hair dryer is used early in the process, fewer wrinkles will form and less prodding will be needed at the end. A foam block can be used to tamp down any wayward edges or dips.

This is a good time to check for air bubbles trapped between the decal and the model. Pierce any bubbles with a pin to allow the air to escape, then add a little Micro Set to the area. Use a foam block to tamp down the surface. Blocks found in polishing kits are quite firm. Facial make-up wedges found in cosmetic departments of drug stores are softer, so they conform to complex shapes better.

Matthew Wells of Scale Motorsport keeps both ready on his workbench.

As the decal enters its final stages of becoming one with the model, clean up any adhesives, scum, sweat, or spots left behind from the application process (**Photo 11**). I recommend dampening a paper towel to remove these menaces because it will be less likely to scratch either the decal or the painted surface. Again, fold the towel to minimize lint. A cloth from a polishing kit also works well. I do not recommend cotton swabs for cleaning or whisking liquid away from decals. Even the best quality swabs leave excessive amounts of lint, and, worst of all, they may leave fine scratches in enamel model paint.

#### An ounce of protection

To clear or not to clear, that is the question. A protective coating over your decals will preserve them. The risk of clear coating over decals and paint is that the clear may turn yellow with age. Automotive grad clear is the most stable and is an excellent alternative to hobby clear coats. Gene Sisemore prefers DuPont acrylic enamel, Fred Cady says "no lacquer clear," and Scale Motorsport recommends Microscale's Micro Flat or Micro Gloss.

There is also the question of aesthetics. I can understand building Revell-Monogram's 1932 Ford kit, applying the kit's flame decals, then applying a clear gloss coat over the whole body (**Photo 12**). The decals

replicate flames painted on the body. Gloss flames, gloss body, therefore gloss top coat.

In contrast, race cars, for example, have a mix of techniques to replicate. Several body colors may be depicted as paint, the number decals may represent paint or semi-gloss vinyl graphics, and the sponsor decals may simulate a vinyl material. When viewing a full size racecar close up, it's evident that the graphics are made of different materials. To reproduce these varied effects, I feel it's best to apply a clear coat over the decals that should look like paint, then apply the remaining decals, and leave them uncoated to simulate less glossy graphics. Food for thought.

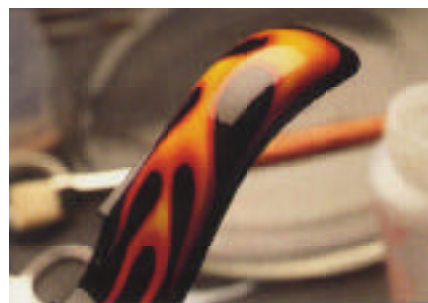
### Opacity

It can be disappointing to finish decaling a model only to find that when the decals dry, the white, yellow, or other light tones become translucent. For example, the white numbers on a black car would look light gray. It happens. The light portions of Microscale decals generally feature a white underlay that goes under the graphic to reduce transparency. Gene Sisemore's Slixx decals are also underlaid with white,

but are still thin in composition for better adhesion. New EPA regulations have created another challenge for decal makers because the new inks have less opacity. Gene's solution is to place a second decal directly over a light decal that is applied to a dark surface if necessary.

### Silvering

Decals stick best to gloss paint, like glass next to glass. If you place decals on a surface with flat paint, you risk a condition called "silvering". This occurs when a decal is placed on flat paint, which consists of many microscopic hills and valleys. The decal can't conform to the microscopic contours. It's like placing a sheet of glass on a sheet of sandpaper; many air pickets are left between the glass and the sandpaper. As light strikes the decal, it is reflected back to our eyes from the areas where the decal and the paint make contact. Our eyes see these areas of the decal as being properly applied and we are happy. However, some of the light passes through the decal and enters the "valleys." There, it bounces around until it exits back through the decal. The decal diffuses



**11** After tamping the decal in place, give it time to dry. Then, wipe it with a damp towel to remove any residue. The result should be a decal that full conforms to its surface.

the light, giving it a milky appearance. Our eyes don't like this, and we are not happy with the look of the decal.

As car modelers, we are fortunate that we usually have glass surfaces upon which to lay decals. There are some exceptions, the flat black fiberglass hood on a 1969 Dodge Super Bee, for example. Building a replica

## SOURCES

### Fred Cady Design

P.O. Box 576 Dept. SA  
Mount Prospect, IL 60056

### Microscale Decals

P.O. Box 11950, Dept. SAE  
Costa Mesa, CA 92626  
www.microscale.com

### Scale Motorsport

3 Topside Ln., Dept. SAE  
Newtown, CT 06470  
www.scalemotorsport.com

### Slixx Decals

13075 Springdale St.,  
Suite 456, Dept. SAE  
Westminster, CA 92683  
www.slixx.com



**12** If the decal depicts a graphic that would be done with paint, such as these flames, it should be clearcoated to protect the decal and to give it the same shine as the painted fender.

stock version of this car requires placing a "six-pack" decal on each side of the hood scoop. Modeler Steve Jansen has accomplished this feat and offers two solutions. The first, which parallels a common practice among military modelers, is to paint the hood gloss black, apply the decals, then spray on a coat of dull or flat clear. Technically this solves the problem, except that the flat clear coat takes away some of the richness of the deep black finish. Be open-minded. Just because clear comes bottled as gloss or flat doesn't mean we are locked into only those two options. Try mixing differing percentages of gloss and flat clear to achieve the proper shine.

The more gloss that is added to the mix, the richer the underlying color will be. Steve's other suggestion is to apply the decals to a hood painted flat black, trim close to the letters, and use a setting solution. This seems only a small step away from microsurgery, but may well be worth the effort depending on the application. Forego a top coat, but be aware that though the addition of a setting solution may help, silvering may still occur.

Decals are just one of the many facets of model building that can be a rewarding challenge. They can give a model a great deal of character. With patience and practice, you, too, can use decals to achieve a new level of realism.