

# THE Model Railroad Hobbyist's Guide to acrylic painting ... in a post-Floquil world



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**MRH**  
MODEL RAILROAD HOBBYIST

By Joe Fugate

PDF PORTRAIT EDITION

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**THE Model Railroad Hobbyist's**  
**Guide to acrylic painting**  
*... in a post-Floquil world*

***By Joe Fugate***

***Photos by Joe Fugate unless otherwise credited***



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For decades, model railroaders considered Floquil and PollyScale paints to be the go-to paints for painting their models. Since Testors discontinued the line in 2013 and modelers' paint stashes are now diminishing, it's time to wean ourselves from these paints. Ideally, we can find 21st Century environmentally-friendly replacements that are as good or better than these great old standbys.

# PREFACE

Floquil and the related acrylic PollyScale line were for many modelers the go-to paints for model railroading. But as we all know, Testors discontinued the Floquil/PollyScale line of paints in 2013.

The hobby has good post-Floquil/PollyScale alternatives, but we need these replacement paints mapped back to familiar Floquil/PollyScale color equivalents to make getting weaned off these now-defunct paints easier. To that end, MRH has done two color-mapping projects, one for “acrylics” (defined as water-cleanup paints) and another for “lacquers and enamels” (defined as solvent-cleanup paints).

This book discusses acrylics mapping, and our other book: *The Model Railroad Hobbyist’s Guide to lacquer-based painting in a post-Floquil world* covers solvent-based paints.

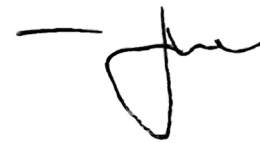
If you prefer water-soluble pre-thinned model paints as I do, then I want to help you make an easy transition in a post-Floquil world to painting with water-based acrylics. If you’ve been a staunch solvent paint user, acrylic paint has come a long way in the last couple decades, so maybe it’s time to revisit using acrylics now that Floquil is no more?

To this end, I’ve included an extensive Floquil/PollyScale color translation chart for the leading acrylic paints available for painting models.

If colors translate one-to-one, I’ve listed that. I’ve also included formulas for colors that don’t translate one-to-one. Plus I’ve included tips on mixing and storing these paints so they keep better.

I’ve also included advice on how I do both brush painting and airbrush painting with acrylics.

We hope you find this post-Floquil painting guide to be your new go-to guide for painting your models! ■



Joe Fugate, MRH

# ICONS USED IN THIS BOOKLET

To make the most important pointers in this book hard to miss, I'm using a couple icons.



First, there's the tip icon. This points out especially helpful nuggets of information, and may also summarize other nearby text. You won't want to miss one of these, which is why I call them out so you'll see them!



Then there's the warning icon. This icon highlights a method or technique you can't scrimp on or do poorly, so pay close attention to the process to make sure you don't mess it up! If you do happen to get it wrong, I'll also point out how to fix it, if possible.

## IMPORTANT RESOURCE LINKS: OTHER GOODIES!

This book is only a part of what you get with our post-Floquil painting guide booklets.

Customers also get online access to more goodies to help you achieve a better model painting experience. Look for these additional resources:

**Cheat sheets:** Remember the crib notes or "cheat sheet" you used to make in school to prepare for an exam? We take the key points in each booklet and distill them down into some cheat sheet summaries for you to keep handy and we post them online. URL: [mrhmag.com/subscribers-only/painting/acrylics/cheat-sheets](http://mrhmag.com/subscribers-only/painting/acrylics/cheat-sheets)

**Bonus chapters:** Because we're doing both a printed version and an eBook version of these booklets, we do have space limitations to keep the cost down. Never fear, if it doesn't fit, then we're making it available for you online for free as bonus chapters. URL: [mrhmag.com/subscribers-only/painting/acrylics/bonus-chapters](http://mrhmag.com/subscribers-only/painting/acrylics/bonus-chapters)

**Web links:** We constantly browse the web for the best content on the topic of painting models. Much of the information is pretty basic, some is just plain wrong, some is okay but presentation sorely lacks, and there's a few truly golden nuggets available online. We save you a lot of time by giving you the best links. URL: [mrhmag.com/subscribers-only/painting/acrylics/web-links](http://mrhmag.com/subscribers-only/painting/acrylics/web-links)

**Supplemental videos:** Some concepts can be difficult to explain and understand with just text and still photos. In these cases, we're highlighting some short videos so you can see how it's done. URL: [mrhmag.com/subscribers-only/painting/acrylics/videos](http://mrhmag.com/subscribers-only/painting/acrylics/videos)

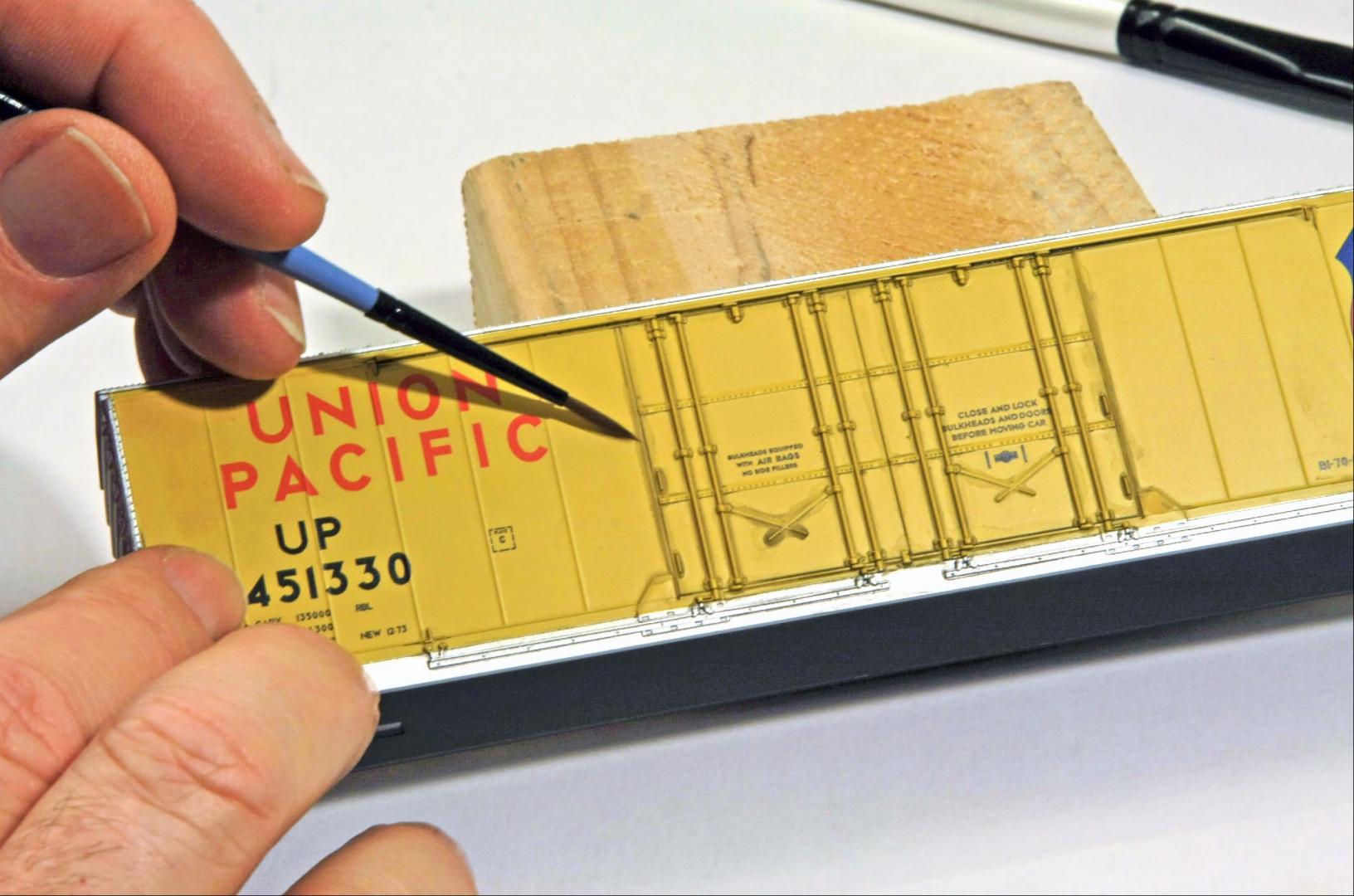
**Updates:** Try as we might to get it right the first time, there are sure to be a few mistakes creep in. Plus hobby technology is constantly changing. For these instances, we'll provide you with updates online. URL: [mrhmag.com/subscribers-only/painting/acrylics/updates](http://mrhmag.com/subscribers-only/painting/acrylics/updates)

**Related products:** Yes, you may also get a few product-related emails from us on this topic of painting your models better. One of the most frequent requests we get is for product insight. You can relax, we hate spam as much as you do. Anything we send on this topic will be infrequent, only from us directly, and will be killer level awesome or we won't be bothering you.

The way we think of it, as an MRH Subscriber, you become a subscriber to a literal *library* of resources for helping you paint and finish your models better than ever. ■



To Vern, for investing in a teenage model railroader and instilling a passion for the hobby that still burns bright today.



1-1. In looking for a suitable Floquil/PollyScale replacement paint, I considered the full gamut of paint uses from airbrush application, to brush painting, to thinning the paint and using it as a wash. Here, I'm applying a black water-based acrylic paint wash to an HO boxcar, bringing out the details by a technique I call "shadowing". See chapter 5 for tips on working with acrylic paints and getting the most out of them.

# CHAPTER 1

## CRITERIA FOR CHOOSING ACRYLIC PAINT

I gave up using Floquil paints and moved to PollyScale water-based paints back in the 1990s. Floquil's solvents had an intense chemical-like odor and after I had a couple frightening episodes getting double-vision from Floquil solvent odor inhalation, I moved to PollyScale and its less problematic fumes.

With the demise of Floquil/PollyScale, I have sought out a good replacement. My ideal replacement paint would be:

1. A low odor water-soluble acrylic paint that's price competitive and available in a broad color line.
2. Allows soap-and-water cleanup with no solvents needed.
3. Pre-thinned for airbrushing, but usable as a brush paint for model details.
4. (Optional) Color names expressed in railroad terms like the Floquil/PollyScale line.

I found three excellent paints that fit my criteria #1 through #3: Badger's MODELflex, Testors' Model Master acrylics, and Vallejo Model Air/Game Air. Badger's MODELflex also fits my criteria #4 with many colors mapped to Floquil/PollyScale names. Testors has augmented sixteen of their Model Masters acrylic paint line with the old PollyScale colors.

Regarding criteria #4 for Model Air/Game Air, Micro-Mark selected ten of Vallejo's Model Air paints and re-packaged them into larger 60ml (2 oz.) craft paint flip-top bottles as MicroLux paint, color matched to PollyScale paint colors.

Regarding price, Testors' Model Master acrylic line comes pre-thinned for airbrushing, but most of their colors need to be translated to railroad paint names to meet my criteria #4. Current list price, \$3.69 per 0.5 oz [14.7ml] bottle.

As for Badger's MODELflex paint, I know many modelers who love the MODELflex line and I use them myself for certain projects. Current list price, \$4.25 per 1 oz [29.5ml] bottle.

Model Air/Game Air currently lists at \$3.30 per 0.6 oz [17 ml] bottle. MicroLux currently lists at \$7.35 per 2 oz (59 ml) bottle.

When we told Testors that MRH wanted to provide a color transition chart from their old Floquil / PollyScale paint colors to their current Model Masters Acrylic line, Testors enthusiastically donated an entire set of their Model Master paints to the project.

Micro-Mark also donated their entire MicroLux paint line to MRH for the project too. MRH also acquired the entire Vallejo Model Air /Game Air paints line. Finally, MRH has Badger's MODELflex paints in stock to do color-for-color matching with them as we describe in the next chapter. ■



2-1. In this chapter I built a color-for-color paint conversion chart from Testors' defunct Floquil / PollyScale paints to the equivalent colors in the Testors Model Master, Vallejo Model Air/Game Air, and the Badger MODELflex paint lines. To do this, MRH acquired an extensive collection of paints from each line and did paint chip color matching back to the old Floquil / PollyScale colors. In some cases, there is no exact match, so I provide a mixing formula to get the same color. In a few cases, there is no color formula that works for a given brand and color. When that happens, then one of the other two brands does have a formula that works for that color.

# CHAPTER 2

## PAINT CONVERSION CHART

To help make the transition off Floquil/PollyScale paints, this chapter provides an extensive color-matching chart, color-for-color, for 72 of the old familiar colors. When the color is an exact match, then I give you that and life is good. If there is no exact match, then I list a mixing formula to get an exact match (also see Chapter 3 for mixing and storage tips). In a few cases, the specific color simply can't be mixed from other colors for a given paint brand. This is rare, but when that happens, the other two brands can generally be used for that color.

In some cases, the match was very close but not exact. When that happens, I often provide both the close match and a formula for getting an exact match. In many cases, close will be good enough, especially if you plan to fade and weather the paint job on the final model.

All three of these paint lines come pre-thinned for airbrushing, but they also can be brush painted with just a little care. For more on using these paints effectively, see *Chapter 5: Techniques for working with modern acrylic paints*.

All of the Vallejo Model Air / Game Air colors have a flat finish, and all the Badger MODELflex paints have a semi-gloss finish. Model Master paints vary, some are flat, others are semi-gloss, and still others have a gloss finish. On the Model Master paints, I include a notation on the paints that have a semi-gloss and gloss finish. If there is no notation, then the Model Master paint has a flat finish.

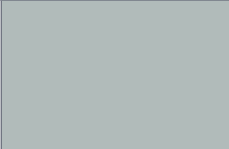
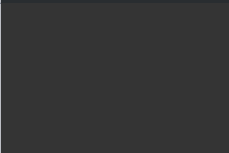
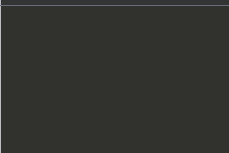
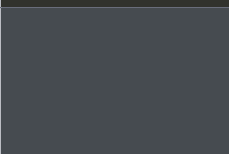

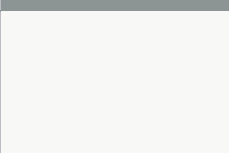


Because the Model Master paint line is intended mostly for painting military models (trucks, tanks, ships, and airplanes), the color line tends to have more subdued tones. This does mean in some cases, a brighter railroad color such as NYC Jade Green made with Testors Model Master paints is a much less intense, faded tone.

The Vallejo Model Air paints, like the Model Master paints, tend to have more subdued military modeling color tones as well. However, Vallejo also now makes their Game Air colors (intended for fantasy figure modelers), which adds a lot of brighter tones to the collection. These brighter colors enable model railroaders to mix almost any railroad color they need. Vallejo's Game Air paints are fully compatible with their Model Air paints.

The Badger MODELflex paints have many colors already mapped by name back to the Floquil / PollyScale paints, which eases transitioning off Floquil or PollyScale paints. Badger also has other MODELflex colors that are outside the model railroading line (automotive, marine, and military colors), so in some cases we have drawn on those other non-model railroading MODELflex colors to get a closer color match.

The color swatches shown in the following chart are only approximate. Because of monitor color calibration variations and printing press ink variations, the colors in the chart only provide a facsimile of the actual labeled paint color. ■

# MRH's Floquil / PollyScale Paint Equivalents Conversion Chart - 1

Floquil - PollyScale	Color (approx.)	Model Master	Vallejo - MicroLux	MODELflex	Notes
Primer Gray		MM 4762	VMA 71.050	16-12	
Engine Black		MM 4888	ML 29008 VMA 71.251	16-01	
Steam Power Black		MM 4795	VMA 71.057	16-448	
Oily Black		MM 4797	VMA 71.021	16-44*	
Weathered (Tarnished) Black		MM 4750	ML 29022 VMA 71.054	16-05	
Reefer Gray		MM 4886 <sup>1</sup> MM 4761	VMA 71.045	16-04	
Reefer White		MM 4873	ML 29004 VMA 71.001	16-02	
Grimy Black		MM 4887	ML 29002 VMA 71.055	16-03	
Caboose Red		MM 4880 <sup>2</sup> MM 4633†	Mix ... 1pt VMA 71.003 1pt VMA 71.102	16-08	MM: Mix 4633 with 20% Model Master's flat medium to get a semi-gloss paint

\* Indicates a close but not exact match. All MODELflex paint is a semigloss finish.

Vallejo Model Air/Game Air, MicroLux, and Model Master paints flat finish unless marked: † Gloss finish. ‡ Semigloss finish.



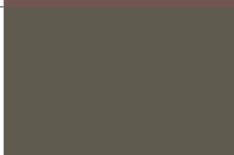
1 Model Master's new Reefer Gray is a shade darker than the old PollyScale Reefer Gray.

Color 4761 Dark Ghost Gray is a closer match to the old PollyScale color.

2 Model Master's new Caboose Red is a shade lighter than the old PollyScale Caboose Red.

Color 4633 Stop Light Red (gloss finish) is a closer match to the old PollyScale color. Add 20% flat medium to get semi-gloss.

## MRH's Floquil / PollyScale Paint Equivalents Conversion Chart - 2










Floquil - PollyScale	Color (approx.)	Model Master	Vallejo - MicroLux	MODELflex	Notes
Tuscan		Mix ... 5pt MM 4609 4pt MM 4605	VMA 71.036	16-53	
Reefer Orange		MM 4682*	VMA 71.083	16-09	
Reefer Yellow		MM 4879	VMA 71.078	16-10	
Roof Brown		MM 4884	ML 29009 VMA 71.249	16-176	
Railroad Tie Brown		MM 4885	ML 29003 VMA 71.029	13-147 <sup>1</sup>	
Rail Brown		MM 4708*	ML 29001 VMA 71.139	16-175	
Rust		MM 4675	ML 29005 VMA 71.037	16-172	
Concrete		MM 4876	VMA 71.045* Closer match ... 1pt VMA 71.131 1pt VMA 71.132	16-11*	
Aged Concrete		MM 4875	ML 29007 VMA 71.143	16-92* Closer match ... 3pt 16-91 1pt 16-51	

\* Indicates a close but not exact match. All MODELflex paint is a semigloss finish.

Vallejo Model Air/Game Air, MicroLux, and Model Master paints flat finish unless marked: † Gloss finish. ‡ Semigloss finish.

<sup>1</sup> Badger's 13-147, FREAKflex *Wooden Stake Brown* is actually a great match for Railroad Tie Brown. FREAKflex is a brand of paint intended for painting fantasy miniatures, but the formulation is completely compatible with MODELflex.

# MRH's Floquil / PollyScale Paint Equivalents Conversion Chart - 3

Floquil - PollyScale	Color (approx.)	Model Master	Vallejo - MicroLux	MODELflex	Notes
Earth		MM 4877	VGA 72.761	16-174	
Mud		MM 4812*	VMA 71.075* Closer match ... 1pt VMA 71.075 1pt VMA 71.143	16-173	
Dirt		MM 4608	VGA 72.762	16-94*	
Aged (Antique) White		MM 4874	VMA 71.132*	16-06	
Boxcar Red		MM 4881	Mix ... 1pt VMA 71.038 1pt VMA 71.105	Mix ... 2pt 16-15 1pt 16-14	
Oxide Red		MM 4882	VGA 72.712*	16-71*	
Depot Buff		MM 4878	Mix ... 3pt VMA 71.033 2pt VMA 71.027	16-81*	
Depot Olive		MM 4734	VMA 71.094	16-91	
Foundation		MM 4722	VGA 72.734*	16-30*	

\* Indicates a close but not exact match. All MODELflex paint is a semigloss finish.

Vallejo Model Air/Game Air, MicroLux, and Model Master paints flat finish unless marked: † Gloss finish. ‡ Semigloss finish.









# MRH's Floquil / PollyScale Paint Equivalents Conversion Chart - 4

Floquil - PollyScale	Color (approx.)	Model Master	Vallejo - MicroLux	MODELflex	Notes
Dark Green		MM 4729*	VMA 71.093	16-192*	
Light Green		MM 4852	VMA 71.126* Closer match ... 5pt VMA 71.126 1pt VMA 71.001	16-47	
Pullman Green		MM 4784	VMA 71.019	16-180	
Coach Green		MM 4726	VMA 71.017	16-164*	
Signal Green		MM 4883	Mix ... 2pt VMA 71.094 1pt VMA 71.113	16-203	
Penn Central Green		Mix ... 3pt MM 4883 2pt MM 4863	Mix ... 2pt VMA 71.007 2pt VMA 71.008 1pt VMA 72.723	16-90	
BN Green		Mix ... 4pt MM 4798 1pt MM 4722 1pt MM 4669	Mix ... 5pt VMA 71.094 1pt VMA 71.089 1pt VMA 71.095	16-26	
GN Empire Green		MM 4849	VMA 71.018	16-65	
GN Empire Orange		Mix ... 2pt MM 4851 1pt MM 4880	VMA 71.130	16-64	

\* Indicates a close but not exact match. All MODELflex paint is a semigloss finish. Vallejo Model Air/Game Air, MicroLux, and Model Master paints flat finish unless marked: † Gloss finish. ‡ Semigloss finish.





# MRH's Floquil / PollyScale Paint Equivalents Conversion Chart - 5

Floquil - PollyScale	Color (approx.)	Model Master	Vallejo - MicroLux	MODELflex	Notes
Dark Blue		MM 4742	VMA 71.090	16-69*	
Light Blue		Mix ... 1pt MM 4742 1pt MM 4748	VMA 71.111*	16-93*	
GN Big Sky Blue		Mix ... 1pt MM 4742 4pt MM 4748	Mix ... 4pt VMA 71.108 3pt VGA 72.723 1pt VGA 72.722	16-63	
SP Lettering Grey		Mix ... 3pt MM 4762 1pt MM 4765	VMA 71.121	16-39	
SP Lark Lt Grey		MM 4886	VMA 71.128	16-35	
SP Lark Dk Grey		MM 4752	VMA 71.048	16-40	
SP Daylight Orange		Mix ... 6pt MM 4771 2pt MM 4851 1pt MM 4682	Mix ... 4pt VMA 71.130 1pt VMA 71.074	16-38	
SP Daylight Red		MM 4631†	VMA 71.086	16-36	MM: Mix 4631 with 20% Model Master's flat medium to get a semi-gloss paint
SP Scarlet		MM 4629‡	VMA 71.003	16-37	MM: Mix 4629 with 20% Model Master's flat medium to get a semi-gloss paint

\* Indicates a close but not exact match. All MODELflex paint is a semigloss finish.




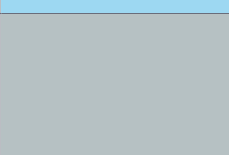
Vallejo Model Air/Game Air, MicroLux, and Model Master paints flat finish unless marked: † Gloss finish. ‡ Semigloss finish.

# MRH's Floquil / PollyScale Paint Equivalents Conversion Chart - 6

Floquil - PollyScale	Color (approx.)	Model Master	Vallejo - MicroLux	MODELflex	Notes
Amtrak Blue		Mix ... 2pt MM 4742 1pt MM 4866	Mix ... 5pt VMA 71.111 1pt VGA 72.721 1pt VGA 72.722	16-59	
Amtrak Red		Mix ... 1pt MM 4633 1pt MM 4629†	VGA 72.710	16-58	MM: Model Master formula makes a semigloss paint
UP Armour Yellow		Mix ... 6pt MM 4683 1pt MM 4879	VMA 71.033* Closer match ... 5pt VMA 71.033 1pt VMA 71.001	16-24	
UP Harbor Mist Gray		MM 4866* Closer match ... 3pt MM 4866 2pt MM 4759	Mix ... 5pt VMA 71.120 1pt VMA 71.115	16-25	
TTX Yellow		MM 4611	VGA 72.705	16-168	
Railbox Yellow		MM 4684	VGA 72.706	16-54	
CSX Grey		MM 4886	VMA 71.051	16-70	
CSX Blue		Mix ... 2pt MM 4742 1pt MM 4840	Mix ... 5pt VMA 71.087 1pt VMA 71.108	16-49	
CSX Yellow		MM 4684*	VGA 72.706*	16-50	

\* Indicates a close but not exact match. All MODELflex paint is a semigloss finish. Vallejo Model Air/Game Air, MicroLux, and Model Master paints flat finish unless marked: † Gloss finish. ‡ Semigloss finish.










# MRH's Floquil / PollyScale Paint Equivalents Conversion Chart - 7

Floquil - PollyScale	Color (approx.)	Model Master	Vallejo - MicroLux	MODELflex	Notes
Flesh		MM 4805‡	Mix ... 2pt VMA 71.076 1pt VMA 71.132	16-205*	
Santa Fe Red		MM 4632†	Mix ... 2pt VMA 71.003 1pt VMA 71.102	16-31	MM: Mix 4632 with 20% Model Master's flat medium to get a semi-gloss paint
Santa Fe Blue		Mix ... 2pt MM 4742 1pt MM 4739	VMA 71.004	16-34	
Santa Fe Yellow		MM 4721	VMA 71.002	16-33	
Santa Fe Mineral Brown		MM 4707	VMA 71.080	16-74*	
MoPac Blue		Mix ... 2pt MM 4742 1pt MM 4769	VMA 71.088	16-86	
MoPac Light Blue		Mix ... 1pt MM 4687 12pt MM 4769	Mix ... 6pt VMA 71.001 1pt VMA 71.111	Mix ... 1pt 16-63 1pt 16-02	
MoPac Grey		MM 4762	VMA 71.046	16-12*	
Conrail Blue		Mix‡ ... 2pt MM 4659† 1pt MM 4769	Mix ... 2pt VMA 71.088 1pt VMA 71.001	16-29	MM: Model Master formula makes a semigloss paint

\* Indicates a close but not exact match. All MODELflex paint is a semigloss finish.

Vallejo Model Air/Game Air, MicroLux, and Model Master paints flat finish unless marked: † Gloss finish. ‡ Semigloss finish.

# MRH's Floquil / PollyScale Paint Equivalents Conversion Chart - 8

Floquil - PollyScale	Color (approx.)	Model Master	Vallejo - MicroLux	MODELflex	Notes
Southern Green		MM 4739	Mix ... 1pt VMA 71.007 1pt VMA 71.108 1pt VMA 71.001	16-46	
Southern Freight Car Brown		MM 4604	VMA 71.125	16-15	
Reading Green		Mix ... 5pt MM 4729 2pt MM 4769	Mix ... 1pt VMA 71.007 1pt VMA 71.108	16-85	
CN Green		MM 4852* Closer match ... 5pt MM 4852 1pt MM 4729	VMA 71.126	16-425*	
CN Yellow		Mix ... 8pt MM 4611 1pt MM 4851	Mix ... 10pt VMA 72.705 1pt VMA 71.107	16-202*	
CN Orange		Mix ... 3pt MM 4703 1pt MM 4851	Mix ... 3pt VMA 71.082 1pt VMA 71.143	16-158*	
CN Gray		MM 4770	VMA 71.045	16-167	
CNW Green		Mix ... 5pt MM 4687 1pt MM 4729	VMA 71.134	16-23	
NYC Jade Green		Mix <sup>1</sup> ... 5pt MM 4659† 1pt MM 4611 7pt MM 4769	Mix* ... 5pt VMA 71.089 3pt VMA 72.732 1pt VMA 71.001	Mix* ... 2pt 16-47 1pt 16-79 1pt 16-02	None of the three paints can get this exact color, only close.

\* Indicates a close but not exact match. All MODELflex paint is a semigloss finish. Vallejo Model Air/Game Air, MicroLux, and Model Master paints flat finish unless marked: † Gloss finish. ‡ Semigloss finish. 1 Model Master lacks the lighter bright blue or bright green needed to get a very good rendition of NYC Jade Green. As a result, the MM mix formula gives a very faded version. For weathered rolling stock, this may be fine, but it's too dull for new paint.



3-1. Using an inexpensive nail polish stair-step rack, you can neatly store over 100 bottles of Vallejo/ MicroLux or Model Master paints for easy access. It's also possible to get inexpensive empty dropper bottles so you can store special paint mixes in convenient dropper bottles. I cover this and other acrylic paint mixing and storage tips in this chapter.

# CHAPTER 3

## ACRYLIC MIXING AND STORAGE TIPS

I have tried many ways of mixing and storing my model paint collection over the years. The loss of the Floquil / PollyScale line forced me to revisit my paint mixing and storage practices. As a result, I've developed some new ways to manage my paint collection, and to get the paint to keep longer. In this chapter, I share my findings with you and give you links you can use to get and employ these materials and methods for yourself.

As I mentioned in chapter 1, Micro-Mark sent MRH a sample of their new MicroLux line, so I tried them out, along with the Vallejo Model Air paints on which they're based. The paint has an ever-so-slight "floral" odor, and Vallejo says in their official documentation that none of their paints require any "health hazard" warnings. Their soap-and-water cleanup is a big plus for me.

Vallejo's storage method of using dropper squeeze bottles is quite clever, beating glass or hard plastic jars hands down. I find the dropper bottles to be less messy, less wasteful, and the paint keeps longer. Vallejo says the shelf life of Model Air / Game Air in their dropper bottles should exceed five years.

### Paint bottle tips

Testors sells their Model Masters paint in 1/2 oz (14.7 ml) glass bottles with a metal lid. Badger sells their MODELflex paints in 1 oz (29.5 ml) plastic bottles with a plastic lid. Both don't keep as well as the Vallejo dropper bottles, and I've especially had the paints in bottles dry out on me before I can finish using all the paint (see the bottle cap seal tip).

**Better bottle cap seal:** While I've heard of (and used) the trick of storing the used bottles of paint upside down so they seal and keep better, it doesn't always work.

**TIP** For bottles of paint I've opened with ordinary screw top lids, I find sealing the bottle top with a 3" square of plastic wrap and a rubber band greatly extends the paint life [3-2].

A rubber band diameter of 1-1/4" to 1-3/4" works best. A three inch square of plastic wrap is about right – it covers the bottle cap and neck, but leaves the label visible so I can see still read what's in the bottle.

**Empty dropper bottles:** The Vallejo dropper paint bottles work great, but what if you need to mix some new colors using our chart - how do you store that newly-mixed paint?

Yes, you can get empty plastic dropper bottles!

I store newly mixed Vallejo colors in these empty dropper bottles, but I also repackage commonly used Model Master



3-2. My opened model paint stored in bottles keeps much longer when I put a 3" square of ordinary kitchen plastic wrap over the top and seal it with a rubber band.

or MODELflex colors into dropper bottles and enjoy the advantages of the Vallejo dropper bottle packaging for those paints, too!

**TIP** I now store model paint in convenient dropper bottles: there's less waste and shelf-life is better. A 20ml bottle size is a great choice – it's ever-so-slightly larger than the 17ml stock Vallejo bottles.

A good source for plastic dropper bottles is Amazon ([amzn.com/B00JD3YYWU](https://www.amazon.com/B00JD3YYWU)). I can select from many different sizes: 5ml, 10ml, 15ml, 20ml, 30ml, or 50ml. The price per bottle runs from 18 cents (5ml) to 48 cents (50ml). My preferred 20ml bottles sell for about 34 cents each as of this writing.

**Better paint mixing:** To help the paint mix better when I'm shaking the bottle, I like to add a stainless steel nut to each paint bottle I open [3-4]. The nut helps knock any sediment on the bottom of the paint bottle loose and gets the pigment to mix more thoroughly with the paint base.

**TIP** Adding a stainless steel nut to a model paint bottle helps the paint mix better when shaking. For dropper bottles, use a nut with a snug fit through the neck so it won't fall into the dropper tip and clog it. A nut is better than a ball bearing in dropper bottles because the hole in the nut allows paint through.

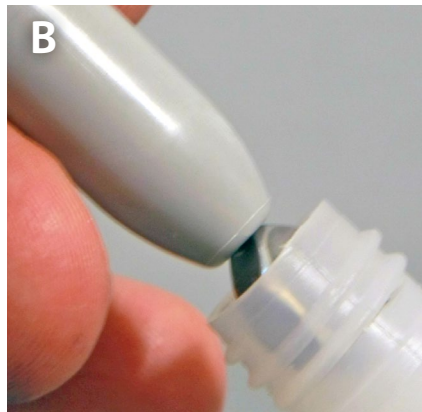
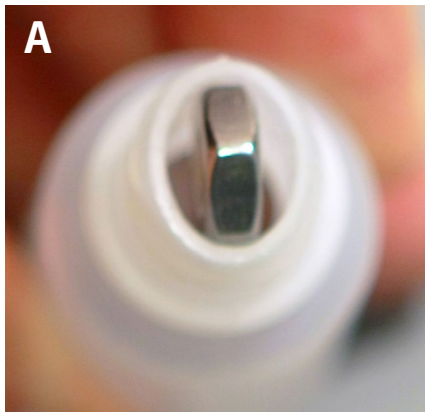
3-4. I like to put a stainless steel nut in my paint bottles so the paint mixes better when I agitate it. Here are the nut sizes that I like to use below. For dropper bottles, use a nut size that's a snug fit in the neck.



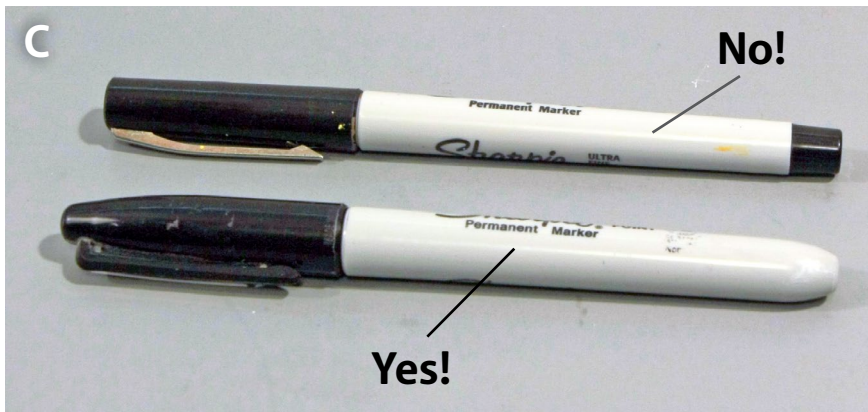
3-3. I have become a fan of storing model paint in convenient plastic dropper bottles. Fortunately, it's easy to get empty dropper bottles online in a wide variety of sizes.



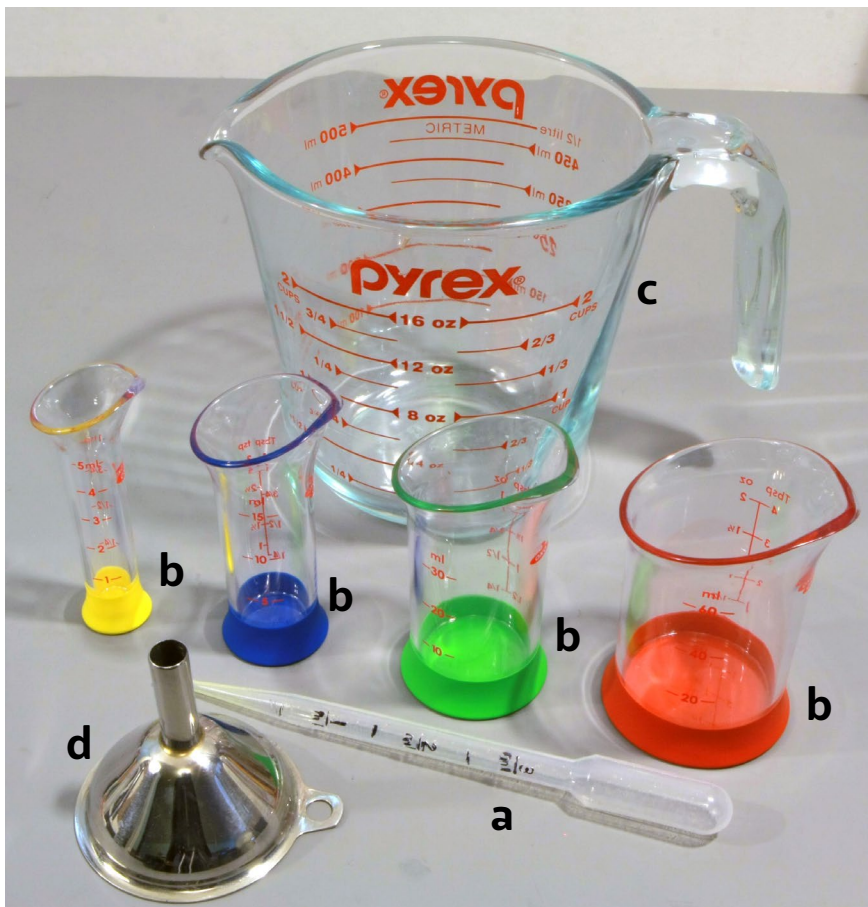




3-5. The 7/16" nut will deform the neck of a Vallejo bottle slightly [A] as shown in this unused Vallejo paint bottle. I use a Sharpie to press the nut through the neck of the bottle [B]. Do not use an Ultra-fine Sharpie, it's too small, use the larger regular Sharpie [C]. A regular Sharpie has the perfect diameter – it lodges neatly in the neck of a Vallejo bottle and won't drop down into the paint.



The 7/16" nut I use on Vallejo paint bottles requires deforming the neck somewhat and takes a good press with a Sharpie to push the nut down into the body of the bottle [3-5]. A normal Sharpie works best because it will lodge in the neck of the Vallejo bottle and won't drop down into the paint that's in the body of the bottle. I have tried the smaller diameter ultrafine Sharpie and I don't recommend it. The ultrafine Sharpie goes all the way down into the bottom of the bottle and slops paint everywhere!



MODELflex paint tends to froth up if you shake it vigorously. A better option for mixing MODELflex paint is to stir it using a bamboo shiskabob stick [3-7]. I keep a supply of these around for just this purpose. They're handy for a lot of things besides use as a paint stirrer. You can find them on Amazon here: [amzn.com/B000UJ0Z10](https://www.amazon.com/B000UJ0Z10)

3-6. Depending on how much paint I need to mix up, I have these various measuring and pouring aids: 3ml pipette [a], graduated beakers from tiny (1-5ml) to large (20-60ml) [b]. I also have a large 16oz measuring cup with milliliter graduations (100-500ml) [c]. And finally, I have a stainless steel cooking mini-funnel [d] to assist with pouring the paint and thinners so they don't spill and go exactly where I want them to go.

## Paint mixing tips

Once you have the paint bottle situation well in hand, next comes mixing up the specific paint colors you need. The color matching matrix in chapter 2 shows various mixing formulas for several of the colors. Here are some tips on mixing paint colors.

**Measuring smaller quantities:** For very small quantities of paint, I can just squeeze out a few drops of paint from a dropper bottle onto a scrap of plastic or – if I want to get fancy, onto a paint mixing tray. Or I may be putting the drops into the cup of an airbrush (more on that in a moment). For formulas, I just decide how many drops equals one part, then multiply each part in the formula out by the number of drops.

But for paint bottles with lids, I like to use a plastic pipette [3-6] when I just want to extract a few drops. I get disposable graduated plastic pipettes from Amazon, and I can select from various sizes, from 0.2ml all the way up to 5ml. My preferred size is the graduated 3ml pipette with half milliliter markings on it.

**TIP** For measuring paint by the drop, I prefer to use disposable plastic pipettes, and they're available for just a few dollars in quantities of 100. See: [amzn.com/B00JMX1KQY](https://www.amazon.com/B00JMX1KQY)

**Measuring larger quantities:** For measuring slightly larger quantities, I also purchased a four-piece graduated beaker set from Amazon. The smallest beaker is especially useful since it has graduations down to 1ml [3-6, 3-8].

**TIP** To measure paint in slightly larger quantities than by the drop, I use a set of graduated beakers from Amazon. These beakers allow me to measure from 1 milliliter all the way up to 60 milliliters with ease. See: [amzn.com/B008X5HRZU](https://www.amazon.com/B008X5HRZU)

And of course, for measuring even larger quantities of paint and thinner, I have a standard two cup glass measuring cup you can find in the cooking utensil department of most any store [3-6].

**Avoiding spillage:** To ensure the paint or thinner goes exactly where I pour it, I recommend getting a small funnel. I prefer a stainless steel cooking mini-funnel [3-6]. A stainless steel funnel isn't affected by any paint solvents or thinners, and it's super easy to clean.

**TIP** For pouring paint or thinners and making sure they go exactly where you want without spillage, use a stainless steel mini-funnel. You can find these in the cooking section of a better-stocked department store, or you can also get them online at Amazon. See: [amzn.com/B00826O10E](https://www.amazon.com/B00826O10E)



3-7. Bamboo shishabob skewers make great paint stirring sticks.



3-8. I find the smallest graduated beaker in the beaker set I got from Amazon to be especially useful for working with the typically smaller quantities of model paint. This beaker goes all the way down to one milliliter (less than a quarter teaspoon). See the text for details on how to find this beaker set online.



3-9. I originally used one of these rotating carousels to store my paint but I never really liked it. I much prefer the storage racks in 3-10 or 3-11.

## Paint bottle storage tips

Many years ago, I got a rotating carousel for storing my paint [3-9]. I never really liked it – seems I could never quickly locate the paint I was looking for. I found myself spinning the carousel repeatedly back and forth trying to remember where I last saw those colors!

With the need to wean myself off Floquil and PollyScale, I decided it was time to upgrade my paint storage as well. I moved to a tiered nail polish rack for storage [3-10] and I like it *so much* better. I sort my paints by color and now everything is right at my fingertips. No more struggling to remember where those other colors were.

Unfortunately, MODELflex won't fit in the nail polish rack, but for that there's a three tier non-skid storage rack that also works [3-11].



By using a tiered storage rack for your paints, you can sort them by color and make finding the paint you need a fast and simple task. Avoid the rotating carousel racks because you can't see all your paints at once and may find yourself endlessly spinning the rack trying to locate the colors you need. ■



3-10. This six-tier plastic nail polish rack works great for storing Model Master or Vallejo paints and it's also quite affordable. I can store 78 bottles of Model Master paint, or just over 100 bottles of Vallejo paint on this rack, and the 2 oz MicroLux bottles from Micro-Mark also just fit. Unfortunately, MODELflex bottles are too large for this rack – see 3-11 for a storage rack that works with MODELflex. The rack above is available either in clear or black plastic from Amazon: [amzn.com/B00E4XTKF0](https://www.amazon.com/B00E4XTKF0).



3-11. This three tier non-skid storage rack works for the MODELflex paint bottles as well as for Model Master or Vallejo. This rack stores 30 bottles of MODELflex, 36 bottles of Model Master, or 45 bottles of Vallejo and is available from Amazon: [amzn.com/B0036OQU56](https://www.amazon.com/B0036OQU56)



4-1. There are a number of options for thinning the acrylic model paints discussed in this booklet that are superior to using just plain water as a thinner. Of course you can use the vendor's own thinner, but there are also inexpensive off-the-shelf alternatives that chemically come close to the vendor's own thinner. Finally, you can also mix your own thinner from a variety of commonly available environmentally-safe chemicals. I discuss all these options in this chapter.

# CHAPTER 4

## FORMULAS FOR THINNERS

One of the obvious advantages of water-based paint is that you can thin the paint with ordinary tap water. However, there's a number of reasons for finely detailed model painting that you don't want to just use tap water to thin your paint – you want to use a more specialized paint thinner that's totally compatible with the paint brand you're using. You also don't want to break the bank in the process, so this chapter is dedicated to making great acrylic model paint thinner in large quantities and doing so inexpensively.

Once you're done painting and ready to clean up, of course using ordinary tap water along with a little soap is perfectly fine and very convenient. But I don't recommend thinning the paint with straight water. There are a number of good reasons for *not* thinning model acrylic paint with only water.



Do NOT thin your acrylic paint with just water (tap water or even distilled water). Water has a high surface tension beads up, especially on plastic or metal. Water is fine for cleanup but not by itself as a paint thinner. Use the vendor's own thinner, or use one of the less expensive thinner formulas in this chapter.

First, avoid thinning acrylic paint with tap water. Tap water can have minerals, sediment, or chemicals in it like chlorine. Tap water is okay for general cleanup, but even better is distilled water for final cleanup. Distilled water costs mere pennies per gallon in most locations. As a side note, Badger recommends only distilled water for thinning MODELflex, but I prefer something that breaks the water surface tension better.

Unfortunately, using exclusively the paint vendor's own thinner can get pricey. In this chapter I provide some alternative paint thinner formulas that have been tested and shown to work great with all three of the acrylic paints listed here: Model Master, Vallejo / MicroLux, and MODELflex.

Most vendor paint thinners will cost you 8 to 11 cents per milliliter. By contrast, the thinner formulas I give cost as little as 2 to 3 cents per milliliter.

Before I get into the thinner formulas, first a few words about some common “bargain basement” thinners I've seen modelers suggest on forums and YouTube.

One suggested thinner I've seen is Windex blue window cleaner. Not only does this “thinner” have a blue tint, it also contains ammonia. In researching what ammonia does to the acrylic resins in the paints discussed in this booklet, let's just say it's not good. Ammonia *attacks* the acrylic paint resin, so it's best to avoid Windex.

Another alternative thinner I've seen mentioned is isopropyl alcohol. Iso-alcohol tends to make these paints coagulate like cottage cheese, so I don't recommend it. Badger MODELflex seems to be the most forgiving with iso-alcohol, but the other thinner formulas in this chapter work great with MODELflex so why risk it?



Do NOT thin the acrylic paints in this booklet with blue Windex (contains ammonia) or isopropyl (rubbing) alcohol. Both of these contain chemicals known to attack the acrylic resin in these paints.

### Using the vendor's own thinner in a formula

One way to get less expensive thinner but still play it safe is to use a thinner formula based on the vendor's own thinner. As to cost, a quart of Model Master's universal thinner straight (comes in 4 oz bottles) will be over \$100, and a quart of Vallejo's thinner straight will cost about \$75. A quart of my formula thinner costs about \$30.



4-1. Testors labels their general purpose Model Master acrylic thinner for their Aztek airbrush line.

Testors (Aztek Universal Acrylic Thinner-4oz/118ml) and Vallejo (Airbrush thinner 6.8oz/200ml) both sell thinners for their acrylic paints. Badger does not have MODELflex thinner per se, so I recommend one of the other thinner formulas for MODELflex paint.

As a side note, avoid using Tamiya's acrylic paint thinner with the paints in this booklet, since Tamiya's paint is based on isopropyl alcohol and not water.

Strictly speaking, this makes Tamiya's paint solvent-based and not water-based.

**PLAY-IT-SAFE THINNER FORMULA (makes 32oz/950 ml)**

- 50% distilled water (500 ml)
- 25% vendor's airbrush thinner (200 ml)
- 25% acrylic flow enhancer (200 ml)
- 5% acrylic retarder (50 ml)

Total cost is about \$30 for one quart (950 ml) of thinner, or about 3.1 cents per milliliter. For flow enhancer, I like Vallejo's airbrush flow improver [4-3]. It's on Amazon here: [amzn.com/B00QD780G0](https://www.amazon.com/B00QD780G0). For retarder, I use Golden's retarder [4-4], [amzn.com/B0009HAB58](https://www.amazon.com/B0009HAB58).



4-2. Vallejo's airbrush thinner comes in 17ml, 60ml and 200ml sized bottles. The 200ml size (6.8oz) is the most economical.



4-3. When a formula calls for flow enhancer, I like to use Vallejo's airbrush flow improver in the 200ml/6.8oz size.



4-4. When a formula calls for retarder, I prefer Golden's acrylic paint retarder in the 8oz (237ml) bottle.

## Other thinner formulas using environmentally-safe chemicals

If you're willing to be a bit more daring, it's possible to make an extremely economical thinner that's also quite compatible with the acrylic paints covered in this booklet. First, however, a word about what I mean by "environmentally-safe".

None of the acrylic paints in this booklet have any hazardous chemicals in the paint or the thinner, according to the MSDS (Material Safety Data Sheet) on record for the paints. A couple of chemicals show up in the formulas for these paints and their thinners, so let me describe why they're reasonably safe, at least according to the FDA (US Food and Drug Administration).

**Propylene glycol:** Propylene glycol is an organic viscous colorless liquid with a low odor and faintly sweet taste. It is used in edible goods such as coffee-based drinks, liquid sweeteners, ice cream, whipped dairy products and soda. Pharmaceuticals or personal-care products often include propylene glycol among the ingredients.

Propylene glycol is a major component of the environmentally-friendly Armor All Auto Glass cleaner, for example – and we use it in these thinner formulas. Amazon sells it: [amzn.com/B00CAOBSVO](https://www.amazon.com/B00CAOBSVO).

**Butyl cellosolve:** Butyl cellosolve (2-Butoxyethanol) is an organic colorless liquid with a sweet, ether-like odor. As an inexpensive solvent of low toxicity, it is used in many home and industrial products. It is approved by the FDA as a food additive, defoamer, and stabilizer as well as for packaging, transporting, or holding food.

### HIGH-PERFORMANCE THINNER FORMULA (makes 32oz/950 ml)

- 55% distilled water (550 ml)
- 25% butyl cellosolve (200 ml)
- 25% Armor All Auto Glass Cleaner (200 ml)
- 5% acrylic retarder (50 ml)

Total cost is about \$18 for one quart (950 ml) of thinner, or about 1.8 cents per milliliter. I get butyl cellosolve from Amazon in 8oz (237ml) bottles for about \$15: [amzn.com/B017Q3PM0Q](https://www.amazon.com/B017Q3PM0Q). The butyl cellosolve helps the paint go on smooth and level well, and helps it adhere to plastic and metal. This thinner works very well as an airbrush thinner for the paints in this booklet. It's similar to [Createx High Performance reducer/thinner](#).

### SUPER-ECONOMICAL THINNER FORMULA (makes 32oz/950 ml)

- 80-proof (40% ABV) vodka (700 ml)
- 25% Armor All Auto Glass Cleaner (200 ml)
- 5% acrylic retarder (50 ml)

Total cost is about \$13 for one quart (950 ml) of thinner, or about 1.3 cents per milliliter. This thinner formula is the most economical – it's made from cheap vodka, chemically known as ethanol. As a thinner, this mixture is quite functional, but not quite as superb as the butyl cellosolve formula above. This formula is especially ideal as a thinner for brush painting. Do be aware this thinner formula is the most flammable of the three home-brew formulas given, making it more risky to use with an airbrush (but still much less risky than lacquer thinner).

So there you have it: three very functional, quite affordable thinner formulas for these acrylic paints. ■



5-1. If you thin the acrylic paints listed in this publication to the consistency of skim milk, they go on thin and smooth, not obscuring details. These paints also cover well and they self level, whether brushed on by hand or applied with an airbrush as shown here. In this chapter, I discuss a number of tips and techniques for working with model acrylics and getting great results.



# CHAPTER 5

## TECHNIQUES FOR WORKING WITH MODERN ACRYLICS

If you've been in the hobby for a while, then you probably started out using solvent-based paints for painting your models. But if you're like me, as the years have gone by and paint technology has improved, you've become interested in moving to a more environmentally-friendly water-soluble paint that allows ordinary soap-and-water cleanup.

Acrylics have come a long way in the last couple decades. With the proper techniques, I have found I can get an excellent paint finish on my models that rivals the best of the solvent-based paints. And as a superb side benefit, I don't have the health concerns with modern acrylic paints that I used to have when I used solvent-based paints.

On a side note, it was the dated solvent-based formulas and the related environmental issues that lead to Testors abandoning the old Floquil and PollyScale paint lines. Testors already had a more modern environmentally-friendly paint formula with their Model Master Acrylic paint line, so why re-invent the wheel? Testors did move over sixteen of the most popular colors from the Floquil / PollyScale line to the Model Master line. This, plus the color-mapping in this document, allows you to get virtually any of the remaining colors easily.

### My observations on the paint brands

The paint brands in this booklet: Testors Model Master, Vallejo's Model Air / Game Air (plus Micro-Mark's MicroLux based on the Vallejo formula)<sup>1</sup>, and Badger's MODELflex all come "airbrush ready" which means they're already reasonably thin paint straight out of the bottle.

However, Badger's MODELflex is the thinnest of the lot, with a consistency that's about like 1% milk: very watery. Model Master and Vallejo MA-GA, on the other hand, are closer to whole milk in consistency.

Because MODELflex is already so thin, you can brush paint it, but it may take more coats to cover completely. Model Master and Vallejo MA-GA are a slight bit thicker, so they cover with fewer coats. These last two brands can be airbrushed okay straight out of the bottle, but they do spray better if they're thinned a little more.

As for the airbrush thinning ratio with Model Master and Vallejo MA-GA, a good standard is about 20% custom thinner (see chapter 4) to paint. If the paint is already quite thin (depends on the color and shelf age), then try dropping down to 10% custom thinner. The pigment in these paints is quite intense, so you can thin them as much as 50% thinner and still get a decent coverage when you spray them.

MODELflex can generally be sprayed straight out of the bottle, although adding 10% custom thinner works well, too.

Since the custom thinner formulas (chapter 4) all contain retarder to slow drying a bit, thinning the paint a little for airbrushing also helps reduce the airbrush tip drying problem.

As for airbrush pressure, I start at 25 PSI. Sometimes I may go as high as 35 PSI if the paint's not spraying well. Thinner paint needs less pressure, so go down as low as 15 PSI for paints thinned up to 50%.

For specific detailed how-to's on airbrushing acrylics, see the links supplement for training materials.

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<sup>1</sup> To make it easier to reference the Vallejo Model Air / Game Air line along with Micro-Mark's fully compatible MicroLux paints – from here on, I'm going to refer to this interchangeable family of three paints as simply Vallejo MA-GA.

## Airbrush tricks

It's beyond the scope of this booklet to present detailed step-by-step how-tos on airbrush painting. That said, I do have a few tips that have really helped me as I've worked my way up the airbrush learning curve.

**Easing the tip-dry problem:** One of the mixed blessings of airbrushing acrylics is how fast they dry. The fast drying makes airbrushing a model quite satisfying compared to solvent paints, but the downside is acrylic paint spray backsplash can dry quickly on the tip guard, clogging the airbrush.

The home-brew thinner formulas in chapter 4 all include retarder in them, easing this problem somewhat, but retarder alone may not solve this completely.

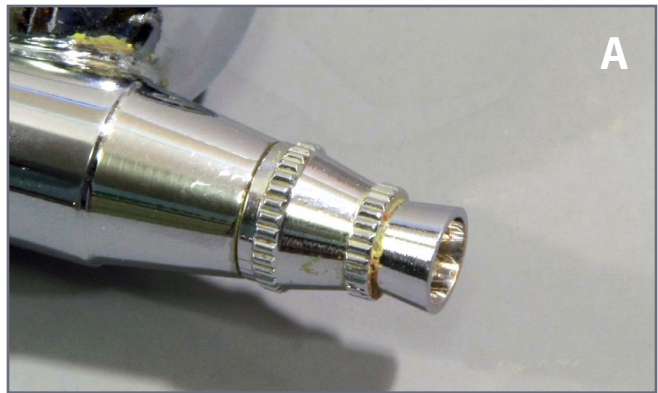
**TIP** Keep some airbrush-cleaner soaked Q-tips handy to deal with airbrush tip-dry when spraying acrylic paints. If you see paint buildup on the tip guard, press the cleaner-soaked Q-tip into the tip guard and spin it a few times to remove this buildup.

**TIP** Savvy airbrushers have found removing the tip guard and spraying without the guard housing can greatly reduce or even eliminate tip-dry [5-2] when spraying acrylics. Do check out your airbrush first, though, because some airbrushes don't work with the tip guard removed.

Some airbrushes make the tip guard an integral part of holding the tip assembly together – in that case, you can't remove the tip guard on those airbrushes during operation, unfortunately.

If you *can* remove the tip guard and have the tip-needle assembly remain intact, then you just need to exercise a little care while using the airbrush without the guard. As long as you don't bang the tip on anything, you should be fine.

If you do see paint building on the tip, stop the air, gently pinch your thumb and index finger together on the tip and pull forward quickly to remove any buildup. **DO NOT** put your fingers on the tip and pull backward toward the airbrush – the tip-needle assembly is *very sharp* [5-2B] and you will likely give yourself a nasty puncture wound!



5-2. One trick for reducing the tip-dry problem when spraying acrylic paint is to see if your airbrush construction allows removing the tip guard [A] as shown here. If your airbrush design keeps the tip and needle intact without the tip guard [B], then you get less tip-dry issues this way. Just make sure you don't bang the tip on anything or give yourself a nasty puncture wound with this super-sharp exposed tip.



5-3. Iwata's SuperLube makes a great investment for improving your airbrush working parts and helping minimize paint clogs inside the airbrush. SuperLube is a Teflon-based product, so applying a dab to your airbrush needle helps lube it and discourage paint from sticking to the needle.



5-4. As added insurance against getting moisture in your airflow, you can attach one of these small in-line moisture traps on the bottom of your airbrush and attach your air hose to it. This moisture trap can also add a nice “extra handle” making it easier to hang on to your airbrush.



5-5. Badger makes this handy little paint tube filter screen for siphon feed airbrushes. For about \$5, there's little reason to not have some of these in your airbrush tool arsenal.

**Lubing your airbrush:** Iwata's SuperLube works very well to lubricate the needle and inner workings of your airbrush [5-3]. SuperLube is Teflon-based, so it helps keep paint from sticking to your airbrush parts.

To apply the lube to your airbrush needle, remove the needle and put a bead of SuperLube on the first third of your needle and then re-insert it into your airbrush. When you slide the needle back into your airbrush, that will distribute the lube along the length of the needle tunnel inside your airbrush. You can also apply a little SuperLube the moving parts of your airbrush trigger to help keep it limbered up.



Using Iwata's SuperLube (Teflon-based) can help keep paint from sticking to your airbrush needle and also make sure your airbrush parts work smoothly.

**Ensuring zero moisture in the airflow:** If you get any moisture in the airflow of your airbrush, that can cause unsightly paint splatters on your model. Sometimes, the moisture trap on your air compressor may not be enough to get all the moisture, so as extra insurance, you can add second moisture trap where the air hose attaches to the airbrush. As a side-benefit, an in-line moisture trap also makes a nice airbrush handle for holding your airbrush.

You can get one of these in-line water traps online for about \$20:

- Iwata in-line moisture trap (Amazon): [amzn.com/B000BQO8WY](https://amzn.com/B000BQO8WY)
- Iwata in-line moisture trap (Blick Art Supply): [dickblick.com/items/25062-1001](https://dickblick.com/items/25062-1001)
- Sparmax in-line moisture trap (Blick Art Supply): [dickblick.com/items/25987-1001](https://dickblick.com/items/25987-1001)



As an extra precaution to prevent airflow moisture from ruining your otherwise great paint job, try using an in-line moisture trap where the air hose attaches to your airbrush.

**Avoiding paint clogs (siphon feed):** If you're using a siphon feed airbrush, Badger has a neat feed tube screen filter you can use to avoid getting paint clogs in your siphon paint feed: [amzn.com/B00277GQCU](https://amzn.com/B00277GQCU).



If you use a siphon feed airbrush, putting Badger's mesh screen filter in the paint bottle on the feed tube can catch any paint-pigment blobs so they don't ruin your paint finish.

## Brush painting tricks

Even if you airbrush a lot, you'll still need to brush paint some details. When you get out the hand brush, here's some tricks I've picked up.



5-6. When brush painting, remove the paint from the bottle and put it on a paint palette like a scrap plastic bag [5-7]. Do not paint straight from the bottle; leaving the bottle open for long periods and/or using the bottle lip for wiping your brush is a poor practice (see text for details). I have alcohol wipes handy for cleaning the bottle lip each time I open it, so dried paint doesn't build up, flake off, and then fall back into the paint.

**Keeping the workspace tidy:** One handy way to keep your work area tidy when brush painting is to get yourself a large flip chart pad. Tear off a sheet and put it down on your work surface.

I like flip chart paper better than newspapers because it's easier to see tiny model parts on it or to spot any wet work surface paint blobs that might accidentally stain a part. I get flip chart paper from Amazon – the price is certainly right: 16 cents a sheet *with* shipping! Most office supply stores sell unlined flip chart paper for more like \$1 a sheet. Even with shipping, the Amazon source is very affordable.



Cover your workspace with a sheet of inexpensive 24" x 36" (61.0cm x 91.4cm) flip chart paper from Amazon for just 16 cents a sheet (with shipping): [amzn.com/B000J07MUM](https://www.amazon.com/B000J07MUM). This paper does have light blue rule lines on one side, but just flip it over to get no lines. Discard when done.

**Remove the paint from the bottle:** Avoid painting straight from the paint bottle. Always remove the paint from the bottle onto a working palette with a pipette, clean the bottle lip, then promptly screw the cap back on to a snug fit. Vallejo dropper bottles do this automatically!



Do not brush paint straight from bottle! Remove paint from the bottle onto a palette (old plastic bag) and work from there rather than painting from an open bottle and wiping the brush on the lip. A palette allows more control over how much paint you get on the brush, it avoids the paint in the open bottles from thickening prematurely, and it keeps dried paint off the bottle lip.

Keeping several paint bottles open for hours of painting allows precious solvent to evaporate, thickening the paint. We want our paint to last – it's not cheap!

Second, this avoids wiping excess paint out of the brush onto the jar lip. When you uncap a bottle of paint, always clean the jar lip so you don't get excess dried paint buildup. That dried paint buildup can become clumps that fall back into your paint bottle. Not good!

Also avoid getting paint on the cap threads – brushing excess paint from a brush onto the paint jar lip almost always gets dried paint on the jar threads, then onto the bottle cap, and ultimately back into the paint left in bottle.

I keep alcohol-soaked wipes on my workbench and use them to clean the lip of any paint jar I open [5-6]. The wipes I use I get from Amazon: [amzn.com/B004SPJP2C](https://www.amazon.com/B004SPJP2C).

When I get a new unused tub of wipes, I open it up and pour more 70% isopropyl alcohol in until the tub is about 3/4 full. That makes sure any wipe I pull out is *really well soaked* and stays damp a *lot* longer.

I also use these wipes to clean dried paint off the tip of the Vallejo-type dropper bottles.

**Three cups of thinner:** I have a specific brush cleaning method I like to use that makes it especially easy to change colors quickly while brush painting and avoid getting any color contamination.

Because I'm working with paint on a palette, I will never contaminate the paint in the bottle, regardless.



5-7. For brush painting I set up three cups of thinner. Use the left-most cup for the initial brush wash (the dirty cup), then move the brush to the middle cup to remove the rest of the paint (the cloudy cup). Lastly, move the brush to the right-most cup and give it a final quick rinse. Also notice I'm using a discarded plastic shopping bag as a paint mixing palette. The price is right on these bags!

For brush cleaning, I prefer to use Armor All Auto Glass cleaner straight. Armor All's Auto Glass cleaner works great this way and it's only a few dollars a quart.

**TIP** When brush painting I prefer to use three small plastic Dixie cups about half full of Armor All Auto Glass cleaner. Use the first cup for the initial brush wash (the dirty cup), move the brush to the second cup to remove the rest of the paint (the cloudy cup). Lastly, move the brush to the third cup (clean cup) and give it a final quick rinse.

When cleaning a paint-filled brush, I first stroke the brush on a paper towel, then dip the brush into the dirty thinner cup and swish it around, brushing it against the sides of the cup.

I next stroke the brush on a paper towel again, and then dip it into the cloudy thinner, swishing it around some more. I stroke the brush a couple more times on a paper towel and dip it into the clean thinner cup and give it a few quick stirs.

Lastly, I put the brush back into the working brush tray (more about that shortly).

Once the dirty thinner gets too dirty, then I clean out that cup, add clean Armor All Auto Glass cleaner into the cup, and put it on the right as the new clean thinner cup.

I move the cloudy thinner cup to the far left and make it the new dirty thinner, and I move the clean thinner cup into the middle to become the new cloudy thinner cup.

**Don't overload the brush:** If you want your brushes to last longer, avoid getting paint into the metal brush ferrule. Paint up into the ferrule can be difficult to remove completely and can dry, ruining the brush.

Always pre-wet a brush with thinner – I like to do this by storing my brushes in a working tray with thinner. I discuss this more in the next tip.

**TIP** Never load a totally dry brush with paint. Dampen the brush with thinner and wipe the excess on a paper towel. Now dip that damp brush into the paint on your palette. Load only the lower half of the brush with paint [5-8].



5-8. To properly load a brush with paint, take a clean damp brush (never load a totally dry brush with paint) from the working tray [5-9] and load only the bottom half of the brush with paint from the palette as shown here. This keeps paint away from the metal ferrule, later drying, and then ruining the brush. By keeping most paint out of the brush ferrule, it's also easier to clean the brush when changing colors.



5-9. I like to use what I call my "working brush tray" as shown here. I get an old frozen meal microwave tray and then flood the bottom with some Armor All Auto Glass cleaner. I place my working brushes in this wet tray to keep any paint residue in them from drying out while I'm working. Once I'm finished with a session, then I give these wet brushes all a good final cleaning, making sure to remove all traces of paint.

**The working brush tray:** Rather than let any of my working brushes dry out during a session, I like to use what I call my “working brush tray” to keep them wet before and after use [5-9].



Get an old frozen dish microwave tray and flood the bottom with some Armor All Auto Glass cleaner. Lay your working brushes in this tray with the bristles end in the Armor All. This keeps any paint residue in the working brush from drying out and keeps the tip pre-wetted before each use.

I prefer to use a tray and not a jar or larger cup for this. Laying the brushes in a tray does not deform the bristles like standing them upright into a jar or cup will do.

When I remove a brush from the tray for use, I give it a couple swipes on a paper towel to remove the excess thinner and just leave the bristles damp. As described in the tip on how to properly load your brush, having a damp brush is best. With the working tray setup like this, having a damp brush becomes automatic.

Once I'm done with a session, then I give the brushes a thorough cleaning at the sink (see next tip). Since the brushes never had a chance to dry out, the final thorough cleaning becomes easier.

**End of session brush cleaning:** Once I'm finally done with a brush painting session, I take all the brushes from the working tray and give them a thorough cleaning at the sink. You will be surprised at how much paint shows up in this final cleaning, even from a supposedly clean brush!



Do the end-of-session brush cleaning at the sink with a cake of ordinary soap. Put the soap under running warm water and wipe the brush back and forth on the soap cake to build up a lather. Remove the soap from under the water and continue to work the brush back and forth in the soap lather until there is no more staining of the lather from any paint residue in the brush. Rinse the soap cake off and rinse out the brush in the running water.

Once I'm all done, I shape the damp bristles with my fingers and put the brush away to dry. This makes sure the bristles always go back to their ideal shape after each session.

**Fixing paint that's too thin:** If you ever find the paint's just a bit too watery, you have a couple options to give it more body again. The first option is to simply open the paint bottle and leave the cap off overnight. In the morning, check to see if the paint's thickened enough. Repeat as many times as necessary to get the paint to thicken up again.

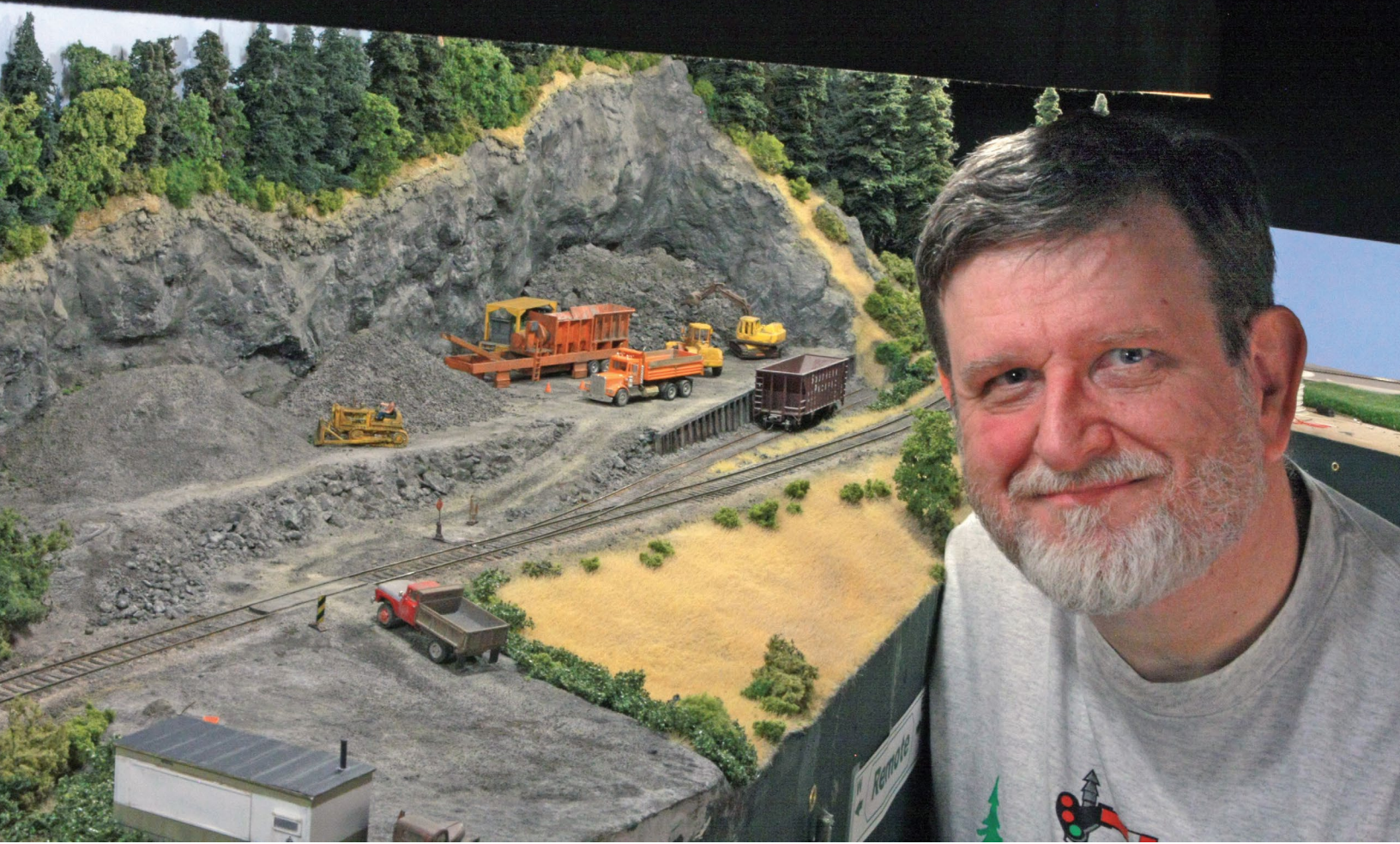
A second quicker way to add body to extra thin paint is to mix some acrylic matte varnish into the paint. Acrylic matte varnish (Amazon: [amzn.com/B000KNPLTM](https://www.amazon.com/B000KNPLTM)) is a thick creamy liquid. Using a bit of matte varnish in the paint on your palette is a quick way to add body back into paint that's otherwise a little too thin for good brush painting. This technique works especially well with MODELflex, which tends to be on the thin side for brush painting.

**Making a good acrylic wash:** To make a good acrylic paint wash, I like to use my high performance thinner formula and mix in one drop of paint per milliliter. If I want an especially dark wash, I will do two or even three drops per milliliter. I like to mix up my washes in clean plastic dropper bottles for easy access later.

## Still more tips

You can find even more painting tips and tricks at the links in the front of this booklet.

I hope you enjoy painting your models with modern acrylics. I especially appreciate the low odor and the soap-and-water cleanup of these paints. At this point, I never want to go back to using solvent-based paints. ■



This scene from my HO Siskiyou Line layout uses many of the paints covered in this book. Not only have all the model details been brush painted and weathered with acrylics, but I also airbrushed the static grass with acrylics to get the exact shade I wanted. In addition, I brush painted the blasted rock face with an acrylic base coat and several layers of acrylic wash. I even brush painted all the gravel piles with acrylics (so they matched the rock face color) and finished up by dusting them with gray PanPastels to give the piles a loose dusty look. And of course, I brush painted the added details and new metal wheelsets on the hopper car with these acrylic paints.



# SUMMATION

## PUTTING IT ALL TOGETHER

By this point I'm hoping you can see how wonderful it is to be working with these new modern acrylics for painting our miniature models. The soap and water cleanup makes finishing a session with these paints into a quick, hassle-free task.

These paints not only airbrush great, but they brush paint nicely as well (especially if you follow the brush painting chapter tips). Because the pigments in these model paints is so concentrated, you can thin these paints a lot and still get great coverage. This, along with the paint life-prolonging tips in this book, gives you more mileage out of a bottle of model paint. Then there's the inexpensive home brew thinner formulas, allowing you to mix up a quart of thinner for a mere fraction of what it costs to use the vendors' thinner straight.

I am especially pleased with the find that Armor All Auto Glass cleaner is chemically quite compatible with these model acrylics. Because this cleaner is designed to not harm the acrylic film used on tinted auto glass, Armor All Auto Glass cleaner is 100% compatible with the acrylic resin in these paints.

I can get this Armor All at my local Walmart in 32oz bottles for \$2.49, making it a highly affordable general purpose thinner for these paints that's much better than straight water. Tap water and distilled water has the typical water surface-tension behavior, making it not as "penetrating" as a solvent-based paint thinner. But the Armor All Auto Glass cleaner find has changed all that – it's inexpensive, has a very low odor, penetrates more like a solvent thinner, and it's environmentally friendly.

And of course, the high performance thinner formula makes using these water-based acrylic paints even more like using solvent-based paints. At \$18 per quart, this thinner isn't much more expensive than solvent paint thinners.

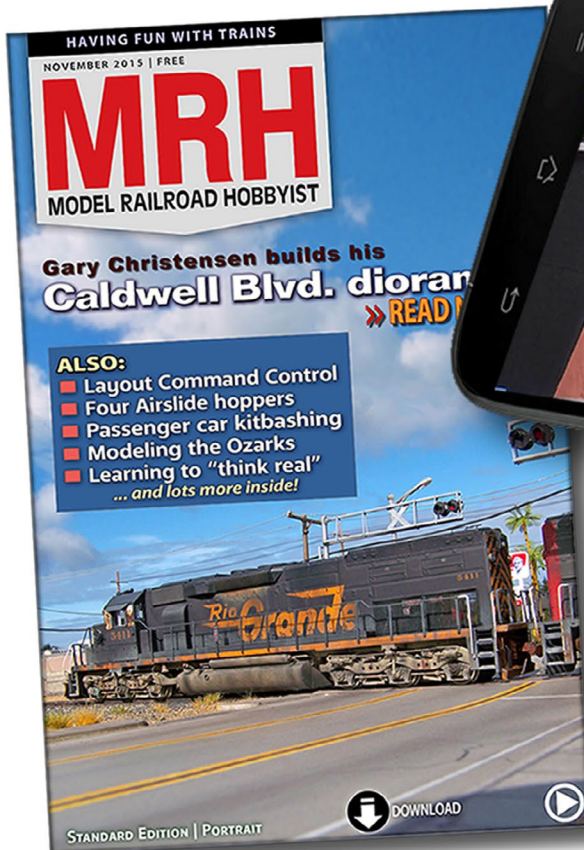
Because model paints are not an insignificant part of our modeling budget, getting each bottle of paint to go farther allows more of our modeling budget to go for the models themselves! It's also a lot more satisfying to find six or twelve months later that bottle of paint still flows like new and hasn't turned into a rubbery mass.

Make sure you check out the extras links at the front of this booklet. We've put things that didn't fit into the booklet there (the joys of also publishing in hardcopy form) and we also may add some videos there – either ones we've produced, or ones we've found done by someone else that we feel is worth your time to watch. Plus every so often, we may add a new tip or trick to this section.

I think with some practice and by adopting the tricks and tips we're putting into your hands, you can get great results with any of these paints – and like me, you won't miss those stinky solvent paints much at all. ■

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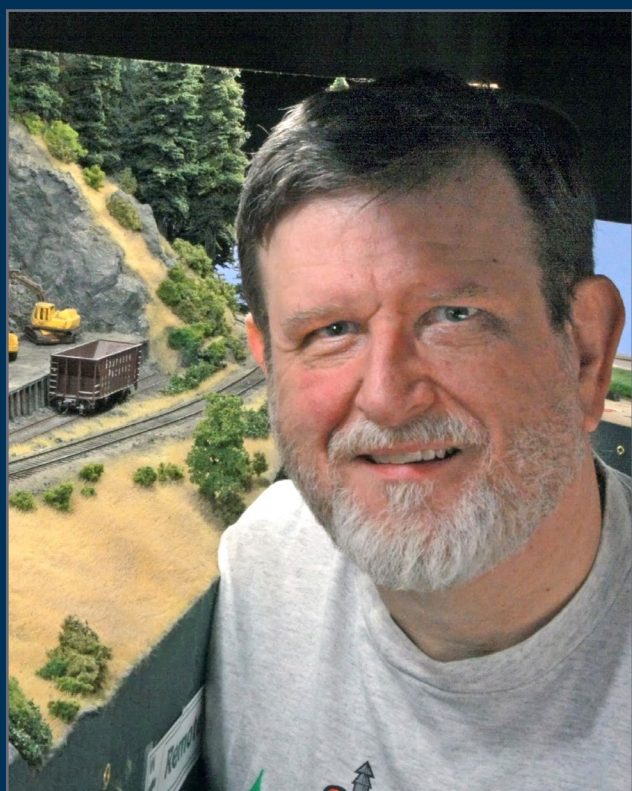
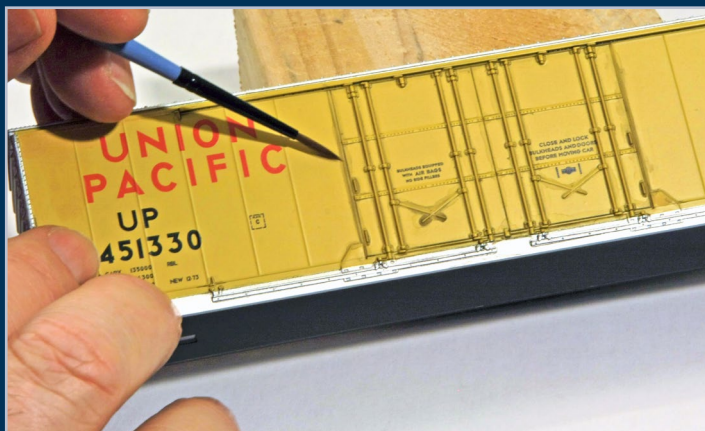
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**“MRH is my ‘go to’ hobby magazine, and TrainMasters TV is first when it comes to video how to.” –Dean K.**

Floquil and the related acrylic PollyScale paint lines were for many modelers the go-to paints for model railroading. Unfortunately, Testors discontinued these paints in 2013.

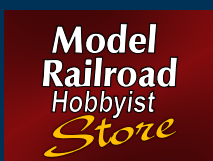
The hobby has good post-Floquil/PollyScale alternatives and this book maps those replacement paints back to familiar Floquil/PollyScale color equivalents. As an added bonus, this book includes several chapters loaded with tips and tricks to help you make an easy transition in a post-Floquil world to painting with state-of-the-art water-based acrylics.



## ABOUT THE AUTHOR

Joe Fugate has been an avid model railroader since getting his first train set at age 8. Joe has written about his hobby since the 1990s and started his own model railroad publishing business in 2004.

Since 2009 Joe has been the Publisher of *Model Railroad Hobbyist magazine* and often shares his extensive hobby expertise through magazine articles in MRH magazine, as well as in books and videos. It was Joe's need to wean himself off the defunct Floquil / PollyScale paints that lead to this book.



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