

# Coloring Flexible Full Width Diaphragms Rev 4

## By D. Clow

### INTRO

For over a decade I have read about and discussed with modelers on how to color Coach Yard HO flexible full width diaphragms. I'm not sure what that curtain material is made of, but nothing seems to stick to it except CA glue and ink. The ink does not cover. It changes the color of the diaphragm. Fred Hill of CY as correctly pointed out that applying red ink on their yellow FWD produces orange. It's virtually impossible to get the UP colors with ink. Oil based paints dry hard, crack and flake off. Acrylics don't stick. Oils and acrylics look OK, and are fine for a model that just sits there, but not flexible.

In my quest for a thin flexible covering where I can mix and match any color that will cover any color, and that will stand up under normal model train operations, I have found a specialized paint made for semi porous (dull) latex. On latex this paint is virtually permanent. There are 13 colors available, and they can be mixed to get any color. With some prep it will adhere to the CY material satisfactorily for normal operations, but will peel off if rubbed or scraped hard enough.

John Fiscella has an excellent method and how-to-do for scratch building FWDs using latex. I want to thank him for his input on latex materials, how to cut the thin latex into strips and glue them on the plates.

### PRODUCTS

- (1) [Monster Makers Latex Mask Paint - Single Colors](#) Monster Makers latex mask paint. Superior covering and adhesion on latex.
- (2) Zap canopy glue formula 560 for attaching FWD to car.

### COLOR

Whatever MM colors are used, white will be needed to lighten. Any of the colors dry from ½ to a full shade darker than the liquid, except the white and black. As an example, I mixed 7 ml of the MM gray and 2 ml of the MM white to get a harbor mist gray close to my cars.

### MIXTURE

Generally the MM paint is too thin and watery right out of the bottle – some worse than others - to brush on. The following describes the Monster Makers paints that I have worked with.

*WHITE:* The thickest right out of the bottle. A small amount cures fast while using it. Brushes require often and frequent cleaning to remove buildup of dried paint. When fully cured, white leaves the thickest film. The white thickens the other colors. I use the white only for lightening my harbor mist gray and Armour yellow mixes.

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**GRAY:** The gray is a mix of colors that separate out in the bottle when sitting for too long. A ring of white forms on the bottom of the bottle. The bottle needs to be well shaken/stirred before each use. The gray is way too thin to brush on out of the bottle. I thicken it by letting 5-10ml set out in the open, in a glass jar without a lid. Adding a drop or 2 of good grade water based acrylic artist paint in 6ml helps a little, and seems to help stabilize the mix.

**RED:** Red is OK right out of the bottle for thin layers, but needs to thicken up a little before applying to latex FWDs. It doesn't show much separation, but the bottle should be shaken/stirred before each use.

**GREEN:** Green is much like the red.

**YELLOW:** The yellow is too thin to brush on out of the bottle, and way too light for Armour yellow when cured. I need some MM brown and/or gray to darken. I don't use the black, because it turns the mix too green (black is real dark blue). A drop or 2 of acrylic burnt umber in 6ml helps to darken a little and stabilize the mix. Tone it with MM red or green, a little more white to lighten, maybe some yellow, and so on to get the Armour yellow I want.

**GREEN, BROWN, BLACK:** pretty much like the red.

How long each paint takes to fully cure depends on how thick/deep the paint is and what color. Thin edges shortly turn dark first, and the thickest portion takes longer. No matter what the mixture, the paint should be set out to partially cure and thicken before applying to FWDs, which will require experimentation to get a mix that can be painted on a 3D object with a brush.

### APPLICATION

I work with 6ml of the MM paint in a 20ml Tamiya glass jar. I use a #000 spotting brushes, and paint the diaphragms after they are installed on the car. It can take 2 thickened coats per color to uniformly cover a diaphragm, but up to 5 coats for an FWD that will hold its shape. Gentle as she goes. One ml of the paint will be more than enough for 1 color on 2 diaphragms at a time. MM warns not to thin their paint out with too much water, although I don't know why anyone would need it thinner than it is in the bottle. Best not to mix any water in the final thickened mix to be applied. Of course the surface being covered must be oil and dust/dirt free. I use isopropyl alcohol. The paint mix should be stirred regularly while using, and the brushes kept clean and free of dried debris. If dried paint builds up in the brush hairs, tiny pimples will start showing up in the layer.

After every time a fresh coat/layer is applied it needs to cure for up to 2 months (depending on temperature, humidity and the mix of colors) before applying another layer, and until the layer is not shiny or sticky to the touch anymore. My harbor mist grays seem to take longer than the Armour yellows. The fresh paint will be shiny, but will turn more dull and lighter in shade as time goes by. It can take 6 – 8 months to get a ready to run FWD, but only 8 – 10 hours of actual work. The rest of the time is spent waiting.

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### CONCLUSION

As in modeling, experimentation will be required. I have rubbed my painted latex as hard as I can with my fingers. I have scraped and picked at this monster stuff with a scribe. I have ripped the latex trying. I painted my wife's latex exercise bands that she worked out daily for 3 months until the exercise band broke. Adhesion is not a problem. I find the mask making technology and art amazing. The true test for RR modeling will be the test of time, but this looks promising to me. I love what the MM harbor mist gray and Armour yellow FWDs did to streamlining my coupled COSF models. There have been "Wow" moments.

### REFERENCES

New Concepts for Improvement of Passenger Train Modeling by John M. Fiscella, PSR–NMRA Regional Convention 2002

The Monster Makers: <https://www.monstermakers.com>

Kit bashing a Coach Yard HO full width diaphragm: [https://youtu.be/oNF8H5xz\\_GM](https://youtu.be/oNF8H5xz_GM)

### REVISIONS

8/16/20: Revised second paragraph of the MIXTURE section to update thickening of the Monster Makers paint.

8/21/20: Revised/updated MIXTURE, APPLICATION, the last sentence of TESTING, and the FUTURE section.

6/11/2025: Rewrote with latest experiences and findings.