

Subject: Plaster for Model Railroad Scenery

Background: Plaster is commonly used for model railroad scenery, both over wire screen or cardboard forms or as a top coat for foam. The plasters that we use are usually gypsum, calcium sulfate, based. They come as a dry powder and form a crystal structure with water when they are mixed. Note that they don't dry, they react with the water, so increasing the amount of water will have little effect on the setting time, but will make the final result weaker. Fresh plaster works best. Any that has been around for a while, especially after the bag has been opened, can be very unpredictable in its behavior. Usually it will set very quickly, but I have seen a ceramic tile installation with old grout where the grout didn't set at all. If you start a second batch in a container with residue from the preceding batch, that residue will accelerate the setting of the new batch.

Plaster of Paris: This is common and readily available. The problem is that it sets so quickly that it is difficult to do any shaping of it. Quoted setting times are 15 to 20 minutes, but it is essentially unworkable much sooner than that. The only place I use it now is for rock castings.

Ultracal 30: Hydrocal products have long been recommended for model railroad scenery. Ultracal 30 is similar, except that it sets to a grey color, is somewhat slower setting than the white hydrocals, may be stronger, and is available locally. It is much stronger than the usual plaster products, with 2 to 3 times the compressive strength claimed. 30 minutes is the claimed setting time. Again practical working time is less, but mixed with cold water there is time to do a modest amount of shaping. The grey color doesn't appear to be an issue, although it might be if an area is to be stained rather than painted.

Ultracal 30 is stocked at Highwater Clays, 600 Riverside Drive, Asheville; about \$26 for a 50# bag. US Gypsum catalogs an Ultracal 60 (60 minutes setting time) which might be worth trying, but I am not aware of any nearby source.

Setting type Joint Compound: Joint compounds that we are accustomed to (the kind that come premixed in 5 gal. buckets) are water soluble, and tend to crack unless applied in thin layers. I had been searching for a plaster with a longer setting time, and stumbled onto "setting type joint compounds". They appear to be mostly plaster of paris, modified to give a longer setting time. They are available in nominal 20, 45, and 90 minutes setting times.

Lightweight setting type joint compounds are available for about \$10 for 18# at Lowes and Home Depot. Ace Hardware has 25# for about \$13, but it is not listed as lightweight, so it's hard to tell which is a better value.

Remember, searching for a slow setting plaster may not find anything, but searching for "setting type joint compound" will.

My scenery starts with 1" mesh chicken wire, and then a layer of paper towels soaked in 50/50 Elmer's white glue and water. (Bounty brand towels work well. Some of the

Walmart cheapies become a useless mush as soon as they get wet. Use a drop cloth; some of the water/glue mix will end up on the floor.) I apply a layer of Ultracal 30, mixed with cold water, over this. My batch size is an 8 oz. Cool whip container, about 2/3rds full. I try to work quickly and shape the surface as best I can before the Ultracal starts to set. Sometimes this is good enough. When it isn't, I apply a second layer of a 90 minute setting joint compound, which gives me plenty of time to shape, carve, etc. This joint compound should also make a good overcoat for foam scenery.

There may be easier ways, and your mileage may vary, but this works for me.

If you color the plaster, you won't get white spots if the surface is chipped later. I have tried this by mixing plaster with cheap brown paint, adding water based (acrylic) artists' colors, and adding a pigment sold to color concrete. They all work, but for me, it isn't worth the trouble. Especially with the concrete pigment, which is a very fine powder, any spillage makes a mess that is very hard to clean up.

Except for rock castings, I paint the plaster with a good grade of brown flat acrylic latex paint before adding any ground foam. Most paint stores have a free color matching service, and my brown was matched to Polyscale earth painted on an index card.

I hope some of this is useful. As I said, your mileage may vary.