

Casting with Polyester Resin

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Polyester resin is sold under several different names: Easy Cast, by Cast 'N Craft, Silmar 41, by U.S. Composites, EP4101 by Eager Polymers. To determine whether resin is Polyester, a other than reading the fine print on the label of the can of material at the local Hobby Lobby, or Michael's or finding the MSDS (Material Safety Data Sheet), is to see if the material is catalyzed with MEKp (Methyl Ethyl Ketone Peroxide).

The Polyester Resin that is best to use is the resin for thick casting. It is a laminating resin and the surface will remain tacky, unless post cured. The surface remains tacky so that more layers can be added and they will adhere to each other without scuffing up the surface.

Why use Polyester Resin? It has been around for so long that most people are familiar with the process in some way or another. It is the same material used to fiberglass boats, to repair car fenders & used to make surfboards. It is relatively easy to work with. It is inexpensive, around \$40 with S&H for 1 gallon of material with catalyst.

There is a shelf life on Polyester Resin. From the moment it is manufactured it is beginning to cure. Under normal conditions it will self-accelerate (cure) in approximately 6 months. If it is in a warm environment it could cure in less time, stored in a cold environment it could last more than a year. The optimal time to use your Polyester Resin is within 6 months of its manufacture. Polyester Resin is cured rapidly by the addition of MEKp catalyst. The use of 3-5 drops of MEKp per ounce of resin will result a longer cure time but more durable product.

What does one need to work with Polyester Resin? Other than the usual safety gear:

eye protection

gloves

wax or silicon paper to cover the work table, silicon paper is best.

Apron to cover your clothes in case of spillage

Denatured Alcohol or Acetone, for clean up

Paper towels

Dyes & pigments

Measuring tools, scoops, syringes, pipettes

Mixing cups

Mixing sticks

Molds

Respirator Mask with charcoal/chemical filters or fume ventilation/extraction system

Hand drill (optional)

Pressure Pot and Compressor (optional)

What does one cast in? You can use Tupper wear containers. You can order mold trays. You can order pen blank molds. You can use PVC pipe from the local hardware store, to make your own molds, pipe end plugs are available from

<http://www.turncrafts.com/thumbnuts.html>. Or you can use tape or clean clay to plug

the bottom. If you are using food containers to cast in make sure that they are made of Polyethylene Terephthalate (PETE), High Density Polyethylene (HDPE), or Polypropylene (PP) plastics, recycling codes 1, 2, and 5. There are several people who are making molds and advertise on the International Association of Penturners (IAP) website <http://www.penturners.org/forum/portal.asp>. Amber pill bottles that are made of Polypropylene can be used for half-blanks and bottle stopper molds. Or you can make your own molds from wood, poly cutting boards from the store, or make them in latex or silicone RTV rubber. If you use wood to make your mold you will need to use a mold release.

Where does one get Polyester Resin and supplies?

The local Hobby Lobby and Michael's carry the Cast'n Craft, Easy Cast Clear Casting Resin. They carry it in pint and quart cans. One down-side of buying it from them is that you don't know how long it has been sitting on the shelf. Another is the cost.

U.S. Composites sells Silmar 41 Thick casting Polyester Resin, and liquid/paste dyes. They are mail order, but they deliver fast and are the least expensive for the best quality resin. They have good technical support.

<http://www.uscomposites.com/polyesters.html>

Eager Polymers carries EP4101 thick casting Polyester Resin, and a line of liquid dyes. They are more expensive and have a greater S&H costs. They have good technical support.

<http://www.eagerpolymers.com/>

Liquid Latex Mold Builder is available from Hobby Lobby, Michael's, or A.C. Moore.

RTV Silicone is available from Reynolds Advanced Materials. The regional tech help is very good.

<http://www.reynoldsam.com/>

Jacquard Pearl-Ex Powdered Pigments are available direct or locally from Hobby Lobby (8 colors), A.C. Moore (12 colors) or the full Pearl-Ex line is available from Reddi Arts in Jacksonville, or Crafts'n More in Jacksonville Beach.

<http://www.jacquardproducts.com/pearlex.php>

Powdered pigments are also available from Coastal Scents. They have a larger lineup of colors than Jacquard, and are cheaper if you buy in larger bulk quantities. The downside is that they are mail-order.

http://www.coastalscents.com/cfwebstore/index.cfm?fuseaction=category.display&category_ID=11

Cast'n Craft Liquid Pigments are also available at Hobby Lobby.

Surf Source carries a nice line of opaque and transparent liquid pigments.

<http://surfsource.net/Manufacturing/Resin%20Accessories/resinandaccessories.htm>

Color Formulation and casting

Our project is going to be to cast a 3 metric oz bottle stopper and a 4 metric oz - 2 cavity mold. We will be using 7 moz of resin. You will need 4 cups. Marked at 5 moz, 3 moz, 2 moz, 1 moz.

1 metric ounce is 30 milliliters.

Dispense 5 moz of resin into one cup and 2 moz of resin into another cup. Hold the cups marked at 3 and 1 in reserve.

Our pigment additions will total approximately 5% or less of the volume of the resin in the 5 moz and the 2 moz cups.

- The 5 moz cup contains 150 ml of resin, so we can add up to 7.5 ml of additives.
- The 2 moz cup contains 60 ml of resin, so we can add up to 3 ml of additives.

Add MEKp to both cups of resin at the rate of 4 drops per moz and mix thoroughly. The count would be 8 drops for the 2 moz cup and 20 drops for the 5 moz cup.

In the 2 moz cup add .2 ml of yellow liquid dye and mix thoroughly.

The resin will resemble lemon meringue in color.

Add Pearl Ex Pigments and mix thoroughly:

- 1 ml Aztec Gold
- .25 ml Sparkling Gold
- .25 ml Brilliant Gold
- .25 ml Interference Gold
- .25 ml Blue Russet

Total pigment additions 2.2 ml

Decant 1 moz of the gold mixture into the marked cup held aside.

In the 5 moz cup add .2 ml orange, and .3 ml blue liquid dye and mix thoroughly.

The resin will resemble prune juice in color.

Add Pearl Ex Pigments and mix thoroughly:

- 5 ml Reflex Violet
- .5 ml Interference Violet
- .5 ml Micropearl

Total pigment additions 6.5 ml

Decant 3 moz of the purple mixture into the marked cup held aside.

Continue to mix and wait for resin to get close to gel this will take approx 50 minutes.

Pour into molds and set aside or put under pressure for 24 hrs.

Post cure for 1 hour at 125 degrees Fahrenheit.