

Our Multipage Plastics Report

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"RESIFOAM" POLYURETHANE PLASTIC FOAM

An insulation, flotation and core material

THE FORMULA:

Polylite 8601	50.	50.	50.	50.
Catalyst R1	1.3	0.65	0.65	0.65
Water	3.7	0.4	0.1	0.0
Polylite 8621	100.	50.	48.5	47.

(Polylite 8601 is a Polyester Resin) (Polylite 8621 is a Polyisocyanate)

PROCEDURE:

In order to prepare a foam of given density, thoroughly mix Polylite 8601 with the necessary amount of Catalyst R1 and water. This mixture is stable - when foam is required - add the necessary amount of Polylite 8621. Mix thoroughly for twenty-five to thirty seconds and then pour - do this right after mixing foam as per instructions above. The foam will fully expand within three to five minutes and sets within five to seven minutes into a rigid unicellular structure. Available mixing time can be extended by moderately chilling the catalyzed resin and the polyisocyanate.

It will attain nearly maximum physical properties upon standing a few hours at room temperature and ultimate strengths in about one week. A surface brittleness may be evident with some formulations after initial set. This brittleness disappears upon further curing, leaving a tough, non-friable foam. Curing can be accelerated with moderate heat up to 100 degrees F., after the foam has set, if desired.

SUPPLY SOURCES:

POLYLITE 8601 and POLYLITE 8621 from: Reichold Chemicals, Inc., 525 N. Broadway, White Plains, NY 10602.

CATALYST R1 also from Reichold Chemicals - address above.

"CRAFT-PLAX" - A CLEAR FLEXIBLE PLASTIC

Vinyl Chloride Type

Suitable for molding in a letterpress

FORMULA:

Fliovic AO	25 ounces
Diocetyl Phthalate	12 ounces
Panaflex BN 2	4 ounces
Aluminum Stearate	1 ounce

PROCEDURE:

The aluminum stearate is mixed with hot dioctyl phthalate. After cooling to room temperature, add the Panaflex BN 2, and finally, the Pliovic AO. Small scale mixing can be done with a paddle, but commercial size batches will require the use of a planetary dough type mixer such as used by bakers.

PACKING:

One pint paint cans, paper label.

DIRECTIONS FOR USE:

Mold with the hands or press into molds with a letterpress. Heat to 350 degrees F. and hold this temperature until the plastic has cured. This will require from a few minutes to an hour or more, depending on the thickness of the object. Curing time can best be determined by trial. Molds may be of 50-50 solder.

COMMENT:

Plastics of this kind are known as plastigels, since they are in the form of easily manipulated, putty-like gels in their uncured states. No other form of plastic is better suited to the operation of the homemaker because no expensive dies or high pressure pressing equipment is needed to produce first class flexible objects.

Pliovic is a vinyl chloride.

SOURCES:

PLIOVIC 40 - Goodyear Tire and Rubber Co., Akron, OH

DIOCTYL PHTHALATE - Monsanto Chemical Co., 1700 S. 2nd St., St. Louis, MO

PANAFLEX DN-2 - Amoco Chemical Corp., 555 Fifty Ave., New York, NY

ALUMINUM STEARATE - Witco Chemical Co., 277 Park Ave., New York, NY 10017

PAINT CANS - Freund Can Co., 4439 S. Cottage Grove Ave., Chicago, IL 60615

LABELS - Frazer Label Co., 734 S. Federal St., Chicago, IL 60605

MIXERS - A. Daigger & Co., 189 W. Kinzie St., Chicago, IL 60610

IMITATION PAPIER MACHE

FORMULA NO. 1 - IMITATION PAPIER MACHE:

Wet Paper Pulp 10 ounces
Casein 5 ounces
Lime 2 ounces
Whiting 20 ounces

Use as little water as possible in mixing this formula. Make up small batches until you see if the composition is exactly what you desire. Hot compositions, of course, cannot be used in glue molds.

FORMULA NO. 2 - JAPANESE FORMULA - The Japanese are experts on paper goods. Here is a fine papier mache formula:

Paper Pulp 10 ounces
Whiting 8 ounces
Rice Flour 5 ounces

Cook to a heavy paste, or 5 ounces of rice may be cooked to a paste and mixed with the dry materials. A hard paper mache.

FORMULA NO. 3

Use Paper Pulp or Powdered Whiting 5 pounds
Liquid Glue 1 pound
Clear Varnish 4 ounces
Linseed Oil. 4 ounces

MIXING PROCESS:

Pour the glue into a tin can or pail with a tight fitting lid so it can be kept closed tightly when not in use. Then add the whiting or paper pulp, stirring in a little at a time and stirring to a smooth paste. Then add the varnish and linseed oil, mixed well. Keep the mixture covered well when not in use as it dries rapidly. This mixture will adhere firmly to wood, tin, glass, chinaware, etc. Papier Mache surfaces are greatly improved after drying if they are coated with shellac. Give two coats.

SYNTHETIC RESIN PLASTIC

Phenol and a solution of formaldehyde, in reacting proportions are put into a steam jacketed kettle and heat is gradually applied. Soon the materials will begin to react, and in doing so - liberate heat so intense the reaction may become that the steam, must, at times, be shut off and cold water circulated in the jacket to keep the process from going too far, or the materials from boiling out of the kettle. After a few hours of heating, the contents of the kettle will be found to have separated into layers, the heavy, melted resin in the bottle and the water on top. When the water is removed, the melted resin

is allowed to run from the kettle into shallow pans to cool. This is a process which requires some experimentation to get it just right, but it is an interesting experience, and lays the foundation for later work on a commercial basis. Different treatment will produce many different qualities of the product, so it is well to keep a good record of every operation. Put them all down in the laboratory record book, so that when a satisfactory product is obtained, it can be duplicated with accuracy.

"IMPAC" FIBERGLASS REINFORCED PLASTIC

MATERIAL REQUIRED:

Laminac 4134	24.45%
Laminac 4110	75.00%
Cobalt Napthenate (liquid)	0.24%
Methyl Ethyl Ketone Peroxide	0.3%
Talc	
No. 1894 EX-L-Wax	
Fiberglass mat	
Woven Fiberglass Cloth	
Color Pastes for Laminac Resins	
Cellophane	

PROCESS:

This method of forming reinforced plastic objects is known as "open mold fabrication". It is best suited to the home craftsman because it is the simplest method available and requires the lowest investment. Extreme wide variation in techniques are possible and the type of structures that can be made are almost limitless.

For molding a boat hull, a female mold is used. This mold is made to conform exactly to the exterior dimensions and finish desired in the completed molded boat hull. The mold may be made of wood, plaster, metal or plastic. The best practical and inexpensive molds are made of the same plastic from which the boat itself will be made.

The interior of the mold is first coated with the parting agent - No. 1894 EX-L-WAX. Apply the least amount that will provide easy removal of the hull from the mold.

Mix the Laminac 4134 and 4110 in the proportions specified in the above formula. Add the cobalt naphthenate accelerator and mix thoroughly before adding the methyl ethyl ketone peroxide catalyst. The catalyst will react violently with the pure accelerator so make certain these materials are incorporated separately. Add talc to the mixture to thicken it so that application to a vertical surface will not produce sags.

Apply a coat of the thickened resin to the inside surface of the mold. This is to ensure a smooth and durable surface. Lay up a single layer of fiberglass mat over the entire surface of the

mold. Using a paint roller, brush or spray, impregnate the layer of fiberglass with the rosin. Regardless of how the rosin is applied, the paint roller must also be used to assure against entrapped air.

Lay up another layer of mat and impregnate it in the same way as the first layer and repeat this sequence until the desired thickness is attained.

Finish with a layer of Fiberglass cloth and work vigorously with the roller to remove excess resin.

Finally, apply cellophane over the entire surface to produce a smooth finish. Allow to harden at room temperature, remove from the mold and place in an oven heated to at least 170 degrees F. and not over 200 degrees F. Bake until full hardness and strength of the plastic has been developed.

Any other structure, either large or small is molded in the same way. Whether to use a male or female mold depends on which surface of the finished piece should have the best finish. The surface in contact with the mold is always the most perfect and highly finished.

Colors may be added to suit by using color pastes made for the purpose. These are incorporated into the resin at the time the talc is added.

The initial curing time in the mold can be controlled by the operator by varying the amount accelerator and catalyst that is used. The length of the working life of the resin before gelation depends on the size of the piece being molded.

More complete instructions on this process may be found in "Fabricating with Laminac Resins". This is furnished free to manufacturers by the American Cyanamid Co., Plastics & Resins Division, 30 Rockefeller Plaza, New York, NY 10020. Write them on your business letterhead.

SUPPLY SOURCES:

LAMINAC 4134 and LAMINAC 4110 from American Cyanamid Co., Plastics & Resins Division, 30 Rockefeller Plaza, New York, NY 10020

COBALT NAPHTHENATE (liquid) from Carlisle Chemical Works, Inc., Reading, OH

METHYL ETHYL KETONE from Enjay Co., Inc., 15 W. 51st St., New York, NY 10019

TALC from Johns-Manville Co., Celite Division, 22 E. 40th St., New York, NY 10016

No. 1894 EX-L WAX from Mitchell Rand Manufacturing Co., 51 Murray St., New York, NY 10007

FIBERGLASS MAT from Bigelow Fiberglass Products, 140 Madison Ave., New York, NY 10016

WOVEN FIBERGLASS CLOTH from Hess Goldsmith & Co., 1450 Broadway, New York, NY

COLOR PASTES FOR LAMINAC RESINS from Plastic Molders Supply Co., 74 South Ave., Fanwood, NJ

CELLOPHANE from Olin Products Co., Inc. 270 Park Ave., New York, NY

PLASTIC FROGS AND WORMS FOR USE AS FISHING BAIT

FORMULA:

Geen 121	30 ounces
Geen 202	20 ounces
Good-rite GP-261	25 ounces
Hydrogenated Terphenyl	25 ounces
Tin Stabilizer	1 ounce

PROCEDURE:

As small quantity such as this may be mixed with an electric cake mixer or by hand. Commercial quantities should be mixed in larger, planetary mixers such as are used in bakeries.

This product is fluid and may be poured into suitable molds. Heating the molds to 350 degrees F. in an oven will fuse and harden the plastic. There is little shrinkage and the cast objects have life-like feeling. Molds may be of any material that will stand the curing temperature.

The names and addresses of 7600 or more retail sporting goods stores may be purchased from Chicago Advertising Agency, 28 E. Jackson, Chicago, IL. You should contact these to handle these plastic worms and frogs - which should be mounted on display cards for store sale.

SUPPLY SOURCES:

GEON 121 and GEON 202 from - B.F. Goodrich, Chemical Co., 3135 Euclid Ave., Cleveland, OH

GOOD-RITE GP-261 also from B.F. Goodrich Chemical Co., 3135 Euclid Ave., Cleveland, OH

HYDROGENATED TERPHENYL from Harshaw Chemical Co., 1945 E. 97th St., Cleveland, OH

TIN STABILIZER from Metal and Thermit Corp., Rahway, NJ

"CELLO" SPONGE RUBBER

FORMULA:

Geon 121 100 ounces
Paraplex G-25 50 ounces
Paraplex G-50 50 ounces
Dythos (Stabilizer) 3 ounces
BL-353 (Blowing Agent) 10 ounces

Sponge density 7 lbs./cu.ft. Expansion 1100%

PROCEDURE:

1. Heat the plastisol in the mold or on the desired substrate at 212 degrees F. until expansion is complete. When GL-353 is used, a pigmented plastisol will show a color change from yellow-green (the color of BL-353) to white when all the blowing agent is decomposed.

2. Fuse the plastisol at 350 degrees F.

NOTE: 10 to 20 parts of MICA (325 mesh) or wood flour may be used as a filler without appreciable effect on the cell structure or density. Above certain levels, additional blowing agent will cause the cell structure to collapse. The level for optimum density and cell structure for BL-353 is about 10 parts per 100 parts resin.

SUPPLY SOURCES:

GEON 121 from B.F. Goodrich Chemical Co., 3135 Euclid Ave.,
Cleveland, OH

PARAPLEX G-25 and PARAPLEX G-50 from Rehm & Haas Co.,
Washington Square, Philadelphia, PA

DYTHOS from National Lead Co., 111 Broadway, New York, NY 10006

BL-353 from E.I. DuPont deNemours & Co., Inc.,
Willmington, Delaware.