

POLYGNITE

Water Based Polymer System

Additional Information

Application

Preparation

Mixing of the components should be done at room temperatures (18 to 25 Deg C). Colder temperatures will slow working / cure time , while warmer temperatures will reduce working time. Do not freeze the liquid or latex portion "A"

Mould Preparation

When casing Polygnite into a rubber mould , rinse mould with soap and water (best to use dishwashing liquid) . After rinsing use Duropastic's DCR5 release agent in pure form if new mould or use 1:1 with warm water if used mould. This will help to minimise air bubbles , facilitate demould , reduce build up and prolong mould life.

Measuring and Mixing

Prior to starting ensure you have the following products

- Polygnite A and B
- Measuring containers
- Dust Mask
- Mixing vessel
- Mechanical Stirrer (use paint mixer on end of variable drill)
- Accurate scale , however volume may be used
- Fillers , powder pigments , etc

Use a dust mask before beginning. Use an accurate scale.

Component ratio below is an example of 1kg , however will depend on the size of your mix.

Place 330 gms of Polygnite liquid "A" into a 2 litre vessel.

Measure out 660gms of the Polygnite Powder "B" component into a 2 litre vessel. Add if necc any other fillers , pigments chopped glass fibers into dry mix . Stir together using mixer.

Now put liquid under stirrer and start stirrer. Add powder into the middle of the vortex of the liquid slowly, ensure that it remains creamy at all times (similar to applying flour to milk/water). Mix in all the powder until fully mixed. Make sure there are NO dry lumps. It is best to set the mixer speed to about 1000 to 1400 RPM.

You have about 25 minutes working time to apply mixture. As you can either cast with the mix or laminate with it , the alternatives are explained below

Casting/Pouring

1. Pour in a small amount of Polygnite into the mould and brush over the surface of the mould. This will assist in breaking the surface tension of the mould and reduce air bubbles.
2. After the face coat is applied, the remaining mixture can be poured in one corner allowing it to flow.
3. If spillage occurs clean with water before it sets. The polygnite turns to "stone" once cured.

A recommendation is to pour mix through a sieve, this will help to prevent lumps to show on the casting. Also one may vibrate or Pressure cast the casting to reduce air bubbles. DO NO VACUUM MIX - IT DOES NOT WORK

Hand Lay Up Technique

Polygnite may be used to make architectural elements - both interior and exterior, planters, panels film and stage sets, or anything else that one wants to create. With the addition of glass fibre in either Polygnite open scrim FGPLG, Woven Rovings or stitched fabrics or even chopped fibres will allow POLYGNITE to be layed up in thin, lightweight and strong products.

1. Mix up as per instructions above.
2. In order to make up a surface / skin coat a special additive Polygnite-Thix can be added to the mix, however add in very small proportions as it thickens very quickly. Make up enough to apply to about 1 - 2mm thickness. One can brush apply or even spray on surface coat.
3. Allow skin coat to cure. Mix up another batch, however this time do not add any fillers, thix additives etc

Methods

Method 1

4. Lay down a thick layer of Polygnite onto back of skin coat.
5. Place down **polmesh - POLYgnite open MESH** on top of layer. Apply another layer of Polygnite on top of surface of matting. Allow mixture to saturate in glassfibre. Use a special washer roller to wet out glass. Ensure no air voids are in the mixture.
6. Continue with the next layer until satisfied with sufficient strength use minimum of 10mm (about 4-5 layers of glass fibre).
7. Reinforcing ribs can be applied after the lay up has cured.

One can use Woven Rovings, Stitch Fabrics instead of above

Method 2

4. Instead of using polmesh for all layers one can use Chopped Fibreglass 6mm or 12mm (available from Duroplastics) as a core spacer material. Mix into A + B mix about 5 - 12%. Make up a slurry mix.
5. Using gloves or spatula spread mixture over the skin coat and initial layer/s of polmesh to the required thickness. Note that this does not have as good a vertical sag characteristic as Method 1..
6. Finish laminate with equal number of layers of polmesh on outside.

An alternative to the chop fibres is to use polcoremat Polygnite COREMAT a lofted cloth to build up thickness.

Using Polygnite Thixo Additive PLG-THX

By adding PLG-THX will cause the Polygnite mixture to go from a relatively thin mixture to as thick a paste as you want . Mix the Polygnite A with the Polygnite B (Powder) before adding the Thixo additive. Use sparingly as it is very effective - up to 2%. In event that you want to achieve a "skin or Gel" coat then mix until correct viscosity. One can apply by brush or spray , in the event that you spray the skin coat then make sure that it is applied to a fair thickness (say 1mm) in the event of it not being thick enough then it may "peel". Apply back up layer as soon as possible after application of the skin coat.

Using Polygnite Accelerator PLG-ACC:

By adding the PGL-ACC will cause the Polygnite to go from about 20min gel time to about 8 min . Addition can be up to 5%. Do tests before application.

Using Polygnite Retarder PLG-RTD:

By adding the PGL-RTD will cause the Polygnite to go from about 20min gel time to about 120 min gel time . Addition can be up to 1%. Do tests before application. **This product is extremely sensitive do not exceed more than 1% , could cause it to not gel at all. Following is an indication of sensitivity**

Plain Polygnite	20min
0.5% Retarder	30 min
1.0% Retarder	45 min
1.5% Retarder	90 min

Spraying

For making large products a special Spray machine may be used. For smaller products a Cup Gun (Available from Duroplastics) can be used. Add PLG-THX to mixture to get the correct viscosity.Contact Duroplastics for further details.

Post Finishing

In order to get a special look of effect one may sand or sand/grit blast the surface. If to be used in exterior applications it is better to apply a sealer coat on surface. Painting of surface is easy to do using Super Acrylics or PVAs. If to be used in exterior applications then use a external sealer , this will assist in the weathering of the Polygnite.

Outside Use

In the event that Polygnite is used for exterior , then make sure that it is well sealed with either an acrylic or silicone sealer . Polygnite , although it has been tested for exterior , it should be noted that this product must be used with caution in high humidity areas.

Special Effects

Polygnite is a basic building block to a range of effects. One may add metal fillers , pigment powders , fillers very similar to polyester resins. All that is needed is some experimentation and imagination.....

Here are some effects that have been successfully made to date :

Painted Bulkheads , Columns , Panels
Cement facades
Sand stone facade for museum
Marble finish
Animal and human bones - Paleontology
Terra cotta
Cold cast metal finishes - Bronze , copper , etc
Alabaster
Travertine

Other products available in POLYGNITE range.

Accelerators and Retarders
Pigment powders
Fillers , stone chips , etc
Fibreglass fibres and matts
Release agents
Polyurethane rubbers