DUROCEM APPLICATION GUIDE

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 Duroceme into a rubber mould, rinse mould with soap and water (best to use dishwashing liquid) . After rinsing use Duroplastic'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.

Mould Release Agents.

Depending on the type of mould surfaces will determine the type of release agent.

Flexible Moulds

- Easyflex or Uregel Polyurethane Moulds

Although a release agent is not really neccessary , it is recommended that Durplastic concrete release agent DCR5 can be used. A carnuba was may also be used

- Silicone Moulds

A release agent is not neccessary , although again DCR5 may be used.

- Timber or Durocem or Plaster Moulds

A sealer such as shellac or petroleum jelly is needed to seal the mould. Again carnuba wax or DCR5 can be used thereafter to be used as a release Agent

Rigid Moulds

It must be noted that rigid moulds that have sides that go up vertically or have undercut flanges could cause a problem if they are not removable. This also goes for castings that have a inside and outside mould such as pots, etc. **Durocem does not expand so tight mouldings are possible.**

GRP (Fibreglass) or Metal Moulds

DCR5 or Carnuba wax is recommended.

Shelf Life

Durocem Latex liquid "A" compound is made of a number of components and may settle out on standing for a long period. Please shake container before dispensing. All Durocem products are made to a standard specification and have been laboratory tested. Shelf life is 6 months. In the event of the product sitting for more than 6 months a small sample should be tested before using. Durocem "B" compound is stable for 1 year as long as no moisture is allowed into the bag. , Ensure that it is kept in dry conditions. Do not store on concrete floor.

Measuring and Mixing

Prior to starting ensure you have the following products
Durocem 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, 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.

RATIO IS 3:1 by mass

Place 250 gms of Durocem liquid "A" into a 1 litre vessel.
Measure out 750 gms of the Durocem Powder "B" component into a 1 litre vessel. Add if necc any other fillers, pigments ALK glass fibres 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 600 to 800 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

For pouring Durocem use more liquid than required or add water to make it more liquid.
1. Pour in a small amount of Durocem into the mould and brushover 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 spilliage occurs clean with water before it sets. The Durocem turns to "stone" once cured.
A recommendation is to 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 NOT VACUUM - IT DOES NOT WORK.

Hand Lay Up Technique.

Durocem 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 scrim Durocem ALKSCRM 165 or chopped fibres of FGRALK2400 of 6 or 12mm will allow Durocem to be layed up in thin , lightweight and strong products.
1. Mix up as per instructions above.
Applying a Skin or Gelcoat
2. In order to make up a surface / skin coat add less Durocem "A" to the mix ,say a 2.7 to 1 ratio (NOTE will accelerate cure) . Make up enough to apply to about 2 - 6mm 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.

Method 1

4. Lay down a thick layer of Durocem onto back of skin coat . It has excellent vertical thixo tropic properties
5. Place down Durocem ALKSCRM 165 MESH on top of layer. Apply another layer of Durocem on top of surface of matting. Allow mixture to saturate in glassfibre. Use a **hand** to wet out glass. Ensure no air voids are in the mixture. Each layer of POLMESH is about 1 - 2.5mm
6 Continue with the next layer until satisfied with sufficient strength use minimum of 6- 10mm (about 3- 6 layers of ALKSCRM) .
7 Reinforcing ribs can be applied after the lay-up has cured.

NOTE DO NOT USE STANDARD FIBREGLASS AS THIS WILL CAUSE FAILURE WITHIN 6 MONTHS DUE TO CEMENT ATTACKING THE GLASS FIBRE

Method 2

4 Instead of using ALKSCRM for all layers one can use Chopped ALKALI Fibreglass 6mm ,12mm or 25mm (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.
Layup below shows approx thickness of laminates.

Spraying

For making large products a special Spray machine may be used. For smaller products a GUPPY Gun (Available from Duroplastics) can be used. A special slow DUROCEM is available.Contact Duroplastics for further details.

Post Finishing

In order to get a special look of effect one may apply special paint finishes using Duroplastic texture finishes or painting of surface is easy to do using Super Acrylics or PVAs.

Outside Use

DUROCEM is designed for outdoor. Therefore no treatment is required

Pigment liquids

The following colours are available in a liquid form that may be mixed into the standard Durocem A and B.

- Yellow
- Terra Cotta
- Brown
- Black
- White

Fillers

Although virtually any mineral filler may be used in Durocem , Duroplastics supplies the some special fillers for use .

Release agents

Although Duroplastics stocks a wide range of release agents. The most popular for the use with Durocem are:

- DCR5 A water / oil emulsion used for concrete industry, however may be used a release agent for Durocem. Caution must be taken to use as little as possible otherwise pooling happens
- DCR7 A special oil based release agent for metal, wood and rough moulds. Also for production out of standard fibreglass moulds.
- Carnuba Standard for Fibreglass industry. Comes in 330gm and 5l tins.

Polyurethane rubbers

Ideal mould making material for Durocem. Comes in two different types, Easyflex and Uregel. The easyflex is a liquid pour version and the Uregel is a brushable thixotropic paste. Come in three different hardnesses 35, 60 and 90 Shore A. With geltimes of about 15 minutes, these rubbers can be used for complicated and flat mouldings of different finishes.

Mixers

Duroplastics has a range of 4 different mixers. Ideal for 25, 5 and 1 litre mixes.

Scales

Although Duroplastics is not a scale supply company, a well tested and good quality scale is available that measures up to 2 kg with a 1gm accuracy.

Fixing Details

Duroplastics supplies Durocem to the Building industry, however the recommendation of fixing with support brackets , etc is up to the architect and structural Engineer concerned. Duroplastic's can advise such profesionals or recommend one if neccessary

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