ENCAPSULATED STONE TABLE

GOALS

Lately we have perceived an increase in the demand of encapsulation processes, especially in sectors such as furniture manufacturing or countertops installation. But the truth is that the applications made with these processes are quite diverse and involve many other fields. However the simple an application is, there are still doubts when it comes to handle these materials and that is the reason why we have decided to create a brief guide in which we will explain the steps we followed to build a table made of an encapsulated stone.

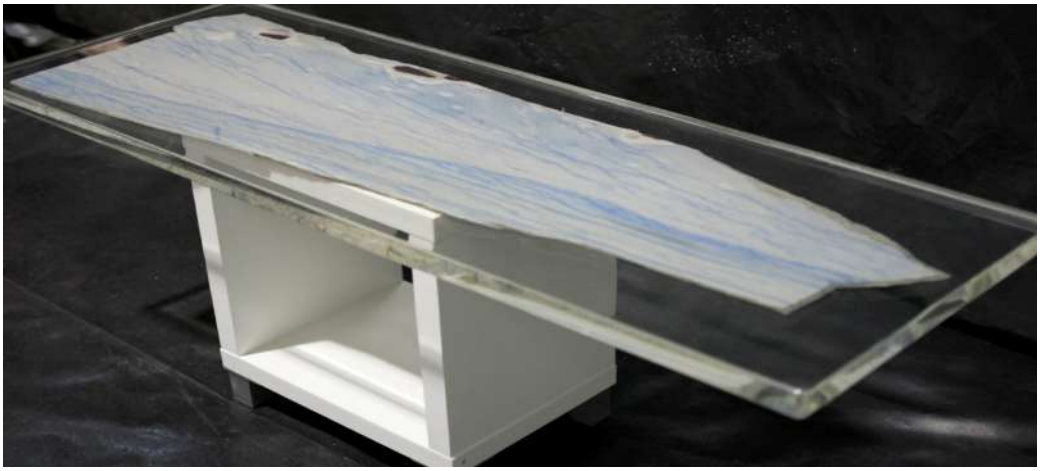
THE PROCESS

As we have told you, the process itself is quite simple and does not require expensive tools (at the end of this guide you will find a list of the materials we used). The biggest problem of the process might be the calculation of the resin we are going to use (if you have not done it before, that is for sure). But if you follow the steps, you should not have any kind of problem.

INITIAL CONSIDERATIONS

Before we begin, it s necessary to take into account a series of previous considerations such as the workshop temperature or the products we will be using. The best thing we can do here is to read the technical data sheet of the products before its application to make sure we fulfill the necessary requirements. This way we will avoid wasting them.

We also must highlight the importance of the use of an appropriate protection equipment (gloves, masks, security googles, protective coveralls, shoes, etc.). We must work in a well ventilated area and preferably with a controlled temperature in accordance to the parameters specified in the technical data sheet to avoid future problems such as high temperature exotherm or air bubbles (the latest one produced by an increase in the resin viscosity when is handled at temperatures below the 18ºC).



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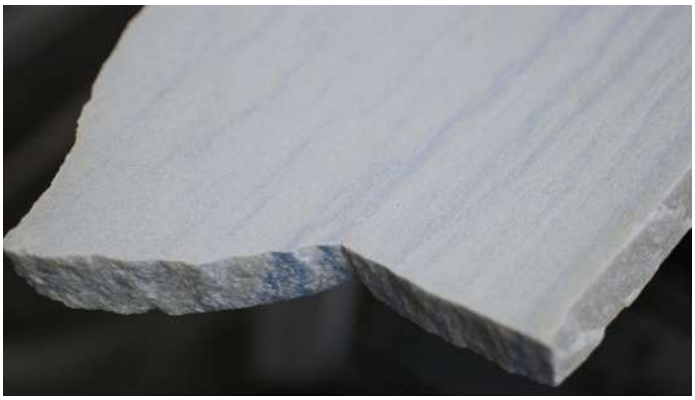
APPLICATION

FIRST STEP: Stone selection

The first step consists basically in finding a stone with which you would like to work. This is a process that can also be used with many other materials but we warn you that you will have to take some things like humidity or any other aspects that might affect negatively to the whole process in consideration. This means that if you are thinking about encapsulating flowers, plants or any other plant element, they should be properly dehydrated first. If not, we will risk ruining the whole process due to the contained water within themselves.

Another important point is to take into account the material you are going to work with. A porous material that has not been properly treated will absorb more resin and, therefore, the costs will increase (read SECOND STEP).

For this process we decided to use a beautiful stone with blue veins.



SECOND STEP: Prepare the Surface I

Before treating the porosity of the surface, we have to make sure it is clean. This is particularly important when it comes to materials that come from the nature since they might have been exposed to the elements and, therefore, might be contaminated by other substances such as earth, rust, insects, etc. The more careful we are right now, the better the final quality will be.

When the stone is clean, we stick some nuts directly under the stone (to the side that will be joined to the table) and fill them with wax. This step might be incomprehensible right now but there is a reason for it. In order to let the resin flow under the stone during the pouring of the resin, it is necessary to leave a gap between the stone and the surface we are working with. Besides, by using the nuts we make sure we will not have to make a hole for the screws later. Anyway, if you have not understood this part yet, do not worry. We will come back to this issue later on.

Once this is done, we seal the stone. To do it we use the Resoltech 1070 transparent epoxy resin which, by the way, has a great ultraviolet resistance and we catalyze it with 45 parts by weight of hardener 1077 for each 100 parts of resin (mixing ratio of 100:45). Next, we mix them thoroughly and transfer the mixture to a new container before applying it to the surface of the stone with a brush. First, we apply it on the side where the nuts are and then over the other side. Before finishing it is convenient to use a welding torch to ease the removal of the air bubbles trapped in the stone itself and in the resin.

THIRD STEP: The box

We let the resin dry and begin with the preparation of the box where we are going to pour the resin. To do it we use some plywood, some screws and JOVI plasticine (preferably the white one because it is the one that contains less additives).

The assembly has no complication: it is all about creating some sort of box to place the stone inside and to can contain the resin. It is important to leave some margin around the stone because later on we will have to sand down and polish (well, actually, this will depend on you and on what you want to create). When the box is done, we will use the plasticine to fill the gaps in the plywood to prevent the resin from leaking.

We place the stone in the box to check that everything is centered and then we outline the perimeter with a pencil. Next, we use a V7PT80 Teflon sheet and stick it to the plywood (under the stone, just under the nuts). This simple step will prevent the nuts from getting stuck to the plywood and it will also make the demoulding process easier. After this, we apply a layer of the Chemlease 15 Sealer EZ too and another one of the Watershield (or Chemlease 2693W). Between the application of each layer you will have to wait at least 15 minutes (when the temperature in the workshop is at 23ºC) and, after the last layer at least 30 minutes. If you work at lower temperatures, our recommendation is that you wait more time.

FOURTH STEP: Sanding

Before proceeding with the pouring we must sand down the Stone. The sanding process is usually like this: begin with a rough grain sandpaper (Abranet sandpaper 80 grain, for instance) and gradually change to finer grain sandpapers (until you reach the number that suits your work better). With this step we try to even the whole surface to ensure no imperfection is left behind.

Remember to clean the surface when you finish to remove every single trace of dust. This will improve the final quality of the piece.

FIFTH STEP: Pour the resin

We place the stone in the box and begin pouring the resin. For this step we decided to use the WWA/WWB4 Resoltech resin in a mixing ratio of 100:50. This mixture will produce a non-completely rigid resin that will allow the stone to suffer some dilatations due to temperature changes. Just like in previous steps, we must mix the components thoroughly and transfer them to a new container before the final application. This process will ensure a proper mixing of both resin and hardener.

Then we can begin with the pouring. It is recommendable to do it little by little, in small batches. This way we will make sure that a first layer covers the whole stone. Between each one of these layers is convenient to use the welding torch to ease

to removal of air bubbles.

Once this is done and to avoid no bubble is trapped under the stone, what we will do is to slightly tilt the box and keep pouring resin until it protrudes from under the stone. When the resin reaches this level, we will put the box horizontally again and we will keep adding resin until it reaches the final thickness we had planned.

In this process, the most essential thing is to keep the temperature between 18ºC and 21ºC (the ideal conditions). If this is achieved, the exotherm risk that often derives in the yellowing of the resin (and even in contractions or undesired cracking) is generally avoided. There have been cases of terrible mistakes that have ruined very expensive pieces just because they decided not to follow our recommendations.

Anyway, if despite this you keep having doubts whether you should cast the resin in one or several shots, we highly recommend you to contact with our technical support team.

SIXTH STEP: Finish

After making sure that the resin is completely cured (usually after some days or a week), we remove the plywood and remove the piece. We make sure to clean it thoroughly (dust, plasticine, etc.) and proceed with the sanding process. This step is exactly the same as the one used in a previous step (read FOURTH STEP). The only difference here is that we also polished the piece.

We apply a little bit of Mirka's Polarshine 25 over the cured resin and use a polishing foam pad. Once we finish, we repeat the same process but with a polishing lambswool pad. If you have followed these steps you should have right now in front of you a completely transparent surface.

What we have to do now is to prepare the table itself. This part will change depending on the original design or idea. We decided to use a white little plywood table as a support for the encapsulated stone. What we did was to make some holes in the plywood that matched the nuts in the table and then, we join everything together with some screws (do not forget to remove the wax first). There is no need to say that this is not the only method you can use. You could also achieve the same result with some glue (but we will not cover this in this guide).

MATERIALS

Down below we present a list of the materials used in this tutorial:

- Epoxy resin Resoltech 1070/1077
- Epoxy resin Resoltech WWA/WWB4
- Chemlease 15 Sealer EZ
- Water based release agent Watershield or Chemlease 2693W
- Mirka's Polarshine 25
- Mirka's orbital electric sander
- Abranet's sandpaper (from grain 80 up to grain 2000)
- Mirka's polisher
- Polishing Foam Pad
- Polishing Lambswool Pad
- V7PT80 Teflon film
- Brushes
- Weighing scales
- Wood tongue depressors
- Welding torch
- Plywood
- Screws
- Nuts
- JOVI plasticine (white)
- Wax