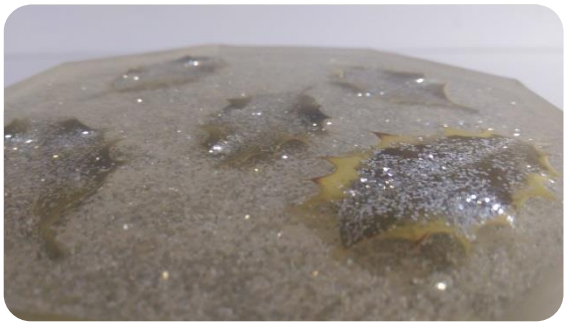
Application Instructions

When using MasterCast 1-2-1 (MC) there are particular techniques that one should follow in order to achieve best results. Through experimenting, guidelines supplied by the company and researching relevant literature the author can advise best practice.

The first step to a successful application is having the appropriate apparatus to hand. Once the MC resin and hardener have been mixed together the subsequent setting time is thirty minutes, therefore the operator has a limited window to handle and apply the MC correctly. The desired formwork and surfaces must be prepared and dust free prior to mixing the two part casting resin. Failure to have a clear plan and procedure will result in a blemished surface finish.

The MC clear casting resin system may be applied to a surface or object by hand pouring or by brush/roller. It is advised however that once the hardener and resin have been initially mixed the setting process begins immediately. The author notes that no obstructions should hamper the progress from the mixing stage to the application stage. At room temperature, the resin and hardener mixture have a combined viscosity of 4.400 – 4.700 milliPascal seconds (mPa.s) which is rather fast when taken into consideration that water has a viscosity of "1.002 mPa.s" (Elert, 2015). For this reason the resin hardener mix has a low level of viscosity; this variable allows the substrate to self-level on a surface or within a mould. The author observed and states that because of MC's low viscosity there is no evidence of brush strokes after application. A foam brush is very effective when using MC as a surface finish, the density of the foam tip allows the resin to be distributed across the surface more efficiently. Bristled brushes are not as effective, the epoxy can slip under or through the bristles resulting in a tardy application. A spatula is also a suitable tool for spreading MC across a surface or within a form.

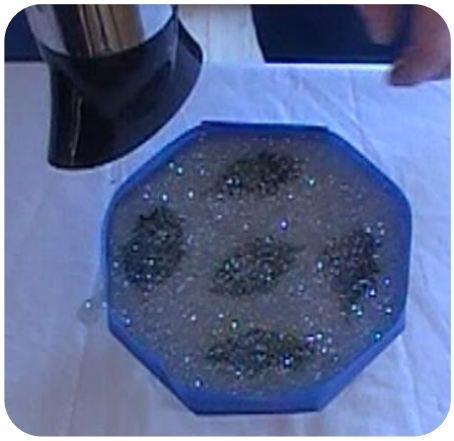


MC resin can be tinted any colour with the edition of polymer pigments which are available in solid and translucent colours. While polymer pigments are most suitable for dying clear casting mixtures alternative powder pigments can also give excellent results. While conducting experiments the author discovered that ground colour chalk can give a similar appearance to polymer pigments once the resin has set and cured. Experiment results indicate that MC responds best to powder pigments and any inclusion of liquid dye in the form of paint should be avoided. Powder pigments dissolve into the resin giving a thorough and even colour while liquid dye reacts with the resin, almost replicating the appearance of oil and water. Liquid dye gives a blotchy appearance and is unattractive in most circumstances. However it can give a desirable effect to a specific design but generally liquid dye is sidestepped. Precaution must be taken when adding powdered pigments to a casting mix. Powder pigments may not be in excess of 10% of the total volume of the casting resin. If the operator exceeds this amount then the casting resin will become unstable and results in cracks on the surface of the desired surface. The author also recommends that pigments must be added to the resin and mixed thoroughly before including the hardener.

It is extremely important to ensure that a casting form or surface is completely flat and level. If MC is applied to a form or surface that is uneven or at an angle then the resin will pool to the lowest point of the desired application. This may be problematic when one has a large surface area, thus, resulting in insufficient resin flow to the corners of the chosen form or surface. The base of forms and moulds must be rigid when applying the resin mixture in order to avoid any deflection. If deflection occurs under the weight of the casting mix then the resin will pool to the centre of the form and effect the overall distribution on the surface.

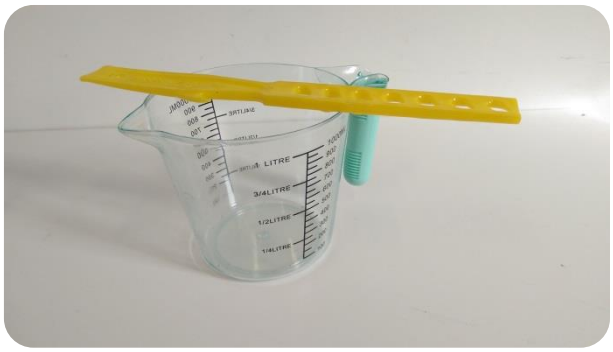
While conducting the mixing process one will notice that air bubbles can form and become trapped within the mixture. It is paramount that these bubbles are removed; bubbles alter the appearance and texture of the finished product. Failure to eliminate

bubbles at their premature stage will conclude with an uneven surface and a finish that is not completely transparent. A number of measures can be taken to counteract and limit bubble formation. Firstly the operator must slowly mix the resin thoroughly with the supplied mixing stick that comes with the MC resin system for 4-5 minutes. This mixing stick contains holes and is especially designed to burst big bubbles on impact. As the large bubbles break down they create smaller bubbles, these smaller bubbles can be removed with a heat gun or blowtorch at a later stage. Once the mixing is complete and the mixture is translucent the resin is ready to pour. The author cautions the operator to pour the contents slowly because any trapped air will cause large bubbles to reformulate. Once the contents of the resin have been fully cast onto the required surface one can effortlessly remove the remaining smaller bubbles. These bubbles can be removed with a sharp object, namely a needle but this can be slow and tedious. For quick removal of the remaining bubbles pass warm air over the surface of the casting resin. A blowtorch or heat gun set at a slow speed can quickly remove any remaining bubbles leaving an unblemished and level surface. The author wishes to exercise precaution when using the blowtorch or heat gun, if the hot air comes closer than 30cm to the resin surface it may create ripples in the cured finish. In direct contrast to this statement, bubbles and ripples may be desirable to give the appearance of water on a particular surface.



The MTW classroom has the reputation for being a dusty environment and measures can be taken to protect your work piece from dust accumulation. The author realises that a work piece must be dust free for 12-24 hours. There is a simple and cheap solution to limit dust accumulation on a work piece, merely cover your casting area with a cardboard box or dust sheet. This will create a miniature dust free environment within the MTW classroom. The author acknowledges that bigger projects

may need specifically made dust boxes for the casting process but these can be mocked up without major expenditure.



Once the casting stage is completely finished one must clean the equipment thoroughly, cleaning the apparatus will ensure reusability. It is advised that each piece of apparatus is submerged and cleaned with acetone or cellulose thinners immediately after casting. Failure to address the cleaning process directly after casting will result in the resin sticking to the mixing/spreading apparatus and unfortunately rendering the equipment useless. The author warns that resin mixing equipment should not be washed with water. Water reacts with casting resin forcing the substrate to become sticky in texture, mixing/spreading apparatus are deemed completely unusable after water application.

Below is a short table containing the necessary steps for a successful casting. The author acknowledges that the application of casting resin may be daunting at first to many MTW teachers but by following these simple guidelines one can achieve overwhelming finishes.