

JESMONITE[®] MADE FROM



Jesmonite AC730 User Guide



INTRODUCTION

Jesmonite® AC730 is supplied as two components, a water-based acrylic liquid, and a blended base. It is formulated for external use and contains a blend of decorative aggregates and pigments to achieve a range of stone finishes. It can be used to create small castings* but is primarily designed as a laminating compound for use with suitable glass fibre reinforcements. Project specific advice can be obtained by calling our technical department on +44 (0)1588 630302.

PREPARATION

It is essential to use both accurate scales and a Jesmonite High-shear Mixing Blade to ensure that the compound performs within its specification. Failure to follow these instructions can lead to strength loss, shrinkage, and reduced durability. Workshop conditions should be warm, dry, and out of direct sunlight. Environments where solvent-based compounds are in regular use should be avoided. Mixing containers should be clean and dry, and of a suitable size.

MIX RATIOS

For standard glass reinforced laminates, weigh the liquids and base in separate clean containers at the following ratio:

AC730 Liquids 1 part by weight

AC730 Base 5 parts by weight

NB. When making a chopped strand pre-mix as described in the 'casting' section below, it is possible to work at a ratio of 4.5:1. This ratio should only be used when adding 13mm coarse glass chopped strands. This method results in a high strength pouring mix that is an alternative to a glass reinforced laminate. If using the mix to brush or spray apply a 'Gel Coat' or 'Mist Coat' to the mould prior to laminating or use of a pre-mix, the mix should be thickened by working at a mixing ratio of 5.25:1. This will help reduce run off or drape on vertical mould surfaces. In general, the mixture can be adjusted to suit the application or the needs of the end user. Adding a little liquid or base to make fine adjustments is very useful – do small batch trials first to assess the materials suitability to a particular mould or application.



MIXING

Jesmonite AC730 must be mixed using a Jesmonite High-shear Mixing Blade. Attach this blade to a drill with variable speed control on the trigger and slowly add the base to the liquids whilst mixing continuously at low speed. As the last base is added, slowly increase the mix speed to around 1,000rpm and mix for a further 60 seconds or until the mix is smooth, flowing and free from lumps.

RETARDER

Retarder is added to the pre-weighed liquids to extend the pot-life of the mixed material. Typical inclusion rates are 2g – 8g, however a small test is recommended, as the precise timing is dependent on both temperature and mix size.

SOLID CASTING

Although Jesmonite AC730 is designed primarily for use with glass fibre reinforcements as a laminating compound, it is also possible to pour the material into open top moulds to create solid casts. To reduce the chance of air bubbles at the surface of the cast, first pour a little material into the mould. Then coat the entire surface either with a brush, or by rotating the mix and mould. The rest of the mix can now be poured, a little at a time, whilst tapping or vibrating the mould to help release any further entrained air.

PREMIX CASTING

To add strength to casts it is possible to add 13mm Coarse Chopped Strands to create a pre-mix. First apply a 1mm – 2mm Gel Coat to the face of the mould. This is applied to stop the glass reinforcements showing on the face of the cast. Allow this to become touch dry, and then pour in the pre-mix. This technique adds significant strength to thinner section casts, and it also simplifies the manufacturing process. Typical pre-mix cast thickness will be between 8mm – 12mm dependent upon size and shape. Further advice on refining these techniques to suit particular applications can be sought from Jesmonite.



LAMINATING WITH QUADAXIAL GLASS REINFORCEMENT

Jesmonite AC730 can be used with Quadaxial Glass reinforcements to create laminated panels that optimise the strength to weight ratio. The key to success is to pre-weigh the required mixes, and to cut out the correct sizes of glass reinforcement to suit the mould before mixing any material.

First cut two layers of Quadaxial Glass to size and shape. Then apply a 1mm – 2mm Gel Coat or Mist Coat to the mould either by brush or by using a hopper/gravity fed spray gun with a suitable nozzle (approx. 2mm is ideal). Allow this mix to become touch-dry, but not completely dry. You will need approximately 2kg per metre squared per mm of laminate thickness. Typical laminates should be 5mm – 6mm thick, resulting in a panel or structure that will weigh approximately 12kgs/m². Make a second mix of material, and apply a thin coat of this to wet out the back of the Gel Coat. Lay the first layer of Quadaxial Glass onto the back of the Gel Coat, directly onto the fresh mix. To ensure that all of the glass is fully 'wetted out' with material, pour more material onto the Quadaxial glass, and work the material through the Quadaxial Glass with a brush or a compaction roller. Please note that it is very easy to crack the Gel Coat when working on rubber moulds with a compaction roller, so care should be taken using this technique.

Next separate some of the mix, leaving just enough to wet out the second layer of Quadaxial Glass. Add 3% – 5% by weight of 13mm Coarse Chopped Strands to the separated mix and stir in with a stick (do not use the high shear mix blade as this will shred the chopped strand). Brush this chop mix into the mould and create an even layer of 3mm – 5mm.

Finally apply the second and final piece of Quadaxial Glass, and using the saved material from the second mix, brush through the glass until the glass is thoroughly wetted out. This completes the basic laminating process. Depending on size and complexity, the panel should now be left in the mould for a further 2½ – 3½ hours. It is essential that the material does not exceed 40°C during the first three hours of hydration. If this looks likely then the cast and mould should be placed in water and the temperature maintained below 40°C. Placing a sheet of plastic over the back of a panel will retain the moisture. This will ensure that the Jesmonite AC730 hydrates properly, and reduces the chances of any shrinkage or distortion in larger flat panels. When making flat panels it is advisable to create a vertical return edge of at least 35mm, and to laminate ribs into the back of the panel. Box section ribs can be created by cutting 25mm – 50mm square ribs from polystyrene and laminating them into the back of the panel using a bandage of Quadaxial Glass and some more of the mix at the standard ratio of 5:1. This will add strength to the panel without adding any significant weight.

NB. If the panel is to be installed in a public area the polystyrene should be replaced by fire resistant foam.



CURING

Jesmonite AC730 achieves over 90% of its ultimate strength in the first 24 hours. Both cast and laminated objects should be kept in a warm, dry environment during this period. They should be racked to allow optimum air-flow and stored in such a way that panels cannot 'creep' or bow under their own weight. Finished products should be packaged only when cured. Care should also be taken when using plastic packaging, particularly in damp storage areas, as this can lead to surface staining and possible water marking.

SURFACE FINISH

Jesmonite AC730 is formulated to result in a stone finish. This is achieved either by using Jesmonite Acid Etch or by grit-blasting. The product can only be acid etched after curing for a minimum of 24 hours. First wet the surface of the panel with water before applying the acid solution. This will reduce the chance of the acid marking or burning the panel where it is first applied. To apply acid etch, the area must be well ventilated, and near a ready supply of clean water. The acid will produce varying degrees of etch from 1 minute through to around 4 minutes. The acid works by removing the surface to reveal the decorative aggregate and pigment in the material. The acid should be washed off with copious amounts of clean water, and the surface padded dry with a clean dry cloth. Once the surface is dry it becomes evident if there are any areas that require a further application.

STORAGE

As a basic rule liquid containers should be kept well sealed to prevent water evaporation and skin forming, freezing must be avoided. They should be stored at a constant temperature between 5 – 25°C and used within twelve months from the date of manufacture. Base should be kept dry and stored at 5 – 25°C and used within 12 months from the date of manufacture. Jesmonite AC730 is formulated primarily as a laminating compound. It is possible to make small decorative castings, however for larger castings please seek advice from our technical department on +44 (0)1588 630302



Jesmonite® is a Registered Trademark

The above information and recommendations are based upon our experience and are offered merely for advice. They are offered in good faith but without guarantee, as conditions and methods of use are beyond our control. It remains the responsibility of the end user to determine the suitability of the materials for the particular purpose intended.

Contact details

Jesmonite Limited

Challenge Court

Bishops Castle

Shropshire SY9 5DW

United Kingdom

Tel. +44 (0)1588 630302

www.jesmonite.com

The key benefits of using Jesmonite



Stronger

Strong, flexible and more durable, making it high impact resistant.



Lighter

Lighter than stone, glass-reinforced concrete, sand and cement products – perfect for film sets.



Safer

Independently fire rated in accordance with European Fire Classification EN 13501-1. Solvent free with no VOC's



Finer

Replicates the very finest detail with superior weathering qualities.



Greener

Water-based making it kinder to the environment.



More choice

Can be pigmented to any colour or RAL reference. It can also mimic any texture and reproduce the effect of materials such as stone, metal, wood, leather and fabric.