USER GUIDE (UG300/17)

AC300

JESMONITE MADE FROM JESMONITE®

INTRODUCTION

Jesmonite® AC300 is a low cost alternative to AC100. It is designed for applications where ultimate performance of AC100 is not required. It is supplied as two components; a water-based acrylic liquid, and a mineral base. AC300 contains less acrylic resin than AC100 and as such is an economic alternative where external durability is not required. The system is suitable for a wide range of casting and laminating applications including decorative cast objects, rubber mould support cases, polystyrene and foam coating, rigid moulds and many other areas in the world of moulding. A range of ancillary products is also supplied further extending the materials versatility. Jesmonite AC300 is designed for internal use only, however it is suitable for short-term external projects such as exhibitions and props. If used externally a sealer or suitable paint system is recommended to protect surface appearance.

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, slow cure, 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

The standard mix ratio for AC300 is as follows.

AC300 Liquids	1 part by weight
Jesmonite Base	2.5 parts by weight

NB. Adjustments can be made to the ratio for addition of additives such as stone and metal fillers, sands, lightweight fillers etc. Please refer to the specific sections of the instructions below. It is also possible to mix the material at a 3:1 ratio to produce a fast set which will help to fill joints, air bubbles, or to join casts.

HOW MUCH WILL I NEED?

For casting every 1,000ml of mould volume will require 1,750g of mixed Jesmonite AC300. For laminating you will need 1,750g/mm of laminate thickness, for each square metre. A typical laminate will therefore need 2.5kg of Gel Coat mix and 8.5kg of backing mix to create a 6mm glass reinforced laminate.

1,750g Jesmonite AC300 = 1000ml. By volume
1m^2 Laminate = 10kg – 12kg Jesmonite AC300

MIXING

Jesmonite AC300 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 powders are added, slowly increase the mix speed to around 1,000rpm and mix for a further 30 – 45 seconds, or until the mix is smooth, flowing and free from lumps.

ADDING PIGMENTS

A range of fully inter-mixable Jesmonite Pigments is available allowing Jesmonite AC300 to be made into any colour required. Pigments must be added to the AC300 Liquids by weight before the Base is added and mixing commences. Pigments are added at a maximum of 2% by weight of the total mix, or 20 grams/kilo of total mix (Base and Liquids). Scales with a minimum of 1gram increments are important for the addition of pigments.

20 grams will produce a strong, saturated colour. For lighter colours simply reduce the addition rate until the desired colour is achieved. Pigments can also be intermixed to produce any colour. Please note that Jesmonite Base is a natural material and as such are subject to minor variation – please take this into account when making very pale objects or when using the material without pigment.

NB. When using pigments with AC300, the colour will not be as saturated and vivid as with AC100 due to the lower level of Acrylic Resin.

THIXOTROPE

Thixotrope is added to the mix to thicken the material to a 'Gel-Coat' consistency. This is useful when brushing or spraying materials onto moulds with vertical faces as it prevents the material from slumping. Thixotrope is added to the mix after the powders, and is mixed in using the High-shear Mixing Blade. Add drop by drop until the desired consistency is achieved. Typical inclusion rates by weight are 2g – 6g per kilo of mix.

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.

CASTING

For simple casts pour a small amount of the mix into the mould. With a brush, coat all accessible surfaces with material to help reduce air bubbles. If access is difficult then rotate the mould so that the mix flows over the surface. Gentle tapping will also help ensure that air rises to the back of the cast.

LAMINATING WITH QUADAXIAL GLASS REINFORCEMENT

Jesmonite AC300 can be used with Quadaxial Glass reinforcements to create laminated panels that optimise the strength to weight ratio. The key to success is preparation. Pre-weigh the required mixes, and 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 1.75kg 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 10 – 12kgs/m^2.

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 Mixing Blade as this will shred the chopped strand). Brush this chop mix into the mould and create an even layer of 3mm – 5mm. This becomes the 'sandwich filling' and ensures that the two layers of Quadaxial Glass are spaced apart, resulting in excellent strength to weight characteristics.

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 45 minutes to 1 hour.

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 AC300. 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 AC300 is a water-based compound, and as such it requires evaporation of any excess water to achieve full strength. Care should be taken at the point of de-mould, as the material can break easily if put under too much strain. Soft, flexible rubber moulding materials must be used for delicate objects with thin sections. Once de-moulded place the objects in a warm, dry environment. Dependant on thickness full strength will be achieved in 24 – 48 hours. Ensure that objects are placed in a suitable rack, or on a shelf where air can circulate. Staining can occur if objects are placed against plastic before all excess water has evaporated.

SURFACE FINISH

Jesmonite AC300 contains a high quality pure acrylic resin that can be polished with a clean cotton cloth**.** Excellent results can be achieved with a wide range of waxes and polishing machinery, and Jesmonite AC300 is also compatible with a wide range of water-based sealers and varnishes.

STORAGE

As a basic rule liquid containers should be kept well sealed to prevent water evaporation and skin forming. They should be stored at a constant temperature between 5 – 25°C and used within six months. Freezing must be avoided. Base should be kept dry and stored at 5 – 25°C. Shelf life is six months from the date displayed on the packaging.

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