AC100 USER GUIDE

JESMONITE MADE FROM

INTRODUCTION

Jesmonite® AC100 is supplied as two components, a water-based acrylic liquid, and a mineral base. 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 AC100 is suitable for internal and external use, however 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 AC100 is as follows.

AC100 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 can be used to fill joints, air bubbles, or to join castings.

HOW MUCH WILL I NEED?

For casting, every 1,000ml of mould volume will require 1,750g of mixed Jesmonite AC100. 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 panel.

1,750g Jesmonite AC100 = 1000ml. By volume
1m² Laminate = 10kg – 12kg Jesmonite AC100

MIXING

Jesmonite AC100 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 30 – 45 seconds, or until the mix is smooth, flowing and free from lumps. Pot life at the standard ratio is 12 – 15 minutes.

ADDING PIGMENTS

A range of Jesmonite Pigments is available allowing Jesmonite AC100 to be made into any colour required. The pigments can also be mixed together to create any colour required. A colour matching service is available from Jesmonite on request. Pigments must be added to the AC100 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 should be used when adding pigments.

20 grams will produce a strong, saturated colour. For lighter colours simply reduce the addition rate until the desired colour is achieved. 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.

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 base, 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 AC100 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 or pieces 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/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 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 AC100. 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 AC100 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 AC100 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 AC100 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.

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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
Fax. +44 (0)1588 630304
www.jesmonite.com

THE KEY BENEFITS OF USING JESMONITE

Stronger
Strong, flexibel and more durable, making it high impact resistant

Finer
Replicates the very finest detail

Greener
Wather-based not solvent based making it kinder to the environment.

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

Safer
Fire-resistant with a class zero fire rating, reduced smoke density and toxicity characteristic. Solvent free with no VOC´s.

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