

# FLEX METAL GEL COATS

## INTRODUCTION

Jesmonite® Flex Metal Gel Coats are formulated to produce metal finishes which are both decorative and durable. They are available in four finishes: Bronze, Copper, Brass, and Silver Bronze. They are used in combination with AC730 or AC830 as a backing material mixed with either Flex or standard liquids dependent upon the type of object being manufactured.

## 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. Flex Metal Gel Coats will work best using Silicon Rubber moulds, however it is also possible to use Polyurethane moulding compounds with an appropriate spray release wax. Rigid GRP, wooden, plaster moulds are best avoided.

## MIX RATIOS

Weigh the Liquids and Base into separate clean containers at the following ratio:

AC730 Liquids	1 part by weight
AC730 Bronze Base	5.5 parts by weight
AC730 Liquids	1 part by weight
AC730 Brass Base	5.5 parts by weight
AC730 Liquids	1 part by weight
AC730 Copper Base	7 parts by weight
AC730 Liquids	1 part by weight
AC730 Silver Bronze Base	6 parts by weight

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. The mix should be thick, but easy to apply by brush at 1mm – 2mm thickness.

## MIXING

Jesmonite Flex Metal Gel Coats must be mixed using a 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 60 seconds or until the mix is smooth, flowing and free from lumps. It is very important to keep the mix stirred whilst applying to stop any settlement of the heavy metal powders contained within the material.

## PIGMENTS

Flex Metal Liquids are compatible with our standard Jesmonite paste pigments. Colours should be added to the weighed liquids and mixed thoroughly before adding the powders. Flex Metal Gel Coats can be adjusted with small amounts of Jesmonite pigment to augment or adjust the background colour. Try adding 2g – 4g of Black pigment to make the Bronze Gel Coat richer in colour.

## **PREMIX CASTING USING CHOPPED GLASS STRANDS**

Flex Metal Gel Coats can be backed up either by casting into the mould, or by following the premix and laminating instructions detailed below. To improve strength in cast panels (rather than laminated as described below) add 13mm coarse chopped strands to create a premix. First apply a 1mm – 2mm Flex Metal Gel Coat to the face of the mould. Allow this to become touch dry, and then pour in the premix. This technique adds significant strength to thinner section casts, and it also simplifies the manufacturing process. Typical premix 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 Flex Liquids can be used with Jesmonite AC730 Base and 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. Ensure that the Flex Metal Gel Coat is touch-dry, but not completely dry before continuing.

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 3 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 material 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 mix at normal ratio (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**

Objects should be kept in a warm, but not overly 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. To accelerate final strengths casts can be placed in a warm room at around 40°C. 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 Flex Metal Gel Coats are formulated to produce a metal finish. The finish can be achieved using a variety of polishing media, however we recommend '000' or fine grade steel wool. It is essential that the cast has cured for at least 24 hours, and that the surface has dried thoroughly. Remove the surface by burnishing, until the desired metal effect is achieved. Whilst polishing, ensure that the dust is cleaned away constantly, and keep turning the wire wool as it wears. Replace the wire wool as soon as it becomes worn. The surface should then be polished using a clean dry cotton cloth. It is also possible to apply a hard clear wax for internal use, or to seal the piece using Jesmonite Gloss Stone Guard Sealer. Many different colours and patinas can be achieved using cold patinating solutions. For further advice please call our technical department on 01588 630302.

## 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. Powders should be kept dry and stored at 5 – 25°C.

*NB. 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.*

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### 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](http://www.jesmonite.com)

## THE KEY BENEFITS OF USING JESMONITE



### Stronger

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



### Finer

Replicates the very finest detail.



### Greener

Water-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 characteristics. 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 the effect of materials such as stone, metal, wood, leather and fabric.