Users Guide

Jesmonite AC300 Multicast Composite

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1. Description

A low cost casting and laminating compound for internal use.

2. Packaging

Jesmonite AC300 Multicast Composite is supplied in two parts:

a. Jesmonite AC300 Liquids
b. Jesmonite AC300 Powders in 25kg bags and drums
c. Supplied in kit form : pack sizes of 35kg, 70kg, 420kg, 3500kg

3. Weighing

Weigh batch mix in separate, suitable size containers (white plastic containers preferable).

4. Mix ratio

Jesmonite AC300 Liquids	28% by weight =	280 gms
Jesmonite AC300 Powders	72% by weight =	720 gms
		1000 gms / 1kg

Notes: Appendix provides information on some useful mix sizes and addition of pigments, retarder and Thixotrope.

Refer to separate user guide for stone and metal finishes.

5. Mix method

Mix the two components using a high shear blade in an electric drill at around 1000 rpm. Add powder to liquids whilst mixing continuously until compound is lump-free. Over mixing can cause air entrainment in the compound - 45 seconds mixing is usually sufficient.

6. Jesmonite Thixotrope

This can be added to the mix to thicken gel coats. Please refer to the appendix for inclusion rates, typically between 0.2 to 0.4%.

7. Jesmonite Retarder (Product range AC100 – 410)

This can be added to weighed liquids to extend pot life. Please refer to the appendix for inclusion rates, typically between 0.2 – 0.6%.

8. Jesmonite stone and metal fillers

Please refer to the relevant user guide.

9. Typical uses

Jesmonite AC300 Multicast Composite is suitable for use as a casting and laminating material.

Casting: Jesmonite AC300 compound can be poured into open top moulds whilst vibrating or agitating the mould to release entrapped air.

Applying a brush coat of the compound to the mould surface, prior to pouring the mix, assists in removing entrapped air on the surface.

Fibre reinforcement: 'E' glass chopped strands 2 – 13mm in length, can be added to the mix as reinforcement 1 – 1.5% by weight, to be stirred into the compound after mixing.

Laminating: AC300 compound can be used to produce laminated products.

Gel coating: Apply a layer of the compound by brush 1 – 2mm thick to the prepared mould surface. For coating contoured and vertical surfaces, the compound can be thickened using Jesmonite Thixotrope (refer to section 5 and the appendix for user instructions). Work the brush coat into the mould surface to release entrapped air. The gel coat is to be allowed to reach initial set stage but not hardened and dry before proceeding to laminating stage.

Fabric reinforcement: A range of 'E' glass reinforcement fabrics are suitable for use with AC300 Composite:

1. Multiaxial stitched fabric 220 g/m²
2. Biaxial stitched fabric 280 g/m²
3. Woven fabric 300 g/m²
4. Vetrotex continuous strand mat 225 g/m²

The method recommended for laminating is to wet out the back of the gel coat using unthickened compound. Apply the first layer of fabric reinforcement, brush through this layer with further compound until thoroughly wetted out.

Before applying a second layer of fabric reinforcement, apply a thick brush coat of AC300 compound, containing 1½ - 2%, 6 – 13mm 'E' glass chopped strands on top of the first layer of fabric. This layer to be 2 – 3mm thick, effectively spacing the next layer of fabric reinforcement from the first layer.

Apply a second layer of fabric reinforcement onto the wet spacing layer and wet out with compound to complete the laminate.

This method will result in a sandwich construction, increasing the thickness of the spacing layer will produce stronger laminate. Typical laminate thickness is 5 – 6mm, weighing 9 – 11 kg/m².

When using Vetrotex continuous strand mat, it is not necessary to use the spacing technique described above. The thickness of the laminate is dictated simply by the amount of layers of Vetrotex mat used.

10. Release agent

Silicone rubber mould linings require no release agent. Other cold cast rubber and rigid moulds, i.e. Jesmonite, GRP and timber, require the use of a soft non-polishing release wax, such as A.P.W. Wax. Release wax should be applied to the mould surface with a soft cloth to avoid wax stains on the product.

11. Pot life/Initial set (Indicative at workshop temperature of 15 – 18°C)

Initial set/pot life	no retarder	8 – 15 minutes
	with retarder [see appendix]	25 – 40 minutes
De-mould possible	casting no retarder	40 – 60 minutes
	laminating with retarder	1½ - 2 hours

Note: Trial batches of the compound should be mixed with and without retarder to determine pot life in the production environment.

12. Curing and drying

The compound has a rapid cure rate, exotherm is produced between initial and final set at around 30°C. Chemical reaction is complete at around one hour after casting. At this stage, the compound has developed about 60% of it's ultimate strength with 5% water retention. Ultimate strength is dependant on drying the product to about 2% moisture content. Thin sections dry faster than thick sections. A warm dry atmosphere speeds up the drying process.

13. Sealer

Jesmonite sealer has a number of uses:

1. As a coating for internal products, apply one coat of sealer by brush or spray to the product to give a clear satin finish.
2. To prevent finger marking and provide a near matt finish, apply one coat of sealer, diluted with water by 75%.
3. By adding pigments and water to the diluted sealer it is possible to create colour washes for patination.

14. General

Jesmonite AC300 is a water-based, solvent-free composite. Equipment can be washed clean using tap water prior to the compound setting.

15. Health hazards

No serious health risks in using this compound. Precautions to be taken against dust inhalation, when handling and mixing powders. Refer to the products' H.S.D.S for full details.

16. Technical data (indicative figures)

Fresh wet density	1745 kg/m³
Air dry density	1650 – 1680 kg/m³
Compressive strength (air dry)	25 – 30 Mpa
Flexural strength (limited of proportionality)	14.0 Mpa
Flexural strength (modulus of rupture)	50.0 Mpa
Water absorption (24hr water soak)	2%
Freeze thaw	Excellent
U.V. resistance	Excellent
Fire performance	Class 'O' (Class 1 surface)

17. Shelf life

When stored under dry frost-free conditions, the materials will have a shelf life of six months from the date of manufacture displayed on the container.

Appendix

Jesmonite AC300 Multicast Composite
Casting and Laminating

Percentage addition		Useful Mix Sizes							
Mix weight	**%**	**1 kg**	**3 kg**	**5 kg**	**7 kg**	**10 kg**	**12 kg**	**15 kg**	**20 kg**
		g	**g**	**g**	**g**	**g**	**g**	**g**	**g**
Jesmonite AC300									
AC300 Liquids	28	280	840	1400	1960	2800	3360	4200	5600
AC300 Powders	72	720	2160	3600	5040	7200	8640	10800	14400
Pot Life (Please refer to note under section 11)									
No retarder 8 – 15 minutes									
AC100 – 410 Retarder 25 – 30 minutes	0.2	2	6	10	14	20	24	30	40
AC Pigments									
AC White	1.0	10	30	50	70	100	120	150	200
AC Black	1.8	18	54	90	126	180	216	270	360
AC Coade	0.2	2	6	10	14	20	24	30	40
Other colours – saturated	0.7	7	21	35	49	70	84	105	140
Jesmonite Thixotrope Addition Rates									
Regular addition rate	0.2	2	6	10	14	20	24	30	40
For extra thick consistency	0.4	4	12	20	28	40	48	60	80