



“YOU SUPPLY THE TALENT... WE’LL SUPPLY THE REST!” THE COMPLEAT SCULPTOR

Product Bulletin - Master Works

Introduction

Master Works M1 is a new composite material for use in the composites, construction and reproduction industries. It is a two component, water based, acrylic polymer/mineral resin system that can be hand and spray laminated, cast or injected.

Primary uses include decorative architectural components, building systems, reproduction castings, foam coatings, tooling and prototyping.

Master Works M1 can replace conventional resins, GRC and other cementitious products due to the significant advantages offered by the system.

Features / Benefits

- Easy to use with simple mix ratios
- Water based with water cleanup
- Low toxicity
- Non combustible
- Low Odor
- Dimensionally stable, very low expansion on set
- Max exotherm on set (48°C / 120°F)
- No limit to casting mass
- Good adhesion to a variety of substrates
- Environmentally friendly, VOC <30g/l 0.25lb/gal
- Non-hazardous waste
- Versatile – can be filled and pigmented
- Can be continuously processed

Processing

The material is supplied as two liquid components A and B that must be mixed together in a simple ratio of 2 parts Component A and 1 part Component B.

The product will tolerate a +/- 5% variance in this ratio without adversely affecting the set time or final product properties. This eliminates the need for precise weight measurements and allows the use of cost effective volumetric dispensing equipment.

The A and B components can also be mixed on a 100 parts A to 45 parts B ratio by weight if that is preferred.

The different weight ratio is due to the difference in densities between the two components. Automatic processing by spray, casting and injecting can be undertaken using recommended equipment, please contact technical centers for further details.

Formulating with M1

The set time and rheology of Master Works M1 can be controlled with the use of a range of Master Works Control Additives.

Master Works M1 can be mass pigmented using the Master Works M series water based pigment dispersions.

Surface finishing gelcoats can be formulated by combining M1 with the recommended Master Works Thixotrope, M series pigment dispersions and / or fillers.

It is recommended that laminates are constructed using Master Works Multi Axial Reinforcement fabric.

Standard product set time is approximately 15 minutes and demolding can be between 30-60 minutes depending on the size of the component being made. The larger the component the longer the mold dwell time needs to be. Master Works M1 develops compressive strength rapidly with 45% of full strength achieved within 4 hours and 60% of full strength within 24 hours.

Application Areas

- Decorative building panels
- Cast objects
- Short run direct molds for advanced composites and prototypes
- RTV2 silicone rubber mold supports
- Architectural complements
- Internal ship building components
- Polystyrene foam coating

Master Works M1 has good water resistance, and is recommended for interior use. It is currently under evaluation for exterior use and should be tested using a sealer or protective coating before recommending it for exterior use.



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Technical Information

Density (wet)

MW M1 Component A 1.96 kg/liter / 16.38 lb/gal

MW M1 Component B 1.70 kg/liter / 14.21 lb/gal

MW M1 as mixed (2:1) 1.87 kg/liter / 15.63 lb/gal

Pot life / Workability (no retarder) 10 minutes

Initial Set (knife set) circa 15 minutes

Final Set (Vicat, ASTM C191) 20-40 minutes

Pot life (with retarder) up to 1 hour

Pot life (with accelerator) as short as 5 minutes

Demold 30-60 minutes (depending on the size and shape of the mold)

Maximum exotherm 48°C/120°F

Mechanical Properties – typical values

Strength development

(23°C/73°F @ 50% relative humidity)

Flexural strength

2.3 MPA / 333.59 PSI at 1 hour

2.4 MPA / 348.09 PSI at 2 hours

3.1 MPA / 449.62 PSI at 24 hours

9.9 MPA / 1435.87 PSI at 7 days

Hardness, Shore D

71 at 1 hour

72 at 2 hours

75 at 24 hours

80 at 7 days

Compressive strength

20.4 MPA / 2958.77 PSI at 7 days

Coefficient of thermal expansion

23 x 10⁻⁶ (1/°C)

Dimensional stability

Initial expansion on set 0.3%

Final expansion 0.15%

Packaging

Master Works M1 is currently supplied in two standard packages.

Pail Kits - 72 kg (158lbs) comprising two 24.9kg (55lbs) pails of Component A and one 21.7kg (48 lb) pail of Component B.

Quart Kits - 4.9kg (11 lbs) comprising two 1.7kg (3.8 lbs) quarts of Component A and one 1.5kg (3.4 lbs) quart of Component B.

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