

Application Instructions – OPTIMOLD Rapid Tooling System

The System

OPTIMOLD Rapid Tooling System is a one-pack resin designed for tool manufacture with a rapid build-up of laminate layers and reduced shrinkage. The system benefits from superior dimensional stability and reduced fibre print through when compared to traditional tooling methods.

Before Use

The material has a shelf life of 6 weeks. To gain the full benefits of the system, the pre-packaged material **must always be mixed before use**.

The resin must be conditioned to at least 20°C before use and the workshop and master plug temperature must not be below 15°C.

The Method

Gel coat the master mould in the traditional way with a tooling gel coat.

For long tool life and ease of any future repair it is recommended that a skin coat of 300g matt is first applied and cured in the normal way.

Cut the required number of glass fibre layers to give approx, 5-6mm laminate and decant the required weight of OPTIMOLD to give a resin: glass ratio of approx 3½ : 1. This amount of material should be split into smaller portions and catalysed when required if the pot-life is shorter than the time taken to laminate the part (see minimum catalyst level recommended)

Catalyse the resin at a level of 15g per Kg using a MEKP medium activity catalyst (*see pot life information). On no account should the catalyst level fall below 12g per Kg or exceed 25g per Kg. Laminate the glass layers paying particular attention to the first layer around radii and on vertical areas. Trapped air, dry

Patches and glass “sitting up” must be fully consolidated before the second layer is applied.

Produce the first 5-6mm laminate in one application and allow the exotherm to start. The exotherm is a vital part of the cure and when achieved successfully, a colour change from beige to white will be detected in the laminate. During the exotherm stage the laminate must achieve a minimum temperature of 40°C in practice temperatures well in excess of this are normal. When a thicker build is required, further layers should be applied once the exotherm has subsided, but it is not necessary for the laminate to be “cold”.

If there is any doubt regarding the exotherm achieved during manufacture, or if the colour change is patchy, a post cure period of 24 hours at 40-50°C is strongly recommended.

* Pot Life Information

Pot life at 20°C, 1.5% MEKP b/w - 18-22 min's

Compatible MEKP catalysts Andonox SG-10 - Norac Andos

Butanox M50 - Akzo

Luperox K1 - Atofina

Troubleshooting

Problem	Cause	Solution
White colour does not develop or is patchy	Insufficient exotherm achieved	Post cure tool. Check material and workshop temperatures and catalyst levels for future use.
Cracking in the body of mould	Glass content too low	-Check resin : glass ratio -Review the design of the mould
Delamination	Insufficient cure Temperature too low Time between layers of OPTIMOLD is too long	- Check the type and level of catalyst - Ensure the material is maintained at 20-25°C, workshop above 15°C. - Increase the layer thickness to raise the exotherm. - Apply OPTIMOLD layers with a reduced time delay.
Poor surface appearance	OPTIMOLD is not compatible with the master mould	*Ensure the master is made of GRP or other compatible material



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*If possible, avoid wood and mastic moulds as the high exotherm generated by OPTIMOLD can lead to distortion of the substrate.

Avoid aluminium or other metal moulds. These good conductors of heat will reduce the exotherm of OPTIMOLD to below the 40°C temperature at which it operates properly.

LIQUID PROPERTIES

TEST STANDARD MECHANICAL PROPERTIES

Viscosity @ 25°C ISO 2884 500-550 cps

Volatile content ISO 3251 30%

Gel time @ 20°C

1.5% MEKP (i)

18-22 mins

Appearance Visual Pink/Beige opaque liquid

MECHANICAL PROPERTIES

TEST STANDARD MECHANICAL PROPERTIES

Tensile strength ISO 3268 85 MPa

Flexural strength ISO 178 110 MPa

Elongation No test method 1.8%

Glass content ISO 1172 25%

Heat distortion ISO75 100°C