

## 1- DEFINITIONS

**RM 2550** is a new generation tooling resin without shrinkage for the production of thinner moulds with a higher glass ratio. The ratio verre / resin is : 1 / 2.6.

**RM 2550** is an unsaturated polyester resin for the production of composite moulds without shrinkage.

**RM 2550** is pre filled, pre accelerated and ready to use.

## 2- CHARACTERISTICS

- ◆ Polyester resin which with cure at ambient temperature with the addition of MEKP (e.g. **Butanox M50 from Akzo**).
- ◆ A pre filled, pre accelerated resin for the rapid production of moulds.
- ◆ No shrinkage, good surface appearance.
- ◆ The product is ready to use.
- ◆ Easy wet out, fast curing.

## 3- SPECIFIC CHARACTERISTICS

- ◆ Good mouldability, and fast wet out, glass to resin ratio : 1 – 2.6.
- ◆ Produces moulds approximately 20% lighter (compared with moulds made from conventional tooling resins)
- ◆ Lower tooling resin costs.
- ◆ Superior mechanical properties due to a glass content approximately 25% higher than with conventional tooling resins (cf §5).

## 4- PROPERTIES OF THE LIQUID RESIN

- |   |                                       |
|---|---------------------------------------|
| ◆ Shelf Life  | 3 months (stir every time before use) |
| ◆ Flammability  | inflammable                           |
| ◆ Density   | 1,48 g/cm <sup>3</sup>                |
| ◆ Apperance   | White liquid                          |
| ◆ <u>Gel time</u><br>(20°C, 1% <b>MEKP</b> )              | 35 – 45 minutes                       |
| ◆ <u>Peak Exotherm</u><br>(20° sur 100g, 1% <b>MEKP</b> ) | 100 – 125 °C                          |
| ◆ <u>Brookfield Viscosity</u> 100 rpm<br>(20°C, sp4)      | 1100 - 1350 mPa.s                     |
| ◆ Solid Content   | 72 - 74%                              |
| ◆ Barcol Hardness   | 40 – 45*                              |

\* after 24H on a laminate made with 4 layers 450g/m2 chopped strand mat.

## 5- PROPERTIES OF THE CURED RESIN

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◆ Heat distortion temperature (HDT)	81°C (cast resin)
◆ Tensile strength*	92.5 Mpa
◆ Tensile modulus*	1.43 GPa
◆ Flexural strength*	154.2 Mpa
◆ Flexural modulus*	5.19 GPa

\*Tests made on a laminate post cured for 16H at 40°C reinforced with 4 layers of 450g/m<sup>2</sup> chopped strand mat.

## 6- PROCEEDURE FOR MOULD PRODUCTION

### Application of the gel coat.

Apply 800µ of tooling vinylester gel coat GC206/GC207 with several fine layers of between 150 to 200µ. The gel coat must be applied at a temperature between 18 and 25°C and catalysed with Butanox M50 at a level between 1.5 and 2%.

When the gel coat is well cured (for optimum conditions, wait at least 4 hours before starting lamination), laminate with Norester R842 as follow:

- 1 mat 100g/m<sup>2</sup> and 2 mats 300/gm<sup>2</sup> with 2% Butanox M50 wet on wet.

Laminating with **RM 2550** can start the following day.

With every application it is important to mix the resin well for several minutes to ensure complete homogeneity.

To obtain optimum properties with the **RM2550** tooling resin, we recommend a resin and workshop temperature between 18 and 25°C. Too low a temperature will not allow the anti shrink additives in the resin to be activated. Too high a temperature will cause a significant reduction in the gel time leading to application problems with the **RM2550**.

Catalyst level should not be **less than 1% of MEKP** and **not more than 1.5% of MEKP** (by weight) in order to achieve optimum hardening of the resin.

### Hand Lay Up with RM 2550

After laminating the R842 layers, put a fine layer of catalysed resin **RM2550** with a brush.

Then apply 4 layers 450g/m<sup>2</sup> with **RM 2550**, consolidating each layer.

Wait about 1H – 1H30 after the complete whitening of the first set of 4 layers 4 x 450g/m<sup>2</sup> mats, before laminating the second set of layers of 4 x 450g/m<sup>2</sup> mats. Continue this process until the required thickness has been achieved.

It is important to laminate 4 layers of 450g/m<sup>2</sup>, wet on wet, in order to generate enough exotherm to activate the anti shrink components in the resin.

**The regular and homogeneous whitening of the laminate ensures that the product is being used correctly.**

### Spray Up with RM 2550

Evaluations were carried out with: GLAS CRAFT (LPA II S/SP85 EC). External mix, system "Air Assist Containment". Pump Ratio : 11: 1. Tip diameter 43, angle 40. Catalyst pump adjusted to : 1.25% of MEKP.

- Remove the filters from the gun to avoid blocking with fillers in the resin.
- On the cured gel coat, put a fine layer of resin without fiber.
- Spray a thickness of 3 to 4 mm of resin and chopped fiber with several fines layers.
- After consolidation wait 1H – 1H30.
- Repeat the process until the required thickness is achieved.
- 2 rovings may be sprayed.

**N.B.** : Avoid contaminating the surface of the mould with dust between laminates, as this can affect the interlaminar adhesion.

## 7- RECOMMENDATIONS FOR DEMOULDING

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According to the size, and application of the mould, it is strongly recommended to reinforce the mould with ribs and to demould between 2 and 5 days after laminating, to avoid any marks from the ribs.

If the installation of ribs is not necessary, then release of the mould can then be carried out 24 hours after the peak exotherm of the last layers of **RM2550**.

## 8- PACKAGING

Available in cans of 25Kg or 250Kg drums.

## 9- STORAGE CONDITIONS AND HANDLING

Storage life : 3 months.

The tooling resin **RM 2550** is subject to the Flammable Liquid Regulations. The product should be stored under cool conditions in closed opaque containers at a temperature not exceeding 25°C. Avoid exposure to heat sources such as direct sunlight.

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