

1 - DEFINITION

RM 3000 is an unsaturated polyester resin based on vinyl ester, especially formulated for producing composite moulds for applications where high thermal and chemical resistance are required. Moulds made with **RM 3000** give perfect plug replication due to the zero shrink properties of the resin.

2 - CHARACTERISTICS

- **RM 3000** has been designed to polymerize at room temperature following addition of normal MEKP catalysts.
- Rapid cure and rapid manufacture of the moulds.
- An easy to use product, pre-filled and pre-accelerated.
- Zero shrink properties in thin or thick sections.

3 – SPECIFIC CHARACTERISTICS

- Low exotherm curing system.
- High solids level with low viscosity.
- Fast build up of Barcol hardness.

4 - PROPERTIES OF LIQUID RESIN

Flammability	Inflammable
Specific gravity	1,45 g/cm ³
Appearance	Beige - Brown liquid
Gel time (20°C, 1% MEKP on 100 g)	19 – 25 minutes
Peak Exotherm (20°C - 1% MEKP on 100 g)	> 110°C
Brookfield Viscosity (20°C, sp4) 50 rpm	1300 – 1700 mPa.s
Non volatile content	72%

5 - MECHANICAL PROPERTIES OF THE CURED RESIN

Heat distortion temperature* (HDT) (ISO 75)	100 - 110°C (cast resin) [†]
Tensile strength* (ISO 527)	90 MPa
Elongation at break* (ISO 527)	7.6%
Flexural strength* (ISO 178)	200 MPa
Flexural modulus* (ISO 178)	6.25 GPa
Barcol hardness* (934-1)	40 – 45 after 24 Hours

*Tests realized on resin reinforced laminate with 26% fiberglass.

[†] Post cured (cast resin) 3 hours at 80°C followed by 2 hours at 100°C.

If conditions of post curing are different, NORD COMPOSITES do not give any guarantee regarding the final results.

IMPORTANT

Information contained in this publication is given in good faith without warranty or guarantee. No liability can be accepted for claims, losses or demands arising out of the contents of this publication. We cannot be responsible for moulds made with RM 2000 if the application conditions specified are not respected. The user must also ensure that his application is appropriate for this product to be used. We assert that the product will meet the specification set out in this data sheet, however, we cannot be responsible for any damage caused by misuse of this product.

6 – RECOMMENDATIONS BEFORE USE

As the **Norester® RM 3000** resin is a filled product, the user must absolutely well mix the resin for each new application before using it to have a homogenous product.

7 – PROCEDURE FOR MOULD PRODUCTION

• Application of the gel coat

Apply 800 μ of tooling vinyl ester **GC 206 / GC 207** with several thin layers from 150 μ to 200 μ . The gel coat must be applied at a temperature between 18°C and 25°C and catalyzed with Butanox M50 at a level between 1,5% and 2%.

• Application of the resin **RM 3000**

The day after, on the well cured gel coat laminate with **RM 3000**.

Before laminating, make sure that the temperature of the resin, of the mould and of the room is between 18°C and 25°C. Low temperature will affect the curing and the properties of the resin, and high temperature will give a too short gel time.

Before use, mix the resin well to achieve a homogeneous product. We recommend to catalyze the **RM 3000** at 1% of MEKP.

Don't catalyze under 1% of MEKP to avoid undercutting of the laminate.

Don't catalyze over 1,5% of MEKP to avoid distortion of the laminate.

• Hand lay up

- When the gel coat is well cured, apply some catalysed resin to wet the surface. This will aid the wetting out of the glass fiber.
- Apply a layer of 100 g/m² or 200 g/m² or 300 g/m². Remove air voids with a roller.
- Apply then 6 layers of 300 g/m² (40 tex) to obtain a thickness of 3 to 4 mm. It is important to laminate 4 layers of 450 g/m² or 6 layers of 300 g/m², wet on wet, in order to generate enough exotherm to activate the anti shrink components in the resin.
- The laminate will turn white when curing. Wait for the peak exotherm to subside (about 1 hour) before starting the second laminate.
- For the second laminate, use 4 layers of 450 g/m² (40 tex). Remove air voids with a roller between each layer and wait for the laminate to reach peak exotherm again and turn white.
- Repeat the process 2 or 3 times until the required thickness is achieved.

• Spray up

Tests were made using equipment from **GLAS-CRAFT LPAIS/SP 85 EC**.

System pump = 11:1

Gun with Air Assist Containment.

- Like in the hand lay-up, apply some catalysed resin on the polymerised gel coat to wet the surface.
- Spray a layer of 3 to 4 mm of resin and chopped fibres.
- After it has turned white and the exotherm has died down (about 1 hour), apply the following layer of **RM 3000**.
- Proceed like this until you achieve the thickness you require.

NB : To avoid problem of adhesion between the layers of 4 mm, do not wait more than 12 hours between the different layers. Avoid contaminating the surface of the mould with dust between laminates as this will affect the interlaminar adhesion.

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

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• Post curing

To reach the optimum properties of the mould we recommend to post cure the mould step by step but increase the temperature progressively while leaving the mould in the oven.

Before post curing wait 24 hours after the application of the last layer of **RM 3000** then post cure the mould to a maximum of 120°C respecting the following steps :

- 6 hours at 40°C
- 6 hours at 60°C
- 6 hours at 80°C
- 4 hours at 100°C
- 4 hours at 120°C.

8 – RECOMMENDATIONS FOR DEMOULDING

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 the 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 **RM 3000**.

9 – PACKAGING

Available in 25 Kg cans or 250 Kg drums.

10 – STORAGE CONDITIONS AND HANDLING

Storage life : the resin **Norester® RM 3000** is stable for 4 months from date of production when stored in original closed packaging away from direct sunlight at a temperature between 15°C and 25°C.

It is the responsibility of the customer to assure that the production is used in good conditions overall before the date limitation mentioned on the keg.

This resin is subject to the Highly Flammable Liquids Legislations.

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