

LET'S TALK / DESIGN

NEOMOULD® TOOLING GUIDE



aliancys
QUALITY RESINS

COMPOSITE TOOLING FOR MAKING GREAT PARTS



FOR COST-EFFECTIVE
MANUFACTURING OF COMPOSITE
COMPONENTS IN SMALL TO
MEDIUM SIZED PRODUCTION
SERIES (UP TO 500-1,000 PARTS PER
YEAR), COMPOSITE MOLDS ARE
BROADLY USED ACROSS
THE INDUSTRY.

While they bring the designer the ability to create unique shapes, composite tools also enable the manufacturing of large components like wind turbine blades, boats, and façade panels.

The surface quality of composite molds can be fine-tuned for specific end-uses and aesthetic requirements. This may include the application of a glossy finish, or the ability to have a special surface texture.

Composite tools are predominantly used for Vacuum Infusion, Hand Lay-up and Spray-up, and to some extent also for RTM. Compared to tools manufactured in steel, the production of composite tools is fast and versatile. For these reasons composite molds have a built a track record of performance already over many years.



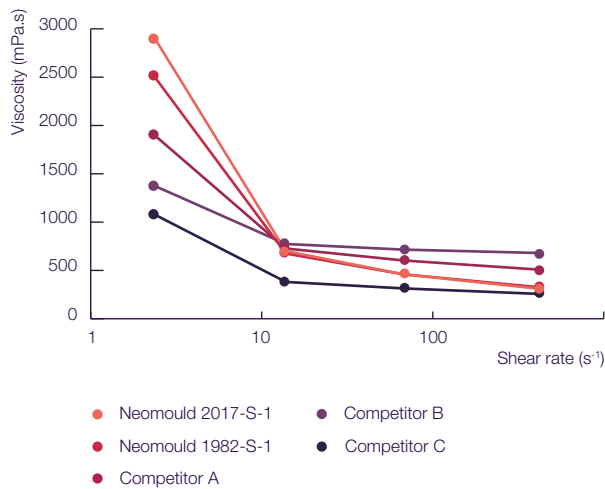


TOOL MANUFACTURING MADE EASY

ALIANCYS IS NOW INTRODUCING THE
UNIQUE NEOMOULD® 2017-S-1 RESIN, SETTING
NEW STANDARDS IN COMPOSITES TOOL
MANUFACTURING AND BRINGING MULTIPLE
BENEFITS TO THE PROFESSIONAL TOOLMAKER.

While the zero-shrinkage feature of Neomould® 2017-S-1 resin enables you to perfectly mirror plug surface and dimensions, the processing is fairly easy and robust. The thixotropic nature of Neomould® 2017-S-1 resin allows for excellent application on vertical surfaces without sagging. Together with its optimized curing characteristics, the resin is suitable for making thick parts (up to 12 layers of glass in one go).

When used with quality tooling gelcoats and tie coats, Neomould® 2017-S-1 resin permits manufacturing durable composite molds that can resist temperatures up to 80°C and provide resistance to styrene.



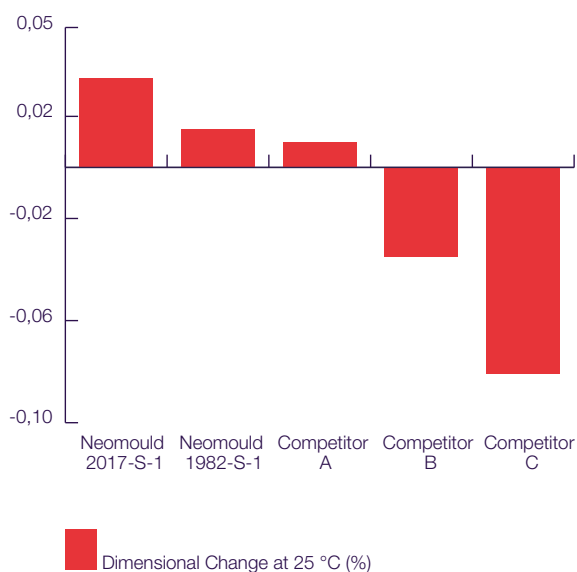
EXCELLENT RESISTANCE TO SAGGING NEOMOULD® 2017-S-1 HAS HIGHEST VISCOSITY AT LOW SHEAR

- Easy application in Hand-lay-up and Spray-up because of low viscosity at high shear
- Excellent fit for use on vertical surfaces (high viscosity at low shear)

	PROCESSING TEMPERATURE		
LAMINATE THICKNESS	25 °C	20 °C	17 °C
4 MM	32	30	NR
8 MM	42	40	40
10 MM	52	50	50

RIGHT CURING BOTH IN THICK AND THIN LAYERS

- Temperature development of Neomould 2017-S-1 in laminate on mold side with 2% MEK Peroxide.
- Competitor products showed in all test conditions 5-20 °C higher peak temperature compared to Neomould 2017-S-1



NEOMOULD® 2017-S-1 HAS UNIQUE DIMENSIONAL SHRINKAGE PERFORMANCE

- At 25 °C resin shows slight expansion
- At less favorable temperature conditions, shrinkage is still zero
- Best guarantee to mirror the surface of the plug

TOOL MANUFACTURING STEP-BY-STEP

TYPICAL MANUFACTURING SEQUENCE FOR MAKING COMPOSITE MOLDS

BEFORE YOU START

Before work begins, the temperature of the workshop, the plug and the materials must be between 15 and 25 °C (ideally 21 °C). Please keep in mind that materials taken from outside or from cold storage may require 2-5 days to reach workshop temperature. Homogenize pails and drums of tooling gelcoat and Neomould® 2017-S-1 resin thoroughly prior to taking out any quantity.



Plug cleaning, polishing and preparation

PLUG PREPARATION

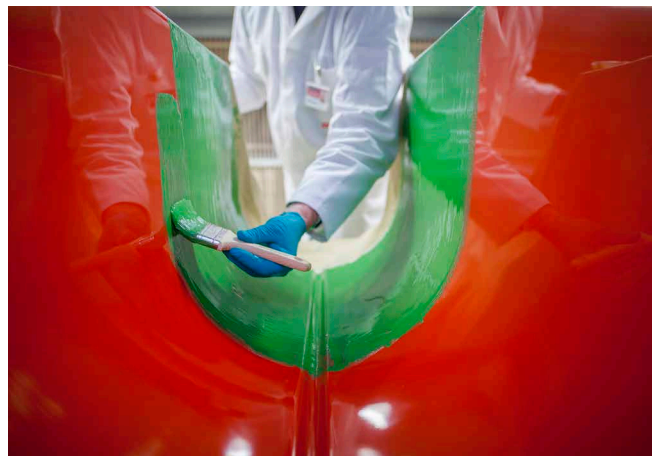
When preparing the plug, please check the entire surface for defects. Remember that even tiny defects will be mirrored in the mold and subsequently in all parts manufactured from the mold. If desired, polish the surface until required gloss is obtained. Check with manufacturer of the plug to determine suitable cleaning agents for the plug materials used. When using solvents give the plugs sufficient time to dry so mould release sticks well afterwards.



Application of mold release

MOLD RELEASE

After cleaning, repair and polishing, continue to prepare the plug by applying wax following the procedure recommended by the release agent supplier. Apply the mold release agent in uniform layer(s) and check the entire surface if the gloss is as desired. It is recommended to inspect from several angles.



Gelcoat application

GELCOAT

Apply the tooling gelcoat by brush or spray, catalyzed by 1.5-2.0% MEKP per recommendation of the gelcoat supplier. For gelcoat application by brush, select a wide and thick brush for allowing longer paint movements.

Apply the gelcoat strip by strip and do not patch, painting in the same direction and slightly overpaint. Prepare for application of 400 g/m² of wet gelcoat in one layer (350 µm wet gelcoat minimum). Please note that typically surface quality is less even because of the use of a brush. Let the first layer cure well and apply a second layer in same wet weight.

For gelcoat application by spray, please ensure before you start that the equipment works properly. Select the right nozzle for avoiding the inclusion of excess air, as tooling gelcoats may be thicker than normal gelcoats. Apply 700-800 g/m² tooling gelcoat in one go, using sufficient overspray to ensure uniform gelcoat distribution and thickness.

STRUCTURAL LAMINATE

When the gelcoat is sufficiently cured, apply the Neomould® 2017-S-1 tooling resin with 2% of MEKP catalyst. This is followed by a layer of surfacing tissue, taking care to remove any air voids. For making a mold with increased durability and for improving the resistance to styrene, it is recommended to apply the first two mat layers with Atlac® 580 ACT resin. After the tie coat layer has cured, apply the mat layers with Neomould® 2017-S-1 tooling resin.

If you would like to increase the mechanical strength of the mold by using woven roving layers, please make sure that at least 4 CSM mat layers are applied onto the gelcoat before applying the fabric layers. This will avoid print-through of the woven roving knots on the mold surface.



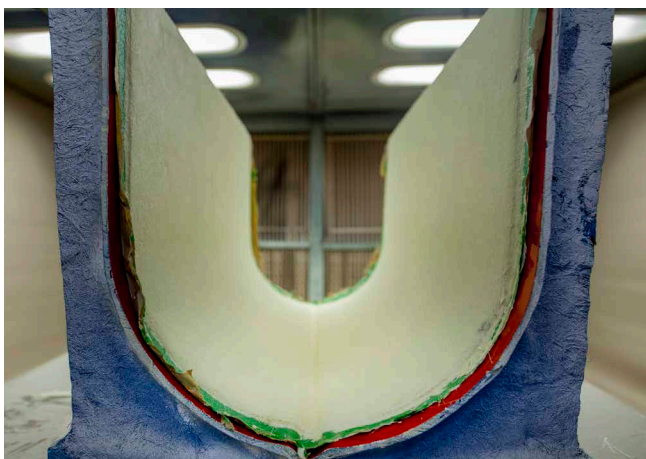
Application of first layer of Neomould® 2017-S-1



Application additional CSM layers



Brown resin color when uncured



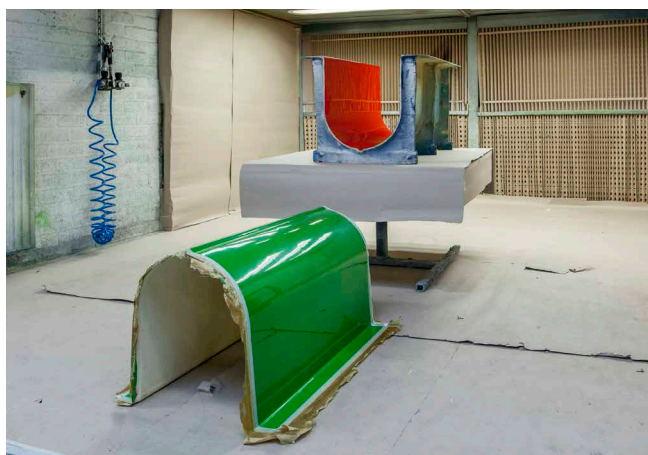
Turning white when cured



Separation plug and tool



Application of first CSM layer



Tool surface mirrors plug surface



End result

FINALISATION AND RELEASE FROM PLUG

Leave the laminate to cure for 16-24 hours in a temperature controlled atmosphere, before separating from the plug. For extending the service life of the mold, it is recommended to post-cure the mold for 24 hours at 60 °C.

It should be planned case by case, whether supports and/or stiffeners will be applied wet in wet during the laminating process, or after curing of the mold laminate.

Carefully release the mold from the plug after it has cooled down to room temperature.

Please contact your Aliancys Technical Service representative for additional details and processing recommendations.



DELIVERING INNOVATION

Aliancys can help you to push the limits of composite part performance and component manufacturing. Taking an integral approach to new product development, we use our full expertise in quality resins, material science, testing and certification, and composite component manufacturing in order to shape new composites applications.

Through building strong relations in the supply chain, we help you to explain composites benefits to key decision makers. We know that co-creation and information sharing help to significantly reduce time-to-market. So let's talk performance and help you to increase your competitive advantage and business success.

QUALITY RESINS

Manufacturing high quality composite components is a prerequisite for your business success. You need consistent and reliable input materials. Resins that meet your specifications day after day, resulting in consistent part performance and a predictable volume output even in a large production series. Delivering to you peace-of-mind in your production process.

Reducing safety factors in design, which translate into weight savings and reduced cost.



Aliancys can provide you with products of high quality consistency so you know your parts perform in the right way. Rather than fixing challenges in your operations, you can focus on your own business, keeping your hands free to build trust with your customers.

DSM HERITAGE

Aliancys can build on a 50 year track record of supplying composite resins. Previously serving the market under the name DSM Composite Resins, Aliancys has a heritage of quality, innovation and sustainability.



In close collaboration with its customers, Aliancys has demonstrated that it make composite innovations happen delivering novel material solutions that provide benefits in terms of people, planet and profit. You can rely on us for your business today. Together we create a successful business tomorrow.

ENGAGE PROFESSIONALS

Aliancys wants to fully understand your business and works closely together with you to meet the needs of your customers. Besides providing you with low hassle and great service, we optimize the quality and output of your processes.



Our technical service team and great material testing capabilities help you to enhance composite part performance and will support you in mitigating eventual process interruptions, so that you can be sure to deliver to your customers the components they need, in the quantities they need.

NEW PRODUCT INTRODUCTIONS

Aliancys has been at the forefront of introducing new resin systems for a range of manufacturing processes. These include systems for high speed manufacturing, solutions for use with glass and carbon fibers, low profile systems for superior surface finish, and solutions that can operate in elevated temperature environments.

GLOBAL SUPPORT CAPABILITIES

Aliancys has three R&D centers, located in Zwolle (Netherlands), Filago (Italy) and Nanjing (China). All have state-of-the-art equipment and support facilities, including mechanical property testing capabilities, and an analytical laboratory.

For physical property testing equipment like dynamic mechanical analysis (DMA) and differential scanning calorimetry (DSC) is available. In addition, Aliancys has a team of technical experts on the road that can support customers either at their site or at endcustomers.

Aliancys Europe

Aliancys AG
Stettenerstrasse 28
P.O. Box 1227
CH-8207 Schaffhausen
Switzerland
+41 (0)52 644 1212
inquiry.world@aliancys.com

Aliancys China

Jinling Aliancys Resins Co., Ltd.
Zone F, 3/F, Block A
Fenghuo Building
No. 88 Yun Long Shan Road
Jian Ye District
Nanjing, Jiangsu Province 210019
China
+86 (0)25 8549 3888
inquiry.china@aliancys.com

The user is held to check the quality, safety and other properties of the product referred to herein. The information and recommendations in this document are to the best of our knowledge and reliable. However, no rights whatsoever can be derived from this document or the information contained therein by any party, other than those expressly accepted by a selling entity of the Aliancys group of companies ("Aliancys selling entity") in a binding sale and purchase agreement for product referred to herein. For the avoidance of doubt the Aliancys group of companies makes no warranty of any kind, express or implied, including those of merchantability and fitness for purpose. Unless explicitly agreed to otherwise in writing by the Aliancys selling entity, all offers, quotations, sales and deliveries of Aliancys products are subject to the general conditions of sale of such Aliancys selling entity. Atlac®, Beyone™, Daron®, Neomould®, Neoxil®, Palatal®, Palapreg®, Synolite™, Aliancys™, the Aliancys™ logo, and the LET'S TALK / logo are registered trademarks of Aliancys AG.

© Aliancys 2016

Aliancys is a joint venture of CVC Capital Partners and Royal DSM

Acknowledgement

Aliancys would like to extend its thanks to Nedcam Solutions and to Cranchi, for their great contributions to the making of this brochure.

LET'S TALK /

For more information

inquiry.world@aliancys.com / aliancys.com

aliancys
QUALITY RESINS

