NEOMOULD® 2017-S-1

INTRODUCTION

Neomould® 2017-S-1 is a novel tooling resin, setting new standards in composites tool manufacturing and bringing multiple benefits to the professional toolmaker.

The zero-shrinkage feature of Neomould® 2017-S-1 resin enables to make parts that perfectly mirror plug surface and dimensions. At the same time the processing of the resin is fairly easy and robust. Because of the thixotropic nature of Neomould® 2017-S-1 resin and high viscosity at low shear rates, the application on vertical surfaces can be done without sagging.

The low viscosity at high shear rates, makes the resin easy to apply in Hand lay-up and Spray-up processes. The combination of an enhanced thixotropic profile and optimized curing characteristics, make the resin suitable for producing thick parts (up to 12 layers of glass in one go).

CHEMICAL/PHYSICAL NATURE

Neomould® 2017-S-1 is a special formulation consisting of unsaturated Polyester resin based on DCPD and low profile additive dissolved in styrene. The resin is pre-accelerated and contains fillers. Neomould® 2017-S-1 has moderate reactivity, medium viscosity and shows zero shrinkage upon cure.

MAJOR APPLICATIONS

Neomould® 2017-S-1 is highly suitable for mold making as it shows low heat buildup in thin and thick layers as well as zero shrinkage during cure.

PRINCIPAL PROPERTIES

Neomould® 2017-S-1 was developed for easy processing with good wet out of fiber reinforcement. The color of the resin allows easy control of air pockets and bubbles during laminating.

The resin exhibits tack free cure without negative effect on secondary bonding. Enhanced thixotropic behavior allows buildup of thicker laminate layers in one go without slip or drain from vertical surfaces.

PRODUCT SPECIFICATIONS UPON DELIVERY

Property	Range	Unit	TM
Appearance	Hazy	-	2265
Solids content, IR	62.0 – 65.0	%	2033
Viscosity, 2 s^{-1}	2800 -3900	mPa.s	2313
Viscosity, 20 s^{-1}	550 – 800	mPa.s	2313
Viscosity, 250 s^{-1}	250 - 400	mPa.s	2313
Time from 25 °C – 35 °C	22 – 25	Min	2625
Time from 25 °C - Peak	30 – 38	Min	2625
Peak temperature	145 – 165	°C	2625

REMARKS

Viscosity measurement: Z2/100s^{-1}/23°C
Reactivity measurement: 2.0 g Butanox® M50 added to 100 g resin

PROPERTIES OF THE LIQUID RESIN (TYPICAL VALUES)

Property	Value	Unit	TM
Flash point	33	°C	2800
Stability, no initiator, dark, 25°C	4	months	-

PROPERTIES OF CAST UNFILLED RESIN (TYPICAL VALUES)

Property	Value	Unit	TM
Tensile strength	47	MPa	ISO 527-2
Tensile E-modulus	5.6	GPa	ISO 527-2
Elongation at break	1.8	%	ISO 527-2
Flexural strength	60	MPa	ISO 178
Flexural E-Modulus	3.9	GPa	ISO 178
Glass transition temperature (Tg)	117	°C	-
Longitudinal shrinkage	0.0	%	-

CURING CONDITIONS

Cured with 2.0 % MEK Peroxide. Cured 24h at room temperature, followed by post curing for 16 h at 60 °C.

GUIDELINES BEFORE USE

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.

PROCESSING

Neomould® 2017-S-1 can be applied by Hand lay-up and Spray-up processes. Best results are obtained when the different resin-fiber layers are applied evenly with similar thickness. Keep in mind to avoid excessive temperatures in the work shop, best results are obtained between 23 – 27 °C.

CURING PARAMETERS

Temperature development of Neomould 2017-S-1 measured in laminate on mold side (2 % Curox® M 312):

Workshop temperature	25 °C	20 °C	17 °C
Laminate thickness			
4 mm	32	30	NR
8 mm	42	40	40
10 mm	52	50	50

The peak temperature of layers up to 10 mm in one go should stay below the critical Tg of the model surface. Thicker layers up to 12 mm did not show tendency for inappropriate peak temperature and did not negatively influence the zero shrinkage behavior.

However it is recommended to reduce the amount of the hardener when it is foreseen that thicker laminates will be build up in one go. Best results in thick layers over 8 mm and /or warmer work shop conditions are obtained with hardener content between 1.0 – 1.5 %.

STORAGE GUIDELINES

The resin should be stored in a dark and dry place at temperatures between 5°C and 30°C. Shelf life is reduced at higher temperatures and the properties of the resin might change during storage.

The shelf life of styrene containing unsaturated polyesters will be significantly reduced when exposed to light. Store in dark and in 100% light tight containers only. Exposure to direct sunlight should be avoided. From DCPD resins it is known that skin formation occurs when exposed to air ventilation or replacement from the original packaging

MATERIAL SAFETY

A Material Safety Data Sheet of this product is available on request.

TEST METHODS

Test methods (TM) referred to in the table(s) are available on request.

Aliancys is a leading global company active in the sales of Quality Resins for composite applications. Together with its customers, Aliancys is pushing the limits of both composite part manufacturing and performance. Taking an integral approach to new product development, Aliancys is using its full expertise in resin chemistry, material science, and component manufacturing for shaping new applications in composites. So let's talk and increase our mutual business success, both today and tomorrow. More information on **www.aliancys.com**

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