Technical Data Sheet
NM Laminering 635

Utg: 2017-12-18
Ers: 2017-12-18
Rev: 20225-05-28

General Description

NM Laminering 635 is an optimized epoxy system featuring high glass transition temperature (Tg), excellent wetting properties, very high mechanical strength, and extremely low vapour pressure.

NM Laminering 635 can be used for injection processes, but it is optimized for hand lay-up applications.

Due to its very low vapour pressure, **NM Laminering 635** is virtually odourless. Vacuum processing does not result in gas formation.
Curing can be performed at room temperature or elevated temperatures. Post-curing should begin no earlier than 24 hours after room temperature curing.

Processing Instructions

The mixing of the components is of critical importance. Poor mixing may result in soft spots.

Thoroughly mix the components in one container, then transfer the mixture to a clean container and mix again. All dosing should always be carried out using scales with sufficient accuracy.

Application is best performed using a roller, although application with a brush is also possible.

Surface Preparation

We recommend film-forming release agents such as Marbocote 220.
Wax-based release agents are generally not recommended and should only be used after prior testing.

Curing

NM Laminering 635 should first cure at room temperature (20–23°C) for 12–24 hours before proceeding with elevated temperature curing.

A typical cure cycle might be one day at 23°C followed by a post-cure at 50°C for 16 hours, or alternatively, 4 hours at 100°C.

It is important to ramp up the temperature slowly to the final cure temperature. A typical ramp rate is between 0.1–0.3°C per minute. The optimal rate is often determined by a combination of laminate thickness and part geometry. The optimal curing cycle must be established for each individual case.

NM Laminering 635 can remain at room temperature for an extended period before post-curing is carried out according to the chosen cycle.

NM Laminering 635 can be used in combination with the following hardeners:

NM Härdare 650 B: ~ 200 minutes pot life
NM Härdare 650 M: ~ 95 minutes pot life [Standard]

Completion Work

In hand lay-up applications, it is important that subsequent processing—such as additional laminating or filling—is carried out while the surface is still tacky. If the surface has fully cured and become dry, it must be sanded to ensure proper adhesion of the next layer.

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Typical Properties

Resin	NM Laminering 635
Hardener	NM Härdare 650 M

Mixing ratio

Resin – Hardener	100 – 35 by weight
	100 – 42.5 by volume
Density:	1099 kg/m^3

Mixed viscosity:	***at °C***	***Pa·s***
ISO 12058-1	18	1.7
	25	1.0
	40	0.3
	60	0.1

Viscosity build up	***from °C***	***mPa·s***	***minutes***
ISO 12058-1	18	to 1500	-*
	18	to 3000	48*
	25	to 1500	28
	25	to 3000	60
	40	to 1500	40
	40	to 3000	53
	60	to 1500	22
	60	to 3000	26

*The viscosity of the system causes short times at low temperatures.

Pot-life	***from °C***	***minutes***
(Tecam, 100 ml,	18	110
65% RH)	25	75
	40	18

Gel time at 23°C		***hours***
(Thin layers:	Start:	3 - 4
0.4-0.7 mm)	End:	5 - 6

Glass transition	***Curing***	***T_G, °C***
temperature	1 day 23°C	36
(DSC, 20 K/min)	7 days 23°C	56
	1 month 23°C	59
	5 months 23°C	65
	24 h 23°C + 15 h 60°C	85
	24 h 23°C + 2 h 80°C	91
	24 h 23°C + 4 h 100°C	102
	24 h 23°C + 15 h 60°C + 5 h 100°C	104

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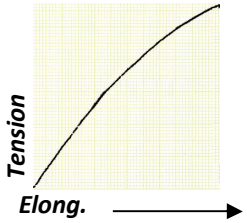
Tensile strength		***Curing:***	***7 days 23°C***	***15 h 50°C***	***8 h 80°C***
(ISO 527)	Tensile strength	MPa	50	58	62
	Elongation at break	%	3.0	4.3	4.5
	E-modulus	GPa	2.3	2.0	2.1
Flexural strength		***Curing:***	***7 days 23°C***	***15 h 50°C***	***8 h 80°C***
(ISO 178)	Flexural strength	MPa	105	146	149
	Elongation at break	%	3.8	5.0	5.7
	E-modulus $_{Flexural}$	GPa	2.7	2.7	2.7

Tension/Elongation at flex.

Tension/Elongation at tension



Water absorption	***Submerged***	***Curing:*** →	***7 days 23°C***	***8 h 80°C***
(ISO 62)	7 days 23°C		+0.7 %	+0.5 %
	28 days 23°C		+1.4 %	+1.1 %

Normal packing:	27.0 kg 6.75 kg 1.350 kg
Cleaning solvent:	*Acetone*

Disclaimer

The technical data for this product are based on both field experience and laboratory testing.

We reserve the right to modify both products and data without prior notice. The current technical data sheet is available on our website or directly from us.
We cannot accept responsibility for applications beyond our knowledge. It is the user's responsibility to evaluate the suitability of the product for their specific application. We only guarantee the material properties.

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