

resoltech 1700 **ECO**

Hardener 1706 **ECO**
Biobased Structural Lamination Epoxy System



- 58% biobased on resin part*
- 22% biobased on hardener part*
- Excellent wetting properties on all reinforcements
- For structural composites parts and tools
- Room temperature cure & mould release
- T_g max up to 98°C

*ratio of the number of biobased carbon atoms / the number of total carbon atoms

INTRODUCTION

RESOLTECH 1700 ECO / 1706 ECO is a **biobased structural lamination epoxy system** to manufacture high performance lightweight structures with glass, carbon, aramid and basalt reinforcements with or without post-curing.

RESOLTECH 1700 ECO / 1706 ECO contains **no CMR components** and complies to the latest REACH European regulation.

Thanks to its **low viscosity**, this system is suitable to traditional wet layup, vacuum bagging or under press.

It is possible to **release the parts from the mould without post-curing**. To speed up demoulding a 40°C cure is possible and optimum thermo-mechanical properties of the laminate will be obtained after a 100°C post-curing cycle.

With 58% of biobased carbon atoms in the resin part and 22% in the hardener part, the use of 1700 ECO / 1706 ECO will reduce the carbon footprint of composites structures making no concessions on thermo-mechanical performances.

MIXING RATIO

The mixing ratio must be accurately followed. It is not possible to change the ratio, it would result in lower mechanical properties.
The mixture should be thoroughly stirred to ensure full homogeneity.

System	1700 ECO / 1706 ECO
Mixing ratio by weight	100/25
Mixing ratio by volume	100/32

APPLICATION

- It is recommended to use products at a **temperature close to 18–25°C** in order to facilitate the mixing and the reinforcements impregnation.
- Lower temperatures will increase the viscosity of the mixture and the gel time, but the resin will not crystallize at low temperatures.
- On the contrary, a higher temperature will reduce the viscosity of the mixture as well as the pot life.
- 1700 ECO resin can, under certain conditions, crystallize. 10h at 60°C in an oven will make the resin liquid again without consequence.
- **Hardener 1706 ECO is sensitive to moisture, use quickly after opening.**

BIOBASED CARBON CONTENT

References	1700 ECO	1706 ECO
Biobased carbon mass content*	58%	22%
Biobased carbon mass content on mix*	-	50%

*ratio of the number of biobased carbon atoms / the number of total carbon atoms

PHYSICAL CHARACTERISTICS

1 Visual aspect

1700 ECO :

Transparent brown liquid

1706 ECO :

Transparent brown liquid

Mix :

Transparent brown liquid

2 Density

References	1700 ECO	1706 ECO
Density at 23°C	1.19	0.94
Mix density at 23°C	-	1.13

3 Density 1675, ± 0.05 tolerance

Viscosity

References	1700 ECO	1706 ECO
Viscosity at 23°C (mPa.s)	1339	25
Mix viscosity at 23°C (mPa.s)	-	428

ISO 12058.2, ± 15% tolerance

REACTIVITIES

System	1700 ECO / 1706 ECO
Gel time on 70mL at 23°C* (4cm high)	1h12min
Time at exothermic peak on 70mL at 23°C	1h15min
Temperature at exothermic peak on 70mL at 23°C	175.3°C
Gel time on 1mm film at 23°C**	6h16min

* Gel time measurements realized with Rheotech*

** Gel time on film measurement realized on rheometer

RETICULATION & POST-CURING

In order to obtain the maximum thermo-mechanical properties, it is necessary to respect the recommended curing cycle. The table below shows the glass transition temperatures (DSC) according to different curing cycles.

System		1700 ECO / 1706 ECO
14 days at 23°C	T _g	52 °C
	Shore D Hardness	89
16h at 60°C	T _g	82 °C
	Shore D Hardness	89
3h50°C+3h100°C +3h150°C	T _g	98 °C
	Shore D Hardness	93

T_g measured by DSC, 10°C/min, inflexion point
Shore D hardness measured at 23°C according to ISO 868

Post-curing cycles previously presented were chosen in order to reach the maximum potential of each systems. Depending on piece size, oven performance and hardener used, shorter post-curing cycles could lead to fully cured parts.

Please contact our laboratory service for any help on post-curing cycles.

MECHANICAL PROPERTIES

System		1700 ECO / 1706 ECO
14 days at 23°C	FLEXION	
	Modulus	3.10 GPa
	Maximum strength	102.1 MPa
	Elongation at max strength	4.7 %
	Elongation at break	5.0 %
16h at 60°C	FLEXION	
	Modulus	3.00 GPa
	Maximum strength	118.0 MPa
	Elongation at max strength	6.7 %
	Elongation at break	8.3 %
3h50°C+3h100°C +3h150°C	FLEXION	
	Modulus	3.00 GPa
	Maximum strength	120.4 MPa
	Elongation at max strength	6.6 %
	Elongation at break	7.2 %

Flexion properties on pure resin according to ISO 178

PACKAGING

- Plastic jerrycan kit of 1kg + 0.25kg
- Plastic jerrycan kit of 4kg + 1g
- Plastic drum kit of 20kg + 5kg

TRANSPORT & STORAGE

Keep containers sealed and away from heat and cold preferably between 10°C and 30°C in a well ventilated area. Our products are guaranteed in their original packaging (check expiry date on the label).

HEALTH & SAFETY

Skin contact must be avoided by wearing protective nitrile gloves & overalls or other protective clothing.

Eye protection should be worn to avoid risk of resin, hardener, solvent or dust entering the eyes. If this occurs flush the eye with water for 15 minutes, holding the eyelid open, and seek medical attention.

Ensure adequate ventilation in work areas. Respiratory protection should be worn with ABEKP coded filters.

Resoltech issues full Material Safety Data Sheet for all hazardous products. Please ensure that you have the correct MSDS to hand for the materials you are using before commencing work.



The data provided in this document is the result of tests and is believed to be accurate. We do not accept any responsibility over the mishandling of these products and our liability is limited strictly to the value of the products we manufacture and supply.

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