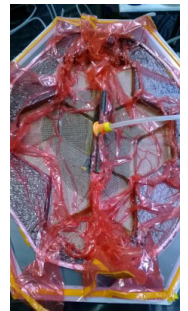
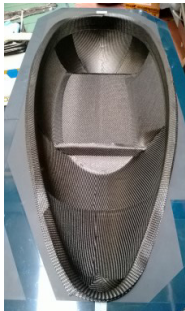


resoltech 1500

Hardeners 1502 & 1504

Structural epoxy infusion system



- 17% biobased on resin part*
- Very low mixed viscosity and high wetting ability
- $T_g > 130^\circ\text{C}$
- Ambient curing and low shrinkage
- High mechanical properties
- Two reactivity available

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

INTRODUCTION

RESOLTECH 1500 / 1504 is an **epoxy infusion system** with an extremely low viscosity that enables structural **composite parts & tools manufacturing** with a service temperature of up to 130°C. This high-performance system is ideally suited to the production of infusion tooling for the manufacture of prepreg parts at 120°C.

Thanks to its **low viscosity** and **exceptional wetting properties**, this system can be used for infusion, RTM and RTM Light applications, etc.

This system has two choices of reactivity (1502 or 1504 hardener) suited to the production of large structures, and its gel time offers a **long pot life**, making it **easy to use for infusion applications**.

Once cured at room temperature, the parts and tools produced must be curing at a low temperature before demoulding (minimum 8 hours at 60°C). This post-curing at 60°C allows the usual modelling materials to be used. Optimum thermomechanical properties will be obtained after a suitable curing cycle.

The **1500 / 1504** system is compatible with **gelcoat 7090**, and they will form a quality composite, with a maximum T_g of 140°C, resistant to the temperature cycles imposed by the prepreps.

With 17% biobased carbon in the resin part, using system 1500 will **reduce the carbon footprint** of the composite structures produced, without compromising performance.

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.

Systems	1500 / 1502	1500 / 1504
Mixing ratio by weight	100 / 22	100 / 30

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.

BIOBASED CARBON CONTENT

Reference or mix	1500	1500 1502	1500 1504
Biobased carbon mass content*	17%	14%	13%

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

PHYSICAL CHARACTERISTICS

1 Visual aspect

1500 :

Yellow opalescent liquid

1502 & 1504 :

Neutral to yellow transparent liquid

Mix :

Yellow opalescent liquid

2 Density

References	1500	1502	1504
Density at 23 °C	1.11	0.94	0.92
Mix density at 23 °C	-	1.07	1.06

ISO 1675, ± 0.05 tolerance

3 Viscosity

References	1500	1502	1504
Viscosity at 23 °C (mPa.s)	1500	7	15
Mix viscosity at 23 °C (mPa.s)	-	250	300

ISO 12058-1, ± 15% tolerance

REACTIVITIES

Systems	1500 / 1502	1500 / 1504
Gel time on 70 mL at 23 °C* (4cm high)	10h	6h30min
Time at exothermic peak on 70 mL at 23 °C	8h30min	6h20min
Temperature at exothermic peak on 70 mL at 23 °C	31°C	34°C
Gel time on 500 mL at 23°C*	-	3h10min
Gel time on 2 mm film at 23 °C	-	7h40min

* Gel time measurements realized with Rheotech*

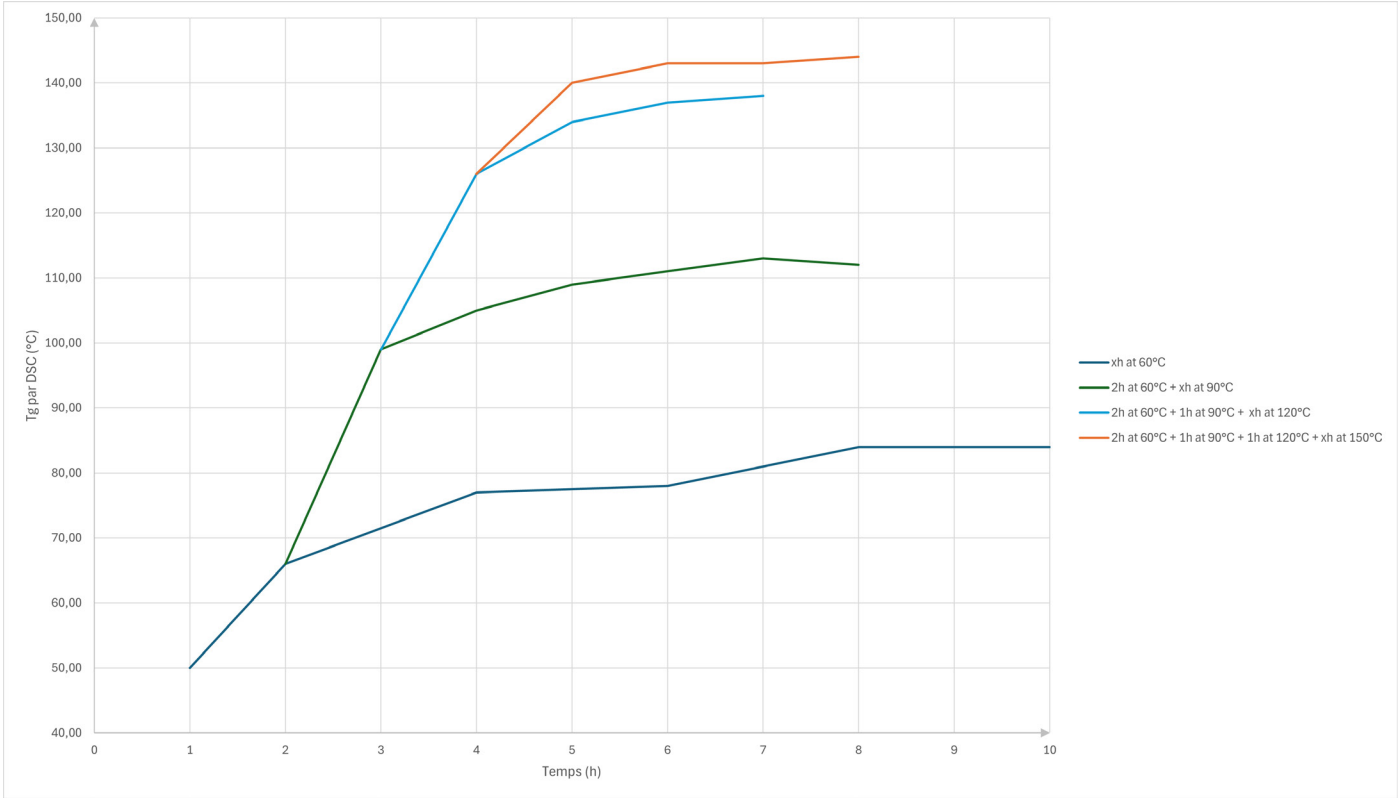
RETICULATION & POST-CURING

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.

Systems		1500 / 1502	1500 / 1504
8h at 60°C	T _g	83°C	
	Shore D Hardness	89	
2h at 60°C + 1h at 90°C + 1h at 120°C + 2h at 150°C	T _g	145°C	
	Shore D Hardness	91	

T_g measured by DSC, 10 °C/min, inflexion point, tolerance ± 10°C
Shore D hardness measured at 23 °C according to ISO 868, tolerance ± 5.

T_g evolution of 1500 / 1504 system*



* Same evolution for 1500/1502 system

Post-curing cycles previously presented were chosen in order to reach the maximum potential of each systems. Depending on parts 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

Systems		1500 / 1502	1500 / 1504
8h at 60°C	FLEXION Modulus Maximum strength Elongation at max strength Elongation at break	-	3.85 GPa 92.6 MPa 2.5% 2.5%
2h at 60°C + 1h at 90°C + 1h at 120°C + 2h at 150°C	FLEXION Modulus Maximum strength Elongation at max strength Elongation at break	3.72 GPa 107.9 MPa 3.2% 3.2%	3.72 GPa 142.3 MPa 5% 5%

Flexion properties on pure resin according to ISO 178

PACKAGING

1500 / 1502 :

- Plastic jerrycan kit of 1kg + 0.22kg
- Plastic jerrycan kit of 4kg + 0.88kg
- Plastic drum kit of 22.73kg + 5kg
- Drum kit of 200kg + 2 x 22kg

1500 / 1504 :

- Plastic jerrycan kit of 1kg + 0.30kg
- Plastic jerrycan kit of 5kg + 1.5kg
- Plastic drum kit of 25kg + 7.5kg
- Drum kit of 200kg + 2 x 30kg

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.

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).



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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resolving your engineering challenges
resoltech.com

249, Avenue Gaston Imbert
13790 ROUSSET
FRANCE

Tel. : +33 (0)4 42 95 01 95
Fax : +33 (0)4 42 95 01 98
export@resoltech.com