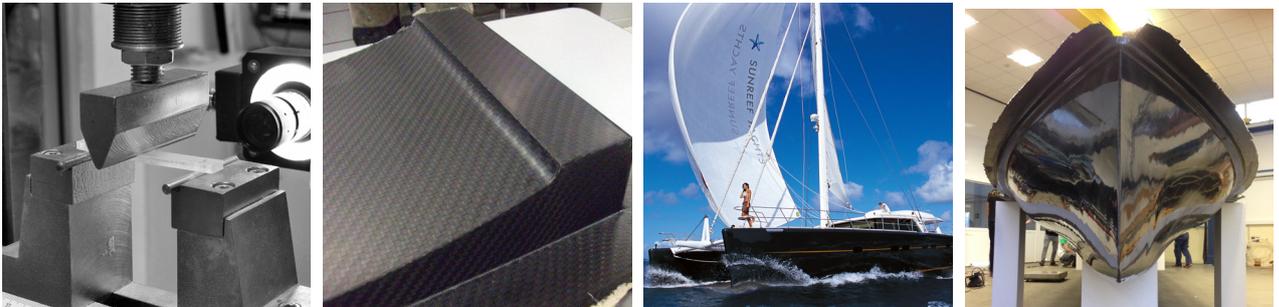


resoltech 1900

Hardener 1903

High modulus lamination system



- Excellent thermo-mechanical performances
- T_g up to 138°C
- Adapted reactivity for large composite structures
- High modulus system for carbon applications

INTRODUCTION

RESOLTECH 1900/1903 is an epoxy system recommended for **high thermo-mechanical parts/molds manufacturing**.

Specially formulated for large composite structures manufacturing, 1900/1903 system offers a long working time that enables **thick laminations** while avoiding high exothermic reactions.

Thanks to its **low viscosity and high wetting properties**, it can be used with any reinforcements, however, due to its excellent thermo-mechanical properties, it is recommended for high modulus carbon fibers laminations.

This system has excellent cross linking properties and enables to **release parts from plugs even after a low post curing of 8h at 60°C**. Final thermo-mechanical properties will be obtained after a suitable curing cycle.

With its high T_g (138°C), 1900/1903 is suitable for both **tooling and parts manufacturing that must withstand temperatures up to 120°C (prepreg molds)**.

Available in thixotropic version **1900T/1903T** for vertical application.

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	1900/1903	1900T/1903T
Mixing ratio by weight	100/36	100/37
Mixing ratio by volume	100/43	-

APPLICATION

- It is recommended to have workshop temperature conditions between 18-25°C in order to facilitate the mixing and the fibers reinforcement impregnation.
- On the contrary, a higher temperature will reduce the viscosity and the pot life of the mix.
- Thermosetting products generate heat when curing. The amount of heat generated varies with the temperature and the quantity of resin mixed. It is therefore necessary to only mix the necessary amount usable within the given pot life.
- Keeping the mixture in flat open containers reduces the risks of exothermic reaction as the mixture will heat up more in a mass than in a film.

PHYSICAL CHARACTERISTICS

1 Visual aspect

1900 :

Opalescent neutral to yellow liquid

1903 :

Limpid colorless to yellow liquid

Mix :

Opalescent neutral to yellow liquid

2 Density

References	1900	1903
Density at 23°C	1.16	0.96
Mixed density at 23°C	-	1.11

ISO 1675, ± 0.05 tolerance

3 Viscosity

References	1900	1903
Viscosity at 23°C (mPa.s)	1313	57
Mixed viscosity at 23°C (mPa.s)	-	487

ISO 12058.2, ± 15% tolerance

4 Thermal conductivity

System	1900/1903
Bulk conductivity (W/mK)	0.21

ASTM 5470-12, grease mode, uncured mix, no pressure

REACTIVITIES

System	1900/1903
Gel time on 70mL at 23°C * (4cm high mix)	8h12min
Time at exothermic peak on 70 mL at 23°C*	8h52min
Temperature at exothermic peak on 70mL at 23°C*	33°C
Gel time on 1mm thick film at 23°C **	8h02min
Gel time on 500mL at 23°C	2h30min
Time at exothermic peak on 500mL at 23°C	3h10min
Temperature at exothermic peak inside a 12mm thick laminate at 23°C ***	31°C

* Reactivity measurements realized on Trombotech*

** Measured on rheometer, tangents method

*** 30 plies (290g/m²) glass twill laminate

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CURING AND POST-CURING

Once hardened at room temperature, **parts can be released after a post curing of 8h at 60°C.**
Final thermo-mechanical properties will be obtained after the appropriate curing cycle

Systems	1900/1903		
Curing cycles	14 days at 23°C	5h at 60°C	6h at 60°C + 2h at 80°C + 2h at 100°C + 2h at 120°C + 4h at 140°C
T _g	63°C	81°C	138°C
Shore D Hardness	89	90	90

T_g measured on DSC, 10°C/min, inflexion point
Hardness : ISO 868

MECHANICAL PROPERTIES

System	1900/1903	
14 days at 23°C	FLEXION Modulus Maximum strength Elongation at break	3.58 GPa 75 MPa 2.2%
5h at 60°C	FLEXION Modulus Maximum strength Elongation at break	3.22 GPa 122 MPa 7.7 %
6h at 60°C + 2h at 80°C + 2h at 100°C + 2h at 120°C + 4h at 140°C	FLEXION Modulus Maximum strength Elongation at break	3.00 GPa 117 MPa 7.2 %

Measurements on pure resin according to the following standard : ISO 178

PACKAGING

1900/1903 :

- Plastic jerrycan kit of 1kg + 0.36kg
- Plastic jerrycan kit of 5kg + 1.8kg
- Plastic drum kit of 25kg + 9kg
- Drum kit of 200kg + 3 x 24kg

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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