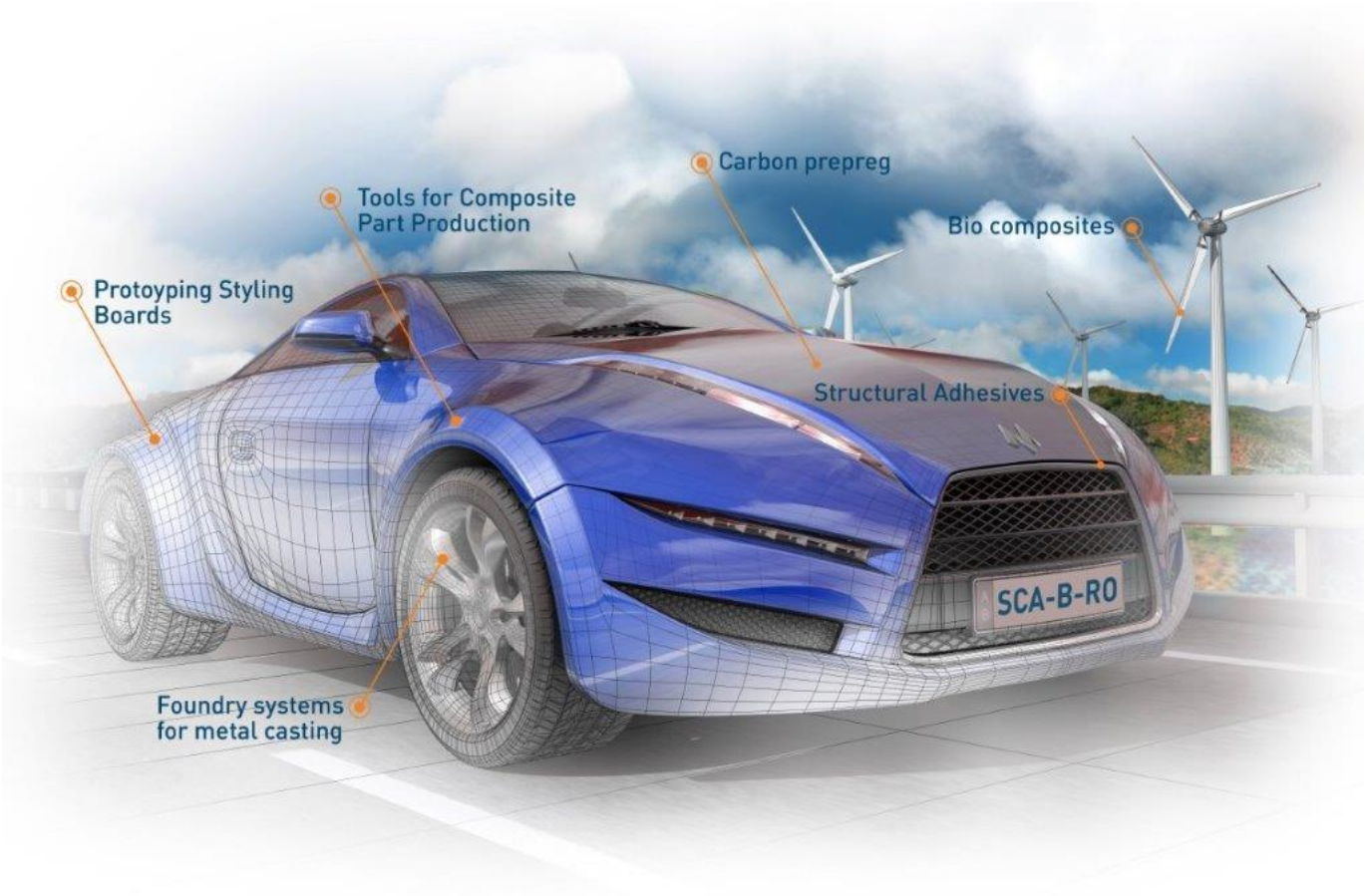
SCABRO
IDEAS TAKE SHAPE

TECHNICAL DATASHEET

RESOLTECH 1800

1803 - 1805 - 1807 - 1808



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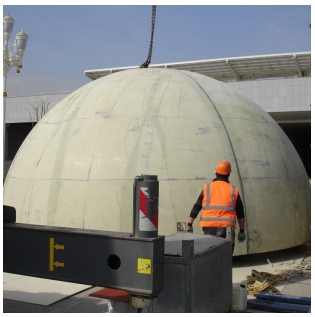
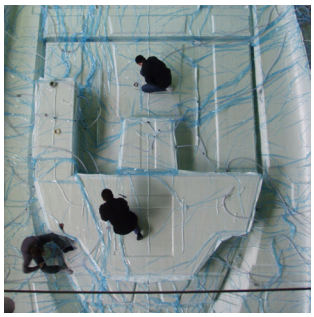
resoltech 1800

Hardeners 1803 to 1808

Structural epoxy system for infusion & injection



- **Adjustable pot life from 18min to 7h**
- **Very low viscosity and high wetting power**
- **T_G up to 120°C**
- **Snap curing (2 minutes) with 1808 hardener**
- **Excellent cross linking properties even at low post-curing temperatures**

INTRODUCTION

RESOLTECH 1800 is an advanced infusion and injection epoxy resin system with an **extremely low viscosity** for fast and safe wet out by infusion and injection.

It features high mechanical properties, **a service temperature up to 130°C** and up to 7h of infusion or injection time.

The **constant low viscosity** right until gel time offers reliable impregnation and air release throughout the infusion or injection process.

This system has excellent cross linking properties and enables to release from plugs even after low post curing temperatures at 40°C.

It is suitable for both **tooling and parts manufacturing**. Typical applications include large marine structures, wind turbine blades, moulds for prepreg production.

Monolithic carbon fibre infusions may be performed with fiber ratios of over 68% with 0,4% porosity.

The superior interlaminar shear strength of this system is one of its key advantages with its improved **health and safety formulation** following the latest EU regulation (CE) nº 453/2010.

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	1800/1803	1800/1805	1800/1807	1800/1808
Mixing ratio by weight	**100/30**	**100/17**	**100/16**	**100/38**

APPLICATION

- Thermosetting products generate heat when curing. The amount of heat generated varies with the hardener used, 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. Automatic mixing and dispensing devices solve the exothermy problem by mixing at the required speed for the infusion.

RESOLTECH 1800 system is formulated for infusion and injection applications. It is recommended to infuse with a resin transfer medium onto the laminate or through the core when prepared with a special grooving for infusion. Controlling the resin temperature, workshop temperature and humidity is important. The reinforcements should not present any excessive moisture content as it may modify the infusion progress through the fibers.

PHYSICAL CHARACTERISTICS

1 Visual aspect

1800 :
Opalescent neutral liquid

1803 to 1808 :
Transparent to yellow liquid

Mix :
Neutral to transparent yellow liquid

2 Density

References	1800	1803	1805	1807	1808
Density at 23°C	1.15	0.94	0.94	0.99	0.99
Mixed density at 23°C	-	1.10	1.12	1.13	1.11

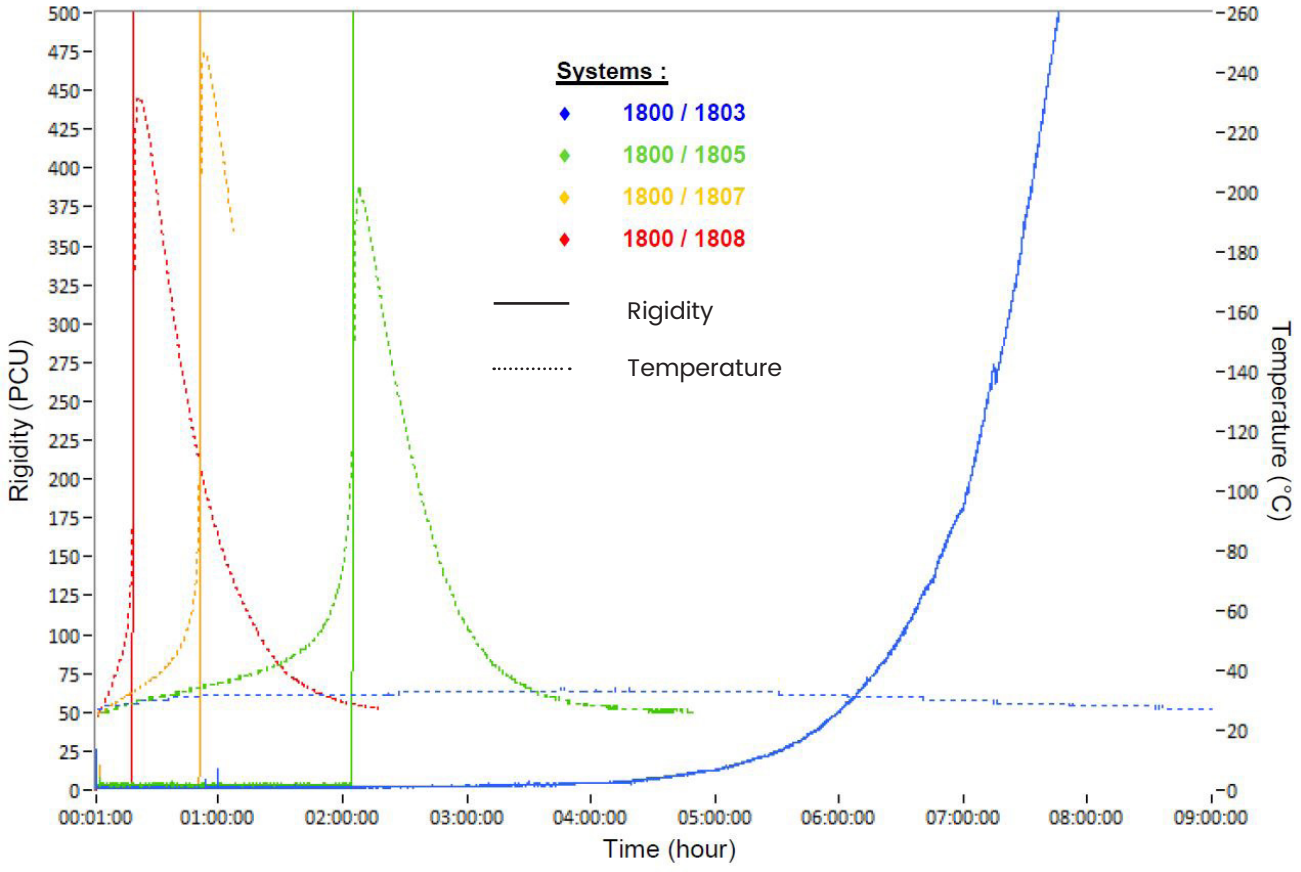
ISO 1675, ± 0.05 tolerance

3 Viscosity

References	1800	1803	1805	1807	1808
Viscosity at 23°C (mPa.s)	900	11	15	20	130
Mixed viscosity at 23°C (mPa.s)	-	190	250	273	325

ISO 12058.2, ± 15% tolerance

Mixed viscosity evolution vs. time on 70mL at 23°C



REACTIVITIES

Systems	1800/1803	1800/1805	1800/1807	1800/1808
Gel time on 70mL at 23°C (4cm high mix)	7h	2h04min	50min	18min
Time at exothermic peak on 70 mL at 23°C	3h45min	2h05min	53min	21min
Temperature at exothermic peak on 70mL at 23°C	34°C	201°C	246°C	232°C
Gel time on 2mm thick film at 23°C	8h20min	7h17min	3h	1h20min
Demolding time at 100°C on a 2mm film	-	-	-	2min30sec

Reactivity measurements realized on Trombotech®

CURING AND POST-CURING

With 1805 hardener, parts should not be released from the mould without initial curing of minimum 8 to 12h at 40°C or 6h at 60°C as it remains brittle without this initial cure.

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 (DMA) according to different curing cycles.

Systems		1800/1803	1800/1805	1800/1807	1800/1808
14 days at 23°C	T_G	42.4°C	46.3°C	48.6°C	49.1°C
	Shore D Hardness	88	88	89	89
16h at 60°C	T_G	54.6°C	64.9°C	65.9°C	66.7°C
	Shore D Hardness	88	89	89	90
6h at 60°C + 10h at 120°C	T_G	70.9°C	111.2°C $T_{G\ max}$ 119.8°C	95°C	-

T_G measured on Kinetech®
Hardness : ISO 868

MECHANICAL PROPERTIES

Systems		1800/1803	1800/1805	1800/1807	1800/1808
14 days at 23°C	FLEXION Modulus Maximum strength Elongation at break	 3.22 GPa 89.8 MPa 3.1%	 3.55 GPa 76.9 MPa 2.3%	 3.48 GPa 104.0 MPa 3.2%	 3.04 GPa 93.7 MPa 4.2%
16h at 60°C	FLEXION Modulus Maximum strength Elongation at break	 3.15 GPa 108.4 MPa 5.0%	 3.10 GPa 95.0 MPa 2.1%	 2.98 GPa 116.5 MPa 6.0%	 2.81 GPa 97.0 MPa 5.5%

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

PACKAGING

1800/1803 :

- Plastic jerrycan kit of 1kg + 0.3kg
- Pastic jerrycan kit of 5kg + 1.5kg
- Pastic drum kit of 25kg + 7.5kg
- Drum kit of 200kg + 2 x 30kg

1800/1805 :

- Plastic jerrycan kit of 1kg + 0.17kg
- Plastic jerrycan kit of 5kg + 0.85kg
- Plastic drum kit of 25kg + 4.25kg
- Drum kit of 200kg + 2 x 17kg
- IBC kit of 1000kg + 170kg

1800/1807 :

- Plastic jerrycan kit of 1kg + 0.16kg
- Plastic jerrycan kit of 5kg + 0.8kg
- Plastic drum kit of 25kg + 4kg
- Drum kit of 200kg + 2 x 16kg
- IBC kit of 1000kg + 160kg

1800/1808 :

- Plastic jerrycan kit of 1kg + 0.38kg
- Plastic jerrycan kit of 5kg + 1.9kg
- Plastic drum kit of 25kg + 9.5kg
- Drum kit of 200kg + 3 x 25.33kg
- IBC kit of 1000kg + 2 x 190kg

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).

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