

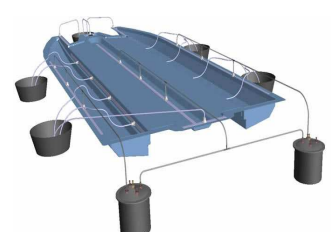


# RESOLTECH 1800

## Hardeners 1805 & 1808

### Structural Epoxy system for infusion & injection

- **Adjustable pot life from 1h to 2h**
- **Very low viscosity and high wetting power**
- **TG: 85° to 130° depending on hardener used**
- **Excellent cross linking properties even at low post-curing temperatures**



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

It features high mechanical properties, a TG of up to 130°C and up to 5H30 of infusion or injection time.

A great property of the system is its constant low viscosity right until gel time. It therefore offers reliable impregnation and air release throughout the infusion or injection process. Suitable for very large composite parts.

This system has excellent cross linking properties and enables to obtain a high TG of 130°C even at low post curing temperatures (15h @ 60°C).

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

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

# Resin 1800

Hardeners 1805 & 1808

## MIXING RATIO

	BY WEIGHT
Resin 1800	100
Hardener 1805 & 1808	17



The mixing ratio must be respected neither excess nor default. The mixture should be homogeneous and intimate with the use.

## APPLICATION

The mixing ratio must be accurately measured. 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.

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 exothermic problem by mixing at the required speed for the infusion.

The RESOLTECH 1800 system is formulated for infusion and injection applications. It is suitable for all established processes. 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 fibres.

## PHYSICAL CHARACTERISTICS

### Visual aspect

1800 : Opalescent neutral liquid

1805 - 1808: Neutral to transparent yellow liquid.

Mixture aspect : Neutral to transparent yellow liquid.

### Densities @ 23°C

	1800	1805	1808
Density	1.17	0.95	0.90
Mix density	-	1.12	1.10

# Resin 1800

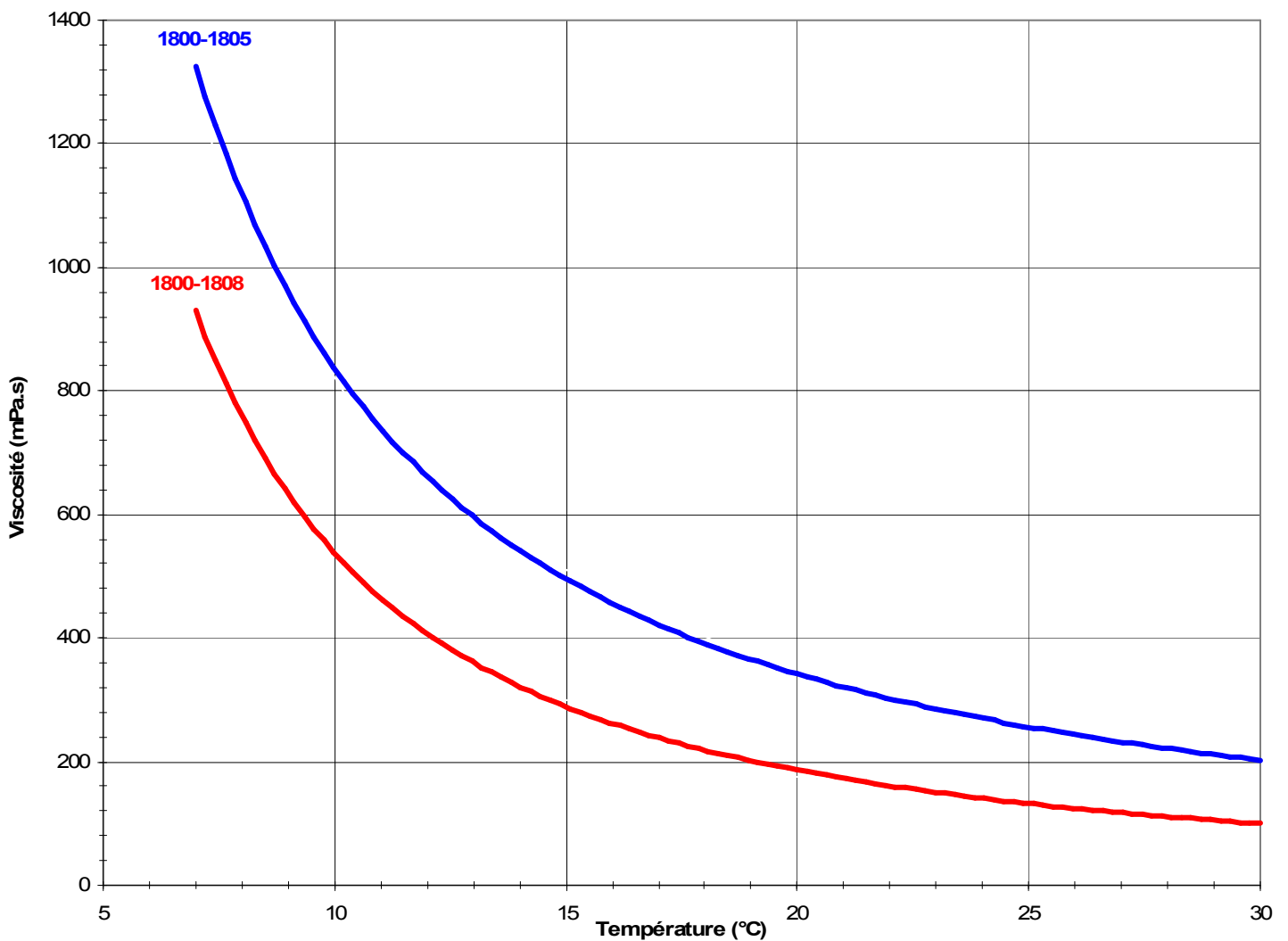
Hardeners 1805 & 1808

## PHYSICAL CHARACTERISTICS (Continued...)

Viscosities (mPa.s) according to ISO 12058-2 @ 23°C

	1800	1805	1808
Viscosity	850	6	5
Mix viscosity	-	290	145

Evolution of initial viscosity vs. temperature according to ISO 12058-2



# Resin 1800

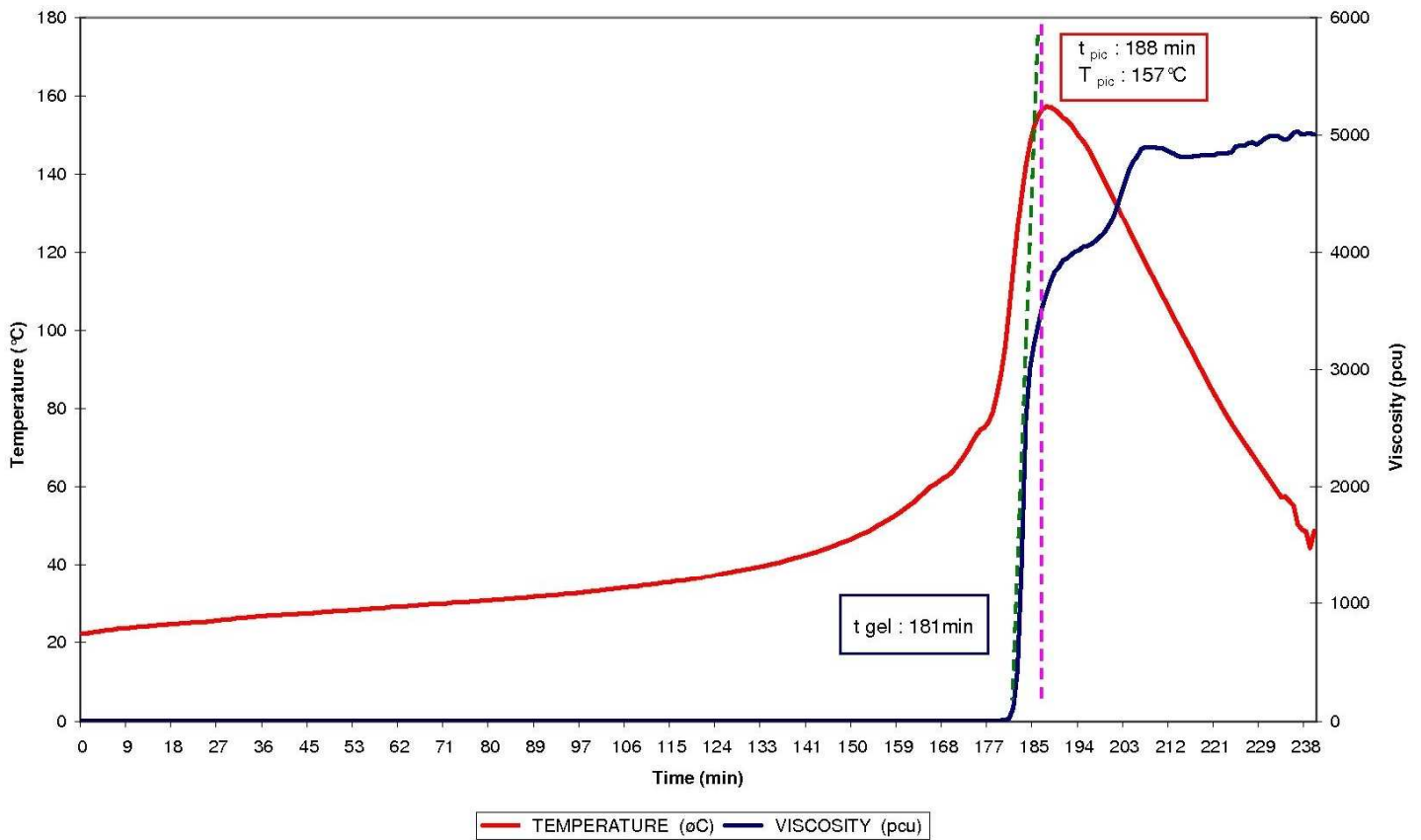
Hardeners 1805 & 1808

## REACTIVITIES

Gel time measures are realized on Trombotech according to ISO 2535 at 23°C

HARDENERS	1805	1808
Gel time on 70g @ 25°C	120 min	50 min
Temperature at exothermique peak on 70g	230°C	240°C
Gel time on 70g @ 20°C	180 min	NC
Gel time on 8kg @ 17°C	100 min	NC

RESOLTECH 1800-1805 @ 20 °C  
Temperature and Viscosity Vs Time on 70g (5cm)



# Resin 1800

Hardeners 1805 & 1808

## CURING & POST CURING

The 1800 system, specially when used with the 1805 hardener should not be released from the mould without curing at intermediate temperatures of minimum 12h @ 40° or 6h @ 60° as it remains brittle without this initial cure.

It will then require a minimal post curing of 15h to 60°C in order to reach its thermo mechanical properties

While a postcure is not mandatory, in order to obtain a material at the maximum of its mechanical properties it is necessary to respect the following recommended cycles:

GLASS TRANSITION TEMPERATURES	1800-1805 15h @ 60 °C	1800-1808 15h @ 60°C	1800-1805 15h @ 60 °C + 5h @ 110°C
Initial TGd	81,7	77,4	123,3
Median TGm	<b>90</b>	<b>84</b>	<b>130</b>
Final TGf	99,4	93,2	140,4

The 60°C temperature cure means that the system does not need to be used in temperature resistant moulds. Ordinary FRP or wooden moulds can be used, as well as CNC machined fast tools made of non-heat resistant foams. Foam cores will easily withstand 70°C.

Heating can be carried out with a space heater and a temporary mould cover or in an oven. It is critical to monitor the heat throughout the mould and laminate to ensure even values.

# Resin 1800

Hardeners 1805 & 1808

## MECHANICAL CHARACTERISTICS

Values on non reinforced resin after 7 days at 23°C

	15h @ 60°C		15h @ 60°C + 6h @ 110°C	
	1800-1805	1800-1808	1800-1805	1800-1808
<b>TENSILE (ISO 527-2)</b>				
Modulus (MPa)	3708	2703	2995	-
Max stress(MPa)	46,2	71,4	64	-
Failure stress (MPa)	46,2	64,7	64	-
Failure strain (%)	1,5	7,5	3	-
<b>FLEXURE (ISO 178)</b>				
Modulus (MPa)	3451	2808	2748	-
Max stress(MPa)	73,1	105	109	-
Failure stress (MPa)	73,1	90,4	109	-
Failure strain (%)	2	8,8	5,2	-
<b>COMPRESSIVE (ISO 604)</b>				
Modulus (MPa)	2288	1636	2027	-
Max stress (MPa)	88	73,5	106,1	-

Values on glass / epoxy composite after 7 days at 23°C \*

	15h @ 60°C		15h @ 60°C + 6h @ 110°C	
	1800-1805	1800-1808	1800-1805	1800-1808
<b>% de fibres en poids</b>	64%	73%	64%	-
<b>FLEXURE (ISO 178)</b>				
Modulus (MPa)	9340	15709	10022	-
Max stress (MPa)	136	279	238	-
<b>COMPRESSIVE (ISO 604)</b>				
Modulus (MPa)	6206	7109	7042	-
Max stress (MPa)	64,6	65	100,4	-

### \* Composite manufacturing

Composite manufacturing was achieved by infusion on 16 layers of glass twill 2-2 of 285 g/m<sup>2</sup>.

# Resin 1800

Hardeners 1805 & 1808

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## MECHANICAL CHARACTERISTICS (Continued...)

### Hardness according to NF T57-106

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Barcol Hardness:

- 36 for 1800-1805 system
- 37 for 1800-1808 system

## WATER ABSORPTION

### Non reinforced resin:

Water absorption at 23°C during 24h according to ISO 62 is :

- 0,2% for 1800-1805 system
- 0,2% for 1800-1808 system

### Reinforced resin:

Water absorption at 23°C during 24h according to ISO 62 is :

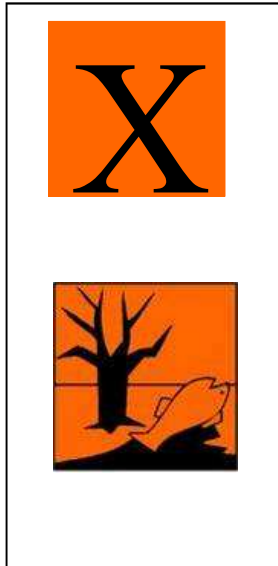
- 0,9% for 1800-1805 system
- 0,8% for 1800-1808 system

# Resin 1800

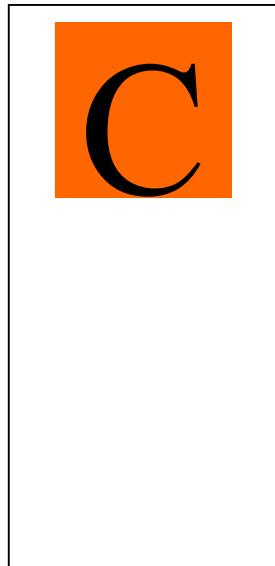
Hardeners 1805 & 1808

## LABELLING

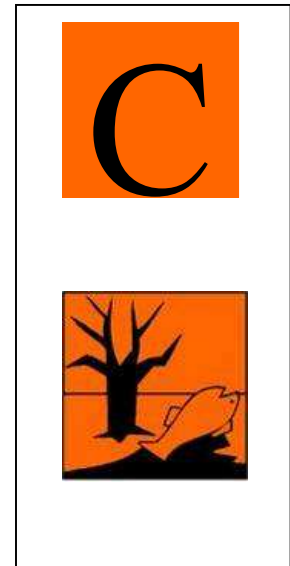
1800



1805



1808



## PACKAGING

- Plastic cans kit of 1 kg + 0.17 kg
- Plastic cans kit of 5 kg + 0,84 kg
- Plastic cans kit of 30 kg + 5,1 kg
- Steel drum kit of 200 kg + 34 kg

## TRANSPORT & STORAGE

Keep containers sealed and away from heat and cold preferably between 10°C and 30°C in a well ventilated area. Shelf life is one year in sealed containers as provided.

## HEALTH & SAFETY

The usual precautions for the use of epoxy resins must be respected. Our health and safety datasheets are available upon request. It is important to wear protective clothing and avoid skin contact with the products. In case of contact, wash thoroughly with soap and water. In case of eye contamination, wash thoroughly with warm water. Consult a specialist.

Nota : The data provided in this document are provided good-faith and are based on the test in laboratory and our practical experience and is believed to be accurate. Considering the application of our products gets away from our control, 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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