

# resoltech 1080S

Hardeners 1083, 1084, 1086

Highest Performance Epoxy Laminating & Infusion System



## **New 1083 hardener CMR free**

- Highest modulus & rigidity epoxy system
- Adjustable pot life from 20min to 4h19min
- Room temperature mould release
- Max  $T_g$  up to 110°C

## INTRODUCTION

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RESOLTECH 1080S is the highest modulus epoxy system formulated by RESOLTECH to manufacture **high performance, rigid, lightweight structures** with glass, carbon, aramid and basalt fibres with or without post-curing.

Using this novolac based epoxy resin will **enable to reduce the amount of reinforcement fibre used**, resulting in lighter, more rigid but also cheaper parts in spite of its higher price compared to more common Bisphenol A & F based resins.

This new generation system, optimized with a low reactivity, low viscosity and excellent air release properties, is suitable for the manufacture **any size structures and composite parts by hand layup, infusion and injection moulding** while guaranteeing low toxicity working conditions to the user and ease of use thanks to its high wetting properties.

It features an **adjustable working time** from 20min to 4h19min with its range of hardeners.

**It is possible to release tool without post-curing.** The maximum thermo mechanical properties of the laminate will be obtained after a post-curing cycle to obtain a final TG of 110°C. Nevertheless, a post cure is not mandatory depending on the final use of the parts.

The resulting structures will result in **very rigid with high mechanical properties.**

1080S is recommended for the production of marine foils, secondary laminations of chain plates, production of lightweight & rigid skiffs or high performance kayaks & outriggers where the weight/rigidity is key.

The 1080S is used on many Dakar wining rally cars, all types of **RC models but also for the production of helicopter, gyrocopter & airplane propellers.**

The 1080S resin is available in a **thixotropic version 1080T** for wet lay-up application **in vertical or overhanging surfaces prone to resin dripping.**

## MIXING RATIO

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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	1080S / 1083	1080S / 1084	1080S / 1086
Mixing ratio by weight	100 / 20	100 / 33	100 / 36

## APPLICATION

- The 1080S system can be applied by brush, roller, infused or injected.
- In case of laminating over a cured surface without peel ply, it is required to deglaze, clean and degrease the support prior to laminating.
- It is recommended to have workshop temperature conditions between 18-25°C in order to facilitate the mixing and the reinforcement fibers impregnation.
- A lower temperature will increase the viscosity of the mix as well as its pot life. On the contrary, a higher temperature will reduce the viscosity and the pot life of the mix.
- **Hardener 1083 is sensitive to moisture, use quickly after opening.**

## PHYSICAL CHARACTERISTICS

### 1 Visual aspect

#### 1080S :

Opalescent neutral liquid

#### 1083, 1084 & 1086 :

Transparent to yellow liquid

#### Mix :

Colourless to slightly yellow liquid

### 2 Density

References	1080S	1083	1084	1086
Density at 23°C	1.13	0.94	0.95	0.99
Mixed density at 23°C	-	1.09	1.08	1.09

ISO 1675, ± 0.05 tolerance

### 3 Viscosity

References	1080S	1083	1084	1086
Viscosity at 23°C (mPa.s)	1100	8	65	225
Mixed viscosity at 23°C (mPa.s)	-	301	500	760

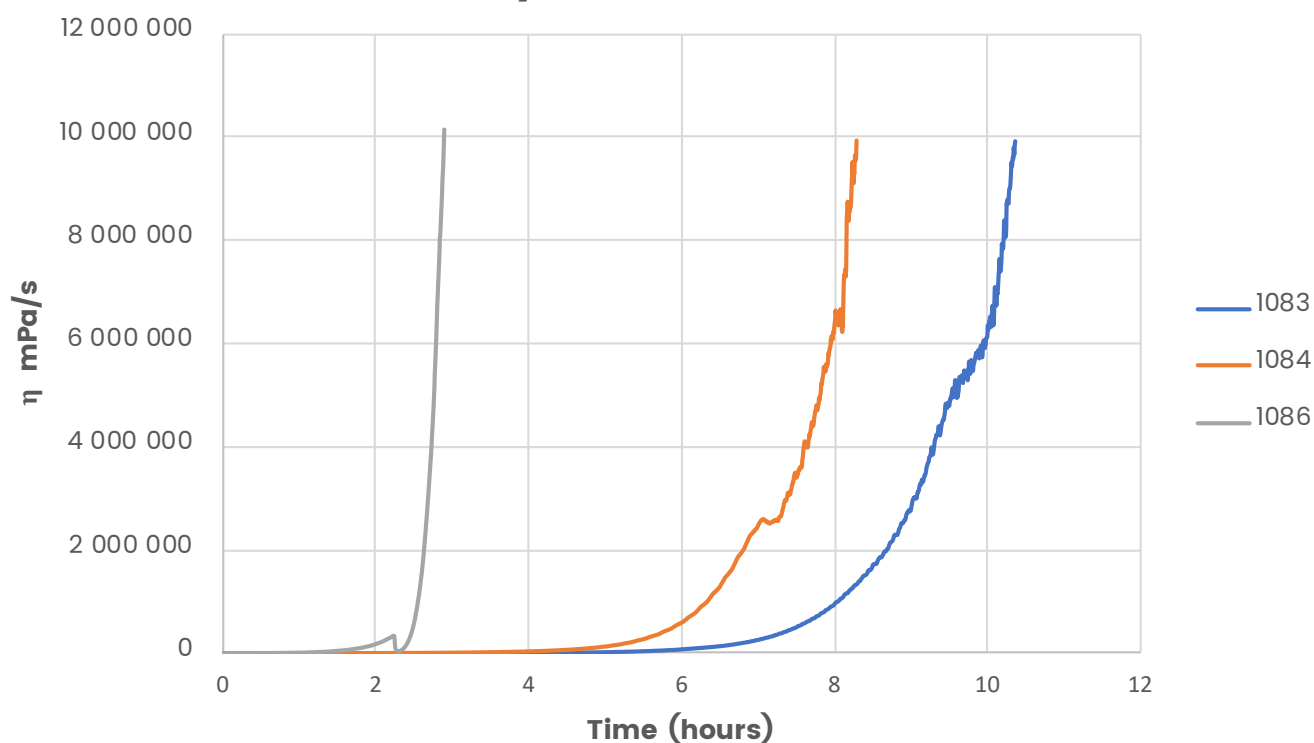
ISO 12058.2, ± 15% tolerance

## REACTIVITIES

Systems	1080S/1083	1080S/1084	1080S/1086
Gel time on 70mL at 23°C (4cm high mix)	4h19min	2h30min	23min
Time at exothermic peak on 70 mL at 23°C	3h06min	2h35min	24min
Temperature at exothermic peak on 70mL at 23°C	44°C	180°C	210°C
Gel time on 2mm thick film at 23°C	9h35min	7h06min	2h45min

Reactivity measurements on 70ml realized on Trombotech®  
Reactivity measurements on 1mm realized on a rhéomètre HAAKE MARS®

## Reactivity on a 1mm film at 23°C



## CURING AND 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		1080S/1083	1080S/1084	1080S/1086
14 days at 23°C	T <sub>g</sub>	54°C	57°C	54°C
	Hardness Shore D	87	86	86
5h at 60°C	T <sub>g</sub>	73°C	80°C	74°C
	Hardness Shore D	89	89	88
T <sub>g</sub> max		110°C	107°C	79°C

T<sub>g</sub> measured on DSC, inflection point  
Hardness : ISO 868

# MECHANICAL PROPERTIES

Systems		1080S/1083	1080S/1084	1080S/1086
14 days at 23°C	FLEXION Modulus Maximum strength Elongation at yield	3.02 GPa 80.0 MPa 2.8%	3.03 GPa 99.7 MPa 3.5%	2.97 GPa 86.6 MPa 3.1%
5h at 60°C	FLEXION Modulus Maximum strength Elongation at yield	2.91 GPa 116 MPa 6.7%	2.63 GPa 102.9 MPa 6.5%	2.61 GPa 106.0 MPa 5.8%

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

## PACKAGING

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### 1080S/1083 :

- Pastic jerrycan kit of 1kg + 0.2kg
- Pastic jerrycan kit of 4.5kg + 0.9kg
- Pastic jerrycan kit of 25kg + 5kg
- Drum kit of 200kg + 2 x 20kg

### 1080S/1084 :

- Pastic jerrycan kit of 1kg + 0.33kg
- Pastic jerrycan kit of 4.5kg + 1.49kg
- Pastic jerrycan kit of 25kg + 8.25kg
- Drum kit of 200kg + 3 x 22kg

### 1080S/1086 :

- Pastic jerrycan kit of 1kg + 0.36kg
- Pastic jerrycan kit of 4.5kg + 1.62kg
- Pastic jerrycan kit of 25kg + 9.72kg
- Drum kit of 200kg + 3 x 24kg

## TRANSPORT & STORAGE

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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

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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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