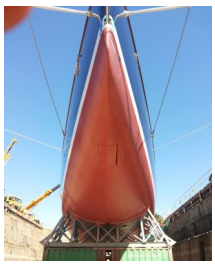
RESOLTECH 1050

Hardeners 1053S to 1059S

Structural Lamination Epoxy System

- **Adjustable pot life from 10min to 14hours**
- **Room temperature cure & mould release**
- **T_G up to 75°C**
- **Excellent wetting properties on all reinforcements**
- **For small to XXL size parts productions**






The 1050 epoxy laminating system is formulated to manufacture high performance lightweight structures with glass, carbon, aramid and basalt reinforcements with or without post-curing.

This latest generation system, **without CMR substances according to GHS criteria** is optimized with a low exotherm, low viscosity and excellent air release properties. This epoxy system is also suitable for the manufacture of small to very large structures and composite parts by wet lay-up, infusion, injection moulding or filament winding while guaranteeing low toxicity working conditions to the users.

All hardeners mix with a 100/35 ratio and can be pre-blended together to precisely adjust the desired pot life. The 1050 resin + 1053S system is particularly recommended for infusion thanks to its low mixed viscosity (205mPa.s).

The 1050 resin is available in a **thixotropic version 1050T** for wet lay-up application in vertical or overhanging surfaces prone to resin dripping.

It is possible to release the parts from the mould without post-curing. To speed up demoulding a 40ºC cure is possible and optimum thermo-mechanical properties of the laminate will be obtained after a 60ºC post-curing cycle.
Laminates produced with the 1050 system will offer very good mechanical properties combined with excellent fatigue resistance thanks to its exceptional wetting properties, improving the composite interlaminar properties even on aramid reinforcements.

Its **elongation at break in flexion up to 5%** makes the 1050 system as a prime choice epoxy system for large structural laminates submitted to dynamic working efforts.

Resin 1050

Hardeners 1053S, 1054S, 1055S, 1056S, 1058S, 1059S

MIXING RATIO

Systems	1050 / 1053S	1050 / 1054S	1050 / 1055S	1050 / 1056S	1050 / 1058S	1050 / 1059S
Mixing ratio by weight	100 / 35					

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. It is important to note that epoxy systems tend to heat up much faster in a pot than as a thin film. It is preferable 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.

APPLICATION

The 1050 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 fibers reinforcement 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.

PHYSICAL CHARACTERISTICS

Visual aspect

1050 : Opalescent neutral liquid
1053S - 1059S : Transparent yellow liquid
Mixture aspect : Neutral to transparent yellow liquid

Density (ISO 1675, ± 0.05 tolerance)

References	1050	1053S	1054S	1055S	1056S	1058S	1059S
Density at 23°C	1.14	0.94	0.95	0.96	0.97	0.98	1.00
Mixed density at 23°C	-	1.08	1.09	1.09	1.10	1.11	1.12

Viscosity (ISO 12058.2, ± 15% tolerance)

References	1050	1053S	1054S	1055S	1056S	1058S	1059S
Viscosity at 23°C (mPa.s)	1000	14	21	30	40	68	166
Mixed viscosity at 23°C (mPa.s)	-	251	308	362	462	520	637

Resin 1050

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REACTIVITIES

Systems	Gel time on 70mL at 23°C (4cm high mix)	Time at exothermic peak on 70mL at 23°C	Temperature at exothermic peak on 70mL at 23°C	Geltime on 2mm thick film at 23°C
1050 / 1053S	14h	11h40min	NR	12h40min
1050 / 1054S	4h25min	3h20min	38°C	7h40min
1050 / 1055S	1h30min	1h40min	140°C	5h45min
1050 / 1056S	37 min	38min	184°C	3h10min
1050 / 1058S	19 min	21min	213°C	2h10min
1050 / 1059S	10 min	16min	217°C	1h05min

Reactivity measurements realized on Trombotech®
NR: Non Representative

CURING & POST CURING

T_G obtained with following hardeners & curing cycles:

	14 days at 23°C		16h at 60°C	
Systems	**T_G**	**Shore D Hardness**	**T_G**	**Shore D Hardness**
1050 / 1053S	42.4°C	88	54.6°C	88
1050 / 1054S	46.3°C	88	64.9°C	89
1050 / 1055S	48.6°C	89	65.9°C	89
1050 / 1056S	49.1°C	89	66.7°C	90
1050 / 1058S	49.7°C	90	69.4°C	91
1050 / 1059S	50.6°C	91	75.0°C	93

T_G measured on Kinetech®
Hardness: ISO 868

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MECHANICAL PROPERTIES

Systems	Flexion according to ISO 178					
	Modulus (GPa)		Maximum strength (MPa)		Elongation at max. strength (%)	
	Curing Cycles					
	14 days at 23°C	16h at 60°C	14 days at 23°C	16h at 60°C	14 days at 23°C	16h at 60°C
1050 / 1053S	3.17	3.08	81.5	97.2	2.7	4.3
1050 / 1054S	3.38	3.18	89.4	91.1	3.4	4.2
1050 / 1055S	3.46	3.45	84.6	110.1	2.5	4.5
1050 / 1056S	3.52	3.42	72.1	113.6	2.2	5
1050 / 1058S	3.50	3.46	76.1	113.5	2.3	4.9
1050 / 1059S	3.56	3.33	81.6	118.1	2.4	5.6

PACKAGING

- 1,35kg kit : (1kg+0.35kg)
- 6,75kg kit : (5kg+1.75kg)
- 37,8kg kit : (28kg+9.8kg)
- 270kg kit : (200kg+3x23.33kg)
- 1350kg kit :(1t IBC+2x175kg steel drums)

TRANSPORT & STORAGE

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

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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