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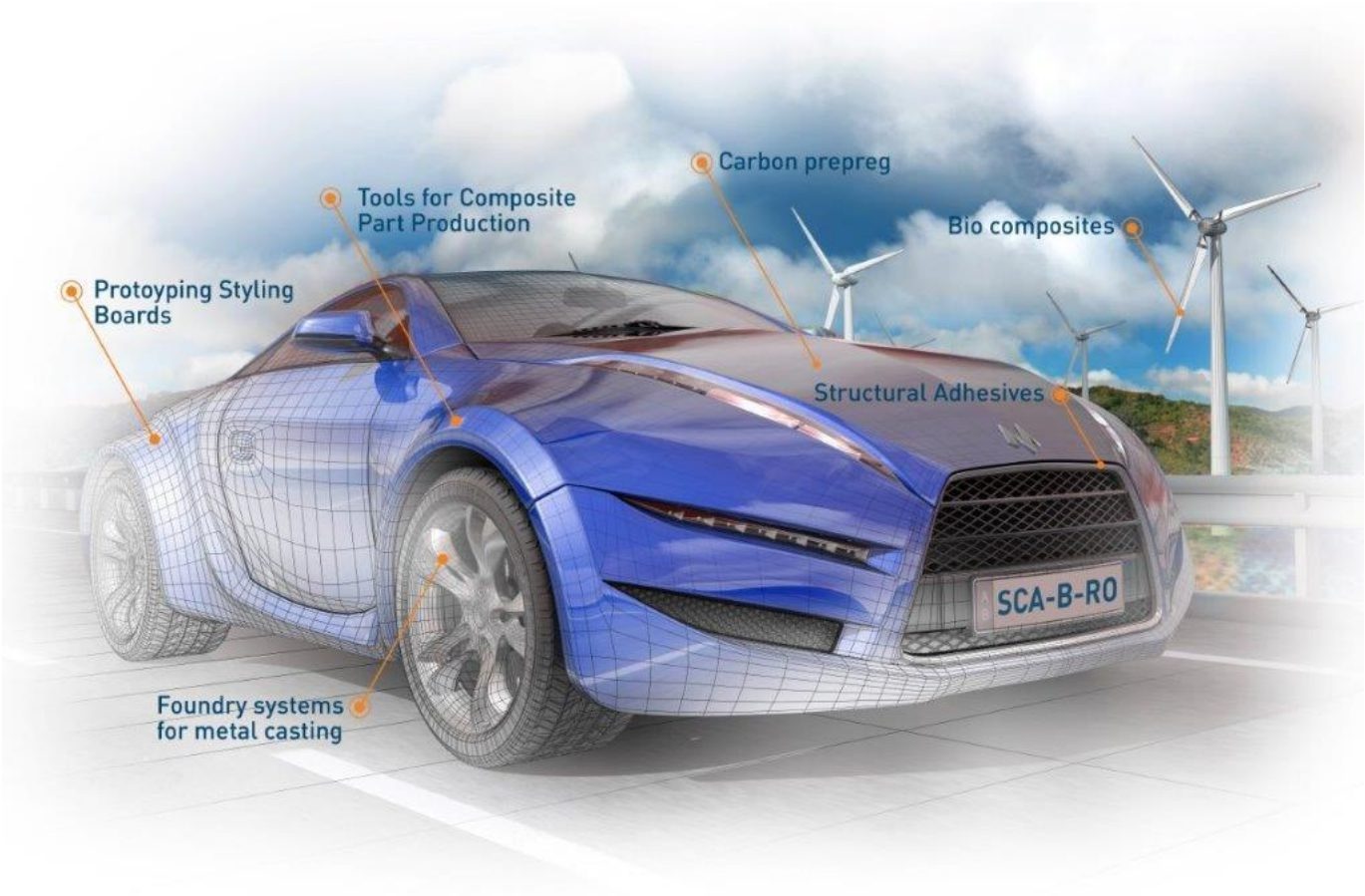
TECHNICAL DATASHEET

RESOLTECH

Epoxy



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RESOLTECH 2060 ALU 25

Hardeners 2061S & 2066H

Technical Data Sheet - 04/07/2014

Aluminium filled tooling epoxy resin

- **Excellent heat conductivity**
- **Casting & lamination resin system**
- **For demanding curing & thermoforming cycles**
- **High modulus & mechanical properties**




RESOLTECH 2060 ALU 25 aluminum epoxy resin is formulated for the production of composites tooling using it as casting resin or as wet layup lamination system. It enables the production of tooling that will resist many years to the most demanding heating and cooling post-curing cycles of: **heating RTM & pre-preg tooling, thermoforming of thermoplastics or polymer concrete/solid surface injection tools**.

The heat conductivity of this resin system is twice better than a conventional epoxy resin, meaning that the dwell temperature at which a part must be post-cured will be achieved in half the time on tools manufactured with this resin system, improving the tool productivity.

This new generation system, optimized with **excellent self levelling characteristics and excellent air release**, is suitable for the manufacture of large composite tooling. It should be applied by brush or casted.

The 2060 ALU 25 system is also available in a thixotropic version, the 2060T ALU 25 & a gelcoat version the 2060GC ALU which are recommended also for manufacturing of tools incorporating heating elements as the system is heat conductive but not electrically conductive.

Final thermo-mechanical properties will be obtained after a post curing cycle defined according later in this technical data sheet. It is possible to de-mould tools from plugs without pre-cure, enabling the use of cheap plug materials - and guaranteeing the dimensional stability of the plug and the mould.

Resoltech 2060 ALU 25

Hardeners 2061S & 2066H

Tooling Aluminium Epoxy Resin

MIXING RATIO

Resin 2060 ALU 25	**100 pbw**
Hardener 2061S (slow)	**13 pbw**
Or	
Hardener 2066H (fast)	**10 ppw**

Warning: 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

APPLICATION

Thoroughly mix the resin component before pouring in mixing cup. It is recommended to mechanically mix the resin+hardener during 5 effective minutes to ensure effective mixing.

The standard procedure of working with epoxy gelcoats applies this system. The 2060 ALU 25 system can be applied by brush, roller, or airless gelcoater.

2060 ALU 25 has been formulated for application of 500 to 600 µm without sag on vertical surfaces in one only coat.
Coverage: 0,950 kg/m² for a 500 µm thickness dry film.

Over coating:
As an indication, at 23ºC with the 2061S slow hardener it is possible to overcoat the gelcoat with a laminating resin within **2 hours** of it's application as long as the surface still has tack (exact timing to be defined by workshop temperature).
It is recommended to sand and degrease before laminating onto the gelcoat if the surface has cured and formed its film (tack-free surface).

Other application methods such as delaying the gel by applying a coat of ultra slow laminating epoxy resin (*1050+1053 or 1040-1043L Resoltech system is recommended for this use*) onto the freshly applied gelcoat **is a well proven method and ensures a good chemical bonding** with the reinforcement laminated within 24h of the 1050/1053 coat.
Lamination of the first layers of reinforcement may be done with the aluminium filled 2060 ALU 25 resin in order to improve mould print-through resistance and better thermal resistance of the mould surface.

In all cases testing in production conditions should be conducted in order to validate the method before industrial size applications.
It is recommended to have workshop temperature conditions between **18-25°C** in order to facilitate the mixing and the application. A lower temperature will increase the viscosity of the mix as well as it's pot life. On the contrary, a higher temperature will reduce the viscosity and the pot life of the mix. For more information, please refer to the applications technical bulletins (TechNotes), available on request.

Resoltech 2060 ALU 25

Hardener 2061S & 2066H

PHYSICAL CHARACTERISTICS @ 23°C

Visual aspect

2060 ALU 25: Grey gel.
2061S & 2066H: Transparent yellow liquid (120 mPas).
Mix : Grey gel.

Density & Viscosity

REFERENCES	2060 ALU 25	2061S	2066H	Mix 2060 ALU25 +2061S	Mix 2060 ALU25 +2066H
DENSITIES	1,74	0,98	0.97	1,68	1,68
VISCOSITIES (mPa.s)	170 000	120	135	120 000	125 000

REACTIVITY @ 25°C

	2066H	2061S
Geltime on 70g (4cm high)	40 min	4h40
Max temperature at exothermic peak on 70g (4cm high)	ND	28°C
Touch dry on 2 mm thickness	2h	5h

CURE & POST CURE

The 2060 ALU 25 system will cure at room temperature enabling to release moulds from the plugs/models at room temperature after 24h of its application, yet further post-cure of 2h at 80 °C+ 3h @ 120ºC will enable the resin system to obtain 100% of it´s mechanical characteristics:

Touch dry on 500 µm with 2061 hardener : 6 h @ 25 ºC
Hard & sandable : 16 h @ 25 ºC
Releasable from mould: 24h at room temperature
Full cure : 7 days at room temperature or 2h at 80 °C+ 3h @ 120ºC

TG

CURING CYCLE	TG_M (Kinetech)
24h @ 23°C	45°C
2h @ 80 °C+ 4h @ 120ºC	115°C

Resoltech 2060 ALU 25

Hardener 2061S & 2066H

MECHANICAL CHARACTERISTICS

Hardness:	87 Shore D
Elongation to break :	4%

THERMAL CONDUCTIVITY

Reference	TC(i,y) [W/mK]	s (MJ/m³K)	TD(i,y) [mm²/s]
Resoltech 2060 ALU 25 + 2061S	0,763	1,424	0,5361

PACKAGING

Slow version

- 1,13 kg kit: 1 kg of 2060 ALU 25 + 0.13kg. of 2061S
- 5,65kg kit: 5 kg of 2060 ALU 25 + 0,65 kg. of 2061S
- 28,25kg kit: 25 kg of 2060 ALU 25 + 3,25kg. of 2061S

Fast Version

- 1,13 kg kit: 1 kg of 2060 ALU 25 + 0.10kg. of 2066H
- 5,65kg kit: 5 kg of 2060 ALU 25 + 0,5 kg. of 2066H
- 33,00 kg kit: 30 kg of 2060 ALU 25 + 3,0kg. of 2066H

TRANSPORT & STORAGE

Shelf life is 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

It is advised to follow basic rules such as avoiding skin contact, wear masks when producing dust. Please read our standard health and safety sheet for more information.

In case of eye contamination, wash with water and seek medical advice.