SCOTT BADER

WE THINK
INNOVATION

Crestapol® Resin Systems for Closed Mould Applications

CRESTAPOL 1210 is a tough low viscosity resin which gives a rapid cure and can be filled as required.

CRESTAPOL 1210A is available pre-accelerated with amine accelerator.

CRESTOPOL 1212 is a very low viscosity, methacrylate-based thermosetting resin. Crestapol 1212 with the addition of high levels (up to 170phr) of alumina trihydrate (ATH) fire retardant filler will produce laminates with excellent low smoke, low toxicity fire performance.

FEATURES

HIGH REACTIVITY
Offering the potential for rapid demould times. Elevated temperature moulding will further enhance the cure time.

MECHANICAL PERFORMANCE
The inherent "toughness" of the cured resin matrices results in laminates exhibiting excellent mechanical performance despite the presence of high levels of filler.

PIGMENTABLE
Fully compatible with polyester pigment pastes.

GELCOATS AND ADHESIVES
Fully compatible with Crystic Gelcoats and Crystic Crestomer and Crestabond Adhesives.

The following tables give typical properties of Crestapol 1210 and 1212 when tested in accordance with BS2782.

LIQUID PROPERTIES			
Property	**Unit of Measurement**	**Crestapol 1210**	**Crestapol 1212**
Appearance		Clear yellowish brown	Clear yellowish brown
Viscosity @ 25°C 4500 sec-1	Poise	1.75	0.7
Density @ 25°C	gcm^{-3}	1.10	1.07
Volatile Content	%	36	49
Stability in the dark @ 20°C	months	>6	>6
Gel time Crestapol 1210*	minutes	8.5	
Gel time Crestapol 1212 **	minutes		25

* @ 20°C 2% Accelerator G, 2% Accelerator D, 1.5% Trigonox 44B
** @ 20°C 4% Accelerator D, 2% Perkadox CH50X
Accelerator G is a 1.0% solution of cobalt as compound in styrene
Accelerator D is a 10.0% solution of dimethyl analine in styrene

MECHANICAL PROPERTIES CRESTAPOL 1210 & 1210A		
Property	**Unit of Measurement**	**Resin (without postcure)**
Barcol hardness		44
Deflection Temperature under load (1.80MPa)	°C	93
Tensile strength	MPa	79
Tensile modulus	GPa	3.5
Elongation at break	%	3.3

MECHANICAL PROPERTIES CRESTAPOL 1212		
Property	**Unit of Measurement**	**Fully cured resin**
Barcol hardness	-	33
Deflection Temperature under load (1.80MPa)	°C	87
Tensile strength	MPa	65
Tensile modulus	GPa	2.7
Elongation at break	%	5.1

Moulding Guidelines

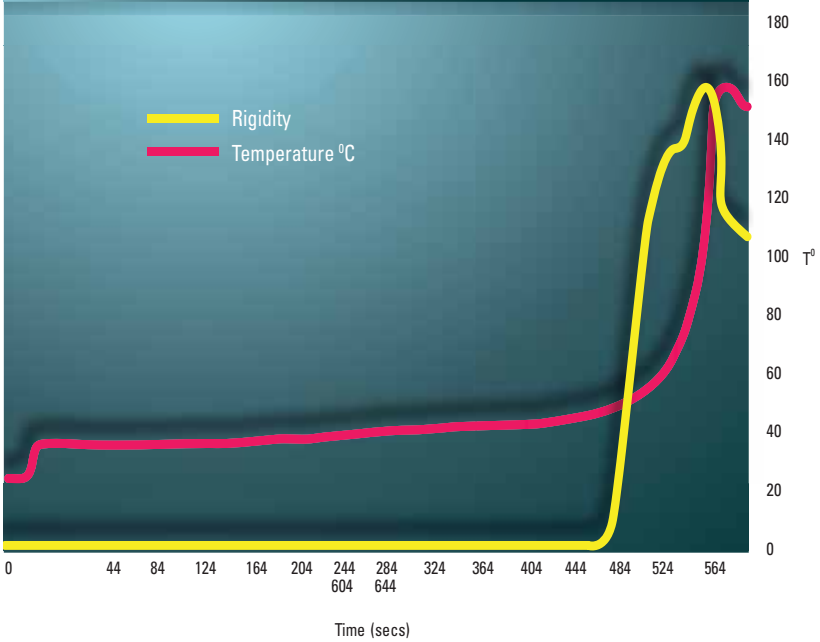
The geltime and cure speed of Crestapols can be varied by altering the levels of accelerators and peroxides used. For Crestapol 1210 standard RTM peroxides such as Trigonox 44B or Trigonox 524 (for elevated temperature) can be used. For longer geltimes commercially available inhibitors can be used. For Crestapol 1212 with high ATH loadings it may be necessary to use wetting agents such as Byk 996 to lower the viscosity and use BPO/Amine curing systems. Commercially available inhibitors such as Akzo Inhibitor NLC 10 can be used to extend the geltime.

If required internal release agents can be used. Please contact Scott Bader Technical Support for recommendations.

Typical Formulations (by weight)

	1210 Formulation	1210A Formulation	1212 Formulation
Crestapol 1210	100		
Crestapol 1210A		100	
Crestapol 1212			100
Accelerator G	2	1	
Accelerator D	2		4
Alumina Trihydrate		50	170
Calcium Carbonate	50		
Byk W996			1.7
Trigonox 44B	2.25		
Trigonox 524		2.25	
Perkadox CH50X			2.0
Geltime	9 minutes @ 25°C	9 minutes @ 40°C	14 minutes @ 20°C
Peak Exotherm		159°C	
Time to Peak		2 minutes	

Typical Cure Curve (1210A Formulation)



Demoulding can take place dependant on the complexity of the part as soon as the Exotherm peaks. In the case of the above formulation demoulding could start at 12 minutes from the end of injection.

Moulding

The correct preparation is essential in order to obtain the full benefits from the use of Crestapol resins.

Resin Temperature

Ensure that the resin is at 18°C or above prior to moulding. If using elevated mould temperatures the resin can be preheated in order not to lower the mould temperature during injection.

Mould Construction

All types of commercial moulds can be used, including polyester, epoxy, metal and nickel shell options.

Mould Temperature

Where possible use liquid heating as this will control the temperature more accurately than electric.

Release Agent

Use a high slip semi-permanent release agent on the non gelcoated surfaces of moulds Reinforcement type: Glass, Kevlar and Carbon reinforcement can be used with Crestapol resins. Any commercial glass suitable for use with polyester resins can be used.
For RTM and RTM light Crestapol 1210 can be moulded using a conventional RTM injection machine. For Crestapol 1212 due to the BPO/Amine cure system used it is essential to either use a machine capable of pumping a suspension form of Benzoyl Peroxide or a 1:1 machine where the amine can be in one half of the resin component and the Benzoyl Peroxide in the other half. Vacuum Infusion can be used to mould both Crestapol 1210 and 1212 based formulations. With filled materials it is essential to use easy flow reinforcements.

Fire Performance

Fire performance of Crestapol 1212 profiles is achieved by addition of aluminium trihydrate (ATH). Due to the inherent low viscosity of Crestapol 1212 up to 170 phr of ATH can be incorporated to achieve a range of stringent fire, smoke & toxic fume standards. For example, 170phr ATH can achieve M1, F0 to the French Epiradiateur standards.
Fire performance will also be dependent on glass content and profile thickness. Please contact Scott Bader Technical Services Dept for advice on ATH loadings for specific applications.

Fire requirement	Minimum ATH loading	Results
French NFP 92-501	170	M1
French NFF 16-101	170	F0
UNE 23721 : 1990 / UNE 23727 : 1990	170	M1
DIN 5510	100	S4/SR2/ST2
ASTM 162	100	Is = 10 (limit <35) Meets Federal Railroad Admin requirements for surface flammability
ASTM 662	100	Ds (max) = 119 Dm (1.5) = 1 Dm (4) = 4
ASTM E84	165	smoke index 110, flame index 15
ISO 5658-2	170	HL2
ISO 5659-2	170	HL2
ISO 5660-1&2	170	HL2

Health and Safety

Refer to MSDS

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