HYBTONITE® – CNT modified Epoxy

HYBTONITE® resin + Amroy CA35 / CA40

The system is a low viscosity solvent free 100 % reactive CNT modified epoxy system taylor made for composites industry. It is suitable for RTM, filament winding, laminating, pultrusion and many other aplications.

The system is made with patented HYBTONITE® technology. The system can be taylor made with different curing agents and accelerators to meet required cure rate, pot life and properties.

The system will give increased impact resistance, elongation to break and fatigue compared to any traditional epoxies. Choose CNT level with different HYBTONITE® resins: G2, G4LV, G4.

Recommended Process Specifications

Before mixing:
Clear the surface from dust, grease and moisture. The higher the temperature of the object is the better flow and wetting is achieved. If possible preheat the HYBTONITE® resin component to 40 °C before use.

Mixing and processing:
Mix the resin with curing agent properly for min 1–2 minutes. Let the air come out and settle for min 2–5 minutes (even vacuum is possible). You can mix fast and slow in any ratio depending wished cure rate / pot life.

Curing:
The product cures even at +20 °C but the higher temperature the better cure and properties. Heat cure from 2 hours at 60 °C to 5 minutes at 200 °C are possible. The product is fully cured at 24 hours at 20 °C. The best mechanical properties are obtained after heat cure of 6 hours 80 °C.

FOR THE BEST RESULTS, CONSULT WITH AMROY.

Table 1. HYBTONITE® G4LV, 25 °C	CA35	CA40	Mix 50/50
Mix ratio (by weight)	100:35	100:35	100:35
Mix Viscosity (mPaS) 25 °C	400	600	500
Mix Viscosity (mPaS) 40 °C	200	300	250
Density (kg/l)	1,06	1,06	1,06
Colour	clear when cured / black, green in liquid		
Gel Time 25 °C (150g)	6 hours	20 minutes	2 hours
Gel time 60 °C	60 minutes	5 minutes	20 minutes
Min Cure Temperature	20 °C	5 °C	15 °C
Heat Cure minimum	2 hours at 60 °C	not needed	not needed
Heat Cure recommended	6 hours at 80 °C	not needed	6 hours at 80 °C
Max Tg / °C	100 °C	100 °C	100 °C
On request also high Tg systems available up to + 200 °C.			

Table 2. Viscosity temperature profiles at different injection temperatures for HYBTONITE® G4			
Viscosity/tempreature profile	25 °C	40 °C	60 °C
HYBTONITE® G4	20000 mPaS	2000 mPaS	200 mPaS
G4 + 50 % CA 35/40 mix	500 mPaS	250 mPaS	95 mPaS
G4 + CA35	400 mPaS	200 mPaS	90 mPaS

Table 3. Reference list of mechanical result improvements with 50–70 % glass/carbon fiber		
Customer	Application	improvement with HYBTONITE®
Montreal Ice Hockey	RTM	+ 38 % impact
Peltonen Ski	Glue	+ 25 % elongation
Baltic Yachs	Laminating	+ 20 % max break
Kajak Sports	VARMT/infusion	+ 60 % max energy
EXEL Oy	Filament winding	30 % flexural
Compotech	Pultrusion	30 % bending

The system can be thixed with 2 % HDK / Aerosil for laminating vertical surfaces and against sagging / draining is requested. Also available in all RAL colours. The system does not crystallize and has a long storage stability of min 3 years when properly stored at closed containers.

Sales packages	IBC	Drum	Can
HYBTONITE® G4	1100 kgs	225 kgs	20 kgs
Amroy CA35 / CA40	900 kgs	180 kgs	18 kgs

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