EPOXIGRAPH REBARS SYSTEM

1. DESCRIPTION

EPOXIGRAPH REBARS SYSTEM is an advanced epoxy system specifically formulated for the manufacture of fibre-reinforced polymer (FRP) pultrusion bars. Its design is optimized for the efficient impregnation of glass, carbon or basalt fibres, ensuring excellent wetting and superior fibre-matrix adhesion, which is essential for high-performance structural applications.

This 100% solvent-free two-component system consists of:

- **EPOXIGRAPH REBARS**
  Epoxy resin doped with graphene nanomaterials, which improves mechanical strength, thermal stability and durability in aggressive environments.
- **EPOXIGRAPH HARDENER REBARS**
  Anhydrous hardener, specially developed to provide controlled polymerisation, high cross-linking and excellent in-line workability.

The formulation of the EPOXIGRAPH REBARS SYSTEM allows for optimal processability and stability in both open and closed mould processes. It stands out for its long shelf life, low emissions and outstanding mechanical properties in the final product. Its compatibility with multiple reinforcements (fibreglass, carbon, etc.) allows the manufacture of FRP with excellent physicochemical properties, making the bars produced ideal for concrete infrastructures, marine environments and highly corrosive environments.

2. PROPERTIES

- High adhesion power.
- Great chemical and mechanical resistance
- Extended lifetime
- Not shrink during hardening
- High performance
- No crystallize at low temperatures

3. APLICATIONS

EPOXIGRAPH REBARS SYSTEM has been developed and is specially recommended for FRP manufacture reinforcement bars by pultrusion, using basalt fibre, glass fibre or carbon fibre as reinforcement. Depending on the process parameters and the desired properties of the parts produced, this system may also be suitable for other manufacturing techniques, such as resin transfer moulding (RTM), filament winding or resin infusion.

For pultrusion applications, it should be noted that:

- The mixture must be homogenised before the product is applied.
- Temperature affects drying time. The system is designed for a working temperature between 30 and 50 °C. Higher temperatures will reduce the pot life of the mixture.
- Hardened product residues can only be removed mechanically.

4. TERMS OF USE

Using Epoxigraph Rebars System, the working temperature inside the mould/die/oven must be in the range of 120 and 240 °C. Attending to the length of the die and the sections and thickness of the parts produced, a pultrusion speed higher than 500 mm/min can be achieved, reaching up to 10 m/min during oven curing processes. The curing procedure must be defined according to the specific manufacturing process and the product geometry. Regarding better mechanical properties, the entire cross-section of the manufactured part must undergo the desired curing program. For more information, please contact the Graphenano Composites technical support.

	EPOXIGRAPH REBARS	EPOXIGRAPH HARDENER REBARS	MIXTURE
VISCOSITY (cP)	11 000 – 14 000	75 – 150	2 000 – 3 500
DENSITY (kg / cm³)	1.2 – 1.3	1.2 – 1.3	1.2 – 1.3
GEL TIEM	-	-	> 24 h a 23 °C
CURING	-	-	1 hour at 90 °C + 2 hours at 140 °C
RATIO	100	85.4	100:85.4

5. MECHANICAL PROPERTIES

	STANDARD	VALUES
FLEXURAL STRESS(MPa)	UN 14125	4 500 – 5 500
FLEXURAL STRENGTH (MPa)	UN 14125	100 – 110
DEFLECTION (mm)	UN 14125	0.5 – 1.5
TENSILE MODULUS (MPa)	UN 527	3 000 – 3 500
TENSILE STRENGTH (MPa)	UN 527	40 – 60
ELONGATION AT BREAK (mm)	UN 527	1.5 – 2

6. STORAGE AND PACKAGING

- The product must be stored in a dry place at a temperature below 25°C.
- Expiration date is 1 year under those conditions.
- Containers are available for 1000 kg. For different quantities, contact Graphenano Composites Sales Department.