

Description

ZNT-*boost* is a universal additive for performance composites designed to significantly improve durability and fracture toughness while maintaining or increasing stiffness and strength. Typical improvements can range from 50% to 100% depending on the resin system and application of the technology. ZNT-*boost* powder typically works best with resin systems that are solid at room temperature or are typically heated for processing such as prepreg resins.

ZNT-*boost* provides improvements for current resin systems with a simple drop-in technology without requiring process, formula, or ratio changes. It is the simplest and most cost-effective path to nanomaterial integration. While other raw nanomaterials can greatly increase the viscosity of the material system, ZNT-*boost* produces no significant increase in viscosity.

Features

- Improves durability and toughness mechanicals in a wide range of composites without degrading strength or modulus
- Cured carbon nanomaterial additive is non-reactive for a simple drop-in to current products
- Compatible with many thermoplastics
- Specifically created for existing applications, no process changes required
- Does not change formula ratios of material system
- No significant increase in material system viscosity

Applications and Industries

Typical applications of ZNT-*boost* (powder) are thermoset resins and epoxies that are solid at room temperature or are heated during the composite manufacturing process.

Typical industries include: automotive, aerospace, sporting goods, marine, and industrial markets where increased toughness is required without reducing stiffness or strength.

Materials Characteristics

Characteristic	ZNT- <i>boost</i> (powder)
Color	Black
Nanomaterial	Multi-wall carbon nanotubes
Nanomaterial loading level in <i>boost</i>	3.4- 4.0%
Appearance	Dry powder
Total Solids, weight %	100%
Shelf Life	24 months
Typical loading level ¹	2.5 -10 phr (parts per hundred) of resin
Specific gravity	1.09

¹**Loading Level:** Contact Zyvex to determine the optimal loading level for your application.

Mixing Procedure

ZNT-*boost* powder is easy to integrate into a wide range of host polymer systems. The following mixing procedure generally produces the best results. For additional mixing assistance, please contact Zyvex Technologies.

Procedure for loading 10 phr ZNT-*boost* (powder) into 100 phr resin:

Preheat 10 lbs. of epoxy resin to 110°C (248°F), and add 1 lb. of ZNT-*boost* powder (flakes) in 1 oz. portions over a period of 1 hr. under constant mixing at 20-50 RPM using dispersive stirrer blade. Continue stirring for an additional 10-15 minutes. Throughout the mixing process, the temperature of the resin should be maintained at 120°C to prevent agglomeration of solid ZNT-*boost*. The blade configurations for blending ZNT-*boost* are the same that are typically used for mixing curing agents and epoxy resins. Typically, a 5-10% viscosity increase is observed when the ZNT-*boost* is uniformly dispersed into the resin. Additional mixing times may be necessary if the viscosity of the epoxy resins is greater than 10,000 cps. In order to accommodate ZNT-*boost* into the resin formulations, NO CHANGES

NEED TO BE MADE in your catalyzing procedure. In most cases the mixing equipment used in catalyzing the resin can be used for mixing the ZNT-**boost**.

Additional notes:

Note 1: No adjustments need to be made in the quantities or type of curing agents. The stoichiometry and the application of the resin should remain unchanged even after adding ZNT-**boost**. In some cases, adjustments may be needed for urethane and anhydride curing systems as ZNT-**boost** may act as an accelerator with these curing agents.

Note 2: Loadings of 2.5 -10 phr will provide mechanical reinforcement. The loadings are calculated based on the resin part only.

Note 3: In some applications, gel times may be affected; therefore we advise processing a small sample to ensure that gel time is not adversely affected.

Note 4: Preheating ZNT-boost is recommended for full dispersion. Do not exceed 110°C.

Safety Handling

Zyvex Technologies provides its customers with a product-specific Material Safety Data Sheet (MSDS) to cover potential health effects, safe handling and use information. Zyvex encourages its customers to review all relevant MSDS prior to use.

Disclaimer

Zyvex Technologies believes that the technical data provided is accurate as of the published date. Performance values are considered representative but are not intended as a specification.

Contact Zyvex

For United States quotes, orders and product information call toll free 877.Go.Zyvex (877.469.9839).

For international quotes, orders and product information call 614.481.2208.

For Sales & Technical Services call 614.481.2207.

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