



COMPOSITE TECHNOLOGY DEVELOPMENT, INC.

ENGINEERED MATERIAL SOLUTIONS

CTD-521 "Super Tuff"

High Performance for Vacuum Impregnation and Wet-Winding Applications

Long Pot Life and Near Room Temperature Cure in Less than 24 hours

- A special "super tuff" formulation, with a primary amine cure, very low viscosity, low vapor pressure, and a high amine content.
 - Ideally suited for applications where extended pot life and low to moderate exothermic heat of reaction is needed.
 - Low viscosity, long pot-life, and near ambient temperature cure yields quick component processing.
 - Non-carcinogenic resin system with very low toxicity. It is a non-solvent based system, and will not give off volatiles on cure.
 - Wide range of properties and applications: can be used as a neat resin for fiber reinforcement, or with particulate fillers - physical properties (thermal expansion, thermal and electrical conductivities) can be tailored to meet differing requirements.
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Cure: 3 Hours at 80°C or 7 days at 25°C

Gel Time: 6 to 8 Hours

Mix Proportions :

	<u>Part A</u> <u>(Parts By Weight)</u>	<u>Part B</u> <u>(Parts By Weight)</u>
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521 Neat Resin	100	45
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Fillers can be added as needed

Mixing Temperature: 20 - 30 °C (Room Temperature)

Process Compatibilities

Resin Transfer Molding (RTM)
Resin Injection Molding (RIM)
Filament winding (FW)
Vacuum Pressure Impregnation (VPI)
Casting with or without filler
Wet-winding

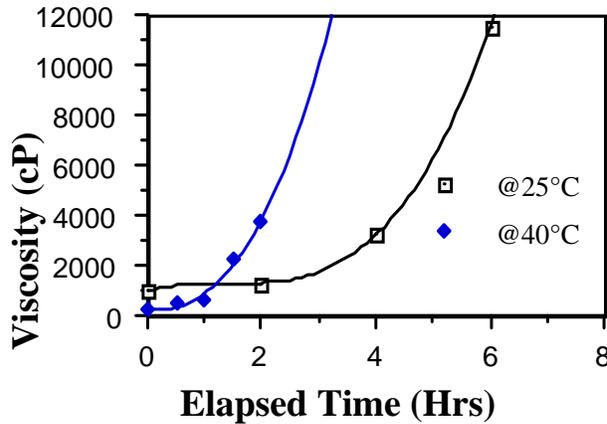
Advantages

- * Non-Carcinogenic
- * Low Toxicity
- * Long Pot-Life
- * Very Low Viscosity, <1000 cps @ 25°C
- * Excellent adhesion to fibers and fillers
- * Specific Gravity < 1.2 g/cc

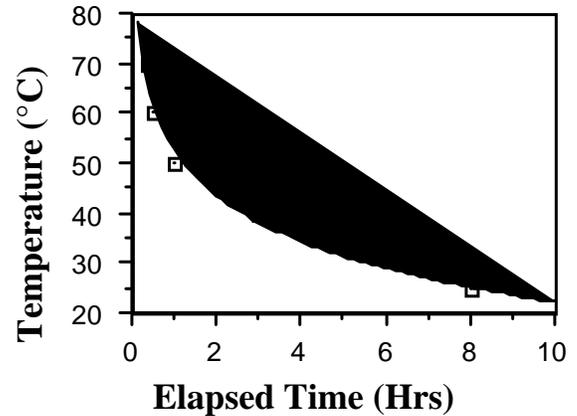


CTD-521 Processing Characteristics

Viscosity Over Time



Gel Time vs. Temperature

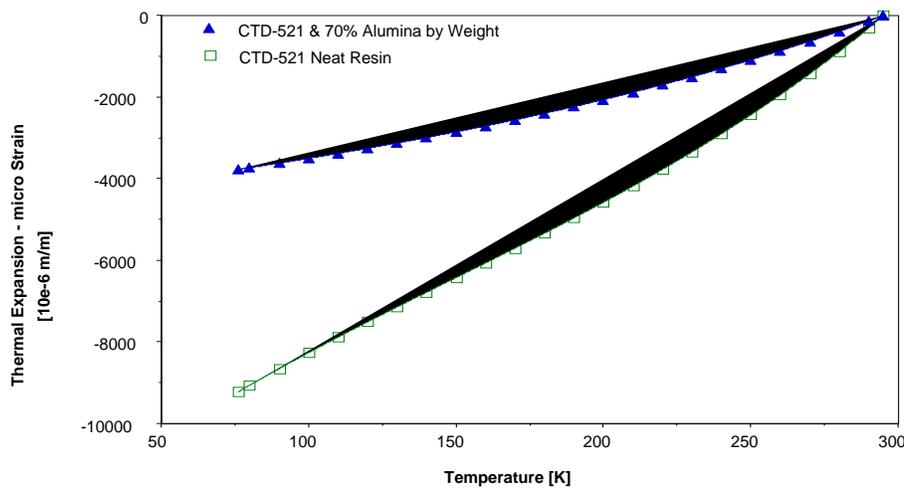


CTD-521 Properties

Compression:		Temperature [K]	Strength [MPa]	Modulus [GPa]
Neat Resin		295	100	3.3
		76	490	6.2
50% vf S-2 Glass		76	1100	16.8

Short Beam Shear		Temperature [K]	Strength [MPa]	Modulus [GPa]
Neat Resin		295	4	3.3
		76	7	6.8
50% vf S-2 Glass		76	118	23.9

Percent Thermal Expansion of CTD 521 Epoxy Resin (Neat Resin and Resin with 75% by weight Filler)



Disclaimer: The information and recommendations contained herein are based upon data believed to be accurate. However, no guarantee or warranty of any kind expressed or implied is made with respect to the information contained herein.

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