

KDT Ceraset DI-200

Heat Curable Prepreg Resin for PMCs (Product Code: C-2008)

KiON Defense Technologies, Inc (KDT) has an exclusive license from Textron to manufacture and sell DI-200 resin for U.S. military and defense applications. KDT CERASET® DI-200 is a proprietary polysilazane resin that is capable of being processed similarly to organic thermoset resins such as epoxies or phenolics. KDT CERASET® DI-200 has excellent high temperature capability, and quartz-reinforced composites fabricated using DI-200 have stable, low dielectric and loss factors at both high temperature and high frequency, as well as extremely low moisture absorption characteristics. It is recommended for use in the 300 °C – 600 °C temperature range, where organic polymers have limited thermal durability and the brittle nature of CMCs provides insufficient mechanical toughness.



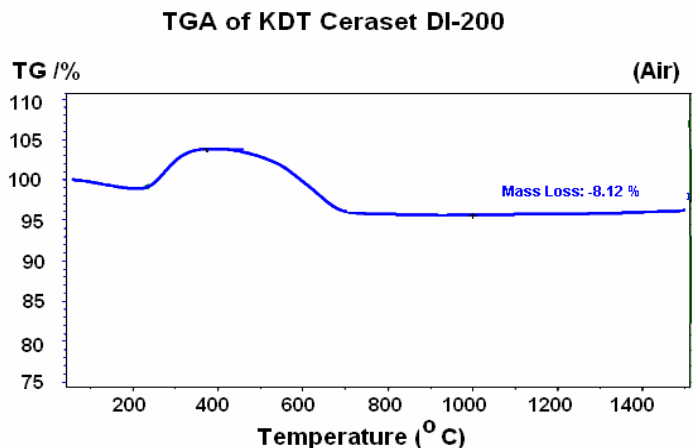
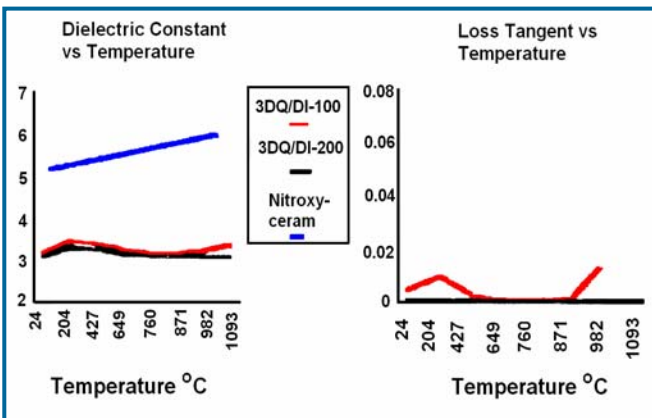
Multi-wall quartz composite radome made with DI-200

Major Applications:

Radomes, Insulating Foams, Aircraft Structural Components, Non-Burning Composite Structures, Electronic Boards and Encapsulants.

Properties:

The thermal stability of KDT Ceraset® DI-200 resin is exceptionally good. Weight loss after 30 hours at 650°C is only about 4wt%. The mechanical properties of unstitched, 2D laminate quartz composites manufactured using DI-200 resin are shown below. Such composites typically have dielectric constants of around 3 at room temperature, with loss factors of approximately 0.008.



KION DEFENSE TECHNOLOGIES, INC.

1957-A Pioneer Road
 Huntingdon Valley, PA 19006
 (215) 957-6100

Material Properties for Quartz Fiber Reinforced DI-200 Composites

Property	Units	Temperature (°F)			
		70	500	1000	1500
Density	lbs/in ³	0.0585			
Specific Heat	Btu/lbm-F	0.18*	0.275	0.32	
Thermal Conductivity (across-ply)	Btu/in-s-F	5.40E-06	6.75E-06	7.70E-06	7.70E-06
Thermal conductivity (fill)	Btu/in-s-F	7.70E-06	1.00E-05	1.12E-05	1.20E-05
CTE (across-ply) curve 1	in/in/F		1.98E-05	2.47E-05	-4.20E-06
CTE (across-ply) curve 2	in/in/F		7.00E-06	4.30E-06	-8.40E-06
CTE (fill)	in/in/F		1.16E-06	7.53E-07	7.00E-08
Poisson's Ratio	--	0.045			
Young's Modulus (Tensile)	Msi	3.00	3.55	3.32	3.65
Young's Modulus (Compressive)	Msi	3.00	3.20	3.10	2.50
In-Plane Shear Strength	psi	2,450	2,900	4,200	1,300
Interlaminar Shear Strength	psi	700**	790**	1,050	450
Tensile Strength (ultimate)	ksi	42	49	23	3
Compressive Stength (ultimate)	ksi	9.7	9.7	9.7	6

Clean Up:

Clean tools immediately after use with acetone or mineral spirits. Solvent cleaning can be followed by a wash with soapy water. Cured material cannot be removed with solvent. Proper clean-up of equipment is essential.

Handling:

Storage Life: Minimum of 2 years for unopened containers.

Pot Life: Usable life will be determined by the precautions taken to keep containers tightly sealed and protected from moisture.

Solvents:

KDT Ceraset DI-200 is miscible with dry aprotic solvents such as alkanes, aromatic hydrocarbons, ethers, ketones, and esters. KDT Ceraset DI-200 is hydrolytically sensitive and will slowly generate ammonia upon contact with moisture. The polymer will also react with other protic substances such as acids, bases, and alcohols.

Safety:

Use safety glasses and adequate ventilation. Protect skin from exposure using gloves and appropriate clothing. Seek medical attention if ingestion or overexposure is suspected. Keep uncured product from flame, all ignition sources, and moisture. This product is intended for professional use by persons familiar with this product data sheet, the Material Safety Data Sheet (MSDS) that accompanies product shipments, and applicable health, safety, and environmental practices and regulations. Contact KDT for advice concerning this product's suitability for specific applications.

Disclaimer:

Information on this product sheet is subject to change without notice as a result of experience and ongoing product development. It is the user's responsibility to verify that this sheet is current prior to use. The user accepts all risk associated with any use of this product for any purpose other than as recommended herein.

KION DEFENSE TECHNOLOGIES, INC.

1957-A Pioneer Road
Huntingdon Valley, PA 19006
(215) 957-6100