



CE3 Cyanate Ester Quartz & Fiberglass Prepregs

350° Cure Toughened Cyanate Ester

Product Summary:

CE3 is a modified cyanate ester resin that delivers toughness along with excellent hot/wet performance. CE3 is ideal for radomes that require transparency at high service temperatures.

Features:

- Latest Generation Cyanate Ester
- Low Moisture Absorption
- Excellent Dielectric Properties
- Cure via Autoclave or Vacuum Bag Process
- Excellent Tack and Drape for Layup Ease

Laminate Properties:

*Mechanical Properties - normalized 60% fiber volume**

	<u>Unit</u>	<u>Quartz</u>	<u>Glass</u>
Laminate Orientation		(0) ₈	QI
0° Tensile Strength*	ksi	122.5	56
0° Tensile Modulus* (ASTM D3039)	Msi	4.3	3.4
90° Tensile Strength*	ksi	118.2	-
90° Tensile Modulus* (ASTM D3039)	Msi	4.4	-
0° Compression Strength*	ksi	88.1	67.9
0° Compression Modulus* (ASTM D695)	Msi	4.5	3.6
90° Compression Strength*	ksi	90.6	-
90° Compression Modulus* (ASTM D695)	Msi	4.6	-
Shear-Inplane Strength*	ksi	21.8	30
Shear-Inplane Modulus* (ASTM D5739)	Msi	0.9	1.1
Short Beam Shear (ASTM D2344)	ksi	9.6	9.1
Flatwise Tension (ASTM D297)	psi	4897	5205

Physical Properties

	<u>Quartz</u>	<u>Glass</u>
Fabric Weave Style	4581	7781

QI = Quasi-Isotropic [0/45/90/135]_{sn}

Electrical Properties (CE3 Quartz):

Neat Resin

Dielectric Constant	2.7	@ 9.375 GHz
Loss Tangent	0.004	@ 9.375 GHz

Quartz Reinforcement

Dielectric Constant	3.20	@ 9.375 GHz
Loss Tangent	0.005	@ 9.375 GHz

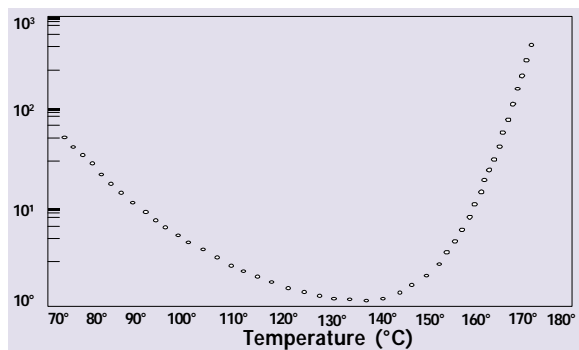
Data listed herein is typical and representative of the product described. The properties of this product can be significantly affected by fabrication and testing techniques. Since COI Materials does not control how its customers will use the material, any and all warranties either express or implied are disclaimed.



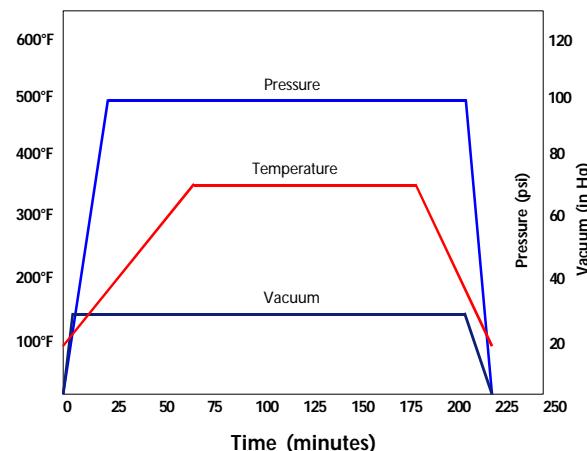
CE3 Neat Resin Properties:

Specific Gravity g/cc	1.19
Tg Dry, °C (°F)	
No Post Cure	206 (403)
With Post Cure	258 (496)
CTE, ppm/°F (-175°F - 175°F)	29
Tensile Strength, ksi	9.2
Tensile Modulus, msi	0.44
Ult Tensile Strain, %	2.4
Flexural Strength, ksi	21.9
Flexural Modulus, msi	0.73
Outgassing	
TML, %	0.31
CVCM, %	0.01

Viscosity Profile (2°C/min)



Autoclave Cure Cycle



A typical cure cycle for CE3 prepregs is as follows:

- A. Apply vacuum
- B. Apply 100 psi pressure
- C. Raise temperature to 350°F at a rate of 2-5°F/minute and hold for 120 minutes
- D. Cool at a maximum rate of 10°F/minute to 150°F or below
- E. Release pressure and vacuum

Optional Postcure (freestanding, oven):

- A. Raise temperature from ambient to 350°F at 5-10°F/minute, followed by a maximum heatup rate of 3°F/minute maximum to 450°F
- B. Hold at 450°F for 2 hours

Handling Precautions

COI Materials recommends that each of its customers observe industry prescribed precautions for handling prepreg materials. Personnel working with this product should wear clean impervious gloves to reduce the chance of skin contact and to eliminate contamination of the material.

Storage

COI Materials recommends that CE3 prepreg be sealed in Mil-B-131 bags and refrigerated at or below 0°F. Following removal from cold storage, prepreg should be allowed to achieve room temperature before the bag is opened, thus avoiding moisture condensation. Shelf life is 12 months at 0°F.

For Industrial Use Only

Overall product design, the processing and environmental conditions, and other factors should be considered when determining whether the material is suitable for a particular application. In lieu of all warranties, express or implied, COI Materials' only obligation shall be to replace such quantity of this product which has proven to not substantially comply with data presented in this document. If a non-conforming product is discovered, COI Materials shall not be liable for any commercial loss or damage, be it direct or consequential, arising out of the use of or the inability to use the product. Before using, customer shall determine the suitability of the product for its intended use, and the customer assumes all risks and liability in connection therein. Statements relating to possible use of our product are not guarantees that such use is free of patent infringement or that they are approved for such use by any government agency. The foregoing conditions may not be changed except by an agreement signed by an officer of COI Materials, Inc.