



THE CARBON NANOTUBE SPECIALIST

NANO-ENGINEER YOUR FUTURE

**PREGCYL**

*Ref: PREGCYL™ NC R2HM-01 –27 February 2009 - V01*

## **PREGCYL™ NC R2HM-01 Product Data - Pre-impregnated UD/Fabric carbon fibres**

### **General information**

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#### **Description**

PREGCYL™ NC R2HM-01 is a Pre-impregnated material based on our EPOCYL NC R2HM01 formulated epoxy based resin system modified with our own Carbon Nanotubes (CNT) and specifically developed to enhance the mechanical properties of the final composite parts.

#### **Applications: High performance composite parts**

- Automotive (bumpers and other structural parts)
- Marine, especially sailing boats (structural outer shell in carbon fiber composite, masts and other generic structural parts)
- Industrial parts (rollers, doctor-blades and wind-mill blades)
- Sporting equipments (bike frames, hockey sticks, tennis rackets, skis and golf shafts)
- Aerospace (structural parts and interiors)

#### **Advantages**

- High toughness (over 1200j/m<sup>2</sup> in some configurations)
- Low CTE
- 120° Tg
- Easy and ready to use
- Higher uniformity of temperature during curing (avoids hot-spots)

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**Curing cycles suggested**

Curing	Gel time	Post Curing	Tg (measured by DSC)
5h at 100°C	60 min		About 120°C
1h at 120°C	15 min		About 120°C
2h at 120°C	15 min		About 120°C
1h at 130°C	8 min		About 120°C
30' at 140°C	5 min		About 120°C
1h at 120°C	15 min	2h at 140°C	About 125°C

Heating ramp suggested: 3-4°C/min. Cooling ramp suggested: 2-3°C/min.

Shorter curing cycles are possible but specific testing may be needed to validate.

**Examples of fibers and fabrics available**

- 200 g/m2 plain and twill 2/2 weave, 3K; 45% resin content
- 370 g/m2 Harness 5 weave, 6K; 45% resin content
- 400 g/m2 twill 2/2 weave 12K; 45% resin content
- 600 g/m2 twill 2/2 weave 12K; 45% resin content
- 150g/m<sup>2</sup> UD; 37% resin content
- 100g/m<sup>2</sup> UD; 37% resin content
- .....

**Properties of the cured and fiber reinforced composite**

Unless otherwise stated the values given are for pressed laminates comprising 8 layers of unidirectional (UD) carbon fibers high tenacity (Tenax 12K HTS 5631) of 230 g/m<sup>2</sup>. Fiber volume fraction: 58-60%.

Curing cycle: 1h at 120°C + 2h at 140°C combined with low pressure.

<b>Fracture Toughness (G1C) – ASTM 5528</b>	<b>1200 J/m<sup>2</sup></b>
<b>Compression Strength – ASTM D3410</b>	<b>553 Mpa</b>
<b>Coefficient of thermal expansion (CTE) – thermo mechanical analysis</b>	<b>2,97 x 10<sup>-5</sup> / °K</b>
<b>Electrical Conductivity</b>	<b>2,5·10<sup>-6</sup> [S/m] = 4·10<sup>3</sup> [Ω·cm]</b>

**Important**

All information is believed to be accurate but is given without acceptance of liability. Users should make their own assessment of the suitability of any product for the purposes required.

**For technical assistance, sales or further information, please contact us :**

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