



THE CARBON NANOTUBE SPECIALIST

NANO-ENGINEER YOUR FUTURE

EPOCYL

Ref: EPOCYL™ NC E1MY-02 – 05 March 2009 – V01

## EPOCYL™ NC E1MY-02 Product Data

Master Batch Liquid tetrafunctional epoxy Resin for Non solvent Formulation Purposes.

### General information

#### Description

EPOCYL™ NC E1MY-02 is a Master Batch based on liquid tetrafunctional epoxy resin containing high concentration of Carbon Nanotubes (CNT) produced by Nanocyl. It is specifically developed to enhance electrical conductivity of high Tg epoxy-based formulations. Feature easy integration and great flexibility in processing. Dilution factor has to be calculated accordingly to the desired level of conductivity.

#### Applications

- Electrostatic discharge (ESD) coatings, linings (tanks, rollers, ...) and composites
- Conductive primers
- Resistive inks
- Adhesives

#### Benefits

- Limited impact on base resin mechanical and thermo-mechanical properties
- Ease of formulation
- Other information available upon request

#### Typical properties of EPOCYL™ NC E1MY-02

Visual Appearance:	Paste, black (Master Batch)
Viscosity @ 25 °C*:	290 ± 55 Pa.s
Viscosity @ 60 °C*:	20 ± 15 Pa.s
Epoxy Value:	8.36 – 8.91 eq/kg
Epoxy Equivalent:	112.2 – 119.5 g/eq
Density at 25 °C:	1.15 – 1.18 g/ml
Storage temperature:	5 °C

\*measured with parallel plate in dynamic mode at 10 rad/s and a strain of 1%

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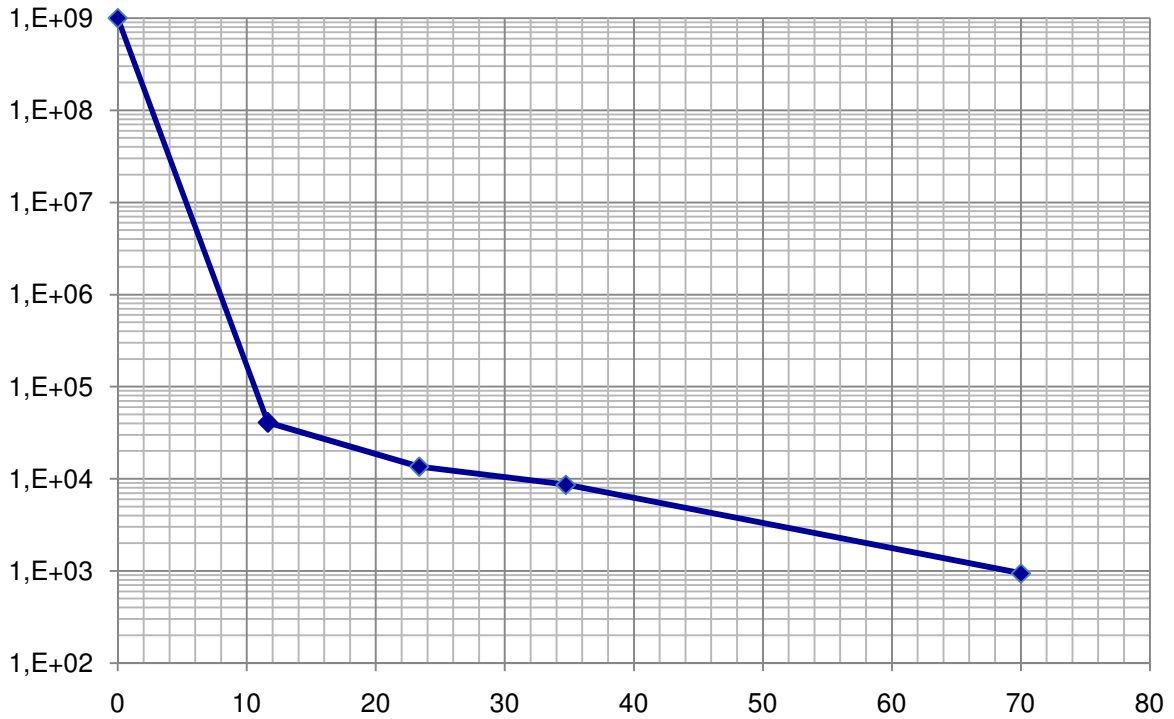
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**Electrical percolation**



*Fig1 : Resistivity (ohm.cm) Vs. Parts of NC E1MY-02 in the final compound (100 parts in total).  
Properties measured on cast films.*

**Curing agents**

EPOCYL™ NC E1MY-02 based formulations can be cured or cross-linked with different types of curing agents which could be decided accordingly to the desired processing conditions and the properties of the final composite like any conventional tetrafunctional based formulations.

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## Guide to processing and to create a formulation based on EPOCYL™ NC E1MY-02

To achieve the required level of conductivity, it is recommended to observe the ratios described in fig.1. Number of parts of masterbatch is in these curves expressed in function of the final resin formulation (resin & hardener).

**For example: [EPOCYL™ NC E1MY-02 (17 %)] + [Neat resin + hardener + other additives (83 %)].**

**IMPORTANT:** EPOCYL™ NC E1MY-02 is not an additive in your formulation, it is a substitution product for the equivalent parts of your conventional TGMDA liquid resin.

### Dilution conditions

It is recommended to pre-mix the MB and if needed could be heated up to 45°-60° C to reduce its viscosity before introducing it into the formulation.

The Master Batch EPOCYL™ NC E1MY-02 could be mixed very easily with any liquid resins at room temperature (RT). If there is any solid resin/component part of final formulation (for example solid epoxies), solid part must be heated until it is nicely flowing melt and thereafter the other resin components can be added including EPOCYL™ NC E1MY-02.

Time, temperature and speed of the mixing may need to be adapted to obtain a final homogenous mixture. All common equipments available in any resin formulation, pre-preg and composite facilities are good to achieve a good and homogeneous mixture. The resin formulation must then be allowed to cool down.

Hardener must be added according to your conventional processing conditions. The amount of hardener required will depend on the final epoxy equivalent weight (EEW) of the formulation.

**IMPORTANT:** EPOCYL™ NC E1MY-02 IS NOT DESIGNED TO BE USED WITH SOLVENT.

### Further impregnation and curing conditions after final resin formulation

Further processing (coating, fiber impregnation...) must be made according to your conventional processing conditions.

### 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 the product for their use and applications.

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

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