



## Colloidal Performance Materials

### NYACOL® TiSol EG

#### TiO<sub>2</sub> in Ethylene Glycol

Nyacol® TiSol EG is a colloidal dispersion of 10–30 nm TiO<sub>2</sub> particles dispersed in ethylene glycol. Nyacol® TiSol EG has been developed as an inorganic alternative to organic type UV blockers. TiSol EG is transparent, but still UV absorbing as a result of the small, highly dispersed nature of the TiO<sub>2</sub> dispersion. The product is intended to be added in PET synthesis and is supplied in fiber grade EG.

Figure 1 shows the typical particle size and particle size distribution using the Malvern Zetasizer instrument.

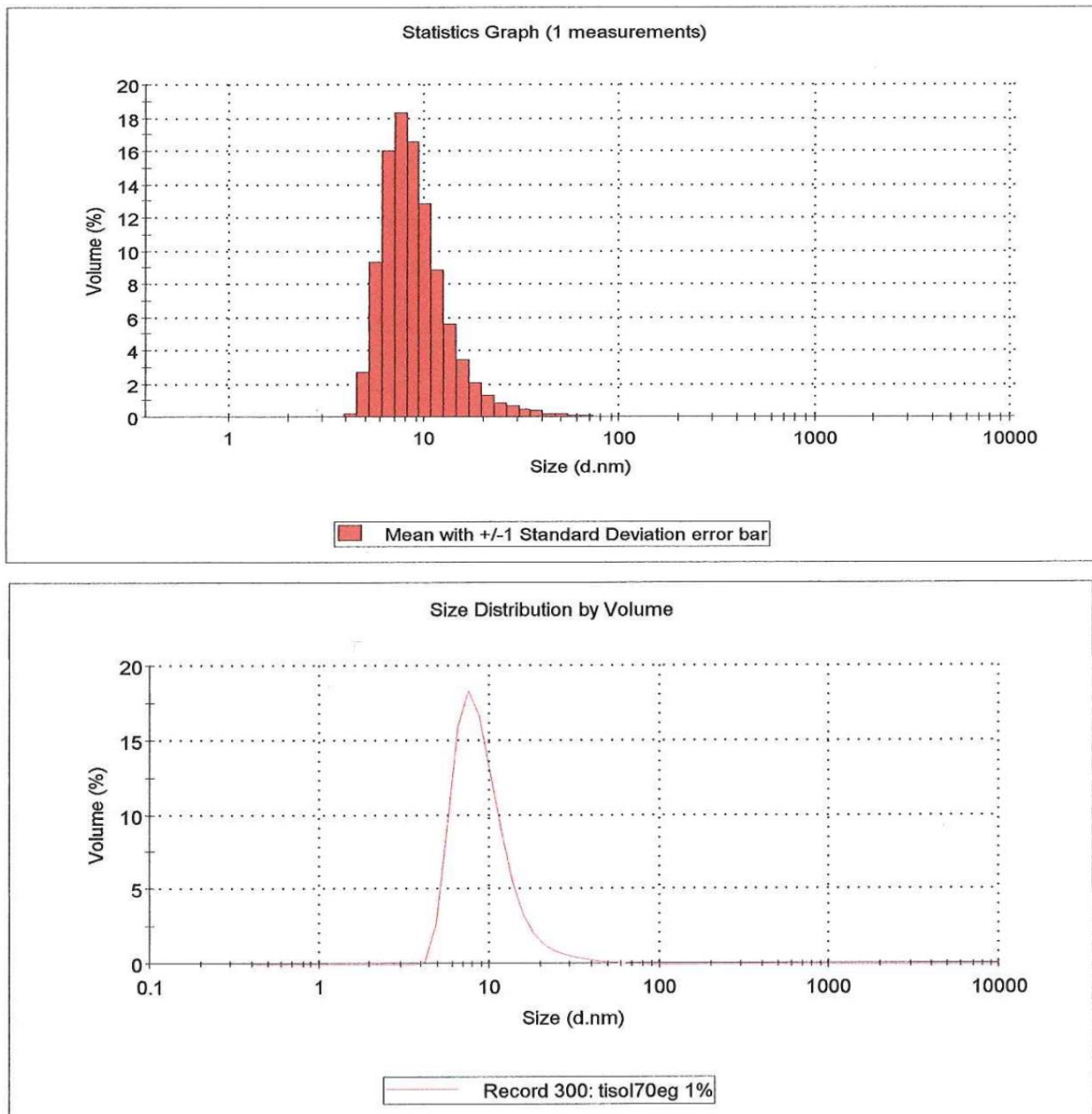
Nyacol® TiSol EG has been designed for PET packaging and PET fiber applications. In packaging, TiSol EG will enable the production of transparent bottles with inorganic UV blocking built into the package. In fibers, TiSol EG will enable bright, fine denier, UV blocking fibers. The amount of TiSol EG required will depend on the desired amount of UV blocking at particular wavelengths, and the thickness of the container PET wall. Figures 2 and 3 show the absorbance (Figure 2) or transmission (Figure 3) as a function of wavelength and TiO<sub>2</sub> concentration. This information can be used to estimate starting point formulations for protecting the contents of PET packaging. Consult Nyacol Technical Service for a recommendation on initial formulation details.

#### TYPICAL PROPERTIES

% TiO <sub>2</sub> , wt:	4–6
Particle size, nm:	20 – 50
%H <sub>2</sub> O:	<4
Viscosity:	40–80 cps
Carrier:	Ethylene glycol

Using TiSol EG

TiSol EG should be diluted to 1–2% TiO<sub>2</sub> with ethylene glycol before using to avoid problems with agglomeration. TiSol EG can be added in the primary ester exchange reactor or prior to polycondensation, depending on the available injection systems. Consult Nyacol Technical Service as needed.



**Figure 1** – Typical Particle Size by Volume and Particle Size Distribution, Malvern

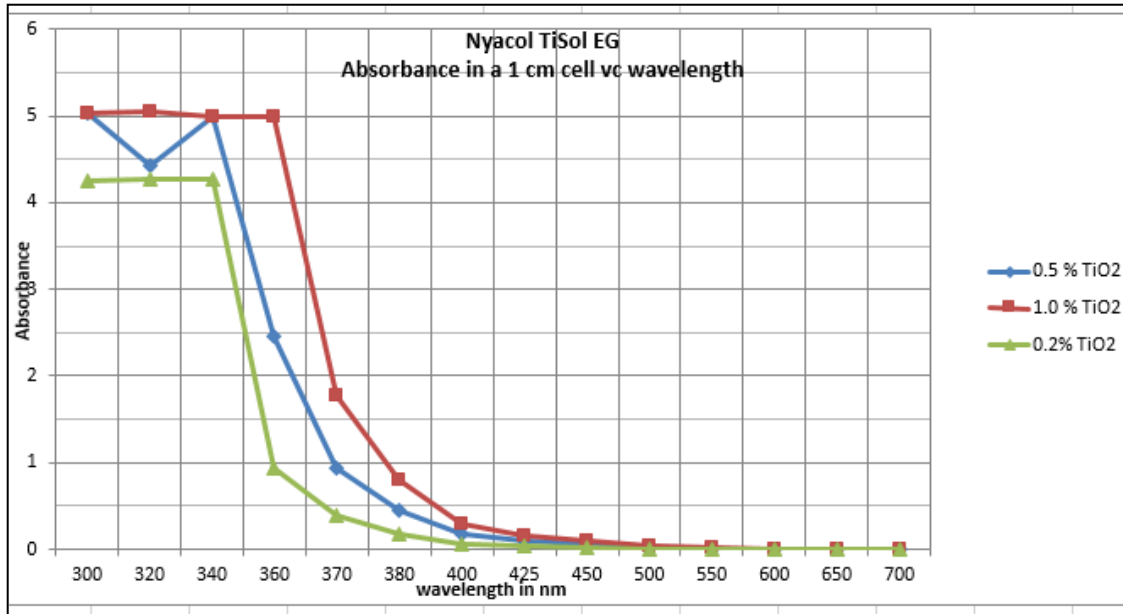


Figure 2 - Absorbance

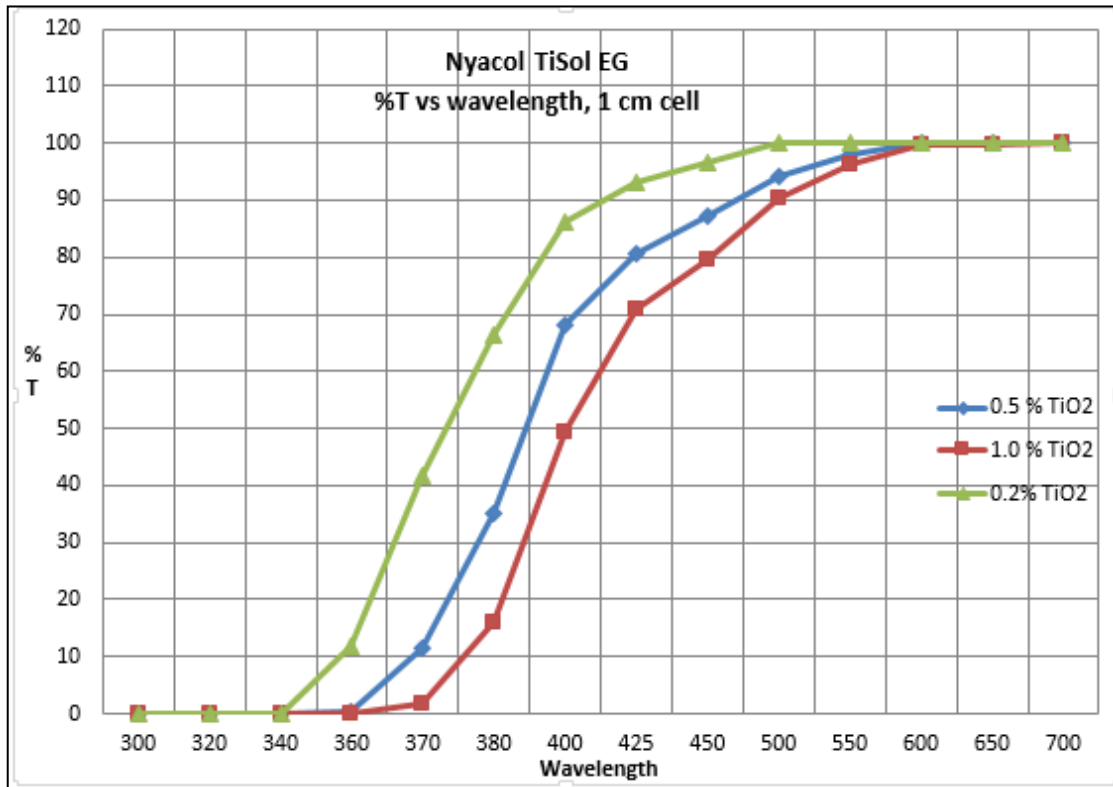


Figure 3 - Transmission



DATA SHEET  
NYACOL® TiSol EG

**TO ORDER MATERIAL OR FOR INFORMATION**

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