



**Meliorum**  
TECHNOLOGIES

## Zinc Oxide Nanomaterial Datasheet

### Powder, Aqueous and Organic Dispersions – Product #09820

#### CONTACT US

Meliorum Technologies, Inc.  
620 Park Ave. #145  
Rochester, NY 14607, USA  
Phone 585.313.0616  
Fax 585.486.1154  
info@meliorum.com  
www.meliorum.com

#### MISSION STATEMENT

Meliorum Technologies, Inc. will provide industry and university researchers worldwide with nanomaterials and other nanomaterial-based precursors which provide strict, cutting-edge specifications at a reasonable cost, thereby adding significant value to the end consumer.

#### PRODUCT DIFFERENTIATION

Meliorum Technologies seeks to be your sole source for nanomaterials and nanomaterial application solutions. Contact us at info@meliorum.com to discuss your materials requirements, or look at our current product listing at www.meliorum.com

#### APPLICATIONS

- Electro-optics
- UV Absorption
- Thin films
- Micro- and nano-electronics
- Flexible electronics
- Magnetic hyperpolarization



- Available in aqueous/waterborne and organic dispersion; standard quantity is 1 g ZnO in 30 mL solvent
- Dispersions are also available, on a custom basis, in the *highest* concentrations commercially available.
- Powders are also available with surface customization options based on application requirements
- Available in average diameters of 10 nm or 150 nm. Please discuss your requirements with us to determine appropriate product form factor.

Zinc Oxide (ZnO) nanoparticles are a versatile material which finds applications in sunscreens, sunblocks, paint, preservation, piezoelectric thin films, thin film waveguides, etc. Zinc oxide's electronic band structure allows the material to block or absorb harmful UV radiation. Below a certain size threshold nanoparticles of ZnO are fundamentally transparent to the human eye. In addition, the material is sensitive to light. ZnO can thus find potential applications as a transparent electro-optic substrate.

Zinc Oxide nanoparticle dispersions are fabricated in scaled quantities with mean particle diameters of 10 nm, and ship in three prepackaged form factors: aqueous

stabilized dispersion, organic stabilized dispersion, and powder. Custom form factors and solvents are available upon request.

The Meliorum Technologies zinc oxide product ships in prepackaged 30 mL research quantities, which contain 1 g of zinc oxide material. However, both the sample size and concentration may be modified as required, to concentrations as high as *50 volume percent*. At these concentrations, the solutions take on a paste-like consistency. Powders are also available, with application-specific customization of surface treatment.

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#### TECHNICAL SUPPORT

Our strategic differentiation comes from many product attributes, not the least of which is support after the sale. Count on Meliorum to help you with your application: from initial inquiry, to post-purchase.

#### SUSTAINED COMMITMENT

Since Meliorum's entry into the nanomaterials marketplace in 2003, The Company has experienced sustained growth ever since. Customer-funded from day one, we rightly focus on the "Voice of the Customer" for our primary strategic guidance. We are passionate and proud to work with both industry and university institutions to further the state of the art in our chosen field.

For more information on any of our products or services please visit us on the Web at:  
[www.meliorum.com](http://www.meliorum.com)

Meliorum Technologies, Inc. – Innovative nanoaterial solutions, from the industry experts. Since 2003.

## Process Control and Supporting Data



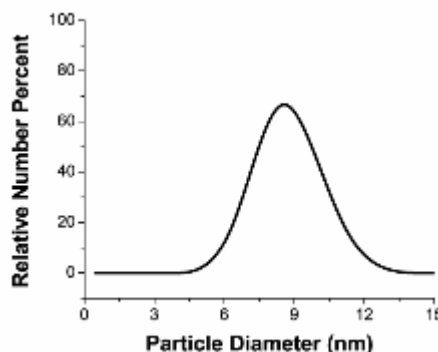
Meliorum Technologies, Inc. has completed Phase I of implementing its operational statistical process control plan. With the completion of this initial implementation and analysis phase, The Company has developed enhanced, high-level knowledge of its own manufacturing process capability. The Plan includes the completion of a year-long period of monitoring key manufacturing process input variables, and subsequent quantitative analysis of resultant outputs. Process outputs were previously defined at the beginning of the year-long period both internally and through target market research, and include parameters such as mean diameter, size standard deviation of particle population (i.e. degree of monodispersity), purity level (raw feedstock and final product), type of impurities (raw feedstock and final product), and for dispersion products, the shelf life of the dispersion (i.e. period of time during which half of total dispersed material has settled),

## Zinc Oxide Product Attributes

- Mean particle diameter: 10 nm or 150 nm with ca. 10% monodispersity
- Approximate surface area, average: based on mean diameter, range from ca. 30 to 134 sq. m per gram
- Particle purity: 99.9% (metals basis), excluding coating, where applicable; material is deliverable with no surface treatment if specified by user (highest elemental purity achievable)
- Fabricated using a proprietary technology which is, by its nature, scalable; lots in kilogram quantities are now available

#### ADDITIONAL SERVICES

Technical Support  
Application Support  
Supply Agreements (Kanban, JIT)  
Statistical Process Control Data  
Process Capability ( $C_{p,k}$ ) Analysis  
Product Storage Support  
Custom Specification Negotiation



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