



NANOCAT® TITANIUM OXIDE POWDER

PRODUCT IDENTIFICATION

Identification label: name: **TITANIUM OXIDE POWDER**; chemical name: titanium oxide powder, chemical formula TiO_2 . This material was prepared using electric explosion of titanium wire in oxygen containing atmosphere.

CHEMICAL COMPOSITION

Material: titanium oxide TiO_2 - 95% wt, unreacted titanium – 3%, adsorbed air, hydrocarbons and moisture – about 1%.

PHYSICAL AND CHEMICAL PROPERTIES

Appearance and color: white powder. The bulk density is up to 2 g/cm³. Phase composition by XRD is as follows: 70% anatase and 30 % of rutile. Both phases are tetragonal. No other phases have been detected. The particles are spherical- Fig.1. BET specific area is 35 to 40 m²/g. Particle size and mass distribution are shown in Fig. 2 Probabilistic (arithmetic mean) particle size $\tilde{a}_n = 47$ nm; surface area mean size $\tilde{a}_s = 66$ nm; mass mean size - $\tilde{a}_m = 90$ nm. Melting point - 1825°C. Explosion and fire-safe. Titanium oxide powder can find its application in the manufacture of electrical ceramics and composites.

HEALTH HAZARD

If inhaled in mass quantities, titanium oxide may irritate respiratory tract. When swallowed, it slowly dissolves in stomach acid. No delayed action effect.

SAFE HANDLING

Use health protection measures commonly used in working with inorganic dust. Wear respirators.

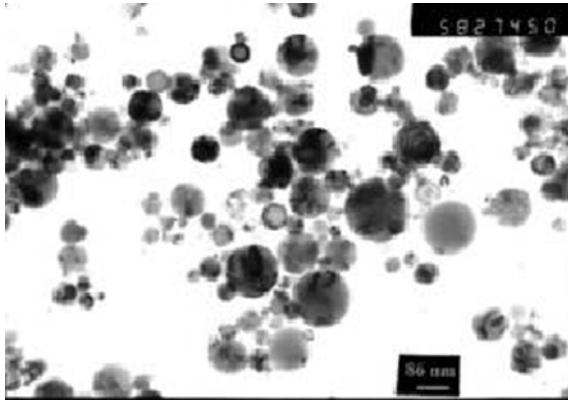


Fig.1 TEM image of Titanium Oxide powder.

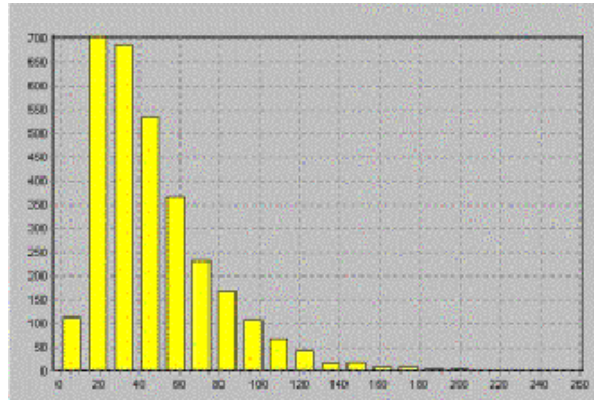


Fig.2 Particle size distribution.
X-axis: particle size in nm;
Y-axis: number of particles.

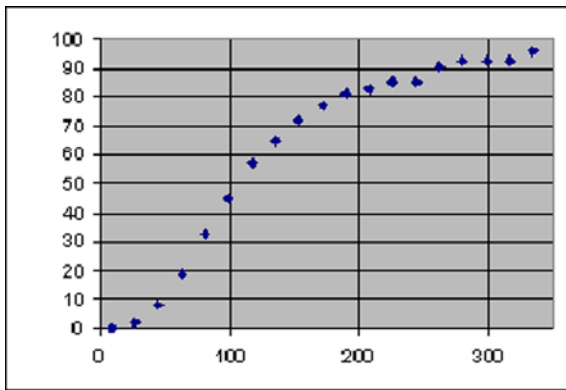


Fig.2 Particle mass distribution. X-axis: particle size in nm; Y-axis: number of particles.

All statements, technical information and recommendations herein are based on tests we believe to be reliable, but the accuracy or completeness thereof is not guaranteed, and the following is made in lieu of all warranties, expressed or implied, including the implied warranties of merchantability and fitness for purpose. MACH I's only obligation shall be to replace such quantity of the product proved to be defective. Before using, user shall determine the suitability of the product for its intended use, and user assumes all risk and liability whatsoever in connection therewith. NEITHER SELLER NOR MANUFACTURER SHALL BE LIABLE EITHER IN TORT OR IN CONTRACT FOR ANY LOSS OR DAMAGE, DIRECT, INCIDENTAL, OR CONSEQUENTIAL, ARISING OUT OF THE USE OF OR THE INABILITY TO USE. **Mach I, Inc., 340 East Church Road, King of Prussia, PA 19406 , USA Phone: +1 610 279 2340**