NANOCAT® TITANIUM OXIDE POWDER

PRODUCT IDENTIFICATION
Identification label: name: TITANIUM OXIDE POWDER; chemical name: titanium oxide powder, chemical formula TiO₂. This material was prepared using electric explosion of titanium wire in oxygen containing atmosphere.

CHEMICAL COMPOSITION
Material: titanium oxide TiO₂ - 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 \( \bar{a}_n = 47 \) nm; surface area mean size \( \bar{a}_s = 66 \) nm; mass mean size - \( \bar{a}_m = 90 \) 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.

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