

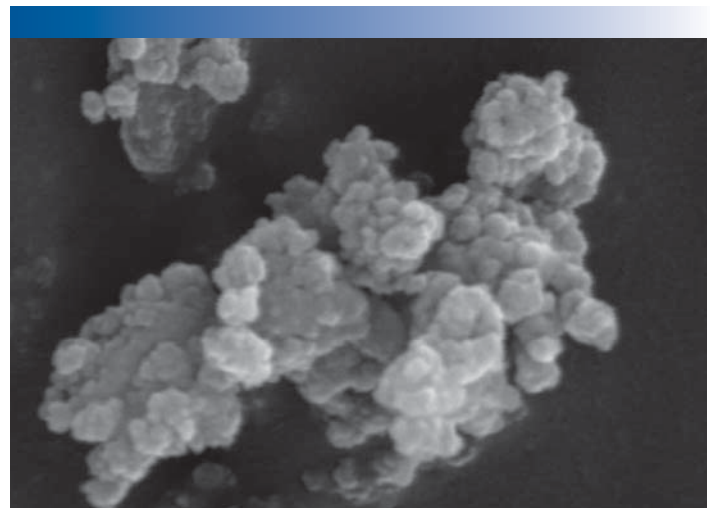
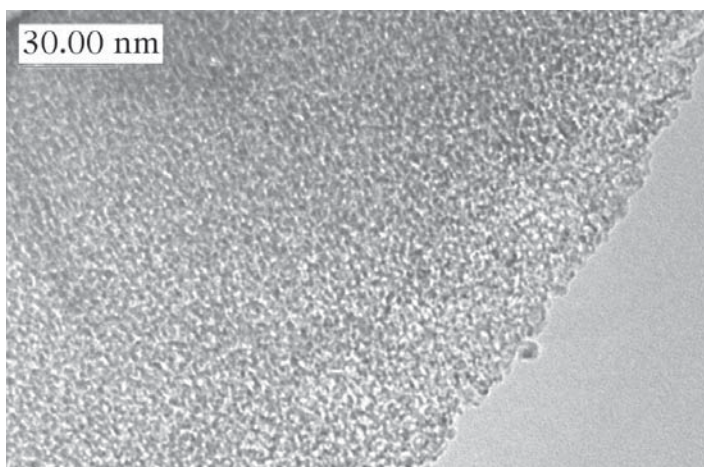
Titanium Dioxide

NanoActive TiO₂ is produced using proprietary processes to obtain very high specific surface area (over 500 m²/g), high porosity, weakly aggregated, amorphous material possessing extraordinary adsorption capacity and chemical reactivity.

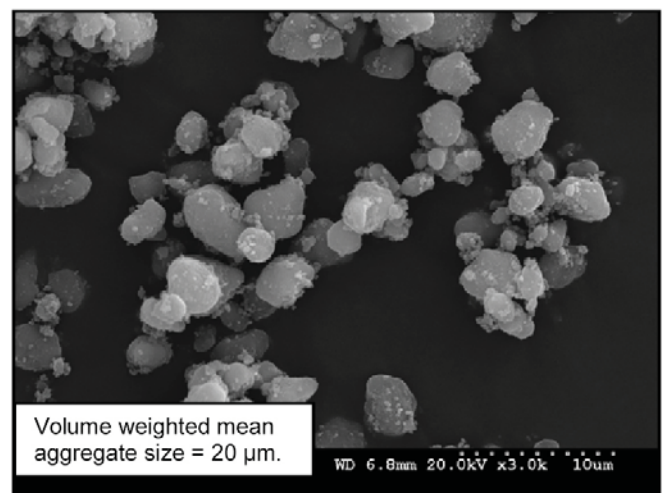
Typical Properties

Appearance/Color	White Powder
Specific Surface Area (BET)	≥ 500 m ² /g
Crystallite Size	Amorphous
Average Pore Diameter	32 Å
Total Pore Volume	≥ 0.4 cc/g
Bulk Density	0.6 g/cc
True Density	3.7 g/cc
Mean Aggregate Size, d _{0.5}	5 μm
Loss on Ignition	≤ 12%
Moisture Content	≤ 4%
Ti Content (Based on Metal)	> 99.999%

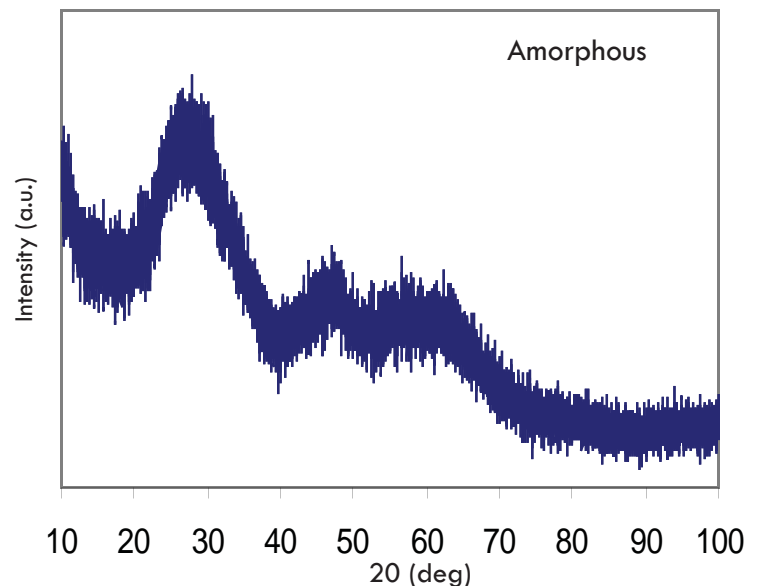
Transmission Electron Microscopy Image



Scanning Electron Microscopy Image



Powder X-ray Diffraction Spectrum



NanoActive materials exhibit a wide array of unusual properties. One of the unusual features is enhanced surface chemical reactivity. Just a few grams of a NanoActive material can have the surface area equivalent to that of a football field. Our NanoActive-S (suspensions) and NanoActive-G (granules) series provide the ability to adjust density and flow characteristics without compromising the high chemical reactivity of our NanoActive products.

Potential Applications	Nanotechnology Benefit
Catalysts and catalyst supports <ul style="list-style-type: none"> Hydrogen synthesis (photocatalytic oxidation) Substrate for precious metals 	Increased activity due to smaller particle size and higher surface area Higher loading and better dispersion of the active species due to the high surface areas of the support Increased selectivity due to defined pore structure of the support Increased wear resistance
Cosmetic and skin care market <ul style="list-style-type: none"> Sunscreens, moisturizers, color foundations, lipstick and balm with SPF, medicated creams 	Improved UV protection Lower opacity Coating with silica or alumina may further improve performance
Destruction of chemical warfare agents <ul style="list-style-type: none"> Room temperature decomposition of VX, GD and HD with the formation of much safer by-products 	Much higher capacity and kinetics attributed to high surface area and porosity, small crystallite sizes and many reactive sites
Paints and coatings <ul style="list-style-type: none"> Self-cleaning, antifouling, antifogging and antimicrobial properties 	Improved photocatalytic reactivity due to smaller particle size Faster kinetics due to higher surface area Better transparency as opacity is decreased with smaller particles Enhanced biocidal characteristics due to higher surface area Higher coverage per unit mass due to lower density
Protective apparel and personal protection equipment Chemical warfare agents, toxic chemicals	Improved protection due to higher reactivity of nanoparticles
Smoke removal <ul style="list-style-type: none"> Building clearance, military applications 	Faster kinetics and coagulation due to high surface area and unique morphology
Structural ceramics <ul style="list-style-type: none"> Reinforcements for metal matrix composites, porous membranes for gas filtration 	Improved mechanical properties Reduced production cost due to lower sintering temperatures
UV protecting clear coats	Better physical-optical properties due to enhanced control over particles Lower opacity

Depending on Customer-specific needs NanoScale can supply its products as dry unfunctionalized powders, compacted powders (granules) or dispersions in various carrier fluids. The custom designed materials can be tested and characterized to meet Customer requirements.

Order

Product	Catalog Number	Quantity
NanoActive TiO ₂	AC012-0025-00NS	25 grams
	AC012-0100-00NS	100 grams
	AC012-1000-00NS	1 kilogram
NanoActive-G TiO ₂	AC312-0025-00NS	25 grams
	AC312-0100-00NS	100 grams
	AC312-1000-00NS	1 kilogram
NanoActive-S TiO ₂	AC017-0500-00NS	500 mL