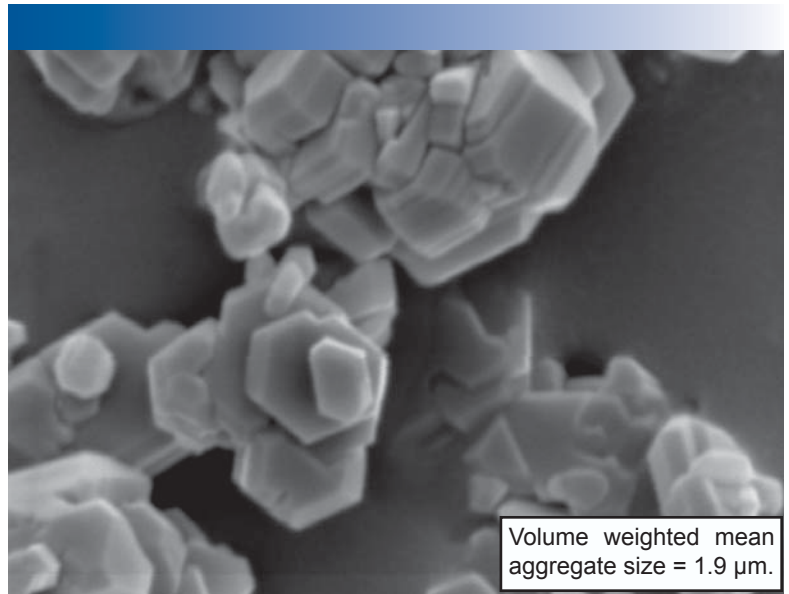


Aluminum Oxide

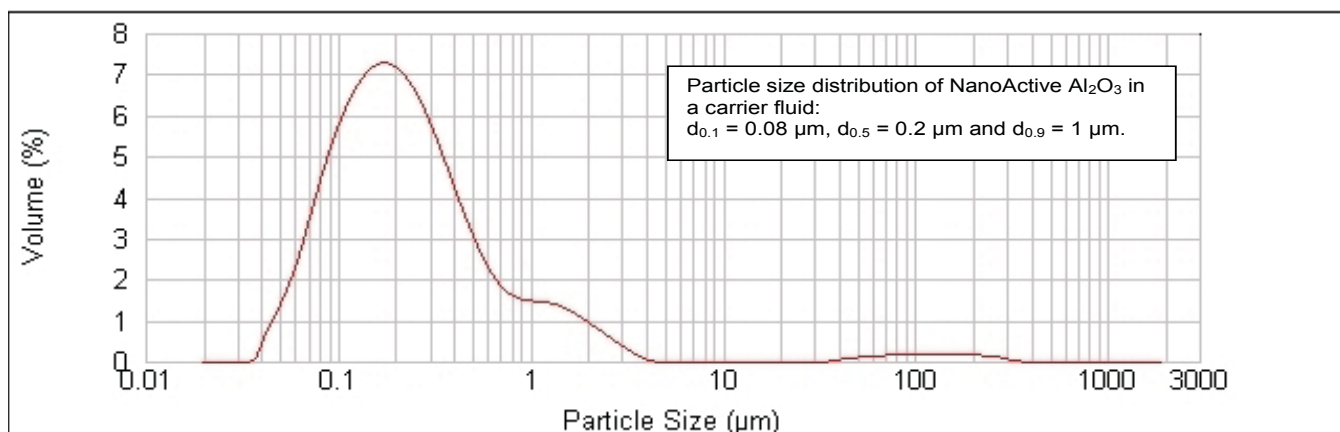


NanoActive Al_2O_3 is produced using proprietary processes to obtain high specific surface area, low density, amorphous material with high adsorption capacity and chemical reactivity. NanoActive Al_2O_3 can be dispersed in various carrier fluids with greatly reduced particle sizes.

Typical Properties

Appearance/Color	White Powder
Specific Surface Area (BET)	$\geq 275 \text{ m}^2/\text{g}$
Crystallite Size	Amorphous
Average Pore Diameter	28 \AA
Total Pore Volume	$\geq 0.15 \text{ cc/g}$
Bulk Density	0.5 g/cc
True Density	3.9 g/cc
Mean Aggregate Size, $d_{0.5}$	1.5 μm
Loss on Ignition	2.1%
Al Content (Based on Metal)	>99.8%

Particle Size Distribution



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
Air Cleaning <ul style="list-style-type: none"> Adsorption of toxic chemicals 	Improved capacity Faster kinetics
Capacitors	Less material needed to provide similar level of capacitance Potential for device miniaturization due to thinner layer of material needed Higher capacitance due to reduction in layer thickness and increased surface area resulting from smaller particle size
Catalysts supports <ul style="list-style-type: none"> Petrochemical (cracking catalyst) and automobile (catalytic converters) industries 	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
Coatings <ul style="list-style-type: none"> Protective (abrasion resistant) electric passivation coatings 	Thinner coatings reducing the amount of required material
Heat transfer fluids (suspensions)	Greatly enhanced heat transfer coefficient due to smaller particle size Longer suspension in fluids due to lower bulk density and high porosity
Polishing materials <ul style="list-style-type: none"> Ceramics, plastics, semiconductor and other electronic materials 	Less material required due to smaller particle size Better finishing due to smaller particles Faster rate of surface polishing
Polymer nanocomposites for improved tribological performance	Larger effects due to smaller particle sizes
Structural ceramics <ul style="list-style-type: none"> Reinforcements for metal-matrix composites, porous membranes for gas filtration 	Improved mechanical properties Reduced manufacturing cost due to lower sintering temperature

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 Al ₂ O ₃	AC003-0025-00NS	25 grams
	AC003-0100-00NS	100 grams
	AC003-1000-00NS	1 kilogram
NanoActive-G Al ₂ O ₃	AC303-0025-00NS	25 grams
	AC303-0100-00NS	100 grams
	AC303-1000-00NS	1 kilogram