

## Alumina Nanoparticles AON1501

### Description:

Aluminum oxide ( $\text{Al}_2\text{O}_3$ ) has a complex structure in which oxygen anions are arranged in a face-centred cubic (fcc) or hexagonal close-packed (hcp) array.  $\gamma$ ,  $\eta$  (cubic),  $\theta$  (monoclinic),  $\delta$  (tetragonal or orthorhombic) structures are based on fcc lattices and  $\alpha$  (trigonal),  $\kappa$  (orthorhombic),  $\chi$  (hexagonal) are hcp structures. Nanoscale  $\gamma$ -alumina and  $\alpha$ -alumina are thermally stable at higher temperature. The oxides of aluminum have high hardness, chemical inertness, high melting point, high thermal conductivity, non-volatility and resistance to oxidation and corrosion. Among the seven polymorphs of transition alumina identified so far, the  $\gamma$  form is one of the most extensively used in industrial catalysis owing to its comparatively large surface area, unique surface characteristics, and exceptional structural stability.  $\gamma$ -alumina contains the same ratio of Al to O atoms as in  $\alpha$ -alumina the only difference is that it has a tetragonal structure where there are 8 cation vacancies for every 160 atoms.

Characterization	
CAS	1344-28-1
Stock No.	AON1501
Molecular formula	$\text{Al}_2\text{O}_3$
Molecular weight (g/mol)	101.96
Form	Powder
Color	White
Morphology	Semi-sphere
Crystal structure	Cubic
Size range (nm)	50-80 nm
Total impurity (%)	N/A
Density (g/cm <sup>3</sup> )	3.65
Solubility	Insoluble



Image of Alumina nanopowder  
(AON1501)

**Note:** product specifications are subject to amendment and may change over time.

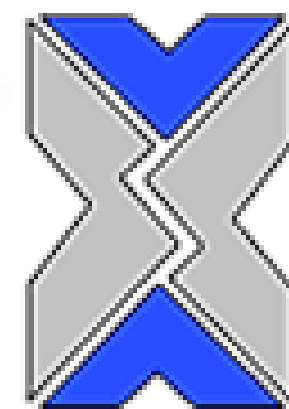
### Applications (but not limited to the following):

Industrial catalyst, electrical insulator, ceramics, refractories, abrasives

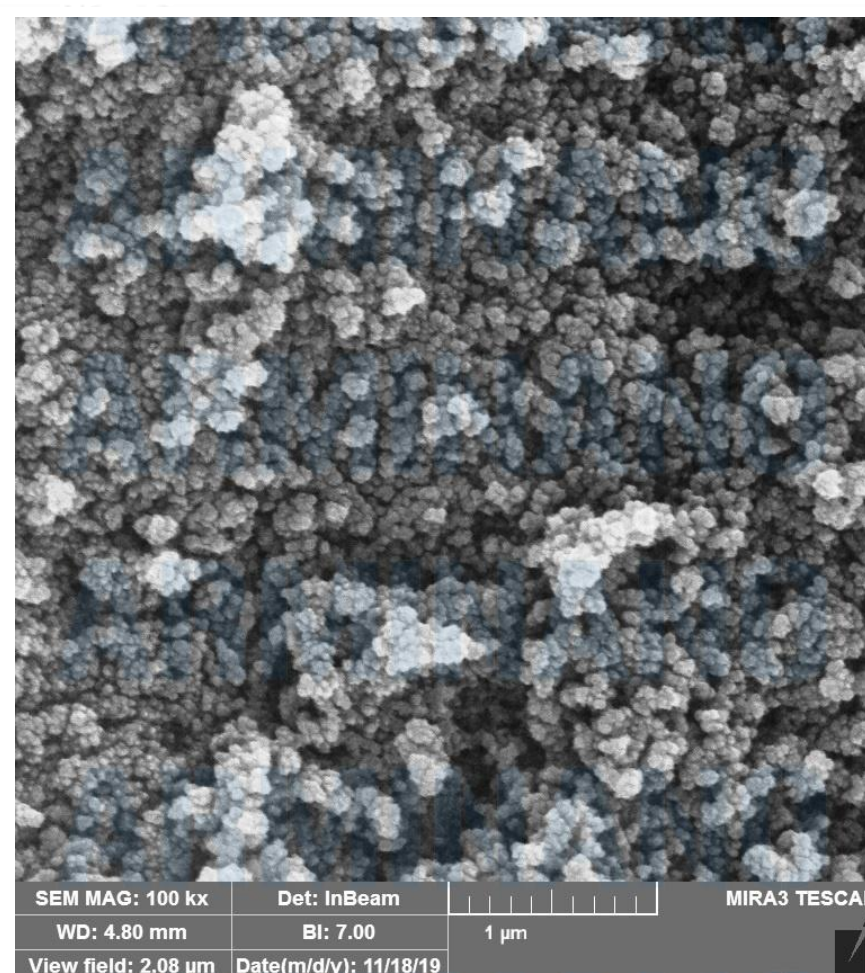
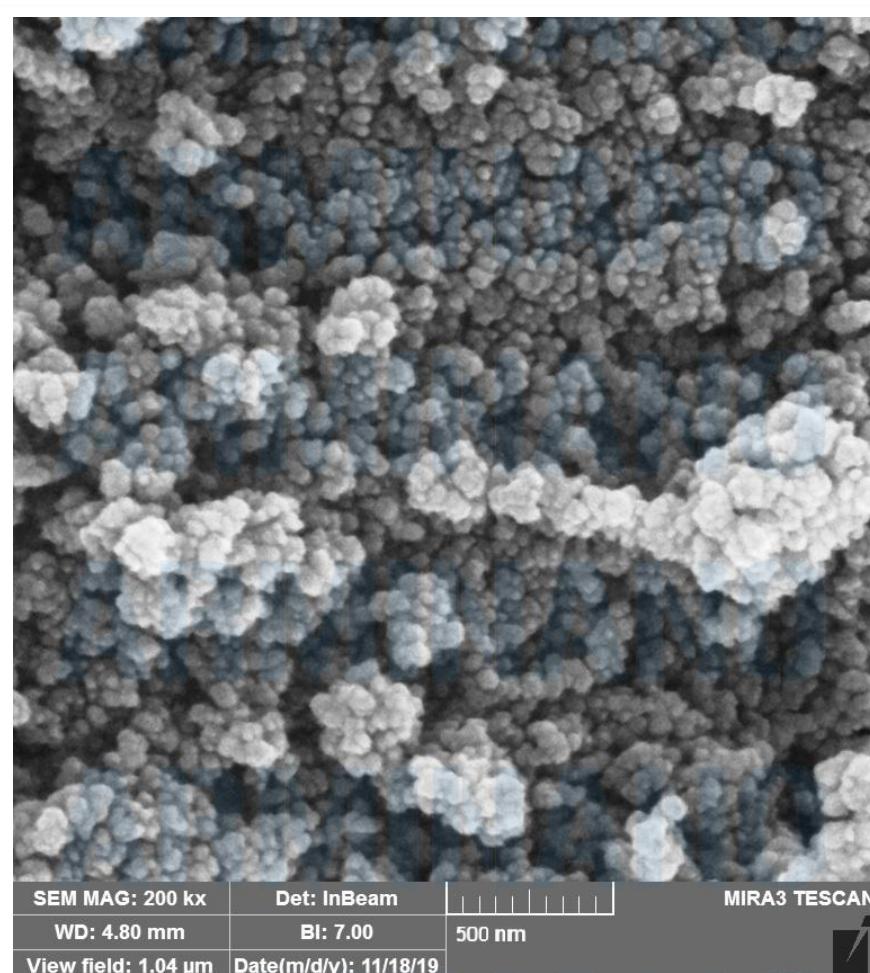
### Safety:

Avoid breathing dust.  
Always use protective gloves and safety glasses.  
Wash with soap and water after exposure.  
Refer to MSDS prior to handling this material.

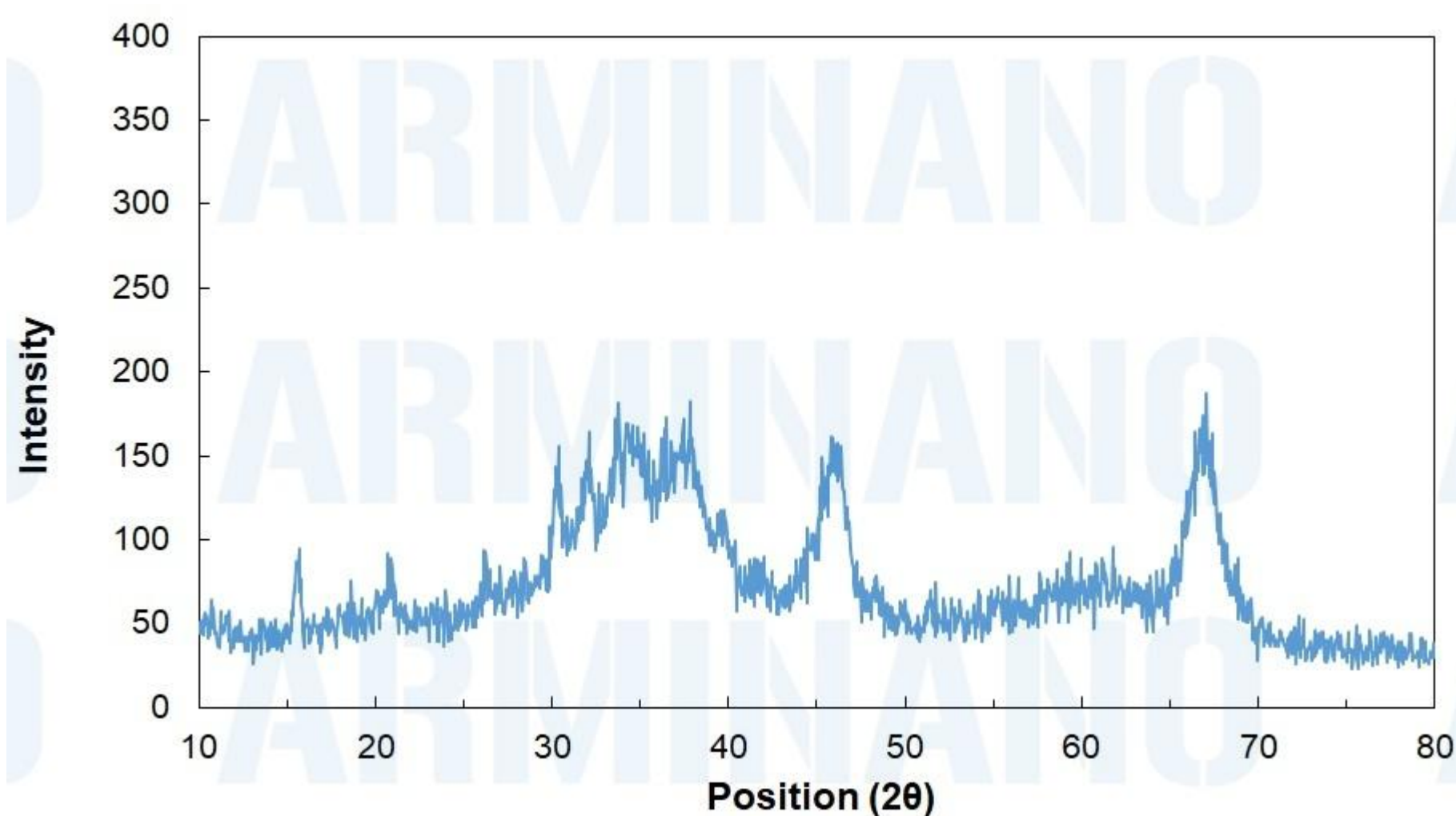




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TEM images of AON1501



XRD pattern of AON1501

### Storage:

Keep it in cool dry place.  
Avoid direct sunlight.  
Do not freeze.  
To disperse nanoparticles sonication could be used.

### Shelf life:

When stored as specified the product is stable for at least 6 months.

