

## Titanium Dioxide Nanoparticles TNP6

### Description:

Titania (TiO<sub>2</sub>) powders possess interesting optical, dielectric, and catalytic properties. Titanium dioxide is considered very close to an ideal semiconductor for photocatalysis because of its high stability, low cost and safety toward both humans and the environment. Titanium dioxide occurs mainly in three crystalline phases, namely anatase, rutile, and brookite, which differ in their physical properties, such as refractive index, dielectric constant, and chemical and photochemical reactivity. Rutile is the thermodynamically most stable phase and anatase is preferred for dye-sensitized solar cell, due to its larger band gap.

| Characterization             |                  |
|------------------------------|------------------|
| CAS                          | 1317-80-2        |
| Stock No.                    | TNP601           |
| Molecular formula            | TiO <sub>2</sub> |
| Molecular weight (g/mol)     | 79.87            |
| Form                         | Powder           |
| Color                        | White            |
| Morphology                   | Spherical        |
| Crystal structure            | Anatase          |
| Size range (nm)              | <50              |
| Total impurity (%) by XRF    | <2               |
| Density (g/cm <sup>3</sup> ) | 3.78             |
| Solubility                   | Insoluble        |

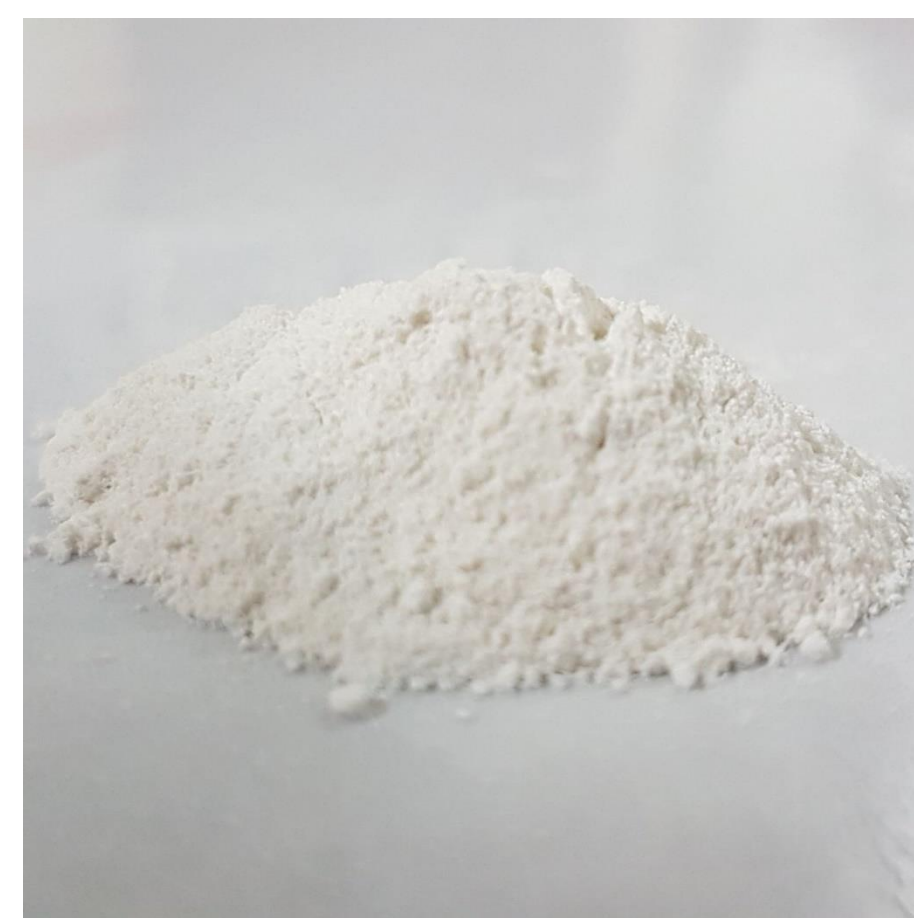


Image of titanium dioxide powder (TNP601)

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

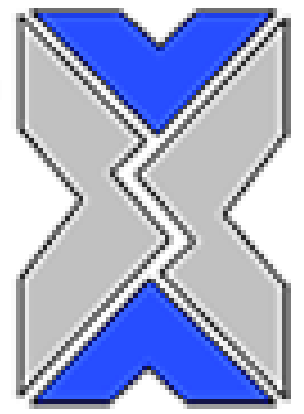
### Applications (but not limited to the following):

Pigments for paints and cosmetics, gas sensing, fillers, catalyst supports, dye-sensitized solar cells, photo-catalysts for degradation of organic pollutants, electrodes in lithium batteries.

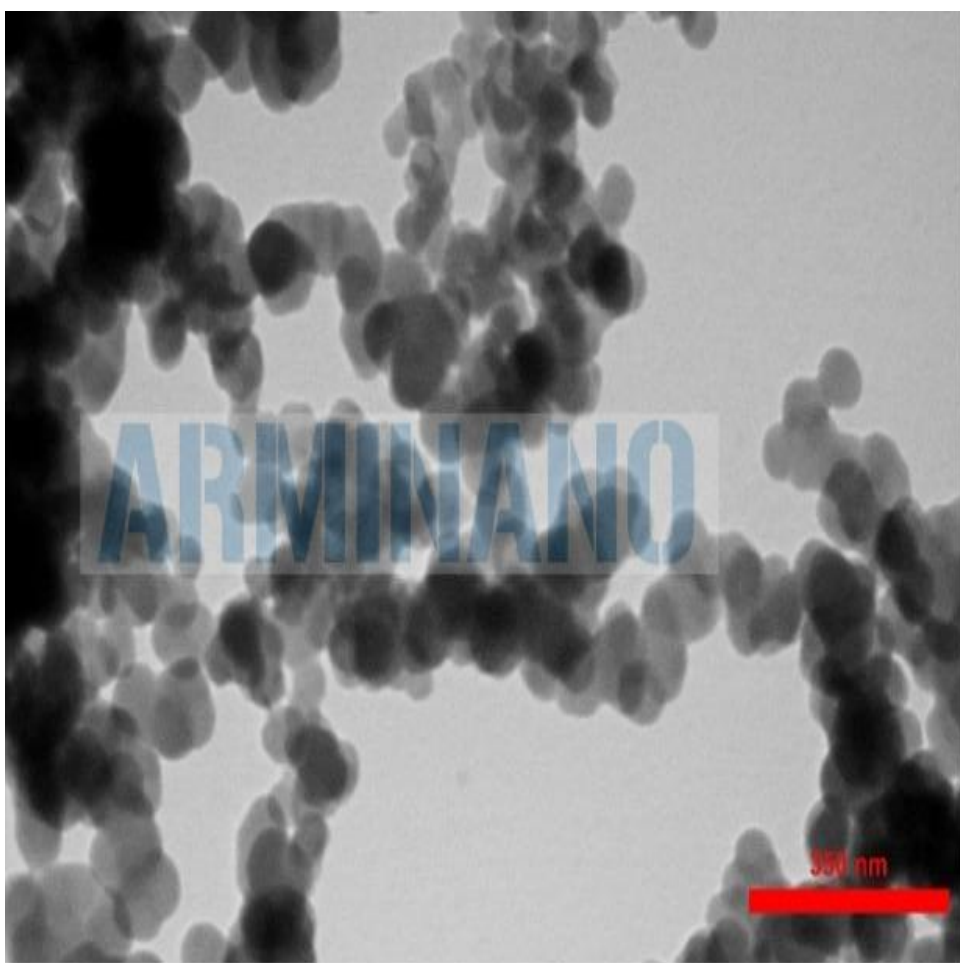
### Safety:

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.

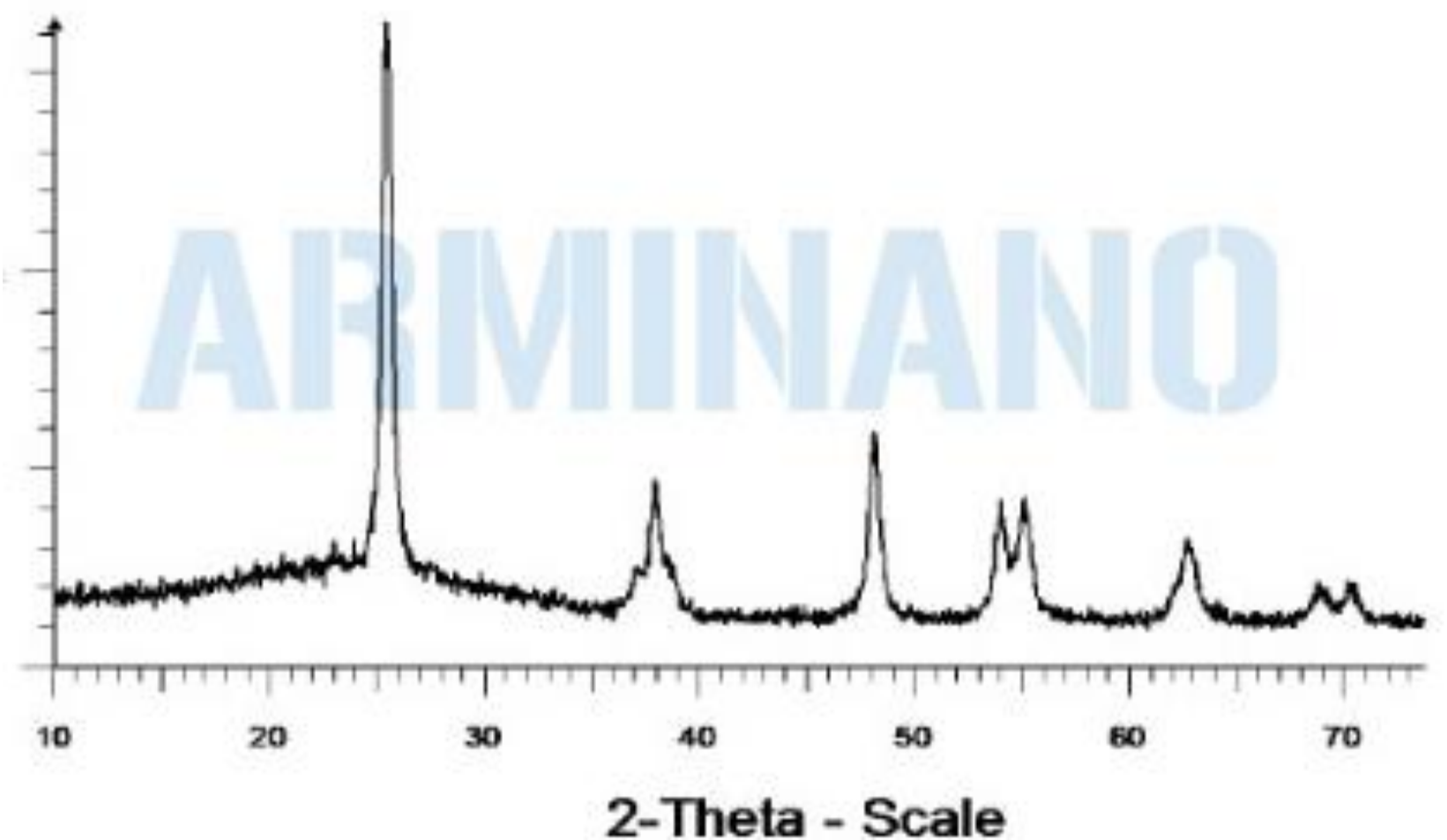




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TEM image of TNP601



XRD pattern of TNP601

### Storage:

- Keep it in cool dry place.
- Avoid direct sunlight.
- Do not freeze.
- To disperse powder use sonication.

### Shelf life:

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