



# DiagNano™ Nanoparticles Surfactants for Nanopowder Dispersion

## Description

DiagNano™ Nanoparticles Surfactants for Nanopowder Dispersion is used to disperse nanopowder in different solution. The surfactants not only can greatly help nanopowder / nanoparticles to be dispersed, but also can prevent nanopowder / nanoparticles from settling down in solution for longer time. Surfactants for ester, aqueous, alcohol, oil and organic dispersion products as well as polymer dispersant are all available.

## Surfactants

The following surfactants are provided:

### Cat#: DNH-NS01 DiagNano™ Nanoparticles Surfactants for Ester Dispersion

- A clear viscous fluid with a solid content of 45%, mixture of butyl acetate and ethylene glycol butyl ether. Suitable for nanoparticles / nanopowder to be dispersed in ester solvents such as ethyl acetate, butyl acetate, and the liquid epoxy resin.

### Cat#: DNH-NS02 DiagNano™ Nanoparticles Surfactants for Aqueous Dispersion

- A clear viscous fluid with a solid content of 45%, possesses the hydrogen bonding of its hydrophilic polyethylene oxide parts. Suitable for making aqueous dispersion products.

### Cat#: DNH-NS03 DiagNano™ Nanoparticles Surfactants for Alcohol Dispersion

- A clear viscous fluid with a solid content of 45%, suitable for solutions: trichloroethylene, ethylene glycol, ethyl ether, ethyl alcohol, isopropyl alcohol, ethylene dichloride and toluene, xylene.

### Cat#: DNH-NS04 DiagNano™ Nanoparticles Surfactants for Oil and Organic Dispersion

- A amber viscous fluid with a solid content of 75%. Suitable for solutions: oil and organic solvents.

### Cat#: DNH-NS05 DiagNano™ Nanoparticles Powdery Polymer Dispersant

- A powdery polymer dispersant for water/ethanol/ester/xylene solvents and many other different solvents for making dispersion products

## Usages

Generally used in 5-10wt% (max 20%) of material total weight.

**Note:** Cat# DNH-NS04 is used in 3wt% (max 5%) of material total weight.

## Dispersion Procedure

1. Add surfactant / dispersant into solution first.
2. When surfactants / dispersants are fully dissolved into the solution, add nanopowder / nanoparticles.
3. Finally, ultrasonicate the solution (this requires the user's own experience).  
**Note:** During ultrasonic processing, the dispersion may heat up, therefore it is a good idea every 5min to stop, wait for solution to cool, defoam, before continuing. Total 30 minutes: 5min x 6 times.
4. At the end of the ultrasonication, centrifuge the dispersion solution, remove non-dispersed agglomerated particles. Centrifugal speed should be 2000r/min, centrifugation time of 30 min.
5. After centrifugation, the dispersion will be stable for a certain time based on materials particle size, concentration, and molecular weight.



## Required Equipments

1. Ultrasonic dispersion device: ideal for laboratory-scale, low-viscosity media to disperse nanopowder;
2. Grinding dispersion equipment: suitable for large-scale nanopowder dispersion product, middle-viscosity media to disperse nanopowder;
3. Combination method: "first grinding, second ultrasonic dispersion" can be efficiently and stably to disperse nanopowder.

**Note:** *Equipment capacity, dispersion volume, dispersion concentration also need to be considered.*