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 settlling down in solution for longer time. Surfactants for ester, aqueous, alcohol, oil and organic dispersion products as well as ploymer 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/exylene 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.

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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.*

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