Water dispersible plate-shaped nanoparticles

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■ Introduction

- The company has succeeded in the delamination in water of layered double hydroxide, a clay mineral, in research into inorganic lamellar compounds stretching over many years. The company is currently advancing application development as a water dispersible plate-shaped nanoparticle.

■ Features

- White powder
- When added to water, these nanoparticles disperse easily to a thickness of 8 nm and a size of 200 nm.
- Plate-shaped nanoparticles dispersed in water charge positively.
- Viscosity can be provided by adding to and dispersing in water.
- The water dispersant elements have excellent film formation properties.
- The water dispersant elements and film have excellent transparency.
- A scratch-resistant coating is formed by firing after coating on a metal surface and drying.

■ Example applications

- Addition to plastic, etc
  Improvement of flame retardation, improvement of mechanical strength, improvement of gas barrier properties
- Protective coating formation
  Anticorrosive effect, improvement of scratch resistance, use of binder effect
- Thickening agent, moisturizing agent

■ Form

Powder | 2% water dispersion | Gel (5% water dispersion) | Independent film

■ Atomic force microscope (AFM) data

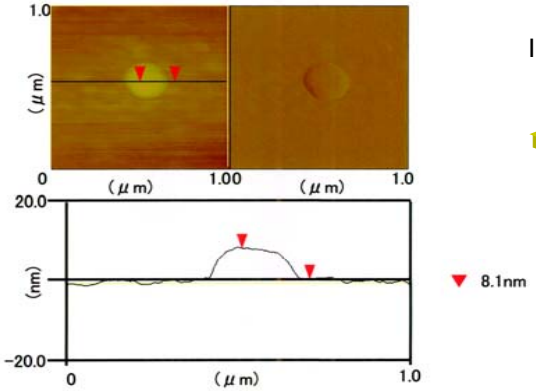

Image (during water dispersal)

Thickness
8 nm

Diameter
200 nm

■ Coating characteristics (coating of 3% water dispersion using a bar coater)

Bar coater No.	8	16	26	36	46	55
Film thickness (μm)	0.2	0.4	0.5	0.6	1.2	1.4
Pencil hardness prior to firing	4B	4B	4B	5B	5B	5B
After firing at 500°C	9H	9H	8H	8H	8H	8H

No. 8 No. 16 No. 26 No. 36 No. 46 No. 55

Excellent transparency

Laminated coating after firing