

## FINECLE® CMCA25 Multifunctional Surfactant

### Made from Wet Granules of Carboxymethyl Cellulose Ammonium

- The wet-granule surfactant FINECLE® CMCA25 is 25 percent solid, making it easy to handle, store, and transport.
- This surfactant is optimally suited for use in paints, inks, and foam molding. It can serve as a water-resistant cross-linked hardener.

### Product Characteristics

FINECLE® CMCA25 is ideally suited for use as a pigment dispersant, viscosity modifier, or sizing agent. It is able to transform pigment and fat into wet granules, even after blending. When used as a dispersant for conducting large-scale wet classifications, such as those on soil, it creates a closed system that makes all materials inside the system recyclable.



### Technological Features

Fine Clay has demonstrated that acid-form carboxymethyl cellulose (CMC-H) can be mass-produced in a sustainable manner\*1 via a process that employs ammonia to control levels of dispersion and flocculation.

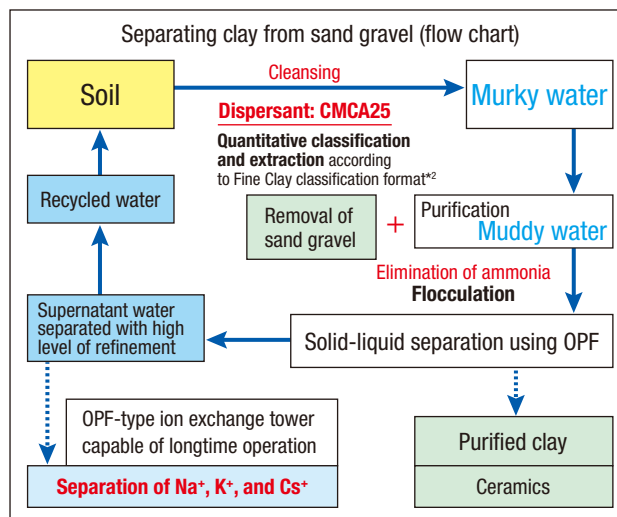
The company's osmotic filtering Pascal filter (OPF) enables precise separation of solids and liquids.\*2

### Advantages

The structure of FINECLE® CMCA25 supports high viscosity. This makes it optimally suited for use in painting extensive areas of membranes of varying thickness and also enables it to effectively prevent dripping in printing and dyeing processes. Its accuracy in separation and classification enables numerical design to be conducted in a highly precise quantitative manner. The ash of this product is almost free of alkaline metal cations, and the company is working to eliminate metal cations completely.

Carbon dioxide + Water ⇒ Photosynthesis ⇒ Carbohydrates + Oxygen  
Carbohydrates: Glucose, Starch, Cellulose

Add carboxyl group to cellulose: CMC  
Acid-type product: CMC-H, Ammonium salt type: CMCA



### Take Note!

#### Background

Fine Clay's technology helps improve the levels of wet classification and elutriation that are conducted on soil or on clay minerals such as kaolin. The company has exclusive ownership of a number of patents related to its technology. The company's main scientific advisor, Dr. Kiyoshi Isobe, was a professor at the Graduate School of Science, Osaka City University (OCU). His specialties include chemical reaction control for solids, liquids, gases, and their mixed phases, as well as catalyst chemistry. He is particularly well versed in the physical chemistry of CO<sub>2</sub> and ammonia. Fine Clay's management policy involves contributing to atmospheric CO<sub>2</sub> reduction by achieving appropriate circulation of carbon, nitrogen, and water.

#### Innovative or Unique Qualities

A new technology developed exclusively by Fine Clay allows substances to be transformed into wet granules. This new classification dispersant can be self-supplied. Fine Clay is able to manufacture strainers of varying sizes and underwater pumps, according to customer needs. Incorporation of the OPF system into chemical reaction tanks, ion exchange towers, and absorption column towers enables a stable laminar flow that is free from stagnation at the bottom. Because of this, cations can be selectively absorbed and separated according to their atomic weight.

#### Future Business Development

Fine Clay is seeking new types of collaboration beyond its existing framework. The R&D themes that the company is currently working on include:

- Functional particles for battery electrodes (e.g. black lead), optical functional particles (e.g. phosphorescent pigments), and other pigment dispersant granules;
- Fat for use in paints and inks, glycerin complex granules;
- Thin-film processing agent for ensuring rust prevention, hydrophilicity, and conductivity; and
- Synthesizing a unique CMC from vegetation sources to create a new material that is highly viscoelastic and that can provide a stiffening effect.

Fine Clay is scheduled to work jointly with the OCU Advanced Research Institute for Natural Science and Technology on the analysis of granule structures and the foaming process.

#### Company Profile and Basic Information

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No. of employees: 0 (as of 2014)  
Capitalization: 10 million yen  
Year founded: 1989  
Name of representative:  
Nobuo Furuno, President

#### Business Overview

Patent business, consulting

#### Patents

\*1: CMC-H and its production method  
(Japanese Patent No. 5405786)

\*2: Device and method for conducting wet classification (Japanese Patent No. 4495918)