Production process for limestone fine particle by comminution

Assistant Professor Naoya Kotake

[Production process for limestone fine particle]

Feed : over 10 mm

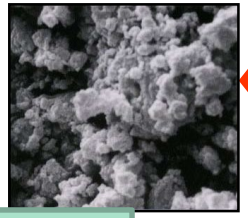
Crushing

Ball milling

Intermediate :
below 100 μm

Optimization;
Operational conditions,
Dispersant conditions

Bead milling



1 μm

Product :
fine particles
below 1 μm

Content :

Limestone is an important mineral resource in Japan, and is widely used in the steel, cement, and paper-pulp industries, in agriculture and stockbreeding, and in the food and pharmaceutical industries. These uses generally require the limestone to be ground to smaller particle sizes, with some applications demanding extremely fine grinding.

This study examines the use of high performance grinding techniques to attain a fine limestone product.

Wet ball milling; Examination of optimum dispersant and its mass fraction for the grinding of limestone with various inorganic and polymer dispersants (NaHMP, NaPP and SPA, SPM, PVA, etc.).

=> **Optimum dispersant conditions**

Fine grinding with a high flow stirred bead mill under the optimum dispersant conditions; various operational conditions such as the rotor speed, the grinding time, the mass and size of grinding media and the concentration of feed slurry.

=> **Optimum operational conditions**

=> **Optimization for mass production of limestone fine particles**

Appealing point : I will engage in industry-academia collaboration and aim to develop into actual production plants by making the most of my research content.

Yamagata University Graduate School of Science and Engineering

Research Interest : Unit operation, Comminution

E-mail : nkotake@yz.yamagata-u.ac.jp

Tel : +81-238-26-3163