

Dispersing Machine for Nano Particle

NANO GETTER[®]

Dispersing Machine for Mass Producing Nano Particle

MAX NANO GETTER[®]

NANO GETTER / MAX NANO GETTER

Dispersing into Nanometer Size

High Quality and High Precision

- Realizing **Mild Dispersing** by Ideal Bead Movement
- **Mass Production** for High-quality and High-precision Nano Particles
- **Reliable Beads Separation** and **Stable Use** of Microbeads



DMR180



HFM4

Your Partner for Fine Particle Technologies

NANO GETTER series promise you High-quality Nano Dispersing.

Ashizawa will meet the advanced needs of our customers by Mild Dispersing!

Ashizawa offers you two main types of *nanonization* for your purpose -- "Grinding" and "Dispersing".
LMZ is a mill that is suitable to give a shear force to the particles - "grinding". The grinding chamber has become a narrow structure that is effectively using the portion of high energy density, crushed by a strong shear force, to carry out the *nanonization* process with high efficiency.

On the other hand, NANO GETTER and MAX NANO GETTER are the mills which shear force of beads and particles are controlled, suitable for "dispersing".
By the force of rolling beads balanced in the axial and circumferential directions, to loosen particles.
Not performing excessive dispersion, NANO GETTER series can disperse nano particles without damaging the particles.

What is Mild Dispersing?

Advantages

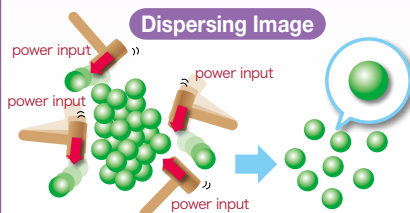
KEEP
particle properties

NO
re-agglomeration

REDUCE
additives amount

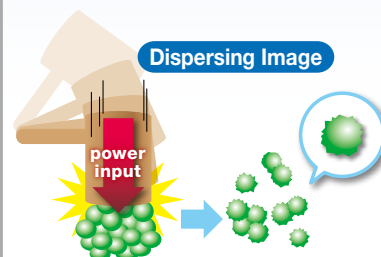
Mild Dispersing

Mild dispersing enables production of high quality and high-precision fine particles without excessive dispersing and damage.



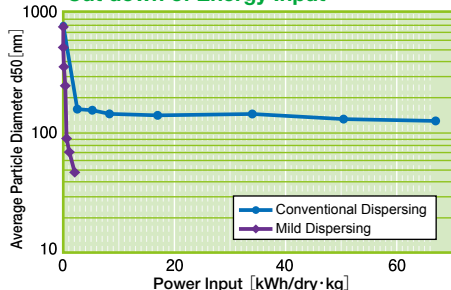
Conventional Dispersing

Due to excessive dispersing, particles are easily damaged, and results in re-agglomeration.

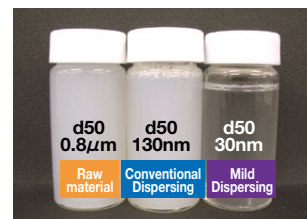
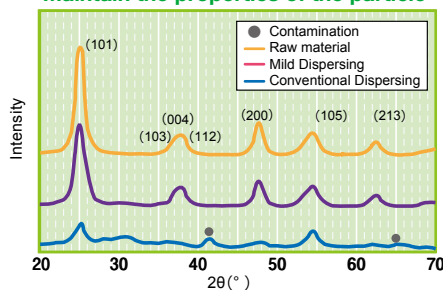


Example of Mild Dispersing Photocatalyst (TiO₂) that requires transparency

Cut down of Energy Input



Maintain the properties of the particle

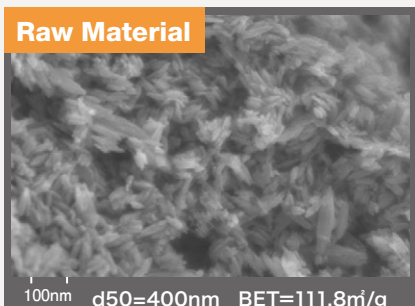


Density: all the same
Primary particle size: 30nm
※ After one year of processing

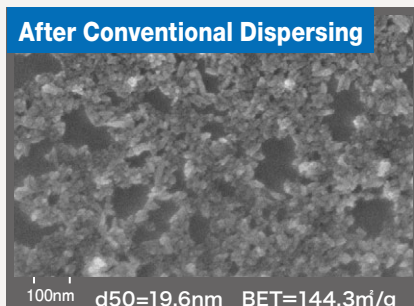
Case Example of TiO₂

Mild Dispersing: Dispersing while maintaining the needle-like shape

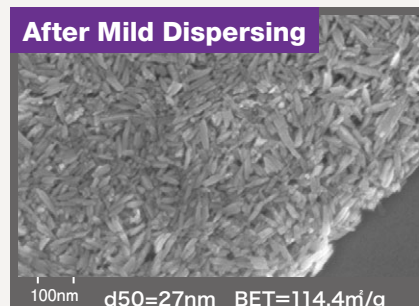
Raw Material



After Conventional Dispersing



After Mild Dispersing



Movement of ideal beads considering the balance of axial and circumferential direction called "spiral laminar flow" can realize damage-free, high quality nano dispersing.

Realizing Ideal Beads' Movement

Ideal Beads' Movement is..

- uniform bead distribution in the grinding chamber
- not over-dispersing

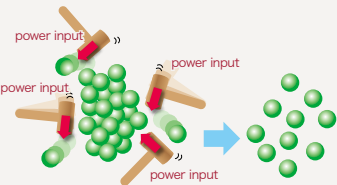
Controlling Contamination

Regarding to wear and contamination, it is very important to select a mill which doesn't use too much energy.
By the ideal beads movement, NANO GETTER and MAX NANO GETTER have great characteristics of high energy efficiency and they don't give excess energy which leads to contamination.

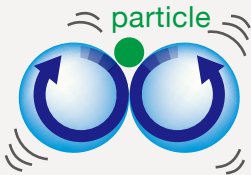
Mild Dispersing Dispersing particle by Rolling movement of Beads

Mild dispersing enables production high quality and high-precision fine particles without excessive dispersing and damage.

Dispersing Image

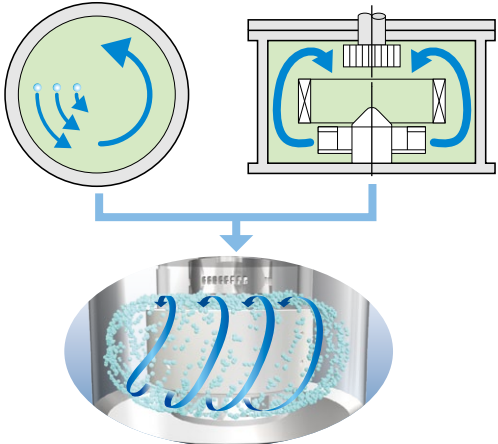


Beads' Movement



Ideal Beads' Movement "Spiral Laminar Flow"

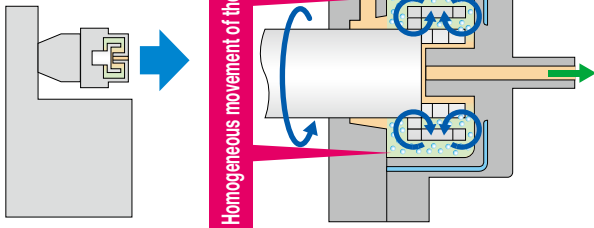
Circumferential Direction Flow (overhead view of the chamber)
Axial Direction Flow (side view of the chamber)



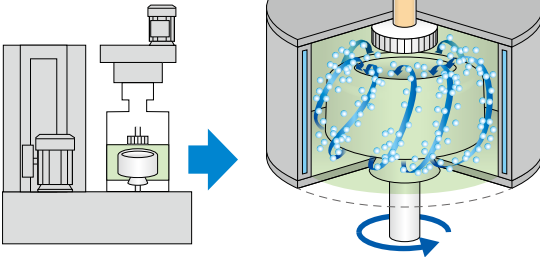
Beads' movement inside the chamber

Shape suitable for "dispersing" to give particle homogeneous energy

NANO GETTER®



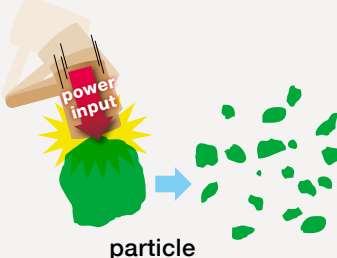
MAX NANO GETTER



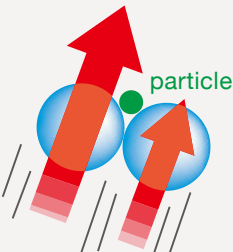
Grinding

Strong energy grinding with high shear force

Grinding Image

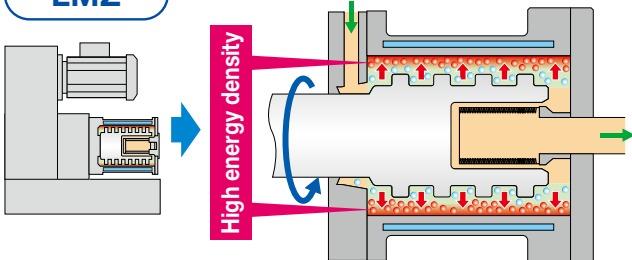


Beads' Movement



Shape suitable for "grinding" to give the particles high energy

LMZ



Various lineup from lab machines to large machines

To minimize damage to the particles, Mild Dispersing will produce nanoparticles of high quality.

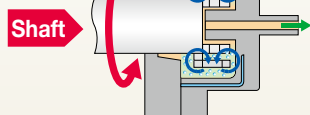
NANO GETTER series adopts the ideal mechanical structure and depending on the amount of grinding chamber volume, micro sized beads can be used.

Adopted the grinding chamber structure that matches the production volume

Small scale machine

NANO GETTER®

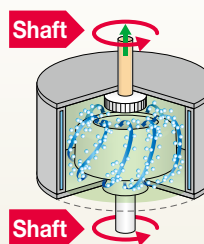
This machine has adopted a structure in which the centrifugal force is greatly affected. It is a simple structure that separates the beads with only the rotation of the agitator.



Production scale machine

MAX NANO GETTER®

Adopting independent centrifugal separator, MAX NANO GETTER has overcome the problem of large machines such as small centrifugal action and poor beads separation.



Ashizawa supports you for producing nano particle efficiently by choosing the optimal model machine.

Specifications

Table sized machines

Specifications are subject to change without notice.

	HFM02 <i>Batch type</i>	DMS65	DMR/S110	DMR/S180	HFM4/8 <i>Conversion</i>		HFM20	HFM50	HFM125
Grinding Chamber Volume (L)	0.2	0.12	0.45	2.1	3.1	6.9	17	50	125
Drive Power Mill (kW)	2.2	2.2	3.7	11	11		15~30	30~55	55~110
Drive Power Separator (kW)	—	—	—	—	3.7		11	15	30
Dimentions [WxDxH] (mm)	Mill: 400×550×600 Whole ^{※1} :1400×600×600	Mill: 400×550×600 Whole ^{※1} :1400×600×600	1000×1000 ×1000	1000×1300 ×1900	1200×1200 ×2300		2500×2000 ×2800	3000×2500 ×3400	3500×2500 ×3800
Weight (kg)	Mill:40 Whole ^{※1} :90	Mill:40 Whole ^{※1} :90	350	800	1300		2500	3200	4000
Grinding Media Diameter (mm)	φ0.03~0.2	φ0.03~0.3	φ0.03~0.5			φ0.03~ φ0.5			
Separation System	—	Centrifugation Wheel ^{※2}			Independently Driven Centrifugal Separator				
Agitator/ Inner Surface of Grinding Chamber	Ceramics and Plastic	Ceramics	Ceramics, SUS, High-Cr steel, Plastic						SUS, High-Cr steel, Plastic

※1: "Whole" includes a mill, a pump, a tank, a mixer and a control panel.
※2: Screen is optional.

Ideal for Laboratory

LABSTAR mini

※ For the detail, please see Labstar series brochure.

Fine Grinding

LMZ015

Mild Dispersing

DMS65

Batch Type

HFM02

Table sized wet grinding and dispersing mill

The minimum sample
100 mL

Scalable to
Production scale



Applications

- Optical materials · Films
- Pigments
- Cosmetics
- Multilayer capacitors
- Dyes
- Abrasive for SC
- Photocatalyst
- Magnetic recording materials
- Resist inks
- Batteries, etc.

Trial test, Toll grinding, Facilities are available

Trial tests, grinding services are available at our head office in Chiba, JAPAN. We will suggest the optimal conditions based on the past experience. Feel free to contact us for further information.

Your Partner for Fine Particle Technologies

Ashizawa

Ashizawa Finetech Ltd.

Headquarter 1-4-2 Akanehama, narashino-shi, Chiba 275-8572 JAPAN

TEL +81-47-453-8111

FAX +81-47-453-8378

Osaka Branch 4-15-13 Katayamacho, Suita-shi, Osaka 564-0082 JAPAN

TEL +81-6-6389-7700

FAX +81-6-6389-7710

<https://www.ashizawa.com/english/> E-mail sal@ashizawa.com