

The glazing properties and the intensity of colour of waterbased paint are significantly improved by dispersing and fine grinding to 2 micron. Production time is reduced from 7 hours to 15 minutes!

Industry: Manufacture of paints, varnishes and similar coatings, printing ink and mastics
Product: Green medium viscosity (200-300micron) waterborne paint with a density of 1.4gr/cm³. The product was premixed but not dispersed.

Challenge: To improve the dispersion process and to obtain a finer dispersed product of approx. 2-3 micron. To manufacture higher quality products with greater intensity of colour that is comparable to products manufactured by leading suppliers of artists' colours.

The customer's factory was equipped with approximately 25 outdated, open, triple roll mills. After milling times of 7 hours a particle size of 15-20micron was achieved. The mills require a lot of space, long set up times and are high maintenance.

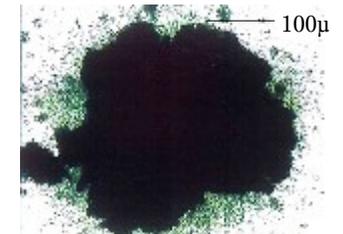
Our Solution:

1. Predisposition with a dissolver „Dispermat AE3“
1.4kg of the premixed product was dispersed with a Dispermat AE3 in a 2l double-walled container cooled by tap water, with a 40mm dissolver disc running at a tip speed of 17m/s.
→ Result: After a 30min predisposition, the agglomerates were dispersed to a size of 90micron.

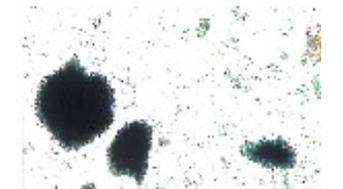
2. Fine grinding with the basketmill „TML 1“
For fine grinding the dissolver shaft DL was removed and replaced by the milling system TML 1, filled with 40ml of ZrO₂. 1.2-1.7mmø beads. In order to improve the product recirculation a larger 80mmø heavy duty dissolver disc was fitted. During the entire milling process the temperature remained constant at 33°C (a max. 60°C was acceptable).
The required result, an even distribution of particles of 2-3micron, with some particles of 5-6micron, was achieved at a tip speed of 11.7m/s (4000rpm/min) in a total milling time of 60min.

Instruments: For dispersing: dissolver Dispermat AE3 (1,1kw)
For fine grinding: basket mill TML 1

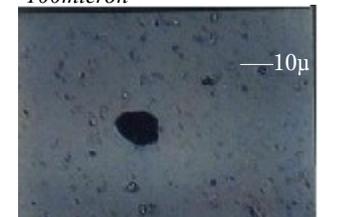
Success: The customer's plant has been equipped with two TORUSMILL SK 500 basket mills, which in practice actually led to a further improvement of the laboratory results described above. Introduction of the SK500 has reduced production time from 7h to 15min. The product quality has been improved and product handling and maintenance are easier and faster now.



Pic. 1: Before dispersing: Particle size of 200-300micron



Pic. 2: After 30min of dispersion: Part. size of 90-100micron



Pic. 3: After 30min of fine grinding: 2-3micron (some 10micron)



Pic. 4: After 60min of fine grinding: 2-3micron