

Ceramic ink has been dispersed below 1µm by basketmill TML5!

Industry:	Ceramic industry
Product:	Low-viscosity ceramic ink (100-200mPs) made for decoration and design applications
Challenge:	It was to prove that ceramic pigments can be dispersed fine enough by a basketmill. We aimed at achieving a D99,5-value below 1µm. A desagglomeration, of such quality, is essential since the ink is applied on ceramics (e.g. tiles etc.) by means of ink-jet technique. Particles any bigger than this will obstruct the nozzle.
Our solution:	Due to low viscosity the dissolver disc was not able to carry in sufficient performance in the product. Tip speed was as slow as 12m/s. Positive effects on desagglomeration of pigments were not to be seen at this point, because ceramic pigments require a significantly more intense strain. With respect to this we then started fine grinding.
1. Mixing with the dissolver „Dispermat CN20F2“	
2. Fine grinding with the basket mill „TML 5“	The basketmill TML 5 has been filled with beads differing in size, yet with a constant bead volume of 80%. The tip speed has been varied. With respect to the high amount of beads in the basketmill the tip speed was higher than usual for to achieve a better circulation of product in the milling basket. For results see grafic.
Conclusion:	<ul style="list-style-type: none">• The best result has been achieved with the smallest beads(0,3-0,4mm).• The lowest tip speed (18m/s) was as good as the highest (23m/s).• Due to our experience we know that a higher tip speed simply leads to a higher wearout
Instruments:	<ul style="list-style-type: none">• Dissolver Dispermat CN20F2• Basketmill TML5 (SiSiC-version plus nano-Kit)• 5ltr double-walled container: 5L for an amount of product of 3,5ltr• Beads: ZrO2 Yttrium-stabilized

Dispersion results as follows

