



Advanced Mixing Technologies

Are All High Shear Mixers Created Equal?

— BACKGROUND —

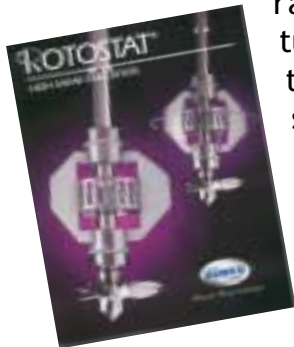
Are all high shear mixers are created equal? **NO!**

As illustrated by the table below, one of the major improvements in both the Admix Rotosolver and Rotostat designs is the ability to generate very high flow rates in addition to high shear rates. The result is substantially more throughput of material through the mixing head, increasing the turnover rate of the batch many more times a minute relative to competitive equipment. This in turn allows more work and shear to be provided to the formula to quickly and completely disperse and reduce all particles and droplets.



— HOW DO WE RATE? —

This table quantifies the pumping rate and batch turnover rates of the leading high shear mixers for a typical 250 gallon batch.



MIXER	Hp	Head Size	Tip Speed (ft/sec)	Flow Rate* (gpm)	Turnover Rate (turns/min)
Rotosolver- [®]	5	3.5"	52	1255	5.0
Rotostat [®]	5	3.2"	48	1111	4.4
Type "ST"	7.5	4"	63	420	1.7
Type "G"	10	3.8"	58	300	1.2
Type "R"	10	4"	63	260	1.0
Type "AB"	7.5	3-7/8"	61	235	.94
Type "S"	7.5	4.25"	66	160	.64

* Information shown obtained from company's literature or actual testing. Flow is for waterlike viscosity (under 10 cps).

— SUMMARY —

To fully qualify the expected degree of mixing of any high shear device, parameters beyond pumping and turnover rate are necessary. Tip speed and shear rate must also be considered along with an "Intensity" factor which relates to bulk fluid velocity. A tip speed of 40 feet/second is generally adequate for most high shear applications (all of the units shown above exceed that value). Shear rate is often difficult to quantify for some mixer designs, but it is generally agreed that all of the high shear mixers listed will provide particle sizes in the 5-25 micron range, with some models approaching 1 micron.

The "Intensity" factor developed by Admix provides a useful measurement of the expected "degree of mixing" based on a bulk fluid velocity and mass flow analysis. More information on Intensity factors is available on the technical report #4 of this series.