

# Quadro Ytron™

## HIGH SPEED DISPERSION OF BENTONITE CLAY

### BACKGROUND/REQUIREMENT

Bentonite is a naturally occurring aluminum silicate clay which can take up several times its own weight of water to form a highly thixotropic colloidal suspension or gel. The gel structure is derived from hydrogen bonds which develop between the clay particles (or platelets.) These bonds readily break down with shear, reforming again if the shear force is removed. One of the principal applications for bentonite is in drilling muds, however it is widely used as a suspending and stabilizing agent, and as an adsorbent or clarifying agent in many industries, some examples of which are given in the table:

<i>Industry</i>	<i>Use</i>
<i>Agrochemical</i>	Anticaking agent for granular fertilizer, ingredient of pesticides, suspending agent
<i>Civil Engineering</i>	Foundations, asphalt emulsions, grout
<i>Cosmetic</i>	Antiperspirants, deodorants, lipstick, creams and lotions
<i>Food/Animal Food</i>	Binder, carrier and stabilizer in pet food. Clarifier for juice, wine and edible oil
<i>Household</i>	Detergent bulking agent, polishes
<i>Miscellaneous</i>	Paper coatings, paper de-inking, inks and paints
<i>Oil</i>	Drilling mud
<i>Pharmaceutical</i>	Stabilizing, thickening and suspending agent in creams and ointments

Despite the diversity of end uses, and the various processing methods and equipment used, there are a number of common processing requirements which must be satisfied in order to obtain maximized "functionality".

- Mixing equipment must be capable of rapidly incorporating and dispersing the powder into the base liquid.
- The bentonite particles must be reduced to their finest constituent parts to expose the maximum surface area to the surrounding liquid and activate the gelling effect.

The following problems can be encountered when using conventional agitators:

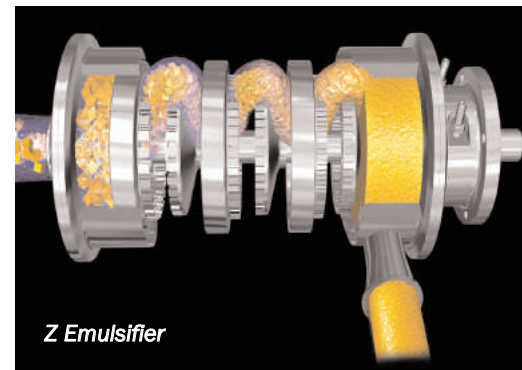
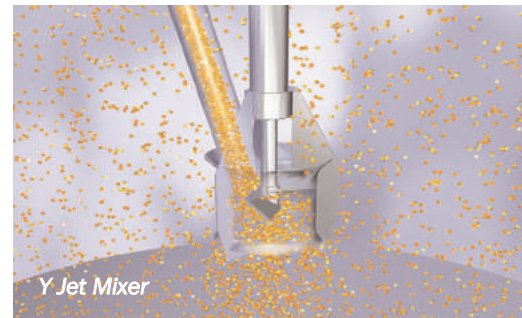
- Conventional agitators do not produce sufficient shear to reduce particle size and activate the gelling effect.
- On addition to the water, the particles tend to agglomerate. The washing action of conventional mixers cannot break these down effectively.
- Long mixing cycles are required to obtain uniform dispersion and to complete hydration.
- With in-tank mixing, once viscosity increase has started, agitation of the solution becomes increasingly difficult reducing the mixer's ability to provide shear to reduce particle size and maximize gelling effect.

# QUADRO YTRON™

## QUADRO'S APPROACH

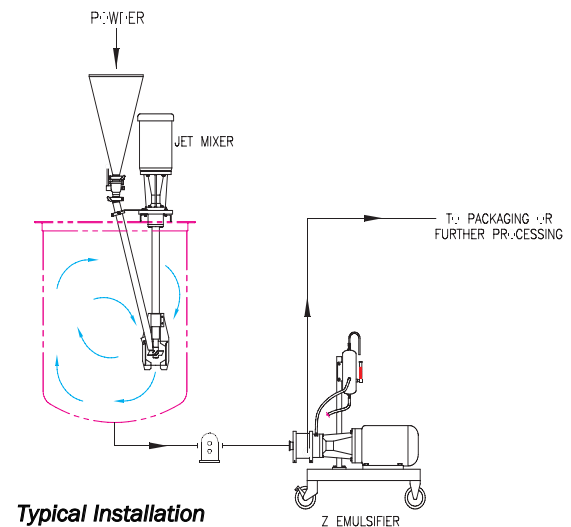
The above problems can be overcome using a Quadro Ytron Jet Mixer and Z Emulsifier.

Bentonite Clay is made up of organic platelets, which under shear break apart to create multiple platelets, hence creating the viscosity increase. The Jet Mixer with a bypass assembly will introduce the Bentonite Clay powder into solution dust free and the axial flow pattern of the Jet Mixer will blend to a uniform concentration within minutes. When the Bentonite Clay has been introduced and blended, we recommend a single pass of the solution through the high shear, fine radial tolerance Z Emulsifier to achieve the maximum viscosity building properties of the Bentonite Clay.



## QUADRO YTRON JET MIXER AND Z EMULSIFIER ADVANTAGES

- Rapid dispersion and blending of the powder into solution dust free.
- Single pass, inline high shear dispersion to break down and wet each individual particle.
- Single pass processing assures each particle is subjected to the same amount of shear ensuring consistent quality batch to batch.
- Single pass inline dispersion provides shorter processing time compared to an intank high shear mixer.
- Inline mixer requires less Hp than an intank high shear mixer to process the solution.



## LOCAL REPRESENTATIVE



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