

# YTRON-ZC

## POWDER DISPERSER



- **Instantaneous and problem-free dispersion of hydrophilic polymers such as Carbopol® and Pemulen™ types**
- **Achieving higher viscosities through 'STRETCHING'® of molecular chains**



YTRON® PROCESS TECHNOLOGY

### The challenge

The use of high molecular weight, cross-linked hydrophilic polymers provides many advantages and enhancements such as efficient gel formation or thickening effect and pseudo plastic properties as well as the stabilisation of suspensions and emulsions. The drawback, however, is that the inclusion of these polymers into the formulation causes considerable difficulties during mixing and dispersing.

The difficulty in dispersing such fine and electrostatically charged powders is their tendency to quickly form agglomerates, as their outer skin hydrates instantly. The resulting tough outer skin may prevent completion of the hydration process creating

an agglomeration of particles which are wetted on the outside only. These appear, at best, as small transparent 'fish-eyes' but more generally as lumps of varying sizes, even after longer mixing and swelling stages. Should an attempt be made to achieve a homogeneous dispersion by smoothing out these lumps through high shear methods, the polymer molecular chain may be damaged. This will affect the end result by reducing the desired rheological characteristics of the finished product, at least partially.

Compromise during dispersing may therefore lead to a reduced viscosity of the final product and adversely affect the reproducibility of the entire process.



## The Solution

YTRON-ZC enables quick, reproducible and problem-free dispersion of "difficult to wet" gels, gums and thickeners, whilst "STRETCHING"<sup>®</sup> of the molecular chain at the initial wetting stage means highest achievable yields.

## The use of the YTRON-ZC brings significant advantages

In a single pass, the polymer particles are homogeneously dispersed and fully hydrated. Breakdown of the long chain molecules, resulting in low viscosity, does not occur in the YTRON-ZC as it would in a batch processing method. This is due to the fact that the powder is sheared immediately and only for a fraction of a second after coming into contact with the liquid phase.

The special rotor/stator dispersion reactor effects the "STRETCHING"<sup>®</sup> of the molecular chain, which can result in a considerable increase in viscosity. The negative pressure created in the dispersing head means a consistent powder intake without the introduction of additional air. The end product is consistently reproducible.

Because the powder/liquid ratio is adjustable, concentrations ranging from 0.5% to 10% can be achieved. The production of a concentrate for later dilution may save time and energy in a later step of the process.

Valuable, ingredients such as liposomes and other shear or heat sensitive products, and encapsulated raw materials can be processed efficiently and without degradation..



*Highest concentrations are possible even in a single pass.*



## How YTRON-ZC works

The powder is sucked into the dispersing section from the feed hopper. The liquid entering tangentially creates a centrifugal field of liquid in the dispersing section. The powder / liquid mix is immediately dispersed by the labyrinth of rotor / stator teeth. Free discharge from the YTRON-ZC housing is ensured without any clogging or sticking.

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