

When developing our dosing equipment, our goal was to determine the exact release of the Biology Super Absorbents, which can be considered as a unique rheological system, by the end of the understanding, the shape, size and size of the droplets, to be automated, to control the optimal amount of vaccine, pre- and probiotic and water access to the chicks.

Our goal was also to be able to quantify the value of each operating parameter and thus optimize that even with remote control and control technology so that dosing is simple and reproducible. This is based on a fluid distribution our patented device, to achieve a uniform pressure, shear profile and geometry etc, depend on different condition for example: water hardness, temperature, humidity, conveyor belt speed, etc..

APPARATUS FOR THE CONTROLLED DISPENSING OF A FEED SUPPLEMENT HYDROGEL WITH HIGH VISCOSITY The present invention relates to a dispensing apparatus suitable for the controlled dispensing of a high viscosity feed supplement product (superabsorbent hydrogel), which apparatus can be used to automatically control the shape, size and size distribution of drops, so that each animal always obtains the optimal amount of vaccine, pre- and probiotic. , food, water, etc. The hydrogel itself is an innovative new product



that complies with EU feed additive law EC 1831/2003 and animal welfare standards, which can, among other things, increase the survival rate of poultry during transport and hatching. The product is a natural polymer-based hydrogel that can be prepared in two different forms, both as a physical and a chemical gel. The chemical gel differs from the physical gel in that, in the case

of the chemical gel, first-order bonds form the three-dimensional network, in the physical gel, loops between the polymer chains, chain entanglement, and second-order bonds form the (physical) network. Due to their different structures, the two gels have very different rheological properties. Besides, their rheological behavior is also very different from the rheological behavior of ideal materials. They are non-Newtonian fluids, but pseudoplastic materials, i.e. their viscosity also depends on the shear conditions (geometry, shear stress, shear rate), which further makes it difficult to ensure proper dispensing. We have realized that efficient and accurate dosing can be achieved if the droplets are shaped by ourselves by creating the right geometry and pressure conditions.

(The "similar" devices currently in use are not capable of this, as the shape, size and size of the droplets can be determined by the dosing rate and the limit of the properties of the material (some cases not allowed in EU), thus not controlling and optimizing the dosing. The consequence of all this is that the size of the droplets varies over a very wide range, as they form droplets due to their own inertia. Our equipment uses the right pumps, nozzles, control technology with numerically adjustable parameters and a new kind of proprietary flow technology fluid distribution component (patented).

This enables us to meet high quality standards, special viscosity, compliant and guaranteed controlled release for high viscosity gel systems (BIOSAP). With this solution it is possible that since 1 such liquid distributor is 8 pcs distributes the dispensed gel to a nozzle, you think that the nozzles 8 have the same dispensed gel you get same quantity. Our equipment contains 6 such liquid distributors - thus 48 nozzles. For the longitudinal and transverse arrangement, we can adjust the number of the working nozzles. This is also the way to use paper boxes, as the BIOSAP used is also an opportunity for paper too.

