

# VAC-PAC PLUS®

## Advantages over Effervescent Powders and Tablets

The Vac-Pac family of vaccine stabilizers represents the newest generation in vaccine protection technologies. Advances in stabilizer technology continue to push these top-performers farther in front of the field. In producing Vac-Pac Plus, Animal Science Products dominates the stabilizer market with stabilizers that are safer for vaccines and more convenient and profitable for users.

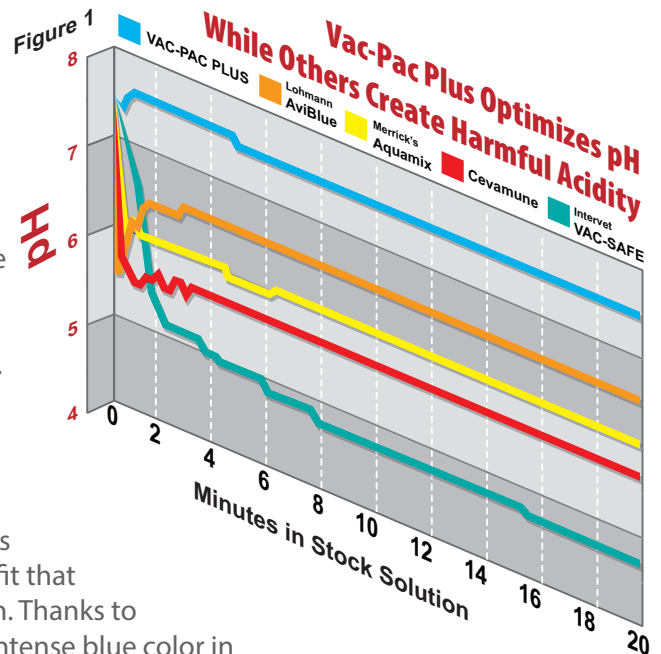
### Easier to Use

Vac-Pac Plus is more concentrated and more soluble than competitive technologies such as slow-dissolving effervescent tablets and powders or animal derived milk proteins. Vac-Pac Plus' higher stabilizing power and solubility offers faster vaccine preparation time. Slow-acting competitors often carry label warnings that require up to a 15 minute wait after mixing the stabilizer before it is safe to add the vaccine. Vac-Pac Plus needs no such warning because its stabilizing action is immediate. There is no waiting required. The stabilized vaccine diluent is immediately safe and ready to receive the vaccine as soon as Vac-Pac Plus has been stirred into the solution. Another benefit that makes Vac-Pac Plus more convenient is the new, dust-free formulation. Thanks to advanced granulation technologies, customers now enjoy the same intense blue color in the vaccine solution in a form that is even easier to use.

### Safer for Vaccines

Effective drinking water sanitation is a vital good manufacturing practice in poultry production. Constant chlorination is the most common means of sanitizing drinking water, as it reduces the microbiological load on the birds. However, chlorination systems can surge, resulting in chlorine spikes. These spikes overpower weaker stabilizers and rob flocks of valuable immunity if the surges occur while vaccine is present. An advantage of Vac-Pac Plus is heightened vaccine stability over the entire course of the vaccination. Vac-Pac Plus is manufactured using patent-pending technologies designed to absorb these shocks. Vac-Pac Plus rescues vaccines from chlorination spikes that other less powerful products cannot absorb.

Vac-Pac Plus also contains a sophisticated buffering system that sustains an ideal pH for vaccines at about 7.8. Vac-Pac Plus maintains this ideal pH regardless of whether the water used in the stock solution is acidic or alkaline. Several competitors ignore the vaccine's need for buffering and actually take the opposite approach. They attempt to overcome poor solubility in their powders and tablets by making them effervescent. Strong acids in effervescent stabilizers generate violent bubbling. Excess acid immediately builds, driving the pH to harmful levels for vaccines. The graph (Figure 1) compares the optimized pH of a stock solution stabilized with Vac-Pac Plus to the acidic pH generated by several competitive effervescent tablets or powders.



All ASP spec sheets are available for download at [www.asp-inc.com/products-list](http://www.asp-inc.com/products-list), or by scanning the QR code with your mobile device.



*Providing Ideal Solutions... Everyday!*

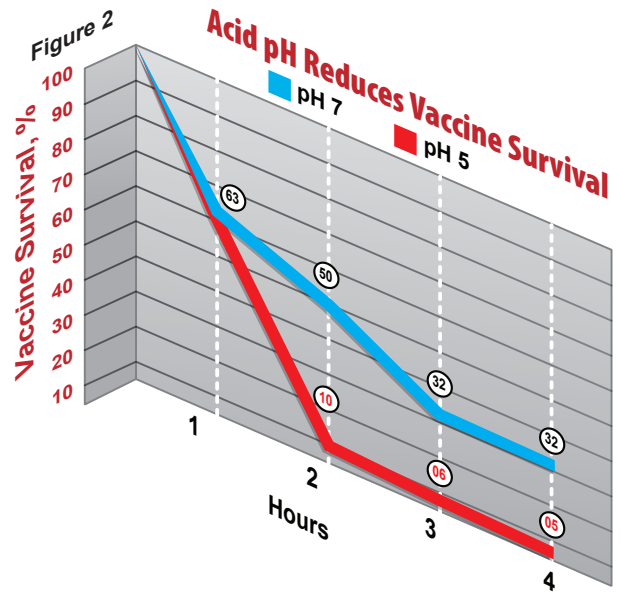
# VAC-PAC PLUS®

The effervescent products all caused the stock solution's pH to drop within 15 seconds. They all required a wait of 10-15 minutes before dissolving and the acid condition persisted after the stabilizer was dissolved. Any vaccines added to these effervescent solutions would be exposed to excess acid which puts vaccine titers at risk. How much titer decay might you expect from acidic effervescent products? Research shown in Figure 2 illustrates that only 10% of a vaccines' original titer remained after 2 hours in a pH 5 solution, and the titer fell to 6% by 3 hours. It highlights the enormous risk effervescent products pose to vaccines, even during the course of a normal vaccination period.

### Broader Spectrum

For optimal stability, bacterial vaccines such as Mycoplasma and Salmonella have different biological requirements than viral vaccines such as Newcastle, Bronchitis and Influenza. These bacterial vaccines require a more tonically balanced environment to maintain optimal potency. Vac-Pac Plus helps satisfy this biological need by providing more ideal tonicity or osmolarity. Vac-Pac Plus' improved tonic balance broadens the spectrum of vaccine protection by stabilizing both viral and bacterial vaccines. No effervescent tablet, powder or milk protein offers the same osmotic balance as that provided by Vac-Pac Plus.

Vac-Pac Plus represents the newest generation in vaccine stabilizing technology. It provides significant advances over lesser alternatives such as effervescent powders and tablets or animal-derived milk proteins. Vac-Pac Plus is more convenient for the user because it is highly soluble, provides instant protection, does not contain strong effervescing acids and is now cleaner and more dust-free. It also offers the strongest protection from a wider array of risk factors. Vac-Pac Plus absorbs greater shocks from possible chlorine spikes, it is acid-free and buffered, and it is more tonically balanced to protect a broader range of both viral and bacterial vaccines. These benefits all combine to build the greatest protection for vaccines, poultry and profit.



**Figure 3 Vac-Pac Plus Benefits Over Competitive Stabilizers**

Stabilizing power	Vac-Pac Plus	Effervescent tablet	Effervescent powder	Milk protein
Instantly soluble	+++	---	--	---
No wait before adding vaccine	+++	---	---	---
Surge protection	+++	-	-	---
Acid-free and buffered	+++	---	---	-
Broadest spectrum	+++	---	--	--
No animal protein	+++	+++	+++	---
Dust-free granulation	+++	+++	-	---

+++ Very Positive      -- Very Negative  
 - Negative      --- Extremely Negative



All ASP spec sheets are available for download at [www.asp-inc.com/products-list](http://www.asp-inc.com/products-list), or by scanning the QR code with your mobile device.



*Providing Ideal Solutions... Everyday!*