

FORMULATION DEVELOPMENT



ACCELERATE DEVELOPMENT, FROM THE LAB TO THE FIELD.

It takes constant innovation to meet growing global demands and changing regulatory requirements in agribusiness. Battelle can help you accelerate your agricultural formulation development schedule, gain access to new markets and maintain your competitive edge.

We provide an integrated approach to research, development and regulatory compliance to help you move to market quickly and reliably while controlling costs and risks. We offer customized research studies and full registration programs throughout Europe and NAFTA.

DEVELOPMENT SERVICES

Develop and test new agrichemical products and complex co-formulation mixtures, or modernize your existing products by replacing potentially hazardous ingredients.

- Development services
- Feasibility studies
- Quality control
- Stability testing
- Batch preparation
- Factory process transfer

FORMULATION TECHNOLOGY

Update your product mix with cutting-edge formulation technologies for better performance and stability.

- Bioformulation of proteins, enzymes and bacteria
- Capsule suspensions
- Controlled-release systems
- Emulsions and microemulsions
- Seed dressing
- Ultra-fine sub-micron suspensions
- Water-dispersible granules
- Suspension concentrates and oil dispersions

TESTING AND REGULATORY SUPPORT

Get your products to market faster and gain access to new markets with Battelle's regulatory compliance expertise.

- GLP 5-batch analysis
- Physico-chemical property determination and hazard studies
- Formulations analysis
- E fate, residue toxicological and ecotoxicological testing
- Efficacy testing
- Submission of dossier and regulatory support

CO-FORMULATION OF TWO CHEMICALLY DISTINCT FUNGICIDES

An international customer came to Battelle with a challenge: they needed to develop a co-formulation of two distinct fungicides with stability and efficacy equal to or better than each of the active ingredients alone. The two active ingredients had very different chemical and physical properties: fungicide A was a high melting point solid with very low solubility, and fungicide B was a low melting point solid with low water solubility. In addition, fungicide A was typically used as a dispersion of fine solid particles in water, but fungicide B needed to be solubilized to achieve biological efficacy.

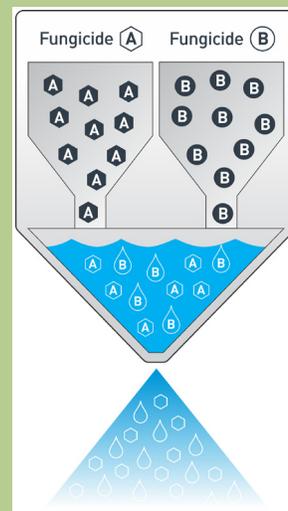
We developed a stable, suspo-emulsion (SE) co-formulation where a solution of fungicide B was emulsified into a suspension of fungicide A. We used a solvent screen to identify a solvent that provided good solvency for fungicide B, poor solvency for fungicide A (to prevent crystal growth), and low water solubility to keep fungicide B in solution and maintain its activity. The new co-formulation was delivered to the customer within six months of project initiation, allowing them to get through product testing and registration for an on-time and on-budget product launch.

The Why

In order to extend the spectrum of disease control, offer greater convenience to farmers and differentiate their product from competitors, a key international customer needed a co-formulation of two fungicides with widely differing physical properties. The challenge was to develop a stable co-formulation where one fungicide was dissolved in a solvent and the other dispersed as a solid.

The How

A suspo-emulsion (SE), where a solution of one fungicide was emulsified into a suspension of the other, was identified as the best option. Solvent selection was key – it needed to have good solvency for one fungicide, but poor solvency for the other and have low water solubility in order to minimise partition into the aqueous phase. The resultant formulation had a two-year shelf-life, gave good biological efficacy and was both easy to make and easy to use.



Every day, the people of Battelle apply science and technology to solving what matters most. At major technology centers and national laboratories around the world, Battelle conducts research and development, designs and manufactures products, and delivers critical services for government and commercial customers. Headquartered in Columbus, Ohio since its founding in 1929, Battelle serves the national security, health and life sciences, and energy and environmental industries. For more information, visit www.battelle.org.

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ID 397 01/17

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