Latrn

UNIQUE CHEMICAL SOLUTIONS

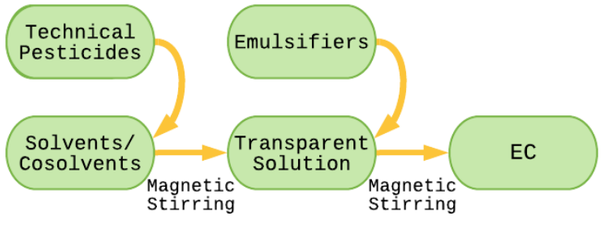
SURFACTANT SOLUTIONS FOR EC PESTICIDE FORMULATIONS

About EC Formulations

EC formulations are still one of the most common formulation types for crop protection products worldwide. Although this is the most common formulation, the trend is moving away from the old technology of petroleum-based solvent formulations toward new technologies of water-based emulsions, microcapsules, and water-dispersible granules.

How to Prepare EC Formulations

An emulsifiable concentrate (EC) is a liquid formulation which contains active ingredient, one or more organic water-immiscible solvents, emulsifiers (such as surfactants) and other ingredients. When EC formulations are diluted with water, they form a spontaneous emulsion or opaque appaerance.



Advantages of EC formulations:

- ✓ Simple to formulate and produce
- ✓ Relatively easier to get formulation stability
- ✓ High active ingredient content often possible
- ✓ Relatively high biological activity
- ✓ Spontaneous emulsification upon dilution

Limitations of EC formulations:

- Use large amounts solvents containing dangerous VOCs
- Solvents may damage the equipments in spray applicators
- Active ingredients need to be fully soluble in the solvent over a range of temperature
- Low flash point
- Use of water miscible solvents can cause active ingredient crystallisation problems upon dilution

What Should We Consider During EC Formulation Development?

1. **Efficiency:** The formulation must perform well in the field according to its intended purpose.

2. **Chemical stability:** The active ingredient should not chemically degrade during expected shelf life of the formulation

3. **Physical stability:** The formulation components must keep their stability in the solution over the expected shelf life of the formulation. Emulsification properties must not deteriorate as the product ages.

4. **Emulsification stability:** The active ingredient must remain uniformly distributed in the water during application in variable hardness of water and under variable environmental conditions.

5. **Compatability:** Should not negatively affect the physical and chemical stability when it is mixed with other ingredients in the tank

EMULAT® EMULSIFIERS

We are specialized in formulating many active ingredients as emulsifiable concentrates. Formulations developed with EMULAT® emulsifiers are robust against variations in water temperature as well as water hardness and are easy to adapt to solvent changes.

Our specifically developed emulsifiers containing anionic-nonionic surfactants together or separately, provide excellent emulsion performance and great stability.

Key Benefits of EMULAT® Emulsifiers

- Competitive price, low usage levels, low formulation cost
- Provide excellent emulsion performance
- Provide perfect formulation stability
- Easy to adapt in solvent changes

Content of EC formulations and Latro Guide Recipes

The general composition of a EC formulation consists of :

✓ Active ingredient: 1,5% - 50%

✓ Emulsifiers (surfactants): 5% - 15%

✓ Cosolvents, other ingredients: 0% - 20%

✓ Solvents: Up to 100

CHLORPYRIFOS METHYL 200 g/L EC	USAGE RATES (%)
Chlorpyrifos Methyl (97%)	23,40
EMULAT® EC 35	2,40
EMULAT® EC 70	3,60
Cyclohexanone	10,00
Xylene	Up to 100

Specifications:

Appearance: Clear light yellow liquid

pH (10%): 4,9

d: 1,01 g/cm^3

Flash point: > 25 °C

Emulsion performances and stability tests (in 54 degrees for 2 weeks / 0 degrees for 1 week) of all Latro EC recipes have been checked and approved by our Wonderlab.

Better Solutions for a Better World

In order to make agriculture more sustainable, the resources available in the nature should be used more efficiently. As Latro, we develop eco-friendly performance chemicals that aim to increase efficiency and decrease the consumption of natural resources. In this way, we contribute to a sustainable agriculture that can meet the needs of the rapidly increasing world population.

About Latro

Latro has developed a high-quality service at formulating and supplying sustainable chemical raw materials and solutions. Our comprehensive solutions are served in an extensive spectrum of sectors, such as Textile, Cosmetics, Agriculture, RTV silicones, and many Industrial applications.

Latro offers technical support, new product development, and sufficient solution suggestions for pre and after-sales. The key factors that separate us from most of the other chemical companies are our chemistry know-how, technical logistics, client-oriented solutions, specialty products, product development studies, and attention we pay on nature via sustainability. With these assets, we set our target higher not only providing the products but also eliminating the problems our customers can encounter.

To fulfill our commitment better we established “Wonderlab”, a laboratory specialized in research and product development. This facility allows us to develop new formulation solutions as well as product characterizations. Wonderlab is also a laboratory where our customers can experiment with the products and formulations with us. Latro aims to invest further into research by supporting young researchers, acquiring new equipment, and providing laboratory experience to customers.

Latro offers a wide range of innovative solutions for Agriculture industry. We are supporting our customers by creating tailor-made formulations and making various performance tests in our application laboratory in order to support the marketing claims. Our main goal is to create value-added and cost-effective products by following the market and customer needs.

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