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ARMID® DM 10 and ARMID® FMPC: New Solvents for AGRO

Karin Bergstrom, Jim Long, Jim Hazen and ^oRupak Paul

(Akzo Nobel Surface Chemistry Pte. Ltd.)

N-methyl-2-pyrrolidone (NMP) because of its toxic profile, the commercial use is recently restricted in many fields. Local environmental regulations are forcing agrochemical formulators to find a suitable alternative for NMP which is commonly used in many agrochemical formulations. Under the circumstances, it is desirable to look for an alternative solvent in the pesticide formulation area. AkzoNobel's new ARMID solvents, an eco-premium technology, offer formulators the exact candidate to replace environmentally hazardous solvents NMP as a carrier for pesticides thus making these applications safer and less toxic to plant foliage and the environment.

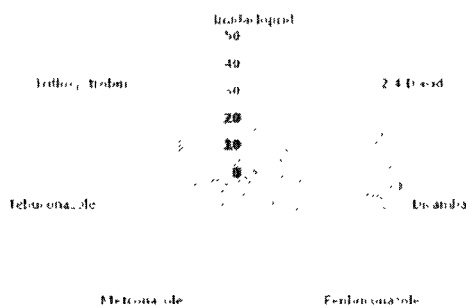
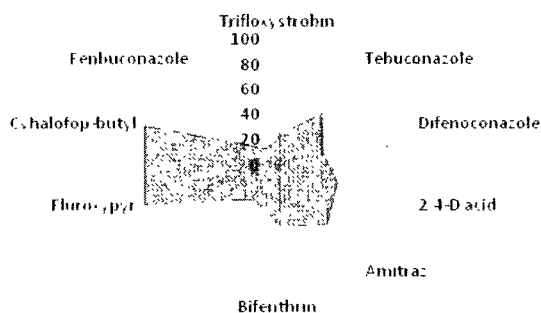
Armid DM 10 is non-aromatic dimethylamide solvent with low water solubility and an excellent solvent for Emulsifiable Concentrate (EC) formulation for triazoles, chlorpyrifos, propanil, trifluralin, and other active ingredients requiring a moderate polarity solubilizer and give similar physical and formulation performance of current competitor products. Armid FMPC is an optimized morpholine-carbonate blend, highly efficient for Soluble Liquids (SL) formulation with exceptional spray dilution stability (low tendency for crystallization). It offers excellent performance as well as good stability for imidacloprid 200 g/l SL formulation as a solvent. It is highly soluble in many other solvents such as water, glycols, ethanol, xylene, vegetable and mineral oils.

These new generation solvents are intended to be used as a direct drop-in for solvents replacements of NMP and no need to modify other components of existing formulations to maintain performance. These solvents are non-flammable, readily biodegradable, safe toxicological, ecotoxicological profiles and has good handling characteristics (low pour point and viscosity in cold water).

Solubility performance against different active ingredients

Armid DM 10

Armid FMPC



Regulatory:

Armid DM 10: N,N-Dimethyldecanamide, is TSCA, DSL, and REACH listed. EC Regulation No. 238-405-1 and FIFRA registration is under 40CFR 180.920. The ingredients in Armid FMPC are listed on TSCA and DSL. The product contains only ingredients that have been subject to a pre-registration, according to EC Regulation No. 1907/2006 (REACH)

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Armid is AkzoNobel's new generation solvents and potential replacement of NMP in agrochemical formulation. Armid DM10 is suitable for EC formulation of tebuconazole, chlorpyrifos, propanil, trifluralin etc. Armid FMPC is a solvent with high water solubility for Imidacloprid Soluble Liquids (SL) formulation. These are direct drop-in solvents for EC and SL formulations in place of NMP. These are non-flammable, readily biodegradable, safe toxicological and ecotoxicological profiles and the ingredients in Armid solvents are listed on TSCA, DSL, REACH, MITI, and FIFRA registration is under 40CFR 180.920 (Armid DM 10).