Airable RESEARCH LAB
WHERE SUSTAINABLE SOLUTIONS START

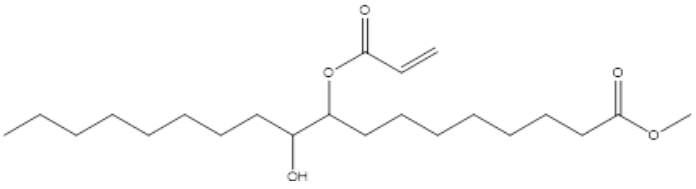
Acrylated Epoxidized Soy Methyl Ester

Airable Research Lab has synthesized a renewable, soy-based acrylate monomer that can substitute for petroleum-based chemicals, enabling a variety of low-cost and low-toxicity products.

BENEFITS AND APPLICATIONS

Acrylated epoxidized soy methyl ester (AESME) has lower functionality and lower viscosity than other vegetable-oil-based acrylates, making its reactivity easy to control. The compound is versatile, having both an acrylate group and a hydroxyl group that allow for its incorporation into a wide variety of formulations. AESME is readily soluble in many common solvents and other monomers. Possible applications include coatings, inks, and resins, among others. AESME contains ~70% bio-based content.

TECHNICAL DATA



Representative structure, a mixture of methyl esters of different fatty acids

Property	Value
Hydroxyl value	160.25 mg KOH/g
Iodine value	14.36 g iodine/100 g
Density	1.026 g/mL
Viscosity	206 cP
Acid value	<2 mg KOH/g
Refractive index	1.4669
Glass transition temperature	-25.8°C – -20.6°C
Boiling point	325°C
Melting point	11.7°C
Biobased content	~70%
Solubility (20 wt% at 20°C):	
Toluene	Soluble
Acetone	Soluble
Methyl ethyl ketone	Soluble
Ethanol	Soluble
Soy methyl ester	Soluble
Water	Not soluble
Isopropanol	Soluble
2-butoxyethyl acetate	Soluble
Ethyl acetate	Soluble
Lauryl methacrylate	Soluble
Methyl methacrylate	Soluble
2-(diethylamino)ethyl methacrylate	Soluble
Neopentyl glycol diacrylate	Soluble

Barry McGraw ✹ Founder and Chief Laboratory Officer ✹ (614) 704-1250 ✹ bmcgraw@soyohio.org