

## Bio-based Oils

### High-Performance Bio-based Oils for Agrochemicals

SYLVASOLV™ oils are 100% bio-based<sup>1</sup> solutions designed for a wide range of agrochemical applications, including in-can and tank-mix adjuvants as well as spray oils. They serve as effective replacements for petroleum-based and vegetable-based oils commonly used in pesticide formulations.

In herbicide formulations, SYLVASOLV oils enhance wetting and spreading, improving the bioefficacy of active ingredients. They also help increase droplet size for use as drift reduction agents. Structurally similar to mineral oils, SYLVASOLV oils offer superior hydrolytic stability compared

to vegetable-based oils. Their excellent solvency power may further enhance the penetration of waxy plant surfaces and improve solvation and stability of active ingredients used in various pesticides.

SYLVASOLV oils originate from responsibly managed forests and are derived from CTO, a pine wood pulping byproduct. These bio-oils provide formulators with a 100% bio-based, low carbon footprint<sup>2</sup>, no land use change, and non-food sourced oil option for pesticide and adjuvant formulators. Additionally, SYLVASOLV oils are nonflammable<sup>3</sup> with minimal VOC<sup>4</sup> (CARB LVP-VOC classified).

#### Applications:

- » Wetters, Spreaders and Penetrants
- » Drift Reduction Agents (DRA)
- » Spray Oils

#### Sustainability Advantages:

- » 100% Bio-based<sup>1</sup>
- » Sourced from responsibly managed forests
- » Low carbon footprint<sup>2</sup>
- » Non-food source
- » Does not compete for Land with Food Crops

#### Performance and Property Benefits:

- » Good Spreading and Wetting
- » Minimal Phytotoxicity
- » Exceptional Solubility Power
- » Larger Droplet Size
- » Good Hydrolytic Stability
- » Minimal VOC (CARB LVP-VOC classified)<sup>4</sup>

<sup>1</sup> Provisional bio-based carbon content based on radiocarbon C14 test by USDA certified lab, according to USDA BioPreferred® program

<sup>2</sup> Product carbon footprint depends on composition, production process and local energy source.

<sup>3</sup> According to GHS criteria: flash point >93°C (199.4°F)

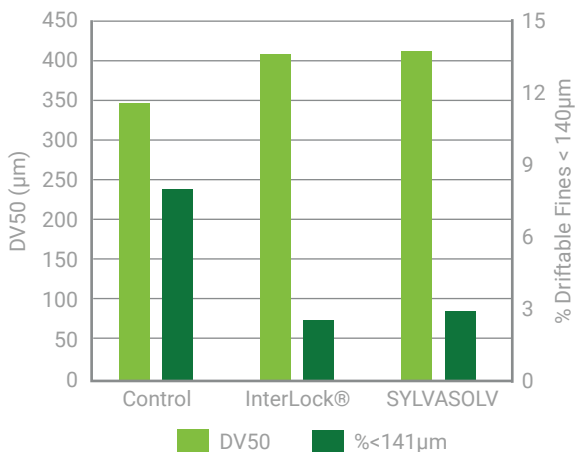
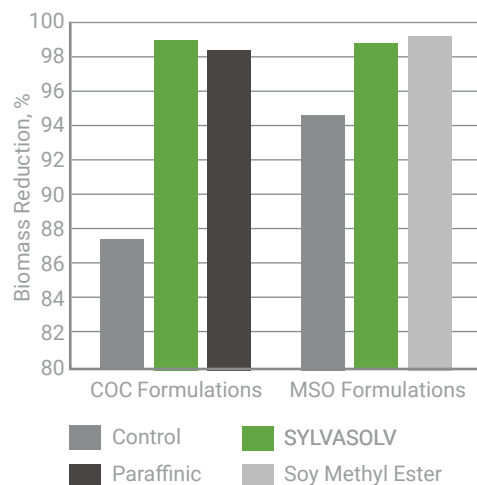
<sup>4</sup> The boiling point distribution of the product was assessed by SIM-Dist analysis performed according to EN-15199-2 and ASTM D2887 to classify low VOC based on EU Directive 2004/42/EC and CARB LVP-VOC.

## SYLVASOLV Bio-based Oil Physical Properties

Property	Method	1000 Series	3000 Series	Unit
Kinematic Viscosity (40°C)	ASTM D-445	45	22	cSt
Density at 20°C	ASTM D-1480	0.97	0.96	g/cm3
Color	AQCM 002	12	2	Gardner
Required HLB (O/W)	ICI Americas, Inc Guidelines	11-12	-	-
Flash Point (COC)	ASTM D-92	145	142	°C
Pour Point	ASTM D-97	-14	-24	°C
KB Value	ASTM D-1133	-	58	-

### Bio-efficacy Performance of SYLVASOLV™ Bio-Oil in Herbicide Formulations

The bio-efficacy of a Mesotrione herbicide with 1% v/v oil-based adjuvant was tested for biomass reduction in 2–2.5 inch Waterhemp plants. A single-nozzle spray chamber (TeeJet DG9502 nozzle, 15 GPA, 2.41 mph, 40 psi, 20-inch boom height) was used. Plants were harvested, oven-dried (60°C, 3 days), and weighed. Results showed that replacing paraffinic oil and soy methyl ester in Crop Oil Concentrate (COC) and Modified Seed Oil (MSO), respectively with SYLVASOLV™ oils improved biomass reduction over the control and performed comparably to standard oils.



### Wind Tunnel Testing-Drift Reduction

Samples were analyzed with a Sympatec Helos Vario KR particle size analyzer in a low speed wind tunnel at 15 mph. Nozzle AIXR11003 was tested at 40 psi. The formulations tested used Roundup PowerMAX 3® herbicide (1.72% v/v) and drift reduction adjuvants (0.31% v/v). Results show that SYLVASOLV bio-oils tested in generic adjuvant formulations exhibit comparable performance to optimized MSO-based industry standards.

## KRATON CORPORATION

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