

Silwet L-77* AG Spray Adjuvant



MARKETING BULLETIN

SPECIALTY FLUIDS - AGRICULTURE

Silwet L-77 AG spray adjuvant is a superspreading surfactant based on a trisiloxane ethoxylate. Silwet L-77 AG spray adjuvant is an excellent candidate to consider to lower the surface tension of spray solutions, beyond that which is achievable with conventional adjuvants.

Typically, Silwet L-77 AG spray adjuvant (at 0.1 wt %) gives an aqueous surface tension of 20.5 mN/m. On the other hand, an octylphenol ethoxylate containing 10 EO units (a commonly used nonionic surfactant) at 1.0 wt % gives a surface tension of only 30 mN/m.

Silwet L-77 AG spray adjuvant can help lower the aqueous surface tension more effectively than conventional spray adjuvants.

Because Silwet L-77 AG spray adjuvant is a superspreading surfactant, the contact angle of spray solutions on leaf surfaces is reduced, leading to an increase in spray coverage (Figure 1).

Additionally, under specific conditions, Silwet L-77 AG spray adjuvant promotes rapid uptake of agrochemicals into plants via stomatal infiltration. Spray solutions taken into plants in this way become rainfast, thereby improving application reliability (Figure 2).

Silwet L-77 AG spray adjuvant is nonionic in nature, making it useful with a broad range of agrochemical formulations.

Key Features and Typical Benefits

- Superspreader
- Promotes spray volume reduction
- Promotes rapid uptake of agrochemicals (rainfastness)
- Can improve spray coverage
- Nonionic
- Meets EPA 40 CFR §180.910 requirements⁽¹⁾

Typical Physical Properties

| | |
|---|-------|
| Surface Tension (0.1%, mN/m) ^(a) | 20.5 |
| Cloud Point (0.1 wt%), °C | < 10 |
| Viscosity, cPs at 25 °C | 20 |
| Specific Gravity at 25 °C | 1.007 |
| Flash Point, ^(b) °C | 116 |

Typical physical properties are average data and are not to be used as or to develop specifications.

(1) The components meet the requirements of U.S. EPA regulation 40 CFR §180.910, and are therefore exempt from tolerances in food when used as an inert ingredient in agricultural applications in accordance with the other conditions of that regulation.

(a) Surface Tension by Wilhelmy Plate Method.

(b) Pensky-Martens Closed Cup, ASTM Method D93

*Silwet L-77 is a trademark of Momentive Performance Materials Inc.

Potential Applications

In Agrochemical Formulations

Silwet L-77 AG spray adjuvant may be used as a component in agrochemical formulations. Although organosilicone surfactants are subject to hydrolysis under acidic or basic conditions, optimum performance is achieved by buffering the formulation to pH 6.5 -7.5. Additionally, it is recommended that Silwet L-77 AG spray adjuvant be used at a concentration of at least 5%, based on the total formulation.

As A Tank Mix Adjuvant

Silwet L-77 AG spray adjuvant, when used as a tank-side adjuvant may be used to improve spray coverage, improve uptake or to allow for a reduction in spray volume. Silwet L-77 AG spray adjuvant is most effective as a tank-side adjuvant when spray mixtures are 1) within a pH range of 5-8, and 2) used within 24 hours of preparation.

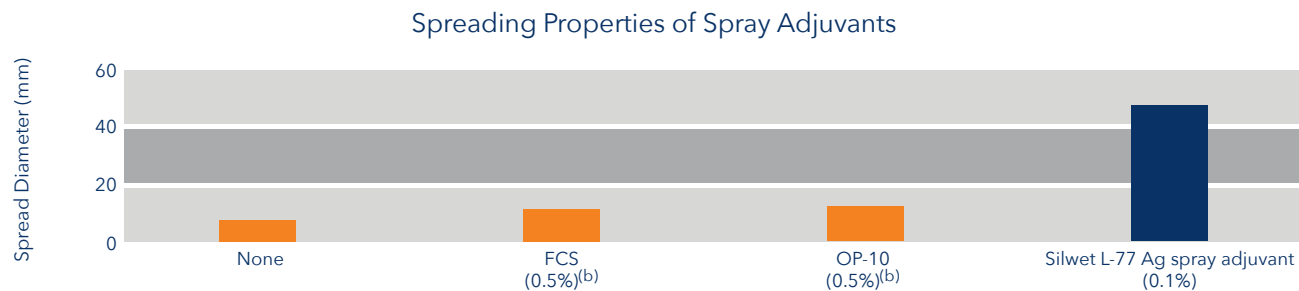
High spray volumes, coupled with high surfactant rates, are not required to achieve sufficient coverage with Silwet L-77 AG spray adjuvant. In fact, Silwet L-77 spray adjuvant may provide adequate coverage in many low volume spray applications at rates between 0.025% and 0.1%.

Potential Applications

Silwet L-77 AG spray adjuvant has been used successfully in spray applications globally. Typical applications include:

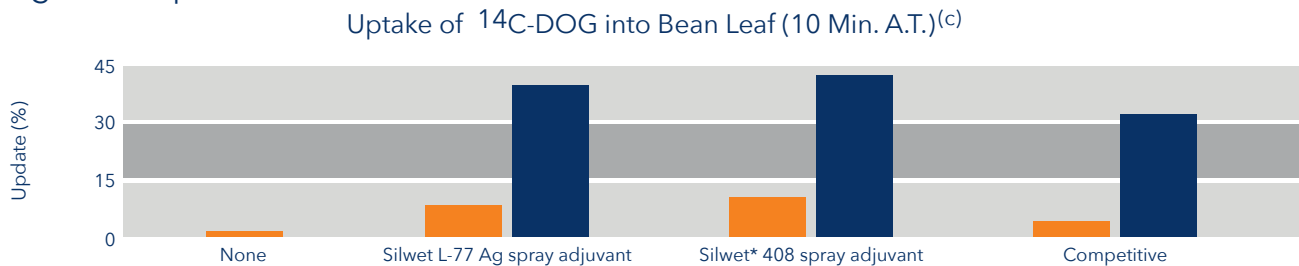
| Application | Typical Use Rate ^(a) |
|--------------------------------|---------------------------------|
| Plant Growth Regulators | 0.025% to 0.05% |
| Herbicide | 0.025% to 0.15% |
| Insecticide | 0.025% to 0.1% |
| Fungicide | 0.015% to 0.05% |
| Fertilizers and Micronutrients | 0.015% to 0.1% |

Figure 1: Spreading



Note: Test data. Actual results may vary.

Figure 2: Uptake



Note: Test data. Actual results may vary.

(a) Note: Use rates are dependent on crop, agrochemical and spray volume requirements.
 (b) FCS = Fluorocarbon surfactant; OP-10 = Octylphenol Ethoxylate, 10EO.
 (c) DOG = Radio Labeled Deoxyglucose uptake at 10 Minutes After Treatment
 *Silwet and Silwet L-77 are trademarks of Momentive Performance Materials Inc.

Patent Status

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