Silwet* 625

Description
Silwet 625 spray adjuvant is a proprietary trisiloxane alkoxylate based wetting agent, used as a penetrant for herbicide applications (e.g. glyphosate).

Unlike traditional trisiloxane alkoxylates, which can inhibit uptake of glyphosate into grasses, Silwet 625 spray adjuvant helps overcome this problem, by enhancing performance relative to conventional tallow amine ethoxylate based spray adjuvants.

Although most trisiloxane superspreaders are excellent wetting agents (i.e. Silwet L-77* adjuvant), it has been demonstrated that spreading is not always beneficial to herbicide uptake and performance (Lui, Z.Q.; Zabkiewicz, J.A. 1997. Proc. 50th Plant Protection Conf.: 129-133.). Figure 1 illustrates that superspreading can reduce the concentration of herbicide per unit area. In some cases this is believed to limit herbicide uptake into grasses. Evidence suggests that cuticular penetration of herbicide is favored by organosilicone sprays that do not superspread, thereby giving a higher concentration of herbicide/unit area. Silwet 625 spray adjuvant is designed to provide the penetration properties associated with trisiloxane alkoxylates, but limits the superspreading property to achieve the optimum balance.

Figure 1: Effect of Spreading on Herbicide Distribution on the Leaf Surface

As a result of the unique composition of Silwet 625 spray adjuvant, improved efficacy may be achieved at use levels up to 4 times less than a conventional tallow amine ethoxylate. Figure 2 demonstrates that Silwet 625 spray adjuvant is an effective adjuvant for glyphosate in controlling barnyardgrass (Echinochloa crus-galli) relative to a trisiloxane alkoxylate superspreader (Silwet* L-77).

*Silwet is a trademark of Momentive Performance Materials Inc.
L-77 adjuvant), and a tallow amine ethoxylate containing 15 EO units.

Figure 2: Impact of Spray Adjuvant Type on Control of Barnyardgrass with Glyphosate\(^{(a)}\)
(Rain 2 HAT, Results @ 14 DAT)

(a) Glyphosate used as the isopropylamine salt at 0.75% in a relative spray volume of 100L/ha. Simulated rainfall was applied at 2 Hours After Treatment (2.5 cm).

**Key Features and Benefits**

- Promotes rapid penetration of herbicides into grasses
- Improves spray coverage
- Controlled spreading overcomes antagonism associated with TSAs and glyphosate on grasses
- Reduced use levels relative to tallow amine ethoxylates
- Low use rates make Silwet 625 spray adjuvant an excellent candidate for “In-can” formulations (25 to 100 g/L formulation)

**Typical Physical Properties**

<table>
<thead>
<tr>
<th>Physical Property</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance at 25°C</td>
<td>Clear amber liquid</td>
</tr>
<tr>
<td>Surface Tension, mN/m (0.1 wt%) (^{(a)})</td>
<td>33</td>
</tr>
<tr>
<td>Viscosity (cps) (^{(b)})</td>
<td>144</td>
</tr>
<tr>
<td>Spread Diameter, mm (0.5 wt%) (^{(c)})</td>
<td>7</td>
</tr>
<tr>
<td>Cloud Point (0.1 wt %), °C</td>
<td>≥100</td>
</tr>
<tr>
<td>Flashpoint, PMCC °C (°F)</td>
<td>82 (180)</td>
</tr>
</tbody>
</table>

(a) Surface Tension by Wilhelmy Plate Method
(B) Brookfield Viscosity: 25°C, Spindle LV-3, 100 rpm

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(c) Deionized water, 25°C

Product Usage

In Agrochemical Formulations

Silwet 618 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 618 spray adjuvant be used at a concentration of at least 5%, based on the total formulation.

As A Tank Mix Adjuvant

Silwet 618 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 618 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.

Typically Silwet 625 spray adjuvant is used at 0.025% to 0.1% in the spray tank.

Patent Status

Nothing contained herein shall be construed to imply the nonexistence of any relevant patents or to constitute the permission, inducement or recommendation to practice any invention covered by any patent, without authority from the owner of the patent.

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