

# Silwet\* HS-312 Spreader



## MARKETING BULLETIN

## SPECIALTY FLUIDS - AGRICULTURE

Silwet HS-312 spreader is a hydrolytically stable silicone with a broad pH stability range that formulators can use as a typically cost-effective adjuvant in many in-can pesticide products.

Silwet HS-312 spreader is an excellent candidate to consider for superb spreading performance and extended stability in water-based formulations between 3-12 pH. This product can offer excellent performance as a spreader, relative to commercial surfactants, for the effective delivery of many in-can pesticides with lower spray application rates. In addition, Silwet HS-312 spreader is usually used at much lower rates compared to conventional surfactant adjuvants.

Silwet HS-312 spreader is compatible with many agrochemical components and can therefore be dispersed into water-based agricultural formulations, yielding products with excellent storage stability.

### Key Features and Typical Benefits

- Four-to-10 times more surface spreading than surfactant adjuvants
- Can improve spray coverage on crops
- Promotes spray volume reduction
- Compatible with most Ag formulations
- Can provide excellent stability with Ag formulations between 3-12 pH

### Potential Use in Agrochemical Products

Silwet HS-312 spreader is typically cost-effective and can be used in in-can pesticide products in the 3-12 pH range. It can be added as a component directly to such formulations to provide better spreading during spray application.

The addition levels of Silwet HS-312 spreader are dependent on the level of spreading required in the spray application of the pesticide. A recommended use rate is 5% of the total pesticide formulation, or 0.05% - 0.20% of the tank-mix mixture.

### Typical Physical Properties

Appearance	Yellow to amber liquid
Surface Tension, mN/m (0.1 wt%) <sup>(a)</sup>	26.7
Spreading Diameter, mm	35
Viscosity 25 °C, cPs (LVT No 3, 100 rpm)	70
Cloud Point, °C	42
Specific Gravity	1.0
pH Stability	3-12

Typical physical properties are average data and are not to be used as or to develop specifications.  
 (a) Wilhelmy Plate Method; solutions prepared in 0.005M NaCl.  
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Performance Data

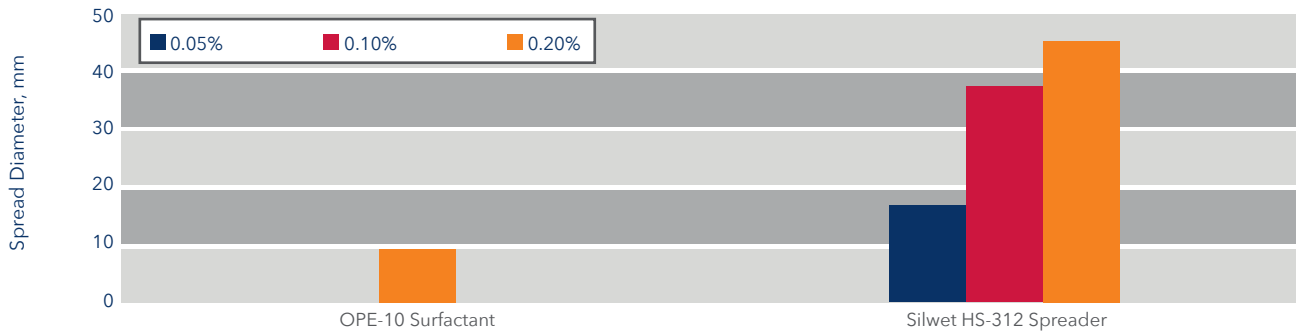
Because Silwet HS-312 spreader has very low surface tension, the contact angle of spray solutions on leaf surfaces is typically reduced compared to other surfactant adjuvants. This important property is shown in Figure 1 below, which illustrates Silwet HS-312 spreader had less than 5° contact angle relative to the Octylphenol Ethoxylate containing 10 EO units (OPE-10), which had a 31° contact angle. It is also important to note that the lower Silwet HS-312 spreader contact angle was achieved at much lower concentrations compared to the OPE-10 surfactant concentration.

Figure 1: Contact Angles of Spreader Adjuvants



Figure 2 illustrates the excellent wetting properties of the Silwet HS-312 spreader. Compared to OPE-10 at equal concentrations, Silwet HS-312 spreader had five times larger spread diameter, which resulted in improved surface coverage during spray applications. Even at significantly lower concentrations, Silwet HS-312 spreader had better spreading performance than conventional adjuvants, which can potentially lower spray volumes during the application of pesticides to a crop.

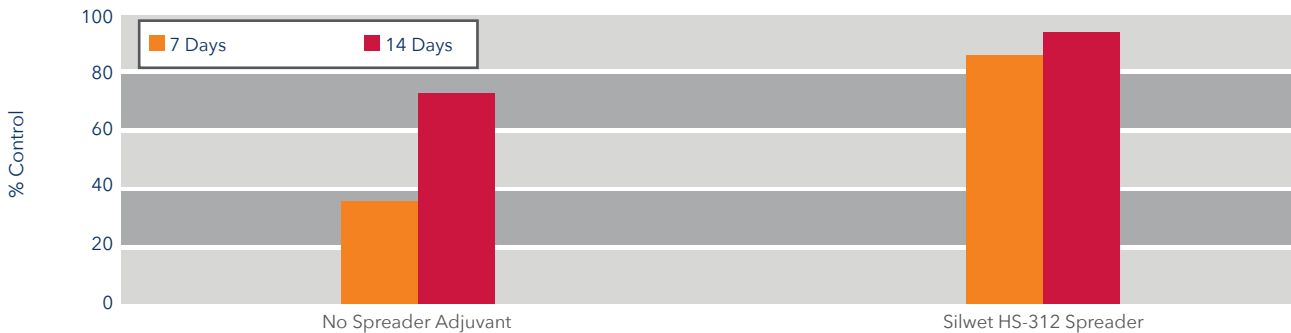
Figure 2: Spread Diameter vs. Adjuvant Use



Note: Test data. Actual results may vary.

Figure 3 illustrates an improvement in efficacy of a 1% glyphosate treatment on Velvetleaf (*Abutilon theophrasti*) when using Silwet HS-312 spreader. Plants grown indoors were treated at the 2 - 4 leaf stage with 1% glyphosate using a track sprayer at a relative spray volume of 100 L/ha. Silwet HS-312 spreader was included as an adjuvant at 0.1% rate. Rain (2.5 cm) was applied two hours after treatment. A visual assessment was made at seven and 14 days after treatment as compared to an untreated control.

Figure 3: Efficacy of 1% Glyphosate Control-V



Note: Test data. Actual results may vary.

### 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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Customers must evaluate Momentive Performance Materials products and make their own determination as to fitness of use in their particular applications.

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