Technical Data Sheet

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Agricultural Silicone Surfactant Silfluo LA-15

Polyalkyleneoxide Modified Trisiloxane Agricultural Surfactant

Description:

Silfluo LA-15 is a 100% active nonionic polyalkyleneoxide modified trisiloxane surfactant (CAS 134180-76-0) for use as an agricultural spray adjuvant and in-can formulation additive.

At 0.1 wt% aqueous concentration, LA-15 reduces surface tension to 21.0 – 22.0 mN/m. At this surface tension level, the contact angle of spray droplets on wax-coated leaf surfaces drops below the threshold for stomatal entry, reducing droplet bounce on hydrophobic cuticles and expanding wetted area per droplet relative to hydrocarbon surfactant systems (typically 28 – 32 mN/m at equivalent concentration).

Performance is equivalent to Momentive Silwet 806 and Evonik BREAK-THRU S 240.

Typical Technical Properties:

Silfluo Code:	LA-15
Chemical Name: Synonyms:	Polyalkyleneoxide Modified Trisiloxane Organosilicone Adjuvant, Cuticular Penetrant, Spray Modifier
CAS NO.:	134180-76-0
Appearance:	Clear, colorless to pale yellow liquid
Viscosity (25°C, mPa·s):	20 - 45
Density(g/cm3):	1.01-1.03
Surface Tension (0.1% aq., 25°C, mN/m):	21.0-22.0
Cloud Point (1.0 wt% aq.):	< 10 °C
Ionic Nature:	Non-ionic

Mechanism of Action

Silfluo LA-15 lowers the dynamic surface tension of agricultural spray mixtures. Compared with conventional carbon-based surfactants, its siloxane backbone lets the spray liquid spread over the waxy cuticle of the leaf. This improves droplet retention during application and speeds the uptake of herbicides, fungicides and nutrients through the stomata, so the deposit becomes rainfast sooner.

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Applications and Recommended Use Rates

LA-15 is active at 0.015 – 0.15 wt% of the spray tank volume (e.g., approximately 5 g per 20 L of spray solution). Initiate testing at 0.1% and reduce to the minimum effective concentration for the specific active ingredient, crop, and application method. Concentrations above 0.15% do not proportionally improve spreading and may cause phytotoxicity on sensitive crops; verify on target crop at recommended rates before commercial application.

Agrochemical Class	Recommended Use Rate (wt% of spray volume)
Plant Growth Regulators	0.025%–0.05%
Herbicides (systemic and contact)	0.025%–0.15%
Insecticides	0.025%–0.1%
Fungicides / Bactericides	0.015%–0.1%
Foliar Fertilizers / Trace Elements	0.015%–0.1%

Spray Tank Mixing Sequence

Fill the spray tank with 80% of the calculated water volume.
Add agrochemicals and agitate until fully dissolved or uniformly suspended.
Add the calculated volume of LA-15.
Add remaining 20% water and agitate gently to limit foam generation.
Do not add LA-15 directly to concentrated agrochemical before dilution- premixing at high active ingredient concentration may cause incompatibility or precipitation.

Application Parameters

pH window: maintain spray mixture at pH 6.0 – 8.0. Apply within 24 hours of preparation; hydrolysis

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of the trisiloxane Si－O－Si bonds occurs at pH ⩽5.0 or ⩾9.0, generating heptamethyltrisiloxanol and the polyether fragment — both surface-inactive — reducing adjuvant efficacy.

Temperature: apply at ambient temperatures between 10°C and 35°C. At temperatures below 10°C, stomata may be closed, reducing the stomatal infiltration pathway regardless of surface tension.

Nozzle selection: flat-fan or hollow-cone nozzles with small aperture (< 0.3 mm tip) are recommended to produce fine droplets (VMD 150－250 μm) that improve canopy penetration and droplet coverage density per unit leaf area.

Spray water volume: total spray water volume can typically be reduced by up to 30% compared to standard applications at equivalent active ingredient dose per hectare; verify reduction rates via field trial before commercial adoption.

In-Can Formulation Guidelines

LA-15 is compatible as a component in concentrated agrochemical formulations at 0.5－8.0 wt% of the total formulation weight, provided the system is buffered to pH 6.0－8.0. Hydrolysis rate increases rapidly at pH ⩽5.0 or ⩾9.0; formulations outside this range will show loss of surface activity on accelerated stability testing. Trisiloxane surfactants can interact with certain emulsifiers, co-solvents, and ionic active ingredients. Compatibility and long-term stability testing in the specific chemical matrix is mandatory before commercialization — verify by storage at 40°C / 75% RH for a minimum of 3 months with surface tension measurement at t = 0, 1, 2, and 3 months.

Package &Storage:

In 20kg, 200kg plastic barrel or 1000kg, or up to clients request.

Keep in cool, dry and ventilated place. Keep away from sunlight and fire sources. Keep in unopened containers, shelf life is 24 months from the date of production. It is shipped as non-hazardous substance.

Storage beyond the shelf life does not necessarily mean that the product is no longer usable. In this case however, the properties required for the intended use must be checked for quality assurance reasons.

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