



2016



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Spinosad (A&D) Technology

The Shaga Advantage: Technical Excellence

Presentation: Shaga Aquabiology

www.shagachemicals.com

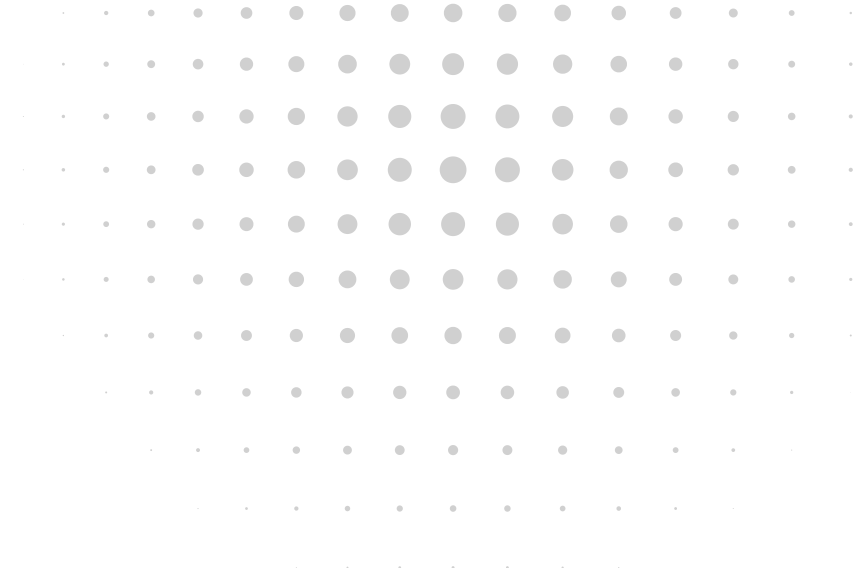


2016

Shaga Chemicals: Professional Spinosad Larvicide Series

Welcome to the cutting edge of vector control. Our Spinosad-based portfolio is engineered for maximum efficacy, integrating advanced formulation science to meet the rigorous demands of agricultural and urban pest management.





Our Formulation Portfolio

We offer a comprehensive range of concentrations and delivery systems, specifically designed to adapt to diverse environmental challenges. Spinosad—a naturally derived active ingredient born from soil actinomycetes—represents the pinnacle of modern bio-rational pest control. It combines the rapid knockdown speed of synthetic chemicals with the safety and eco-compatibility of a biological agent.



Understanding Shaga

To unlock the full potential of this exceptional molecule, our engineered Vecto-Series introduces seven distinct formulation matrixes:

- **High-Velocity Liquid Concentrates (EC & DC lines)**: Tailored for immediate bioavailability, rapid emulsification, and aggressive knockdown in wide-area applications.
- **Thermodynamically Stable Micro-Emulsions (ME lines)**: Calibrated with ultra-fine droplet structures for extended residual control, long-lasting persistence, and surgical precision in sensitive urban or residential zones.
- **Advanced Solid Dosage Systems (T & DT lines)**: Precision-compressed effervescent and water-dispersible tablets engineered to eliminate field-measuring errors, reduce logistical overhead, and optimize tank-mix compatibility.

Every product in this catalog is a testament to Shaga's modular formulation superiority. Whether you are managing complex municipal vector programs in expanding urban landscapes or protecting high-yield agricultural ecosystems, the Shaga Spinosad Series provides professional operators with a highly specialized, reliable, and ecologically responsible toolset.

We invite you to explore a portfolio where advanced molecular science meets environmental stewardship.

Trust the Shaga difference—engineered for performance, sustained by nature.

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FOREWORD: THE NEW ERA OF BIOLOGICAL VECTOR CONTROL

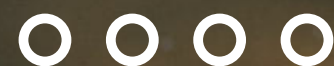


In an era where environmental responsibility and uncompromising efficacy must coexist, Shaga Chemicals is proud to introduce our definitive Spinosad Larvicide Series. As global regulatory landscapes shift away from traditional, high-toxicity chemical profiles, the demand for smarter, sustainable, and highly targeted pest management has never been more critical.

At Shaga, our research and development are anchored in the core principles of Green Chemistry. We believe that protecting public health and agricultural yields should not come at the expense of our ecosystems. By replacing conventional, toxic carriers with sustainable, bio-based, and CMR-free solvents, we ensure that our formulations deliver maximum biological impact on target vectors while maintaining an exceptionally favorable environmental profile.



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The Shaga Advantage: Technical Excellence

At Shaga Chemicals, we believe in the power of Green Chemistry. By prioritizing sustainable, bio-based solvents, we ensure our products deliver lethal efficacy against pests while maintaining an environmentally responsible profile. Our modular "Vecto-Series" approach—including components like VectoSol and VectoMix-E—ensures that every formulation is stabilized and optimized for its specific application method.



- **"Lethal to Vectors, Gentle on Ecosystems:
Driven by Green Chemistry."**
- **"Zero Measuring Errors, Zero Compromise:
Precision-Engineered Spinosad Tablets."**
- **"The Speed of Chemistry, the Soul of Nature:
Next-Generation Vector Control by Shaga."**
- **"From Immediate Knockdown to Extended Residual Defense:
One Molecule, Seven Mastered Formulations."**



Product Profile:

SHAGA™ Spinosad 24 EC

Engineered for maximum knockdown power, SHAGA™ Spinosad 24 EC is our premier, high-potency emulsifiable concentrate. This formulation is designed to deliver rapid, broad-spectrum control across the most challenging environments, from agricultural fields to complex urban and industrial water systems. It is the ultimate solution for professional operators demanding immediate, high-performance results.



Technical Specifications:

Value Proposition:

When failure is not an option, choose SHAGA™ Spinosad 24 EC. Its unmatched potency and speed provide the critical edge needed for successful vector control and crop protection programs. Trust the Shaga difference for immediate, reliable, and superior performance.

Active Ingredient:

A Spinosad (a blend of Spinosyn A and Spinosyn D).

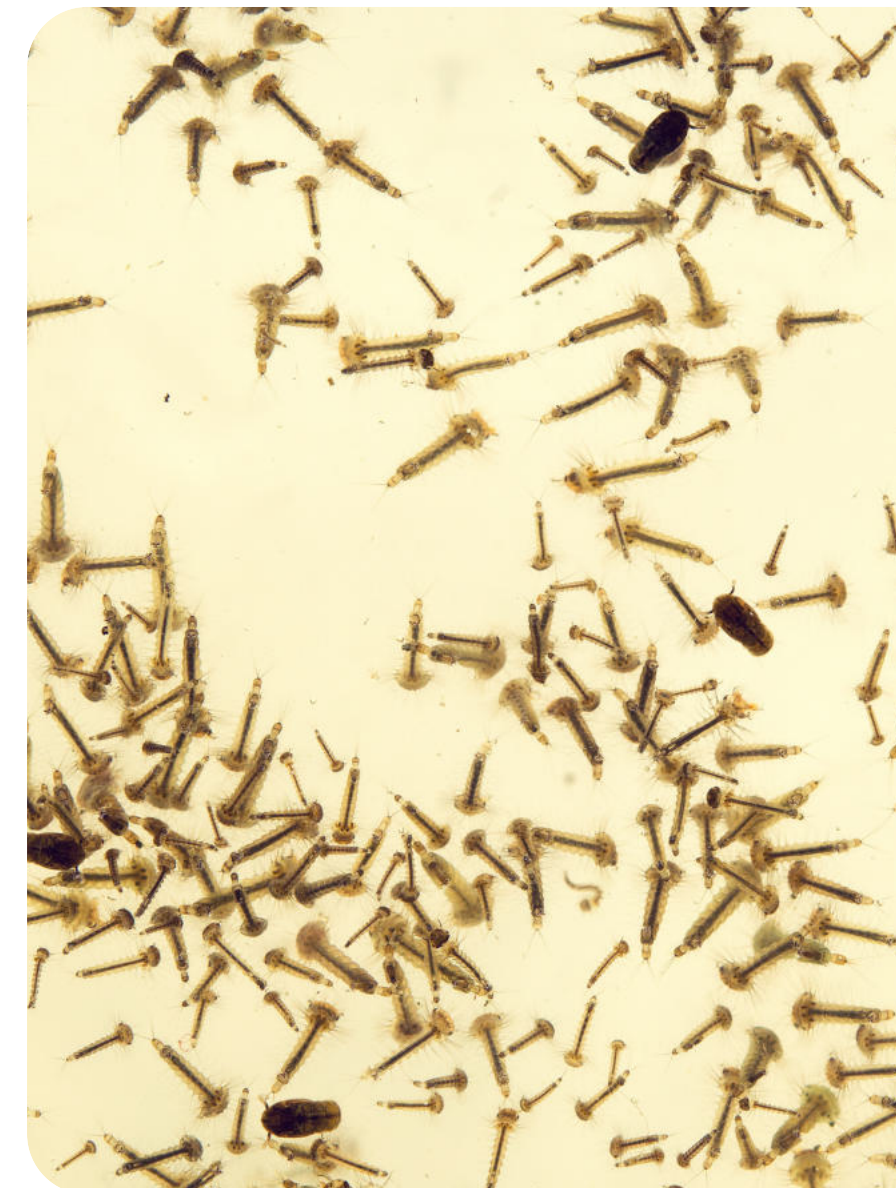
Concentration:

A Spinosad (a 240 g/L (24% w/v).blend of Spinosyn A and Spinosyn D).

Formulation Type:

Emulsifiable Concentrate (EC).

SHAGA™ Spinosad 24 EC





Key Features & Benefits:



SHAGA™ Spinosad 24 EC

01

High Potency:

Formulated with a concentrated 24% Spinosad active ingredient, providing maximum lethal efficacy against targeted larvae.

02

Rapid Emulsification:

Instantly disperses upon contact with water, creating a stable, uniform emulsion that ensures even coverage and immediate bioavailability.

03

Broad-Spectrum Control:

Highly effective against a wide range of public health and agricultural pests, including Aedes, Culex, and Anopheles mosquito larvae, as well as key lepidopterous and thrips species in crops.

04

Flexible Application:

Compatible with various application methods (ground spray, aerial application, ULV), adapting to any operational need.



Product Profile:

SHAGA™ Spinosad 22 EC

For programs requiring dependable, year-after-year results, SHAGA™ Spinosad 22 EC is the standardized solution. This formulation is engineered for consistent, high performance in a wide range of habitats, from agricultural acreage to municipal water systems. It offers the perfect balance of broad-spectrum efficacy and predictable application characteristics, making it the workhorse of professional vector control.



Technical Specifications:

Value Proposition:

Choose SHAGA™ Spinosad 22 EC for predictable, proven performance. When your operations demand consistency and reliability without sacrificing efficacy, this standardized formulation delivers the results you need, every time. It is the trusted foundation for long-term vector control success.

Active Ingredient:

A Spinosad (a blend of Spinosyn A and Spinosyn D).

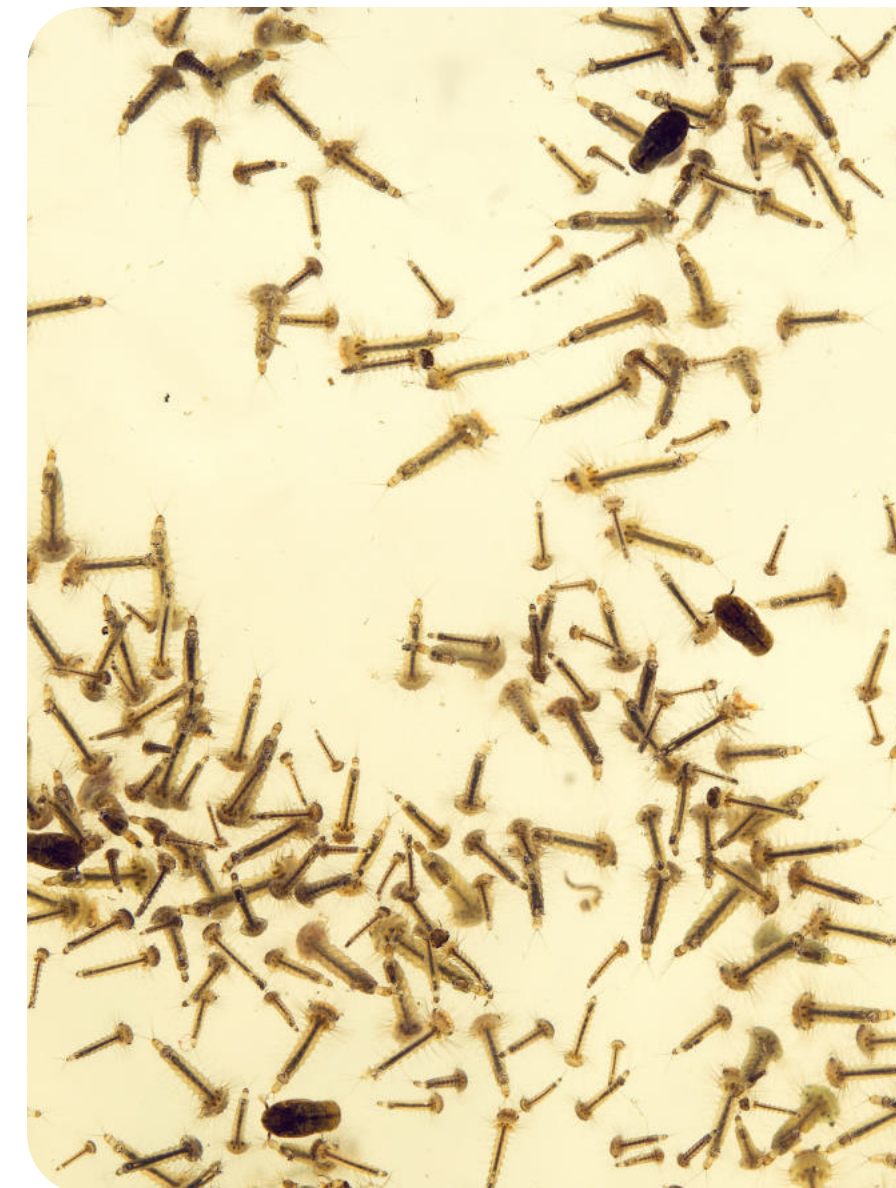
Concentration:

A Spinosad (a 220 g/L (22% w/v).blend of Spinosyn A and Spinosyn D).

Formulation Type:

Emulsifiable Concentrate (EC).

SHAGA™ Spinosad 22 EC





Key Features & Benefits:



SHAGA™ Spinosad 22 EC

01

Standardized Performance:

Formulated with a precise 22% Spinosad concentration, ensuring identical and reliable results with every application.

02

Consistent Efficacy:

Delivers stable and uniform control across diverse environmental conditions, minimizing variability in pest management programs.

03

Stable Emulsion:

Upon dilution, it forms a stable, long-lasting emulsion, ensuring even distribution of the active ingredient throughout the target area.

04

Broad-Spectrum Versatility:

Highly effective against a wide range of public health pests (Aedes, Culex, Anopheles) and agricultural pests, providing maximum operational flexibility.



Product Profile:

SHAGA™ Spinosad 12.05 DC

Engineered to overcome challenging environmental and storage conditions, SHAGA™ Spinosad 12.05 DC is an advanced dispersion concentrate. This specialized formulation is designed for high chemical and physical stability, ensuring that the active ingredient remains uniformly suspended without settling or degrading over time. It is the ideal choice for operations requiring reliable, extended-shelf-life larvicides that perform exceptionally well in both kentsel vector control and targeted agricultural scenarios.



Technical Specifications:

Value Proposition:

When logistical reliability, storage longevity, and flawless chemical stability are non-negotiable, SHAGA™ Spinosad 12.05 DC stands out. This advanced dispersion formulation guarantees that from the day it is manufactured to the moment it hits the field, your active ingredients perform at peak strength. Secure your vector control supply chain with Shaga's high-stability formulation engineering.

Active Ingredient:

A Spinosad (a blend of Spinosyn A and Spinosyn D).

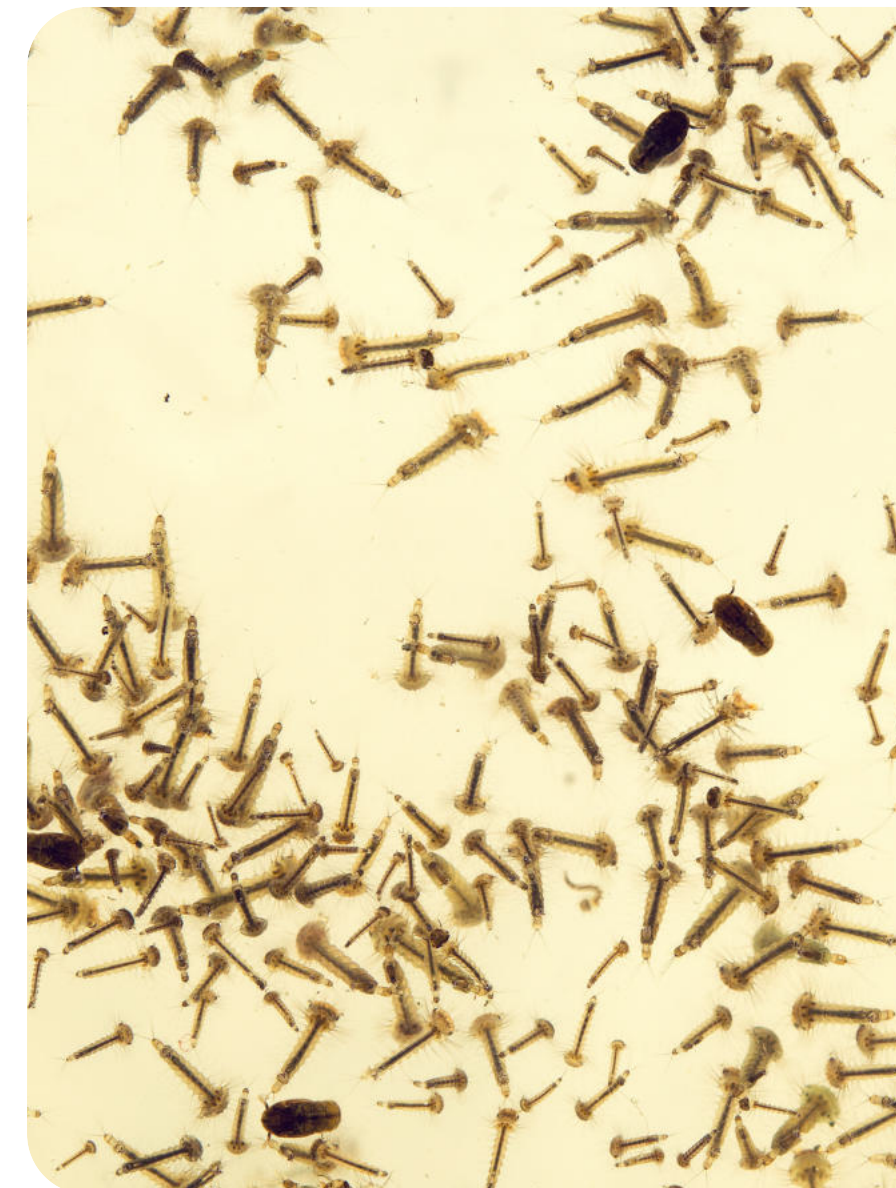
Concentration:

120.5 g/L (12.05% w/v).

Formulation Type:

Dispersion Concentrate (DC).

SHAGA™ Spinosad 12.05 DC





Key Features & Benefits:



01

Advanced Dispersion Technology:

The specialized DC (Dispersion Concentrate) matrix prevents phase separation and particulate crystallization, maintaining structural integrity even under temperature fluctuations.

02

Enhanced High- Stability Formulation:

Perfect for long-term storage or stockpiling programs. The formula guarantees that the active ingredient remains fully active and perfectly homogenized inside the container.

03

Uniform Aquatic Distribution:

Upon addition to water, the fine particles disperse smoothly across the water column, creating a highly bioavailable field environment for rapid larval ingestion.

04

Optimized Concentration:

The 12.05% calibration provides an ideal balance for highly precise dosing in delicate ecosystems or sensitive agricultural fields, minimizing localized chemical overloading.

SHAGA™ Spinosad 12.05 DC



SHAGA™ Spinosad 10 ME

Product Profile:

SHAGA™ Spinosad 10 ME

Engineered for prolonged environmental persistence, SHAGA™ Spinosad 10 ME utilizes cutting-edge micro-emulsion technology to deliver long-lasting residual control. This advanced formulation features ultra-fine droplet structures that stay perfectly suspended in water, preventing rapid breakdown and ensuring a continuous, lethal dose is maintained in the target habitat. It is the definitive solution for municipal, industrial, and agricultural vector control programs that require extended protection with reduced reapplication intervals.

www.shagachemicals.com





Technical Specifications:

Value Proposition:

When short-term control isn't enough, extend your defense with SHAGA™ Spinosad 10 ME. By combining the natural power of Spinosad with advanced micro-emulsion engineering, Shaga Chemicals provides a protective barrier that stays active long after traditional formulations fade. Invest in durability, reduce operational overhead, and secure peace of mind with our premier residual solution.

Active Ingredient:

A Spinosad (a blend of Spinosyn A and Spinosyn D).

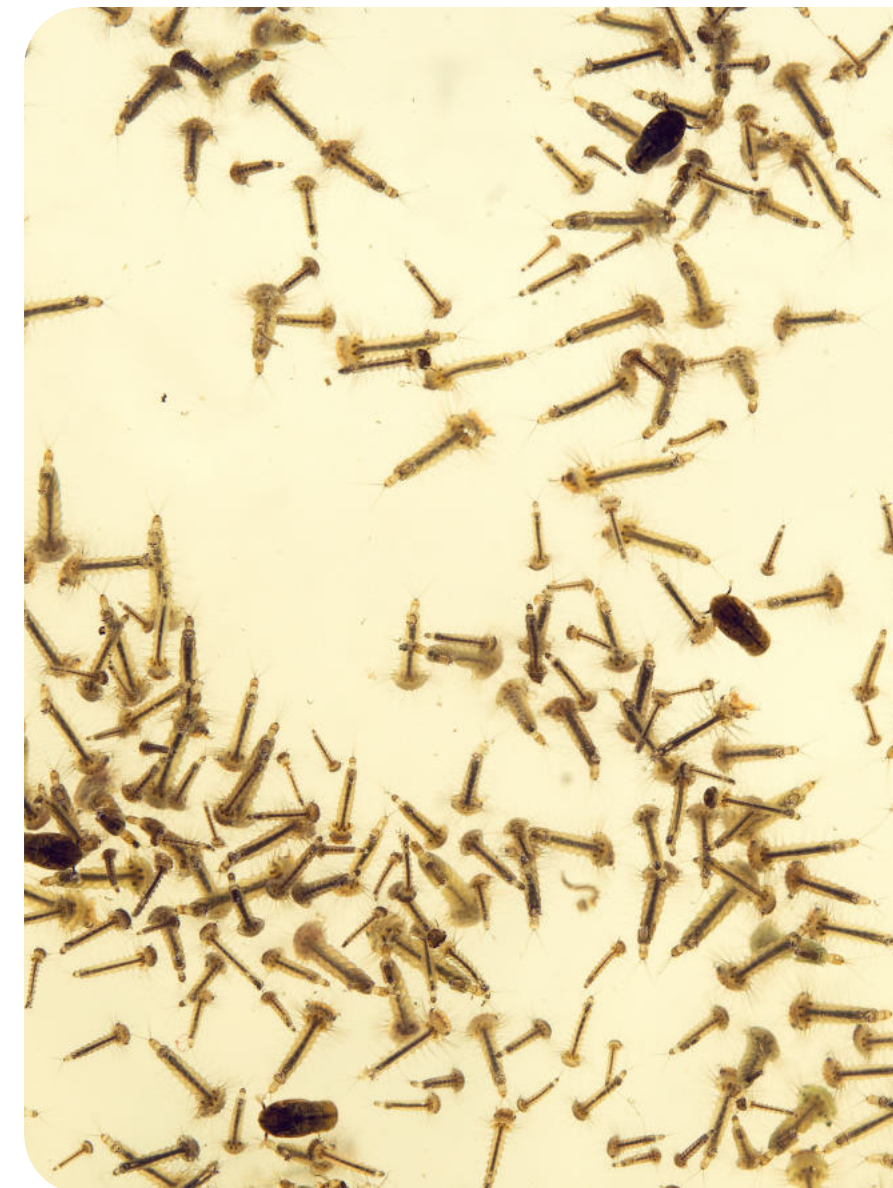
Concentration:

100 g/L (10% w/v).

Formulation Type:

Micro-Emulsion (ME).

SHAGA™ Spinosad 10 ME





Key Features & Benefits:



SHAGA™ Spinosad 10 ME

01

Micro-Emulsion Technology:

Formulated with an extremely fine droplet size that maximizes thermodynamic stability, ensuring the active ingredient does not separate or degrade in demanding water bodies.

02

Long-Lasting Residual Action:

Provides extended control over weeks, making it highly cost-effective by reducing labor costs and application frequencies in the field.

03

Eco-Friendly Carrier Matrix:

Built upon our Green Chemistry principles, utilizing a low-odor, bio-based solvent system that minimizes environmental impact while maximizing biological efficacy.

04

Excellent Surface Adherence:

The unique ME structure allows the active particles to adhere evenly to aquatic vegetation and organic matter, maximizing ingestion by foraging larvae.

Product Profile: **SHAGA™ Spinosad 8.33 T**

Engineered to bring maximum precision and operational ease to aquatic larvicide applications, SHAGA™ Spinosad 8.33 T is developed in a highly advanced effervescent tablet form. This innovative solid formulation completely eliminates the challenges of transporting, measuring, and handling liquids in the field. Utilizing specialized slow-release technology, each tablet dissolves at a controlled rate, steadily liberating the active ingredient over time to deliver both an immediate knockdown and extended residual protection.





Technical Specifications:

Value Proposition:

Eliminate measuring errors and maximize your field efficiency. SHAGA™ Spinosad 8.33 T unites all the operational advantages of solid dosage technology for modern vector control. Delivering precision, safety, and long-lasting protection in a single tablet, Shaga sets a new benchmark for operational excellence.

Active Ingredient:

A Spinosad (a blend of Spinosyn A and Spinosyn D).

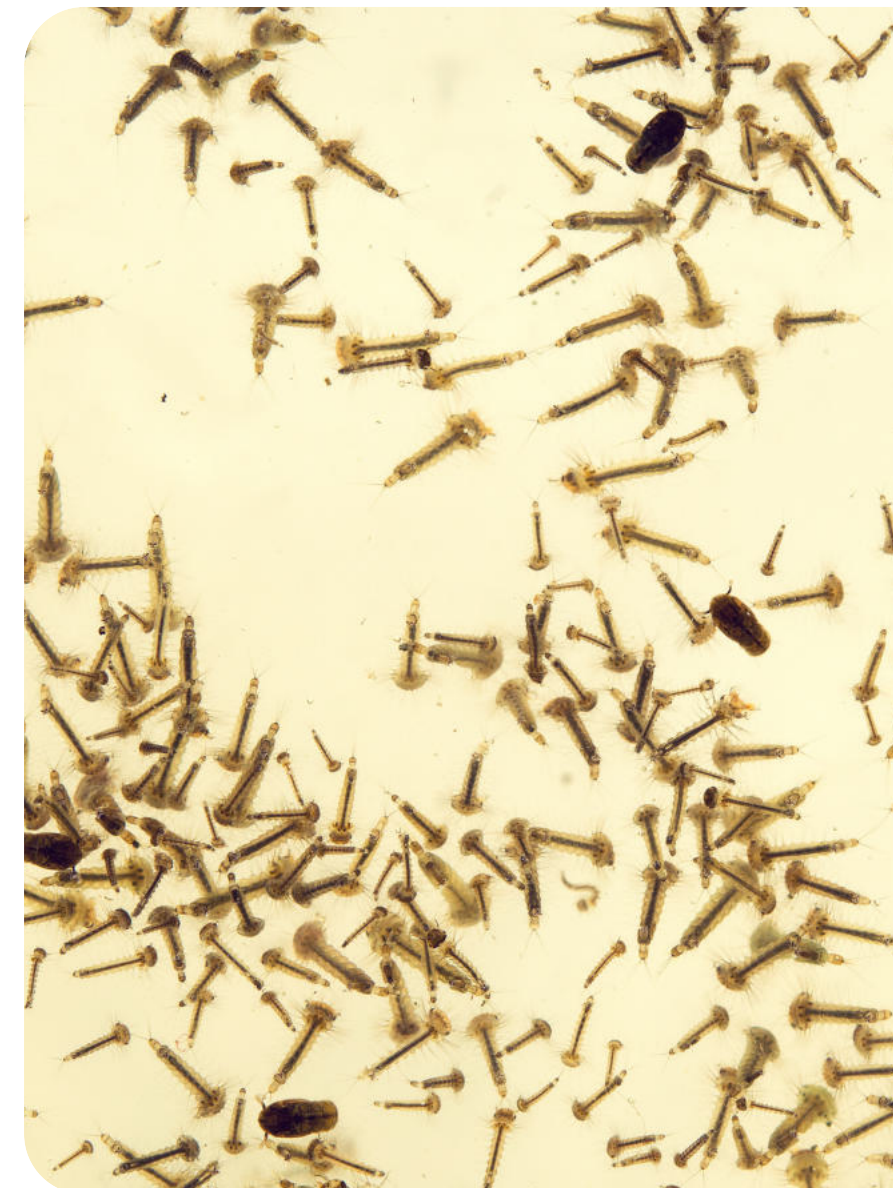
Concentration:

8.33% (w/w).

Formulation Type:

Effervescent Tablet (T)

SHAGA™ Spinosad 8.33 T





Key Features & Benefits:



01

Precise Dosing Technology:

02

Controlled Release Mechanism:

03

Self-Mixing Dispersion:

04

Broad-Spectrum Vector Control:

SHAGA™ Spinosad 8.33 T

Each tablet contains a meticulously calibrated 8.33% Spinosad concentration. This eliminates complex field measurements and dilution calculations for operators; a simple "one tablet per x cubic meters" rule reduces human error to zero.

As the tablet dissolves, it releases the active ingredient from interlocking structural layers at a steady rate. This ensures a prolonged residual footprint that maintains lethal efficacy for days.

Upon contact with water, the effervescent action causes the tablet to self-disperse. This guarantees a highly homogenous distribution of the active ingredient, even in stagnant or heavily vegetated water bodies.

Relentless against targeted larval vectors in aquatic ecosystems, focusing primarily on public health pests such as Aedes, Culex, and Anopheles mosquitoes.



SHAGA™ Spinosad 7.48 DT

Product Profile:

SHAGA™ Spinosad 7.48 DT

Bridging the convenience of a solid dosage form with the rapid bioavailability of a liquid, SHAGA™ Spinosad 7.48 DT is a premium water-dispersible tablet. Engineered for rapid disintegration, this formulation breaks down completely upon contact with water, creating a flawless, homogeneous suspension of micro-particles. It is specifically designed for operators who prefer the transportation and storage benefits of a solid tablet but require an instant pre-mix solution for large-scale tank mixes, backpack sprayers, or immediate direct-to-water dispersion.

www.shagachemicals.com





Technical Specifications:

Value Proposition:

The power of a liquid concentrate, packed into the efficiency of a solid block. SHAGA™ Spinosad 7.48 DT redefines field preparation by dropping measuring cups and eliminating liquid transport weights. It dissolves in seconds and defends for days, bringing unmatched adaptability, speed, and precision to your integrated vector management programs.

Active Ingredient:

A Spinosad (a blend of Spinosyn A and Spinosyn D).

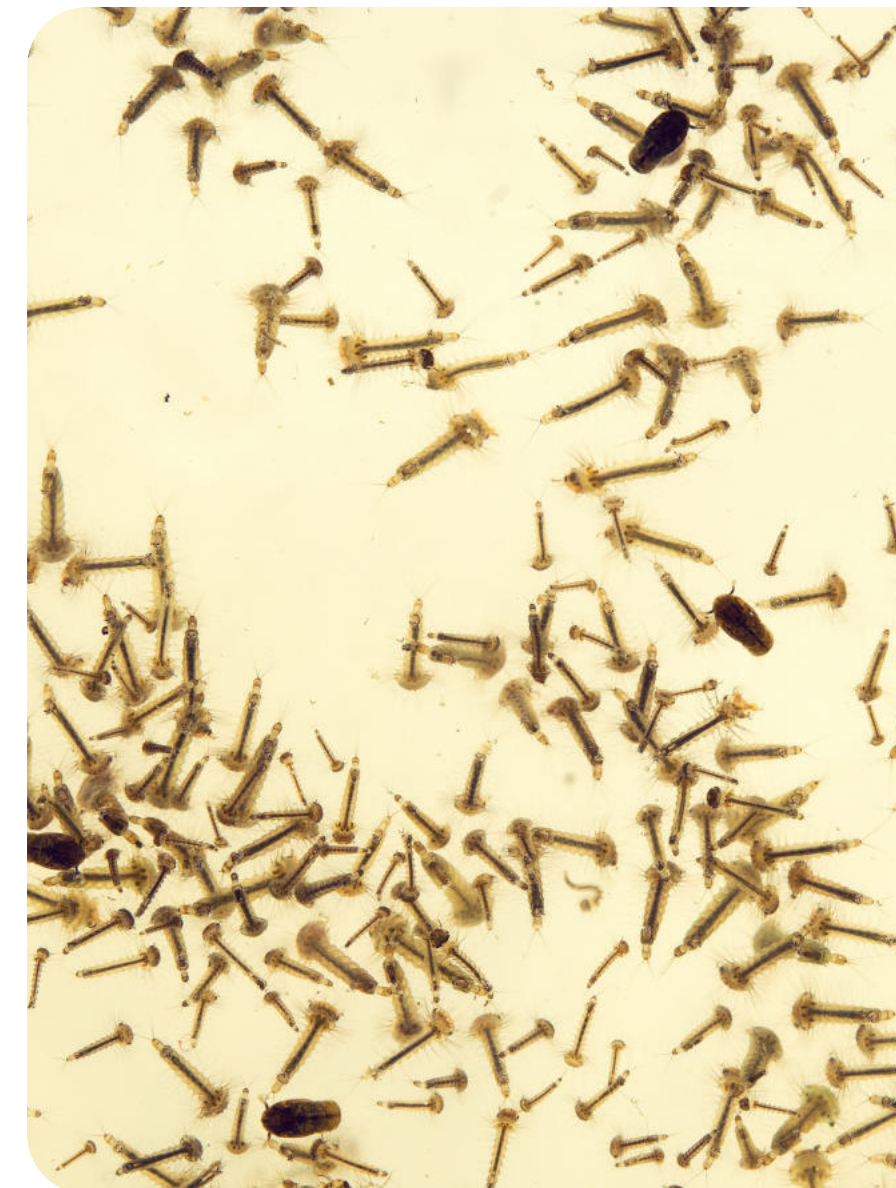
Concentration:

7.48% (w/w).

Formulation Type:

Tablets for Direct Application / Water Dispersible Tablet (DT).

SHAGA™ Spinosad 7.48 DT





Key Features & Benefits:



01

Rapid Disintegration Matrix:

Formulated with advanced super-disintegrants that pull water into the core of the tablet, causing it to collapse and dissolve completely within moments without leaving any gritty residue.

02

Flawless Suspension Performance:

Once melted, the fine particles create a stable suspension throughout the water column, ensuring that every milliliter of your spray mix or treated pool contains an identical, lethal dose of active ingredient.

03

Premix & Spray Equipment Friendly:

Highly versatile. It can be tossed directly into stagnant breeding sites or dropped straight into spray tanks, melting instantly to pass smoothly through fine nozzles without causing blockages.

04

Calibrated Operational Safety:

Concentrated at a precise 7.48% Spinosad profile, these tablets guarantee uniform dosing per volume unit, protecting field teams from direct dust inhalation or liquid chemical contact during handling.

SHAGA™ Spinosad 7.48 DT

Product Profile:

SHAGA™ Spinosad 5 ME

When vector control intersects with delicate ecosystems or residential urban zones, precision and safety override raw concentration. SHAGA™ Spinosad 5 ME is an ultra-pure, low-dose micro-emulsion explicitly engineered for sensitive area treatments. Utilizing our core Green Chemistry principles, this water-based carrier system yields microscopic droplet sizes that deliver impeccable target accuracy against larvae without staining surfaces, leaving heavy odors, or stressing non-target flora and fauna.





Technical Specifications:

Value Proposition:

Maximum control with a minimal footprint. SHAGA™ Spinosad 5 ME provides public health officials and commercial operators with a surgical tool for sensitive environments. Protect your community and crops with a sophisticated, low-impact micro-emulsion that proves you don't need harsh chemicals to achieve flawless larvicidal defense.

Active Ingredient:

A Spinosad (a blend of Spinosyn A and Spinosyn D).

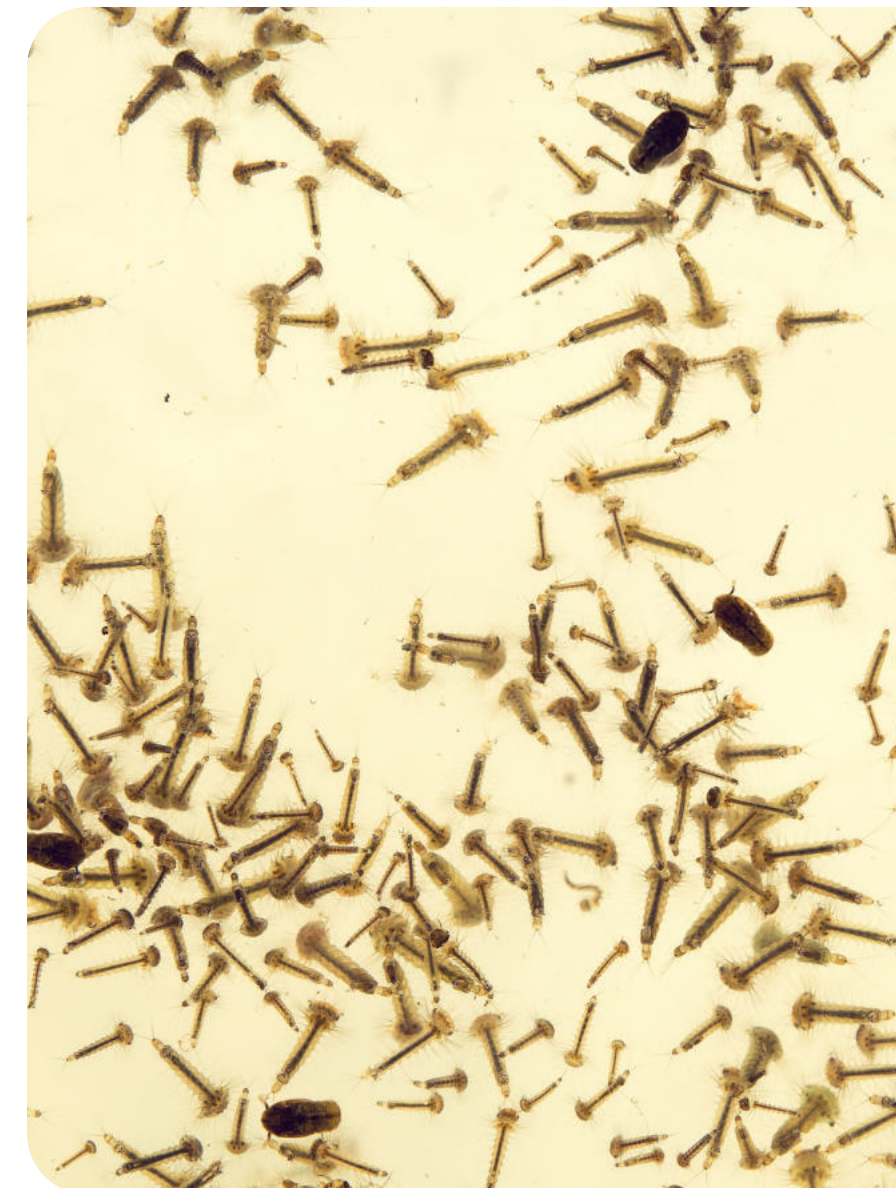
Concentration:

50 g/L (5% w/v).

Formulation Type:

Micro-Emulsion (ME).

SHAGA™ Spinosad 5 ME





Key Features & Benefits:



01

Targeted 5% Calibration:

SHAGA™ Spinosad 5 ME

Perfectly balanced for routine maintenance, early-stage interventions, and operations in highly regulated public health sectors or sensitive residential green zones.

02

Ultra-Fine Micro- Emulsion Droplets:

Thermodynamically stable droplets disperse completely into clear water columns, staying active and bioavailable at the exact feeding zones of young larvae.

03

Non-Staining & Low Odor:

Built on a bio-based, premium solvent carrier that eliminates traditional chemical fumes, making it ideal for urban fountains, ornamental ponds, and backyard vector management.

04

High Eco- Compatibility:

Highly lethal to targeting pests (Aedes, Culex, Anopheles), while remaining gentle on the surrounding delicate environment when applied according to the label guidelines.



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- **Advanced Bio-Rational Control:** Derived from soil actinomycetes, it perfectly combines the rapid knockdown power of synthetic chemicals with the safety profile of a biological agent.
- **Driven by Green Chemistry:** Formulated with sustainable, bio-based, and CMR-free solvents, ensuring lethal efficacy against targeted larvae while maintaining an exceptionally favorable environmental profile.
- **Unmatched Versatility:** Tailored across seven distinct formulation matrixes (EC, DC, ME, T, and DT) to seamlessly adapt to diverse agricultural, municipal, and industrial water ecosystems.
- **Precision and Stability:** Engineered through Shaga's advanced formulation matrixes to deliver either long-lasting residual control, rapid field emulsification, or zero-error solid dosing.
- **Targeted Efficacy:** Highly lethal against primary public health vectors—including Aedes, Culex, and Anopheles mosquito larvae—without compromising non-target organisms when used as directed.

➔ **Cost Depreciation**

➔ **It reduces operating costs.**

➔ **Continuous Protection in Biosecurity**

➔ **Environmentally and Fish Friendly**



2016

R&D and Dynamics

- **Continuous Engineering Excellence:** At Shaga Chemicals, our state-of-the-art R&D department is continuously pushing the boundaries of vector control through advanced molecule optimization and structural engineering.
- **Green Chemistry Pioneering:** Our R&D team is deeply committed to pioneering sustainable alternatives, replacing traditional hazardous carriers with eco-friendly, bio-based, and CMR-free solvent matrices.
- **Dynamic Modular Architecture:** Through our innovative, modular "Vecto-Series" development approach, we create highly dynamic chemical systems that adapt flawlessly to specific environmental challenges.
- **Advanced Thermodynamic Stability:** Every liquid and solid formulation undergoes rigorous physical testing to ensure dynamic chemical equilibrium, preventing phase separation and guaranteeing uniform dispersion in the field.
- **Target-Oriented Solutions:** By matching advanced fluid dynamics with precise biological data, Shaga's ongoing R&D delivers unmatched target accuracy, securing both immediate efficacy and optimized field performance.

Thanks

"Nature's Intelligence, Shaga's Engineering."

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---this is the photo of Virgin Islands where
S. spinosa was isolated from soil collected
inside a nonoperational sugar mill rum still
in the Virgin Islands.