

VectoBac® 12AS Biological Larvicide Aqueous Suspension

SDS# VBC-0036 Revision 3

ISSUED 03/08/16

[Classification according to OSHA; 29 CFR § 1910.1200, (3/12/2012)]

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY

1.1 Product Identifier

MATERIAL NAME: VectoBac® 12 AS Biological Larvicide Aqueous Suspension

Synonyms: VectoBac 12AS

EPA Reg No.: 73049-38

Code Number: 15576, 15577, 15578, 21894, 83872

List Number: 05605

Chemical Family: Not applicable; microbial product

1.2 Relevant Identified Uses and Uses Advised Against

Identified Uses: Mosquito larvicide

Uses Advised Against: It is a violation of Federal law to use this product in a manner inconsistent with its FIFRA pesticide labeling.

1.3 Details of the supplier of the Safety Data Sheet

Supplied By: Valent BioSciences Corporation

870 Technology Way

Libertyville, Illinois 60048

1.4 EMERGENCY TELEPHONE NUMBERS

Emergency Health or Spill:

Outside the United States: 651-632-6184

Within the United States: 877-315-9819

2. HAZARDS IDENTIFICATION

2.1 Classification of the Substance or Mixture

Category 1B: Sensitization -Skin

2.2 Labeling Elements

Symbol(s)



Signal Word

WARNING

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Hazard Statement(s)

May cause an allergic skin reaction

Precautionary Statement:

Prevention

- Avoid breathing mist or spray
- Wash thoroughly after handling
- Contaminated work clothing must not be allowed out of the workplace
- Wear protective impervious gloves

Response

- If on skin: Wash with plenty of water.
- If skin irritation or rash occurs: Get medical advice/ attention.
- Take off contaminated clothing and wash it before reuse.

Disposal

Dispose of contents/container in accordance with local/regional/national regulations.

2.3 Other Hazards

None identified.

3. COMPOSITION/INFORMATION ON INGREDIENTS

CAS #	Component Name	Classification	Percent
None	<i>Bacillus thuringiensis</i> subsp. <i>israelensis</i>	Eye Irritation – Cat 2B Skin Sensitizer – Cat 1B	11.61 %
2634-33-5	Proxel GXL	Skin Sensitizer	0.10 %
Trade Secret	Other Ingredients – withheld as Trade Secret	Not classified	88.29 %

4. FIRST AID MEASURES

4.1 Description of First Aid Measures

GENERAL: In all cases of doubt, seek medical attention.

EYES: Remove from source of exposure. Flush with copious amounts of water. Remove contact lenses, if present and easy to do, after the first 5 minutes, then continue rinsing. If irritation persists or signs of toxicity occur, seek medical attention. Provide symptomatic /supportive care as necessary.

SKIN: Remove from source of exposure. Take off contaminated clothing. Flush with copious amounts of water. Cover irritated skin with an emollient. If irritation persists or signs of toxicity occur, seek medical attention. Provide symptomatic/supportive care as necessary.

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INGESTION: Remove from source of exposure. Move person to fresh air. Do NOT induce vomiting. Give large quantities of water. If signs of toxicity occur, seek medical attention. Provide symptomatic /supportive care as necessary.

INHALATION: Remove from source of exposure. If signs of toxicity occur, seek medical attention. Provide symptomatic/supportive care as necessary. If person is not breathing, call 911, then give artificial respiration.

4.2 Most important Symptoms and Effects, both Acute and Delayed**Acute**

Mild eye and skin irritation, mild sensitization potential

Delayed

No information on significant adverse effects

4.3 Indication of any Immediate Medical Attention and Special Treatment Needed

Treat symptomatically and supportively

5. FIRE FIGHTING PROCEDURES**5.1 Extinguisher Media****Suitable Extinguisher Media**

Dry chemical, water spray, foam or carbon dioxide. Use appropriate medium for the underlying cause of the fire.

Unsuitable Extinguisher Media

None known

5.2 Specific Hazards Arising from the Chemical

Keep containers cool by spraying with water if exposed to fire.

Thermal decomposition products

Carbon oxides, nitrogen oxides

5.3 Advice to Firefighters**Protective Equipment and precautions for firefighters**

Fire fighter should wear full-face, self-contained breathing apparatus and impervious protective clothing. Fire fighters should avoid inhaling combustion products. See Section 8 (Exposure Controls / Personal Protection)

Fire & Explosive hazard

Not expected to be flammable.

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SDS# VBC-0036 Revision 3

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6. ACCIDENTAL RELEASE MEASURES**6.1 Personal Precautions, Protective Equipment and Emergency Procedures**

Wear a dust/mist filtering respirator, eye protection and impervious gloves.

6.2 Environmental Precautions

Dispose of excess product and washwaters according to local regulations.

6.3 Methods and Materials for Containment and Cleaning Up

Recover product with inert material (earth, sand, vermiculite), place into appropriate container for disposal. Do not flush to sewer.

6.4 Reference to Other Sections

See Section 7 for Handling Procedures. See Section 8 for Personal Protective Equipment recommendations. See Section 13 for Disposal Considerations.

US Regulations may require reporting spills of hazardous materials: See Section 15: Regulatory Information for details on reportable quantities, if any.

7. HANDLING AND STORAGE**7.1 Precautions for Safe handling**

Avoid contact with eyes, skin or clothing. Wash thoroughly after handling. Do not eat, drink or smoke while working with product, obey reasonable safety precautions and practice good housekeeping.

7.2 Conditions for Safe Storage, Including and Incompatibilities

Store in a cool, dry place. For further information refer to local country registration and label.

Incompatibilities

None Known

7.3 Specific End Use(s)

Mosquito Larvicide.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**8.1 Control Parameters****Component Exposure Limits**

None Established

VectoBac® 12AS Biological Larvicide Aqueous Suspension

SDS# VBC-0036 Revision 3

ISSUED 03/08/16

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Derived No Effect Levels (DNELs)

No DNELs available

Predicted No Effect Concentrations (PNECs)

No PNECs available

8.2 Exposure Controls

Appropriate Engineering Controls

Provide general ventilation.

SKIN PROTECTION:

Wear impervious protective clothing, including boots and gloves. Wear gloves made of impervious materials. Wash thoroughly with soap and water after handling.

EYE PROTECTION:

Wear goggles, safety glasses with side shields or full-face shield when splashing or spraying of materials is likely.

RESPIRATORY PROTECTION:

Use dust/mist filtering respirator (MSHA/NIOSH approved number prefix TC-21C) or a NIOSH approved respirator with any N, P, R or HE filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Light brown liquid	Odor:	Malt-like
pH:	5.0 (1% w/v susp)	Odor Threshold:	N/D
Melting Point:	°F (°C)	Boiling Point:	°F (°C)
Specific Gravity:	@ °F	Solubility (H ₂ O):	
Relative Density:	1.06 g/cm ³ @ 20 °C	Evaporation Rate:	N/D
Octanol/H ₂ O Coeff:	N/D	Decomposition Temp.:	N/D
Vapor Density:	N/D	Vapor Pressure:	N/D
VOC:	% by weight	Flammability Class:	Not flammable
Kinematic Viscosity:	cSt @ °C cSt @ °C		

10. CHEMICAL STABILITY AND REACTIVITY

10.1 Reactivity

Material does not pose a significant reactivity hazard.

10.2 Chemical Stability

Stable under ordinary conditions of use and storage. Spontaneous reaction not possible.

VectoBac® 12AS Biological Larvicide Aqueous Suspension

SDS# VBC-0036 Revision 3

ISSUED 03/08/16

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10.3 Possibility of Hazardous Reactions

Does not undergo hazardous polymerization

10.4 Conditions to Avoid

Keep away from incompatible substances.

10.5 Incompatible Materials

Diluted or undiluted product can cause corrosion if left in prolonged contact with aluminum surfaces (e.g. spray equipment, aircraft components).

10.6 Hazardous Decomposition Products

Carbon oxides and unidentified organic compounds.

11. TOXICOLOGICAL INFORMATION**11.1 Information on Toxicological Effects**Likely Routes of Exposure

Eye Contact: Yes

Skin Contact: Yes

Inhalation: No

Ingestion: No

Acute Effects – Product Toxicology StudiesOral Toxicity: LD₅₀ > 5,000 mg/kg (rat)Dermal Toxicity: LD₅₀ > 5,000 mg/kg (rabbit)Inhalation Toxicity: LC₅₀ > 5.34 mg/L air

Corrosiveness: Not corrosive to humans, can be corrosive to aluminum.

Dermal Irritation: slightly-irritating, (category IV)

Ocular Irritation: slightly-irritating, (category IV)

Dermal Sensitization: Mild sensitizer, (guinea pig)

Mutagenicity Information: Components of this product are not listed as mutagens.

Carcinogenicity Information: Components of this product are not listed as carcinogenic by NTP, IARC or OSHA.

Developmental/Reproductive Toxicity: This material is not a teratogenic compound. The NOEL for maternal and embryo toxicity in rabbits was ___ mg/kg/day. The NOEL for reproductive effects in rats was ___ ppm.

Special Target Organ: Slight eye and skin Irritation.

Aspiration Hazard: Not Applicable

Repeat Dose Studies: Not Applicable, Pathogenicity Toxicity testing was all negative

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SDS# VBC-0036 Revision 3

ISSUED 03/08/16

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12. ECOLOGICAL INFORMATION**12.1 Ecotoxicity (Data for a Concentrated Technical Powder)**Fish: LC₅₀ >370 mg/L (96-H, Rainbow Trout)Bird: LC₅₀ >3077 mg /kg (6.2 x 10¹¹ cfu/kg) (Acute Oral - Bobwhite Quail)LC₅₀ >3077 mg /kg (6.2 x 10¹¹ cfu/kg) each day for 5 days (Sub-Acute Oral (dietary) - Bobwhite Quail)Invertebrates: LC₅₀ >50 mg/L (48-H) (Daphnia)

Bees: Essentially non-toxic to honey bees.

12.2 Persistence and Degradability

No data available

12.3 Bioaccumulation potential

Not applicable. Substance is not pathogenic to non-target organisms

12.4 Mobility in Soil

No data available

12.5 Results of PBT and vPvB assessment

Assessments not performed

12.6 Other adverse effects

None known

13. DISPOSAL CONSIDERATIONS**13.1 Waste Disposal Methods**

Dispose of product in accordance with federal, state, provincial, and local regulations. Prevent contamination of environment by wastes.

US EPA WASTE NUMBER & DESCRIPTIONS:

There is no applicable EPA waste number. This product, if discarded, is not expected to be a characteristic or listed hazardous waste.

14. TRANSPORTATION INFORMATION

DOT

STATUS: Not regulated by US DOT

UN PROPER SHIPPING NAME: N/A

REMARKS: N/A

VectoBac® 12AS Biological Larvicide Aqueous Suspension**SDS# VBC-0036 Revision 3****ISSUED 03/08/16**

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IATA/ICA0 STATUS: Not Regulated
PROPER SHIPPING NAME: N/A
REMARKS: N/A

IMDG STATUS: Not Regulated
PROPER SHIPPING NAME: N/A
REMARKS: N/A

15. REGULATORY INFORMATION**15.1 Safety, Health and Environmental Regulations / Specific Legislation**

TSCA STATUS: Not Listed

CERCLA STATUS: Not regulated as hazardous

SARA STATUS: Acute: No Chronic: No Fire: No CDT: No

RCRA STATUS: Not regulated as hazardous

State Right-To-Know: Not listed.

Consult applicable national, state provincial or local laws to determine regulations, laws or ordinances which may be applicable.

OSHA HAZARD COMMUNICATION STANDARD: Not defined by the OSHA Hazard Communication Standard, 29 CFR.

15.2 FIFRA – Pesticide Labeling

EPA registration Number 73049-38

EPA Pesticide Label signal word: CAUTION

Product must have EPA Approved Pesticide Label attached or accompanying all containers.

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. The hazard information required on the pesticide label is reproduced below. The pesticide label also includes other important information, including directions and limitations for its use.

**KEEP OUT OF REACH OF CHILDREN
PRECAUTIONARY STATEMENT
HAZARD TO HUMANS AND DOMESTIC ANIMALS
CAUTION**

Harmful if absorbed through skin. Causes moderate eye irritation. Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash contaminated clothing before reuse.

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SDS# VBC-0036 Revision 3

ISSUED 03/08/16

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Mixers/loaders and applicators not in enclosed cabs or aircraft must wear a dust/mist filtering respirator meeting NIOSH standards of at least N-95, R-95 or P-95. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.

PHYSICAL AND CHEMICAL HAZARDS

Diluted or undiluted VectoBac® 12 AS can cause corrosion if left in prolonged contact with aluminum spray system components. Rinse spray system with plenty of clean water after use. Care should be taken to prevent contact with aluminum aircraft surfaces, structural components and control systems, In case of contact, rinse thoroughly with plenty of water. Inspect aluminum aircraft components regularly for signs of corrosion.

DIRECTIONS FOR USE

It is in violation of Federal law to use this product in a manner inconsistent with its labeling. Do not apply directly to treated finished drinking water reservoirs or drinking water receptacles when water is intended for human consumption.

Do not apply when weather conditions favor drift from treated areas. Do not apply to metallic painted objects, such as automobiles, as spotting may occur. If spray is deposited on metallic painted surfaces, wash immediately with soap and water to avoid spotting.

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment-and-weather related factors determine the potential for spray drift. The applicator and the treatment coordinator are responsible for considering all these factors when making decisions.

STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage or disposal.

Storage: Store in a cool, [less than 86°F (30° C)] dry place.

Pesticide Disposal: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

Container Disposal: Nonrefillable container. Do not reuse or refill this container.

Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Once cleaned, some agricultural plastic pesticide containers can be taken to a container collection site or picked up for recycling or puncture and dispose of in a sanitary landfill or by incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke. Do not reuse container.

VectoBac® 12AS Biological Larvicide Aqueous Suspension

SDS# VBC-0036 Revision 3

ISSUED 03/08/16

[Classification according to OSHA; 29 CFR § 1910.1200, (3/12/2012)]

16. OTHER INFORMATION**NFPA Hazard Ratings**Health: N/D
Flammability: N/D
Instability: N/D**HMIS Hazard Ratings**Health: N/D
Flammability: N/D
Instability: N/D0 = minimal
1 = slight
2 = moderate
3 = serious
4 = ExtremeREASON FOR ISSUE: Updated List #'s
APPROVAL DATE: 03/08/16
SUPERSEDES DATE: 04/14/15LEGEND: N/A = Not Applicable
N/L = Not Listed
C = CeilingN/D = Not Determined
L = Listed
S = Short-term

(R) = Registered Trademark of Valent BioSciences

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The information provided in this Safety Data Sheet (SDS) is provided in good faith and believed to be accurate at the time of preparation of the SDS. However, to the extent consistent with applicable law, Valent BioSciences Corporation and its subsidiaries or affiliates extend no warranties, make no representations, and assume no responsibility as to the accuracy, suitability, or completeness of such information. Additionally, to the extent consistent with applicable law, neither Valent BioSciences Corporation nor any of its subsidiaries or affiliates represents or guarantees that this information or product may be used without infringing the intellectual property rights of others. Except to the extent a particular use and particular information are expressly stated on the product label, it is the users' own responsibility to determine the suitability of this information for their own particular use of this product. If necessary, contact Valent BioSciences Corporation to confirm that you have the most current product label and SDS.

This Safety Data Sheet (SDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-APPROVED PRODUCT LABEL (attached to and accompanying the product container). This SDS provides important health, safety, and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use as required by the Occupational Health and Safety Act (29 CFR 1910.1200, "Hazcom"). The product label provides information specifically for product use in the ordinary course. Use, storage and disposal of pesticide products is regulated by the EPA under the authority of FIFRA through the product label. All necessary hazard classification and appropriate precautionary use, storage, and disposal information is set forth on that label or labeling accompanying the pesticide or to which reference is made on the label. It is a violation of federal law to use an EPA-registered pesticide product in any manner inconsistent with its labeling.



SAFETY DATA SHEET

NATULAR™ G30

Effective Date: 1 June 2015

v.01

Page 1 of 8

SECTION 1. Identification of the Substance/Mixture and of the Company

1.1 Product Identifier

Formulation Identifier: Natular™ G30

EPA Registration Number: 8329-83

1.2 Relevant Identified Uses of the Substance or Mixture and Uses Advised Against

Relevant Identified Uses: Insecticide for control of mosquito and midge larvae

Uses Advised Against: See product label for use restrictions

1.3 Details of the Supplier of the Safety Data Sheet

Clarke Mosquito Control Products, Inc.
675 Sidwell Court
St. Charles, IL 60174 U.S.A.
+1 (630) 894-2000
Email: Clarke@clarke.com

1.4 Emergency Telephone Number

24-Hour Medical Emergency: POISON CONTROL Toll-free (800) 214 – 7753

24-Hour Transportation Emergency: INFOTRAC (800) 535-5053

SECTION 2. Hazards identification

United States (US)

According to OSHA 29 CFR 1910.1200 HCS (2012)

2.2 Classification of the Substance or Mixture

Acute Toxicity (Inhalation): Category 4

Pictogram:



Signal Word: Warning

Hazard statements: Harmful if inhaled

Precautionary Statements:

PREVENTION: Avoid breathing dust. Use only outdoors or in a well-ventilated area.

RESPONSE: If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center or doctor if you feel unwell.

2.3 Other Hazards Not Classifiable Under OSHA 2012 HCS

See product label for any additional hazards



SAFETY DATA SHEET

NATULAR™ G30

Effective Date: 1 June 2015

v.01

Page 2 of 8

SECTION 3. Composition/Information on Ingredients

3.1 Components

Substance Name	CAS No.	Concentration % w/w
Spinosad:		2.50
Spinosyn A	131929-60-7	
Spinosyn D	131929-63-0	
Sand:		68.00
Quartz	14808-60-7	≤ 67.66
Aluminum Oxide	1344-28-1	≤ 12.92
Calcium Oxide	1305-78-8	≤ 0.748
Titanium Oxide	13463-67-7	≤ 0.476

Ingredients not identified are non-hazardous and/or are not required to be disclosed pursuant to 29 CFR 1910.1200 (2012), and are withheld as trade secret.

SECTION 4. First Aid Measures

4.1 Description of First Aid Measures

If Inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

4.2 Most Important Symptoms and Effects, Both Acute and Delayed.

Inhalation: This product may release nuisance dust in handling or use. Exposure to dusts from this product may irritate the nose, throat, lungs, and upper respiratory tract. Acute exposure to dust is not likely to be hazardous.

4.3 Indication of Immediate Medical Attention and Special Treatment

Treatment: Appropriate supportive and symptomatic treatment as indicated by the patient's condition is recommended. For medical treatment information, contact the poison control hotline at 1-800-214-7753. Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

SECTION 5. Fire-Fighting Measures

5.1 Extinguishing Media

Suitable Extinguishing Media: Water Fog, Carbon Dioxide (CO₂), Dry Chemical, Foam

Unsuitable Extinguishing Media: None known

5.2 Special Hazards Arising From the Substance or Mixture

Specific Hazards: Under fire conditions some components may decompose. Combustion products may include CO and NO_x.

5.3 Special Protective Equipment and Precautions for Fire-Fighters

Protection Against Fire: Wear positive pressure, self-contained breathing apparatus and protective firefighting clothing (includes fire-fighting helmet, coat, pants, boots, and gloves).

Special Procedures: Fight fires from a protected location. Dike fire control water for later disposal. Keep container cool by spraying with water.

SECTION 6. Accidental Release Measures

6.1 Personal Precautions, Protective Equipment and Emergency Procedures

General Precautions: Use appropriate protection (see section 8)



SAFETY DATA SHEET

NATULAR™ G30

Effective Date: 1 June 2015

v.01

Page 3 of 8

Environmental Precautions: Prevent product from entering into drains and waterways. Collect and dispose of this material and its container in accordance with national and regional regulations. If the product has contaminated surface water, inform the appropriate authorities. See Section 12 for additional ecological information.

6.2 Methods and Material for Containment and Cleaning Up

Clean Up Methods: Collect all material with shovel or other instrument while using appropriate personal protection equipment, and place in closable marked containers. Use non-reactive absorbent to absorb small spills of rinsate and collect for disposal

SECTION 7. Handling and Storage

7.1 Precautions for Safe Handling

Handling: Keep out of reach of children. Do not take internally. Avoid contact with eyes and inhalation of dusts from product.

Hygiene Measures: Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet.

7.2 Conditions for Safe Storage, Including Any Incompatibilities

Storage: Product should be stored in compliance with local regulations. Store in a cool, dry, well-ventilated place in the original container. Protect from excessive heat and cold. Do not store near food, drink, animal feeding stuffs, pharmaceuticals, cosmetics or fertilizers. Keep out of reach of children.

SECTION 8. Exposure Controls / Personal Protection

These precautions are suggested for conditions where the potential for exposure exists. Emergency conditions may require additional precautions.

8.1 Control Parameters

Component Name	CAS No.	List	Type	Value
Spinosyn A & Spinosyn D	131929-60-7 131929-63-0	DOW IHG	TWA	0.3 mg/m ³
Sand	14808-60-7	ACGIH	TWA	0.025 mg/m ³ respirable fraction
		NIOSH	TWA	0.05 mg/m ³ respirable dust
Quartz	14808-60-7	ACGIH	TWA	0.025 mg/m ³ respirable fraction
		NIOSH	TWA	0.05 mg/m ³ respirable dust
		OSHA	TWA	Mineral Dust (30) / (%SiO ₂ + 2) mg/m ³ Respirable Dust (10) / (%SiO ₂ + 2) mg/m ³
Aluminum Oxide	1344-28-1	ACGIH	TWA	1 mg/m ³ respirable fraction <i>as aluminum insoluble compounds</i>
		OSHA	TWA	15 mg/m ³ total dust 5 mg/m ³ respirable fraction
Calcium Oxide	1305-78-8	ACGIH	TWA	2 mg/m ³
		NIOSH	TWA	2 mg/m ³
		OSHA	TWA	5 mg/m ³
Titanium Oxide	13463-67-7	ACGIH	TWA	10 mg/m ³
		OSHA	TWA	15 mg/m ³ total dust



SAFETY DATA SHEET

NATULAR™ G30

Effective Date: 1 June 2015

v.01

Page 4 of 8

8.2 Exposure controls

Engineering Controls: Use with adequate ventilation. Wash hands thoroughly after handling. Wash clothing before re-using.

Individual Protection Measures, such as Personal Protection Equipment:

Eye Protection: Safety Glasses, Goggles or Face Shield

Skin Protection: Wear suitable protective clothing

Hand Protection: It is good industrial hygiene practice to minimize skin contact. If required or preferred, use suitable protective chemical resistant gloves such as latex, nitrile, or neoprene.

Respiratory Protection: Natular™ G30 as formulated is not expected to form appreciable respirable dust from sand from use or attrition. A respirator is not required for normal use of this product. If needed or preferred, use suitable respiratory equipment such as a NIOSH standard N-95 respirator or dust mask.

SECTION 9. Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties

Appearance:	Granule
Color:	Tan/white
Odor:	Earthy scent
Odor Threshold:	Not Available
pH:	6.92
Melting Point:	Not Determined
Freezing Point:	Not Applicable
Initial Boiling Point:	Not Applicable
Flash Point:	Not Determined
Evaporation Rate:	Not Applicable
Flammability:	Not Determined
Explosion limits [U/L]:	Not Applicable
Vapor Pressure:	Not Applicable
Vapor Density:	Not Applicable
Relative Density:	1.284 g/mL
Solubility:	Not Determined
Partition Coefficient:	Not Determined
Auto-Ignition Temperature:	Not Determined
Viscosity:	Not Applicable
Decomposition Temperature:	Not Available
Explosive Properties:	Not Available
Oxidizing Properties:	Not Available

SECTION 10. Stability and Reactivity

10.1 Reactivity

Not Available

10.2 Chemical Stability

Stable under normal conditions



SAFETY DATA SHEET

NATULAR™ G30

Effective Date: 1 June 2015

v.01

Page 5 of 8

10.3 Possibility of Hazardous Reactions

Hazardous Reactions: None under normal conditions

Hazardous Polymerization: Not known to occur

10.4 Conditions to Avoid

Protect from direct sunlight and excessive heat.

10.5 Incompatible Materials

Avoid contact with strong oxidizing agents, strong acids, strong bases

10.6 Hazardous Decomposition Products

None known under normal conditions of storage and use

SECTION 11. Toxicological Information

11.1 Information on Likely Routes of Exposure

Inhalation: This product may release nuisance dust in handling or use. Exposure to dusts from this product may irritate the nose, throat, lungs, and upper respiratory tract.

11.2 Information on Toxicological Effects

Acute Toxicity/Effects

Oral, Rat LD₅₀: > 2,000 mg/kg-bw

Dermal, Rat LD₅₀: > 4,000 mg/kg-bw

Inhalation, Rat LC₅₀: > 4.08 mg/L

Skin Corrosion/Irritation: Natular™ G30 is not a skin irritant

†Calcium Oxide (CAS# 1305-78-8), a component of sand, is classified as Skin Corrosion/Irritation Category 1C under the OSHA 2012 HCS.

Serious Eye Damage/Irritation: Natular™ G30 is not an eye irritant

Skin Sensitization: Natular™ G30 is not a skin sensitizer

STOT – Single Exposure: Dust may cause mechanical irritation to the lungs.

Chronic Toxicity/Effects

Germ Cell Mutagenicity: Natular™ G30 is not mutagenic.

Carcinogenicity: Natular™ G30 is not considered carcinogenic.

Spinosad is not carcinogenic.

†Sand may cause cancer from repeated exposure via the inhalation route of exposure from respirable particles.

†Sand (CAS# 14808-60-7) and its primary constituent, Quartz (CAS# 14808-60-7) are classified as Carcinogenicity Category 1 under the OSHA 2012 HCS, IARC Group 1 – Carcinogenic, and an NTP Known Human Carcinogen.

†Titanium Oxide (CAS# 13463-67-7), a component of sand, is classified as Carcinogenicity Category 2 under the OSHA 2012 HCS, IARC Group 2B – Possible Carcinogen.

Reproductive Effects: Spinosad, in laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.



SAFETY DATA SHEET

NATULAR™ G30

Effective Date: 1 June 2015

v.01

Page 6 of 8

STOT – Repeated Exposure:

In animals, spinosad has been shown to cause vacuolation of cells in various tissues. Dose levels producing these effects were many times higher than any dose levels expected from exposure due to use.

†Sand may cause irritation and/or lung damage, including silicosis, fibrosis, and inflammation.

†Sand (CAS# 14808-60-7) and its constituent, Quartz (CAS# 14808-60-7), are classified as Specific Target Organ Toxicity- Repeat Exposure Category 1 under the OSHA 2012 HCS. Sand constituents, Aluminum Oxide (CAS# 1344-28-1), and Titanium Oxide (CAS# 13463-67-7), are classified as Specific Target Organ Toxicity- Repeat Exposure Category 2 under the OSHA 2012 HCS.

Additional Information:

†Natular™ G30 is a multi-layer coated sand-core granule. Natular™ G30 as formulated is not expected to form appreciable respirable dust from sand from use or attrition. Exposure to respirable sand particles from Natular™ G30 is not expected to occur due to the manner in which its constituents are bound.

SECTION 12. Ecological Information

12.1 Ecotoxicity

Product specific data is not available. Data referenced is in relation to the active ingredient, Spinosad. Spinosad is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).

Toxicity to Fish: 96-hr Acute LC₅₀ 5.0 mg/L, Common Carp (*Cyprinus carpio*)
96-hr Acute LC₅₀ 5.9 mg/L, Bluegill Sunfish (*Lepomis macrochirus*)
96-hr Acute LC₅₀ 30 mg/L, Rainbow Trout (*Oncorhynchus mykiss*)

Toxicity to Aquatic Invertebrates: 48-hr Acute EC₅₀ 1.5-14.0 mg/L, Water Flea (*Daphnia magna*)
48-hr LC₅₀ > 7.9 mg/L, Mysid Shrimp (*Americamysis bahia*)

Toxicity to Aquatic Plants: 5-d EC₅₀ 8.1 mg/L, Blue Green Algae (*Anabaena flos-aquae*)

12.1 Persistence and Degradability

Product specific data not available. Data referenced is in relation to the active ingredient, Spinosad.

Log K_{ow}: Spinosyn A: 3.91; Spinosyn D: 4.38 (distilled water)

Bioaccumulation: Bioconcentration potential is low (BCF < 100)

Bioconcentration Factor: Spinosyn A: 19; Spinosyn D: 33 mL/g (fish)

Mobility in Soil: Potential for mobility in soil is low (K_{oc} between 500 and 2000)

Partition Coefficient, K_{oc}: 701

SECTION 13. Disposal Considerations

13.1 Waste Treatment and Disposal methods

Consult product label for disposal instructions. Avoid release to the environment. Improper disposal of excess product or rinsate is a violation of the Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste Representative at the nearest EPA regional office for guidance.

SECTION 14. Transport Information

14.1 DOT (US)

Not regulated (Bulk and Non-Bulk Quantities)



SAFETY DATA SHEET

NATULAR™ G30

Effective Date: 1 June 2015

v.01

Page 7 of 8

14.2 IMDG (Vessel)

UN Number: 3077
Hazard Class: 9
Packing Group: III
Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE SOLID, N.O.S. (Spinosad)
Marine Pollutant: Yes

14.3 ICAO/IATA (Air transport)

UN Number: 3077
Hazard Class: 9
Packing Group: III
Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE SOLID, N.O.S. (Spinosad)
Environmental Hazard: Yes

SECTION 15. Regulatory Information

FIFRA Information: This chemical is a pesticide product regulated by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information for safety data sheet, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

Signal Word: CAUTION
KEEP OUT OF REACH OF CHILDREN

PRECAUTIONARY STATEMENTS: Hazards to Humans and Domestic Animals: Harmful if swallowed. Causes moderate eye irritation. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco. Avoid contact with eyes or clothing. Wear protective eyewear (such as goggles, face shield, or safety glasses).

First Aid	
If swallowed:	<ul style="list-style-type: none">• Call a poison control center or doctor immediately for treatment advice.• Have a person sip a glass of water if able to swallow.• Do not induce vomiting unless told to do so by a poison control center or doctor.• Do not give anything to an unconscious person.
If in eyes:	<ul style="list-style-type: none">• Hold eye open and rinse slowly and gently with warm water for 15-20 minutes.• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing.• Call a poison control center or doctor for treatment advice.
Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact 1-800-214-7753 for emergency medical treatment information.	

Other Federal Regulations

SARA TITLE III CLASSIFICATION

Section 302: None
Section 311/312: Immediate (acute) hazard
Section 313: This product contains the following toxic chemicals subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:
Aluminum Oxide (CAS 1344-28-1), fibrous forms

OSHA HAZARD COMMUNICATION STANDARD: This product is considered a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

U.S. California Proposition 65: WARNING: This product contains a chemical known to the State of California to cause cancer and/or birth defects or other reproductive harm:

Titanium Oxide (CAS 13463-67-7), airborne, unbound particles of respiratory size
Quartz (silica, crystalline, CAS 14808-60-7), airborne particles of respirable size



SAFETY DATA SHEET

NATULAR™ G30

Effective Date: 1 June 2015

v.01

Page 8 of 8

STATE RIGHT-TO-KNOW: National, state, provincial or local emergency planning, community right-to-know or other laws, regulations or ordinances may be applicable--consult applicable national, state, provincial or local laws.

SECTION 16. Other Information

DISCLAIMER OF LIABILITY The information in this SDS was obtained from sources we believe to be reliable. However, the information is provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage, use or disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. This SDS was prepared as is to be used only for this product. If the product is used as a component in another product, this SDS information may not be applicable.

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SAFETY DATA SHEET

BIOMIST[®] 3 + 15 ULV

Effective Date: 15 July 2015

v.02

Page 1 of 8

SECTION 1. Identification of the Substance/Mixture and of the Company

1.1 Product Identifier

Formulation Identifier: BIOMIST[®] 3 + 15 ULV

EPA Registration Number: 8329-33

1.2 Relevant Identified Uses of the Substance or Mixture and Uses Advised Against

Relevant identified uses: Insecticide for control of adult mosquitoes, biting and non-biting midges, and blackflies

Uses advised against: See product label for use restrictions

1.3 Details of the Supplier of the Safety Data Sheet

Clarke Mosquito Control Products, Inc.
675 Sidwell Court
St. Charles, IL 60174 U.S.A.
+1 (630) 894-2000
Email: Clarke@clarke.com

1.4 Emergency Telephone Number

24-Hour Medical Emergency: POISON CONTROL Toll-free (800) 214 – 7753

24-Hour Transportation Emergency: INFOTRAC (800) 535-5053

SECTION 2. Hazards identification

United States (US)
According to OSHA 29 CFR 1910.1200 HCS (2012)

2.1 Classification of the Substance or Mixture

Aspiration Hazard: Category 1

Acute Toxicity (Inhalation): Category 4

Pictogram:



Signal Word: Danger

Hazard Statements: May be fatal if swallowed and enters airways.

Harmful if inhaled

Precautionary Statements:

PREVENTION: Avoid breathing mist/spray. Use only outdoors or in a well-ventilated area,

RESPONSE: If swallowed: Immediately call a poison control center or doctor. Do NOT induce vomiting.



SAFETY DATA SHEET

BIOMIST[®] 3 + 15 ULV

Effective Date: 15 July 2015

v.02

Page 2 of 8

If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center or doctor if you feel unwell.

STORAGE: Store locked up.

DISPOSAL: Dispose of contents and container in accordance with local/regional/national regulations.

2.2 Other Hazards Not Classifiable Under OSHA 2012 HCS

See product label for any additional hazards

SECTION 3. Composition/Information on Ingredients

3.1 Components

Substance Name	CAS No.	Concentration % w/w
Permethrin	52645-53-1	3.00
Piperonyl Butoxide	51-03-6	15.00
Petroleum Distillate Mixture:		< 82.00
White Mineral Oil	8042-47-5	
Hydrotreated Distillate, Heavy Paraffin	64742-54-7	
Hydrotreated Distillate, Light Paraffin	64742-55-8	
Hydrotreat Neutral Oil	72623-87-1	

Ingredients not identified are non-hazardous and/or are not required to be disclosed pursuant to 29 CFR 1910.1200 (2012), and are withheld as trade secret.

SECTION 4. First Aid Measures

4.1 Description of First Aid Measures

If Inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

If swallowed: Call a poison control center or doctor immediately for treatment advice. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

4.2 Most Important Symptoms and Effects, Both Acute and Delayed.

See section 2 and/or section 11.

4.3 Indication of Immediate Medical Attention and Special Treatment

Treatment: Contains petroleum distillate. Gastric lavage is indicated if material was taken internally. May pose an aspiration pneumonia hazard. Appropriate supportive and symptomatic treatment is indicated by the patient's condition is recommended. For medical treatment information, contact the poison control hotline at 1-800-214-7753. Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

SECTION 5. Fire-Fighting Measures

5.1 Extinguishing Media

Suitable Extinguishing Media: Carbon Dioxide (CO₂), Dry Chemical, Foam

Unsuitable Extinguishing Media: Water jet

5.2 Special Hazards Arising From the Substance or Mixture



SAFETY DATA SHEET

BIOMIST® 3 + 15 ULV

Effective Date: 15 July 2015

v.02

Page 3 of 8

Specific Hazards: Under fire conditions some components may decompose. Combustion products may include CO and NOx.

5.3 Special Protective Equipment and Precautions for Fire-Fighters

Protection Against Fire: Wear positive pressure, self-contained breathing apparatus and protective firefighting clothing (includes fire-fighting helmet, coat, pants, boots, and gloves).

Special Procedures: Treat as oil fire. Move container from fire area if it can be done without risk. Do not scatter spilled material with high-pressure water streams. Dike for later disposal. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

SECTION 6. Accidental Release Measures

6.1 Personal Precautions, Protective Equipment and Emergency Procedures

General Precautions: Use appropriate protection (see section 8)

Environmental Precautions: Prevent product from entering into drains and waterways. Do not contaminate surface or ground water by cleaning equipment or disposal of wastes, including equipment wash water. Collect and dispose of this material and its container in accordance with national and regional regulations. If the product has contaminated surface water, inform the appropriate authorities. See Section 12 for additional ecological information.

6.2 Methods and Material for Containment and Cleaning Up

Clean Up Methods: Soak up with absorbent, non-combustible material, such as sand, silica gel, clay, or sawdust, while using appropriate personal protection equipment. Collect material in appropriate container for disposal.

SECTION 7. Handling and Storage

7.1 Precautions for Safe Handling

Handling: Keep out of reach of children. Do not take internally. Avoid contact with skin and eyes. Avoid inhalation of vapors from product.

Hygiene Measures: Remove Personal Protective Equipment (PPE) immediately after handling this product. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove soiled clothing immediately and clean thoroughly before using again.

7.2 Conditions for Safe Storage, Including Any Incompatibilities

Storage: Product should be stored in compliance with local regulations. Store in a cool, dry, well-ventilated place in the original container. Protect from excessive heat and cold. Do not store near food, drink, animal feeding stuffs, pharmaceuticals, cosmetics or fertilizers. Keep out of reach of children.

SECTION 8. Exposure Controls / Personal Protection

These precautions are suggested for conditions where the potential for exposure exists. Emergency conditions may require additional precautions.

8.1 Control Parameters

Component Name	CAS No.	List/Source	Type	Value
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SAFETY DATA SHEET

BIOMIST® 3 + 15 ULV

Effective Date: 15 July 2015

v.02

Page 4 of 8

Permethrin	52645-53-1	ACGIH	TWA	5 mg/m ³
		NIOSH	REL	5 mg/m ³
		OSHA	PEL	5 mg/m ³
Petroleum Distillate Mixture*:	See section 3	ACGIH	TLV	5 mg/m ³ inhalable fraction
		NIOSH	REL	5 mg/m ³ form: mist
		OSHA	PEL	5 mg/m ³

*Exposure limits based on limits established for White Mineral Oil (CAS# 8042-47-5) component of mixture.

8.2 Exposure controls

Engineering Controls: Use with adequate ventilation. Local exhaust ventilation may be necessary for some operations. Wash hands thoroughly after handling. Wash clothing before re-using.

Individual Protection Measures, such as Personal Protection Equipment:

Eye Protection: Safety Glasses, Goggles or Face Shield

Skin Protection: Wear suitable protective clothing including long-sleeve shirt, long pants, shoes and socks. Body protection must be chosen depending on activity and possible exposure, e.g. head protection, apron.

Hand Protection: Protective glove selection must be based on the user's assessment of the workplace hazards. Suitable protective chemical resistant materials include barrier laminate, nitrile, neoprene or Viton.

Respiratory Protection: Not usually required. In instances where exposure limits are exceeded, wear a NIOSH-approved pesticide respirator with an organic-vapor removing cartridge with a prefilter approved for pesticides.

SECTION 9. Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties

Appearance:	Liquid
Color:	Pale Yellow
Odor:	Odorless
Odor Threshold:	Not Available
pH:	Not Available, not miscible in water
Melting Point:	Not Applicable
Freezing Point:	Not Determined
Initial Boiling Point:	Not Determined
Flash Point:	>300° F
Evaporation Rate:	Not Determined
Flammability:	Not Determined
Explosion limits [U/L]:	Not Applicable
Vapor Pressure:	Not Determined
Vapor Density:	Not Determined
Relative Density:	7.42 lbs/gal
Solubility:	Not Determined
Partition Coefficient:	Not Determined
Auto-Ignition Temperature:	Not Determined
Viscosity:	15.16 cSt @ 40 °C (22.6 cSt @ 20 °C)
Decomposition Temperature:	Not Available



SAFETY DATA SHEET

BIOMIST[®] 3 + 15 ULV

Effective Date: 15 July 2015

v.02

Page 5 of 8

Explosive Properties: Not Available

Oxidizing Properties: Not Available

SECTION 10. Stability and Reactivity

10.1 Reactivity

Not Available

10.2 Chemical Stability

Stable under normal conditions

10.3 Possibility of Hazardous Reactions

Hazardous Reactions: None under normal conditions

Hazardous Polymerization: Not known to occur

10.4 Conditions to avoid

Protect from direct sunlight and excessive heat.

10.5 Incompatible materials

Avoid contact with strong oxidizing agents, strong acids, strong bases

10.6 Hazardous decomposition products

None known under normal conditions of storage and use

SECTION 11. Toxicological information

11.1 Information on Likely Routes of Exposure

Inhalation: May be harmful if inhaled

Ingestion: May be fatal if swallowed and enters airways due to petroleum distillate. Vomiting may cause aspiration pneumonia.

11.2 Information on Toxicological Effects

Acute Toxicity/Effects

Oral, Rat LD₅₀ > 5,000 mg/kg-bw

Dermal, Rat LD₅₀ > 2,000 mg/kg-bw

Inhalation, Rat LC₅₀ > 3.9 mg/L

Skin Corrosion/Irritation: Not corrosive or irritating to the skin on acute exposure. Mild skin irritation or cracking may occur from prolonged or repeated exposure to this product.

Serious Eye Damage/Irritation: Mild (transient) eye irritation may occur from direct exposure of the product in the eyes.

Skin Sensitization: Not a skin sensitizer

STOT – Single exposure: No data is available to indicate product or any components present at greater than 0.1% present a specific target organ toxicity hazard from single exposure.

Chronic Toxicity/Effects



SAFETY DATA SHEET

BIOMIST® 3 + 15 ULV

Effective Date: 15 July 2015

v.02

Page 6 of 8

Germ Cell Mutagenicity	This product has not been tested. No data is available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic. For permethrin and for piperonyl butoxide, no mutagenic effect was found in various tests with microorganisms and mammalian cell culture.
Carcinogenicity	<p>This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP. Permethrin and Piperonyl Butoxide are classified by IARC as Group 3: Not classifiable as to carcinogenicity to humans.</p> <p>Permethrin caused at high dose levels an increased incidence of tumors in mice in the following organ(s): liver, Lungs. The mechanism that triggers tumors in rodents is not relevant for the low exposures encountered under normal use conditions. Piperonyl butoxide was not carcinogenic in lifetime feeding studies in rats and mice.</p>
Reproductive Effects:	No data is available to indicate product or any components present at greater than 0.1% cause reproductive or teratogenic toxicity. Permethrin did not cause reproductive toxicity in a two-generation study in rats. Piperonyl butoxide did not cause reproductive toxicity in a two-generation study in rats.
STOT – Repeated exposure	No data is available to indicate product or any components present at greater than 0.1% present a specific target organ toxicity hazard from repeat exposure. Permethrin did not cause specific target organ toxicity in experimental animal studies. Piperonyl butoxide did not cause specific target organ toxicity in experimental animal studies.

SECTION 12. Ecological Information

12.1 Ecotoxicity

Product specific data is not available. Data referenced is in relation to the active ingredients, Permethrin and Piperonyl Butoxide.

Toxicity to Fish: Permethrin: 96-hr Acute LC₅₀ 0.79 ppb, Bluegill Sunfish (*Lepomis macrochirus*)
Piperonyl Butoxide: 96-hr Acute LC₅₀ 6.12 ppm, Rainbow Trout (*Oncorhynchus mykiss*)

Toxicity to Aquatic Invertebrates: Permethrin: 96-hr LC₅₀ 0.019 ppb, Mysid Shrimp (*Americamysis bahia*)
Piperonyl Butoxide: 96-hr LC₅₀ 0.49 ppm, Mysid Shrimp (*Americamysis bahia*)

Toxicity to Aquatic Plants: Permethrin: 72-hr EC₅₀ 0.5 mg/L, Algae
Piperonyl Butoxide: 72-hr EC₅₀ > 9.1 mg/L, Algae

12.1 Persistence and Degradability

Product specific data not available. Data referenced is in relation to the active ingredients, Permethrin and Piperonyl Butoxide.

Biodegradability: Not rapidly biodegradable.

Partition Coefficient, K_{oc}: Permethrin: 100,000
Piperonyl Butoxide: 399 - 830

Bioaccumulation: Bioconcentration (BCF) Permethrin: 300
Bioconcentration (BCF) Piperonyl Butoxide: 2,175

Mobility in Soil: Permethrin: Immobile in soil



SAFETY DATA SHEET

BIOMIST[®] 3 + 15 ULV

Effective Date: 15 July 2015

v.02

Page 7 of 8

Piperonyl Butoxide: Moderately mobile in soil

SECTION 13. Disposal Considerations

13.1 Waste Treatment and Disposal methods

Pesticide wastes are regulated. Consult product label for chemical substance and container disposal instructions. Avoid release to the environment. Improper disposal of excess product or rinsate is a violation of Federal law. If these wastes cannot be disposed or by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste Representative at the nearest EPA regional office for guidance.

Container disposal: Rinse thoroughly in accordance with label instructions.

SECTION 14. Transport Information

14.1 DOT (US)

Not regulated (Bulk and Non-Bulk Quantities)

14.2 IMDG (Vessel)

UN Number: 3082

Hazard Class: 9

Packing Group: III

Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE LIQUID, N.O.S. (PERMETHRIN)

Marine Pollutant: Yes

14.3 ICAO/IATA (Air transport)

UN Number: 3082

Hazard Class: 9

Packing Group: III

Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE LIQUID, N.O.S. (PERMETHRIN)

Environmental Hazard: Yes

SECTION 15. Regulatory Information

FIFRA Information: This chemical is a pesticide product regulated by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information for safety data sheet, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

Signal Word: CAUTION

KEEP OUT OF REACH OF CHILDREN

FIRST AID	
Have product container or label with you when calling a poison control center or doctor, or going for treatment. For Medical Emergencies, call the International Poison Control Center at 1-800-214-7753.	
IF SWALLOWED:	Immediately call a poison control center or doctor. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give any liquid to the person. Do not give anything by mouth to an unconscious person.
IF ON SKIN OR CLOTHING:	Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.
IF INHALED:	Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth. Call a poison control center or doctor for further treatment advice.
IF IN EYES:	Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing the eye. Call a poison control center or doctor for



SAFETY DATA SHEET

BIOMIST® 3 + 15 ULV

Effective Date: 15 July 2015

v.02

Page 8 of 8

treatment advice.

NOTE TO PHYSICIAN: Product contains a petroleum distillate. Vomiting may cause aspiration pneumonia.

PRECAUTIONARY STATEMENTS: HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION. Harmful if swallowed or absorbed through skin. Avoid contact with skin, eyes or clothing.

Personal Protective Equipment (PPE): Some materials that are chemical-resistant to this product are: barrier laminate, nitrile rubber, neoprene rubber, or Viton. Mixers, loaders, applicators, and other handlers must wear long-sleeve shirt and long pants, shoes plus socks. In addition, all handlers except for applicators using motorized ground equipment, pilots and flaggers, must wear chemical-resistant gloves. In addition, mixers/loaders, persons cleaning equipment, and other persons exposed to the concentrate must wear a chemical-resistant apron. See engineering controls for additional requirements.

User Safety Requirements: Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with the product's concentrate. Do not reuse them.

Engineering Controls: Pilots must use an enclosed cockpit that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(6)]. Human flagging is prohibited. Flagging to support aerial application is limited to use of the Global Positioning System (GPS) or mechanical flaggers.

USER SAFETY RECOMMENDATIONS: Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. Users should remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Users should remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

Other Federal Regulations

SARA TITLE III CLASSIFICATION

Section 302: None
Section 311/312: Immediate (acute) hazard
Section 313: This product contains the following toxic chemicals subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372

Permethrin	CAS# 52645-53-1	3.0%
Piperonyl Butoxide	CAS# 51-03-6	15.0%

CERCLA RQ: None

OSHA HAZARD COMMUNICATION STANDARD: This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

U.S. California Proposition 65: Not listed

STATE RIGHT-TO-KNOW: National, state, provincial or local emergency planning, community right-to-know or other laws, regulations or ordinances may be applicable--consult applicable national, state, provincial or local laws.

SECTION 16. Other Information

DISCLAIMER OF LIABILITY The information in this SDS was obtained from sources we believe to be reliable. However, the information is provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage, use or disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. This SDS was prepared as is to be used only for this product. If the product is used as a component in another product, this SDS information may not be applicable.

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SAFETY DATA SHEET

DUET[®] Dual-Action Adulticide

Effective Date: 1 June 2015

v.01

Page 1 of 8

SECTION 1. Identification of the Substance/Mixture and of the Company

Product Identifier

Formulation Identifier: DUET[®] Dual-Action Adulticide

EPA Registration Number: 1021-1795-8329

Relevant Identified Uses of the Substance or Mixture and Uses Advised Against

Relevant identified uses: An insecticide for mosquito and vector control

Uses advised against: See product label for use restrictions

Details of the Supplier

Clarke Mosquito Control Products, Inc.
675 Sidwell Court
St. Charles, IL 60174 U.S.A.
+1 (630) 894-2000
Email: Clarke@clarke.com

Emergency Telephone Number

24 Hour MEDICAL Emergency: SafetyCall[®]: (888) 740-8712 or (952) 852-9509

24 Hour TRANSPORTATION Emergency: CHEMTREC[®]: (800)-424-9300

International: (703) 527-3887

SECTION 2. Hazards identification

United States (US)

According to OSHA 29 CFR 1910.1200 HCS

Classification of the Substance or Mixture

Acute Toxicity (Inhalation): Category 4

Aspiration Toxicity: Category 1

Pictogram:



Signal Word: DANGER

Hazard Statements: Harmful if inhaled.

May be fatal if swallowed and enters airways.

Precautionary Statements:

PREVENTION: Avoid breathing mist/vapors/spray. Use only outdoors or in well-ventilated area.

RESPONSE: IF INHALED- Remove victim to fresh air and keep at rest in a position for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

IF SWALLOWED: Immediately call a poison center/doctor. Do NOT induce vomiting.

STORAGE: Store locked up in a well ventilated place. Keep container tightly closed.

DISPOSAL: Dispose of contents/container to an approved waste disposal plant.

Other Hazards Not Classifiable Under OSHA 2012 HCS - Not applicable



SAFETY DATA SHEET

DUET® Dual-Action Adulticide

Effective Date: 1 June 2015

v.01

Page 2 of 8

Comments: This material is considered hazardous by the 2012 OSHA Hazard Communication Standard [29 CFR 1910.1200(a)(1), and the GHS

SECTION 3. Composition/Information on Ingredients

Components

Substance Name	CAS No.	Concentration % w/w
ETOC® (Prallethrin)	23031-36-9	1.0
SUMITHRIN® (d-Phenothrin)	26002-80-2	5.0
Piperonyl Butoxide	51-03-6	5.0
Petroleum Distillates, hydrotreated light	64742-47-8	10-20 *
White Mineral Oil	8042-47-5	50-75 *

* The exact percentage (concentration) of composition has been withheld as trade secret.

Ingredients not identified are non-hazardous and/or are not required to be disclosed pursuant to 29 CFR 1910.1200 (2012), and are withheld as trade secret.

SECTION 4. First Aid Measures

Description of First Aid Measures

- Eye contact:** Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes then continue rinsing. Call a poison control center/doctor for treatment advice.
- Skin Contact:** Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.
- Ingestion:** If swallowed, IMMEDIATELY call a poison control center or doctor for treatment advice. DO NOT give any liquid to the person. Do not induce vomiting unless told to do so by a poison control center or doctor. Never give anything by mouth to an unconscious person.
- Inhalation:** Remove affected person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

Indication of Immediate Medical Attention and Special Treatment

Notes to Physician: Contains Pyrethroids and Petroleum Distillates – vomiting may pose an aspiration hazard. For skin effects, a highly efficient therapeutic agent for Pyrethrin/Pyrethroid exposure is topical application of Tocopherol Acetate (Vitamin E).

SECTION 5. Fire-Fighting Measures

Extinguishing Media

Suitable Extinguishing Media: Water Fog, Carbon Dioxide (CO₂), Dry Chemical, foam

Unsuitable Extinguishing Media: Do not use water jet.

Special Hazards Arising From the Substance or Mixture

Specific Hazards: No information available.

Explosion data:

Sensitivity to Mechanical Impact: None

Sensitivity to static discharge: Yes, use proper bonding and/or grounding procedures.

Special Protective Equipment and Precautions for Fire-Fighters

Protection against fire: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

Special Procedures: Treat as oil fire. Move container from fire area if it can be done without risk. Do not scatter spilled material with high-pressure water streams. Dike for later disposal. Use extinguishing agents



SAFETY DATA SHEET

DUET[®] Dual-Action Adulticide

Effective Date: 1 June 2015

v.01

Page 3 of 8

appropriate for surrounding fire. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

SECTION 6. Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures

General Precautions: Use appropriate protection (see section 8). Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Use personal protective equipment as required.

Environmental Precautions: Prevent product from entering into drains and waterways. Collect and dispose of this material and its container in accordance with national and regional regulations. If the product has contaminated surface water, inform the appropriate authorities.

Methods and Material for Containment and Cleaning Up

Methods for containment: Prevent further leakage of spillage if safe to do so. Move containers from spill area.

Small spill: Dam up. Soak up with inert absorbent material. Pick up and transfer to properly labeled containers.

Large Spill: Prevent entry into sewers, water courses, basements or confined areas. Dam up and soak up with inert absorbent material. Pick up and transfer to properly labeled containers. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

SECTION 7. Handling and Storage

Precautions for Safe Handling

Protective measures: Wear a long-sleeved shirt, long pants, shoes and socks. Take prudent precautions to avoid contact with skin, eyes, and clothing. Mechanical ventilation should be used when handling this product in enclosed spaces. Do not contaminate water, food or feedstuffs, by storage, handling, or by disposal.

Hygiene Measures: Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for Safe Storage, Including Any Incompatibilities

Storage Conditions: Store in a cool, dry place. Keep container closed. Always store pesticides in the original container. Store away from food and pet food. Keep out of reach of children.

Electrostatic Accumulation Hazard: This product contains petroleum distillates for which there is potential for the accumulation of static electricity. Consideration should be given to bonding and grounding of equipment during loading, unloading, and transfer of this product.

SECTION 8. Exposure Controls / Personal Protection

These precautions are suggested for conditions where the potential for exposure exists. Emergency conditions may require additional precautions.

Control Parameters

Component Name	CAS No.	List	Type	Value
ETOC [®] (Prallethrin)	23031-36-9	OSHA; ACGIH		None
SUMITHRIN [®] (d-Phenothrin)	026002-80	OSHA; ACGIH		None
Piperonyl Butoxide	51-03-6	OSHA; ACGIH		None
Petroleum Distillates	64742-47-8	OSHA & ACGIH	TLV/TWA (as oil-mist, if generated)	5 mg/m ³



SAFETY DATA SHEET

DUET[®] Dual-Action Adulticide

Effective Date: 1 June 2015

v.01

Page 4 of 8

Mineral Oil	8042-47-5	OSHA & ACGIH	PEL / TLV, TWA (oil mist, mineral)	5 mg/m ³
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Exposure controls

Engineering Controls: Use with adequate ventilation. Local exhaust ventilation may be necessary for some operations..

Individual Protection Measures, such as Personal Protection Equipment:

Eye Protection: Safety Glasses, Goggles or Face Shield. Take prudent precautions to avoid contact with eyes.

Skin Protection: Wear a long-sleeved shirt and long pants, shoes and socks.

Hand Protection: It is good industrial hygiene practice to minimize skin contact. If required or preferred, use suitable protective chemical resistant gloves such as latex, nitrile, or neoprene.

Respiratory Protection: None required. If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn.

SECTION 9. Physical and Chemical Properties

Information on Basic Physical and Chemical Properties

Appearance:	Clear, yellow-colored liquid
Color:	1.0 on Gardner Scale
Odor:	Solvent odor
Odor Threshold:	No information available
pH:	Not applicable. Product is not miscible in water
Melting Point:	No information available
Freezing Point:	No information available
Initial Boiling Point:	No information available
Flash Point:	>93.3°C (>200°F) (Tag Closed Cup)
Evaporation Rate:	No information available
Flammability:	No information available
Explosion limits [U/L]:	No information available
Vapor Pressure:	No information available
Vapor Density (Air =1):	Heavier than air
Relative Density:	No information available
Specific Gravity (Water = 1)	0.860 @ 20°C (68°F)
Solubility:	Immiscible
Partition Coefficient:	No information available
Auto-Ignition Temperature:	No information available
Viscosity:	18 cPs @ 22.0°C (71.6°F) Brookfield
Decomposition Temperature:	No information available
Explosive Properties:	No information available
Oxidizing Properties:	No information available
VOC Content (%):	<1.000%

SECTION 10. Stability and Reactivity

Reactivity

No data available

Chemical Stability



SAFETY DATA SHEET

DUET[®] Dual-Action Adulticide

Effective Date: 1 June 2015

v.01

Page 5 of 8

Stable under recommended normal storage conditions

Possibility of Hazardous Reactions

Hazardous Reactions: None under normal conditions
Hazardous Polymerization: Hazardous polymerization does not occur

Conditions to avoid Extremes of temperature and direct sunlight

Incompatible materials Not compatible with strong acids and bases. Not compatible with oxidizing agents.

Hazardous decomposition products

Carbon monoxide (CO), Carbon dioxide (CO₂)

SECTION 11. Toxicological information

Information on Likely Routes of Exposure

Routes of entry: Oral, Dermal, Inhalation

May be fatal if swallowed and enters airways due to petroleum distillate. Vomiting may cause aspiration pneumonia.

Information on Toxicological Effects

Acute Toxicity / Effects

Assessment of acute toxicity: Slightly toxic after ingestion. Relatively non-toxic after short-term inhalation. Moderately toxic after short term skin contact. Some or all of the toxicity data reported is bridged from a substantially similar formula.

Oral, (Rat) LD₅₀ >5,000 mg/kg

Dermal, (Rabbit) LD₅₀ >2,000 mg/kg

Inhalation, Rat LC₅₀ >2.04 mg/l (4 hours)

Skin Corrosion/Irritation: Slight irritation at 72 hours. Irritation Index = 0.92

Serious Eye Damage/Irritation: Irritation clearing in 24 hours.

Skin Sensitization: Negative; Not considered to be a dermal sensitizer (Buehler).

Conditions aggravated by exposure: None known

Chronic Toxicity / Effects

Assessment of repeated dose toxicity: No significant signs or symptoms indicative of any adverse health effects are expected to occur.

Germ Cell Mutagenicity This product has not been tested. The statement has been derived from the properties of the individual components. No data is available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity Not carcinogenic. This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.
Marginally higher incidences of benign liver tumors in mice were observed following lifetime high dose exposures to PBO. The significance of these observations is undetermined and under review. The doses at which tumors were observed for PBO greatly exceeded potential exposure from labeled uses.

Reproductive Effects: This product has not been tested. The statement has been derived from the properties of the individual components. No data is available to indicate product or any components present at greater than 0.1% produce a fertility impairing effect. No indication of a developmental toxic / teratogenic effect.

STOT – Single exposure Not classified

STOT – Repeated exposure Not classified

SECTION 12. Ecological Information

Ecotoxicity:

Product specific data is not available. Data referenced is in relation to active ingredients, d-Phenothrin and PBO



SAFETY DATA SHEET

DUET[®] Dual-Action Adulticide

Effective Date: 1 June 2015

v.01

Page 6 of 8

Toxicity to Fish: d-Phenothrin 96-hr Acute LC₅₀ 16.7 µg/L (rainbow trout), 15.8 µg/L (bluegill sunfish)
PBO: 96-hour Acute LC₅₀ 6/12 ppm (rainbow trout)
Prallethrin LC₅₀ 0.012 mg/L (rainbow trout)

Toxicity to Aquatic Invertebrates: d-Phenothrin 48-hr LC₅₀ 4.4 µg/L *Daphnia magna*
d-Phenothrin 48-hr LC₅₀ 0.025 µg/L *Mysidopsis bahia*
PBO: 96-hr LC₅₀ 0.49 ppm, *Americamysis bahia*
Prallethrin 48-hr EC₅₀ 0.0062 mg/L *Daphnia*

Toxicity to Plants: No data available

Persistence and Degradability

Product specific data not available. Data referenced is in relation to the active ingredients, d-Phenothrin and PBO

Biodegradability: Not readily biodegradable (by OECD criteria)

Bioconcentration Factor: d-Phenothrin: 592 (edible), 4,000 (non-edible)
PBO: 2, 175
Prallethrin: no data available

Log Kow: d-Phenothrin: 6
PBO: 4.95
Prallethrin: 4.49

Depuration: d-Phenothrin, PBO: 2-4 days

Mobility in Soil: d-Phenothrin has low water solubility and binds tightly to soil. Based on these properties, d-phenothrin is relatively immobile in soil and its potential to contaminate groundwater is low.
PBO is not very soluble in water and adheres moderately to soil with organic matter.
Prallethrin is not very water soluble and adheres moderately with organic material. The hazard for prallethrin to move off the site of application with rain or irrigation is rated moderate.

SECTION 13. Disposal Considerations

Waste Treatment and Disposal methods

Pesticide wastes are regulated. Consult product label for chemical substance and container disposal instructions. Avoid release to the environment. Improper disposal of excess product or rinsate is a violation of Federal law. If these wastes cannot be disposed or by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste Representative at the nearest EPA regional office for guidance.

Container disposal: Rinse thoroughly in accordance with label instructions.

SECTION 14. Transport Information

DOT (US) Not regulated

IMDG (Vessel)

UN Number: UN3082

Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S (d-PHENOTHRIN)

Hazard Class: 9

Packing Group: III

Marine Pollutant: Yes

ICAO/IATA (Air transport)

UN Number: UN3082

Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S (d-PHENOTHRIN)

Hazard Class: 9

Packing Group: III

Marine Pollutant: Yes



SAFETY DATA SHEET

DUET[®] Dual-Action Adulticide

Effective Date: 1 June 2015

v.01

Page 7 of 8

SECTION 15. Regulatory Information

FIFRA Information: This chemical is a pesticide product regulated by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information for safety data sheet, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

Signal word: CAUTION

KEEP OUT OF REACH OF CHILDREN

PRECAUTIONARY STATEMENTS: HAZARDS TO HUMANS AND DOMESTIC ANIMALS: CAUTION. Harmful if swallowed. Wash thoroughly with soap and water after handling and before eating, chewing gum, or using tobacco. Remove and wash contaminated clothing before reuse.

Personal Protective Equipment (PPE): Mixers, loaders, applicators, and other handlers must wear the following: long-sleeve shirt, long pants, shoes and socks. See engineering controls for additional requirements.

User safety requirements: Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry. Discard clothing and other absorbent material that have been drenched or heavily contaminated with the product's concentrate. Do not reuse them.

User Safety Recommendations: Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. Users should remove clothing/PPE immediately if pesticide gets inside, then wash thoroughly and put on clean clothing. Users should remove PPE immediately after handling this product. As soon as possible, wash thoroughly and change into clean clothing.

Engineering controls: Pilots must use an enclosed cockpit that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(6)]. Human flagging is prohibited. Flagging to support aerial applications is limited to use of the Global Positioning System (GPS) or mechanical flaggers.

FIRST AID

If swallowed: Immediately call a poison control center or doctor. Do not induce vomiting unless told to do so by a poison control center or a doctor. Do not give any liquid to the person. Do not give anything by mouth to an unconscious person.

Note to physician: Contains petroleum distillates. Vomiting may cause aspiration pneumonia.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. For information regarding medical emergencies or pesticide incidents call 1-888-740-8712.

Other Federal Regulations

SARA TITLE III CLASSIFICATION

Section 302: None

Section 311/312: Immediate (acute) health hazard

Section 313: This product contains the following chemicals subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

CAS Number	Chemical Name	% by wt.
26002-80-2	d-phenothrin	5.0
51-03-6	piperonyl butoxide	5.0

CERCLA RQ: None

U.S. California Proposition 65: Not listed

STATE RIGHT-TO-KNOW: National, state, provincial or local emergency planning, community right-to-know or other laws, regulations or ordinances may be applicable--consult applicable national, state, provincial or local laws.

OSHA HAZARD COMMUNICATION STANDARD: This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.



SAFETY DATA SHEET

DUET[®] Dual-Action Adulticide

Effective Date: 1 June 2015

v.01

Page 8 of 8

SECTION 16. Other Information

DISCLAIMER OF LIABILITY: The information in this SDS was obtained from sources we believe to be reliable. However, the information is provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage, use or disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. This SDS was prepared as is to be used only for this product. If the product is used as a component in another product, this SDS information may not be applicable.

NFPA Health Hazards 2
Flammability 1
Instability 0
Physical and Chemical Properties –

HMS Health Hazards 1
Flammability 1
Physical Hazards 0
Personal Protection X

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