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

1.1 Product Identifier
MATERIAL NAME: DiPel ES Biological Insecticide Emulsifiable Suspension
Synonyms: DIPEL PALM, Dipel 8L, DiPel SL, DiPel L PLUS, DiPel ES.CPI, DiPel 3.5 SL, DiPel SC, SEQURA PALM, DiPel Aerial
EPA Reg No.: 73049-17
Code Number: 87377
List Number: 05263 and 05555
Chemical Family: Microbial, Btk strain ABTS-351
Substance Registration Number(s)[REACH]: N/A

1.2 Relevant Identified Uses and Uses Advised Against
Identified Uses: Agricultural Insecticide
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 LLC
1910 Innovation Way, Suite 100
Libertyville, Illinois 60048

1.4 EMERGENCY TELEPHONE NUMBERS
Emergency Health or Spill:
Outside the United States: (+1) 651-632-6184
Within the United States: 877-315-9819

2. HAZARDS IDENTIFICATION

2.1 Classification of the Substance or Mixture
Skin Sensitization

2.2 Labeling Elements
Symbol(s)
Signal Word

WARNING

Hazard Statement(s)
May cause an allergic skin reaction.

Precautionary Statement:
Prevention
Avoid breathing dust/fume/gas/mist/vapors/spray
Contaminated work clothing must not be allowed out of the workplace
Wear protective gloves

Response
IF ON SKIN: Wash with plenty of water.
If skin irritation or rash occurs: get medical advice/attention.
Specific treatment (see Section 4.1 First Aid)
Take off contaminated clothing and wash it before reuse.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.

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

2.3 Other Hazards
None identified.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Component Name</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>68038-71-1</td>
<td>Btk Fermentation solids</td>
<td>23.7</td>
</tr>
<tr>
<td>Trade Secret</td>
<td>Other ingredients</td>
<td>76.3</td>
</tr>
</tbody>
</table>

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. If irritation persists or signs of toxicity occur, seek medical attention. Provide symptomatic/supportive care as necessary.

**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**
- Eye irritation, skin sensitization

**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
- None known

**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.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions, Protective Equipment and Emergency Procedures
Use in a well-ventilated area. Respiratory protection is not needed during normal product use. Wear eye protection appropriate to handling activities. Wear impervious gloves. Wear appropriate body coverings if contact may occur. Where exposure level is not known, wear respirator protection suitable for expected level of exposure, in addition to the personal protection as recommended in Section 8.

6.2 Environmental Precautions
Keep out of drains, sewers, ditches and waterways. Avoid runoff to waterways and sewers.

6.3 Methods and Materials for Containment and Cleaning Up
Ventilate area. Wear appropriate personal protective equipment. 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
Ventilate. Do not breath mist or vapor. 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. For filling operations respiratory protection may be recommended particularly in enclosed areas.
SAFETY DATA SHEET
DiPel ES Biological Insecticide Emulsifiable Suspension

7.2 Conditions for Safe Storage, Including Incompatibilities
Protect against physical damage. Close containers of unused material. Store in a dry, cool, ventilated place.

Incompatibilities
None Known

7.3 Specific End Use(s)
Agricultural insecticide.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control Parameters

Component Exposure Limits
None Established

Chemical Name (CAS # ___-___-___)
ACGIH TLV: 0._ ppm 8-hour TWA
OSHA PEL: 0._ ppm (1 mg/m³) 8-hour TWA
Other: Not Applicable

Chemical Name (CAS # ___-___-___)
ACGIH TLV: 0._ ppm 8-hour TWA
OSHA PEL: 0._ ppm (1 mg/m³) 8-hour TWA
Other: Not Applicable

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. Where adequate general ventilation is unavailable use process enclosure, local exhaust ventilation, or other engineering controls.

SKIN PROTECTION:
Wear impervious protective clothing, including boots and gloves. Wear gloves made of Latex or other 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:
For filling operations if dust/mist is produced respiratory protection is recommended or where respiratory protection is warranted, 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). Wash thoroughly with soap and water after handling.

<table>
<thead>
<tr>
<th>9. PHYSICAL AND CHEMICAL PROPERTIES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Appearance:</strong> Viscous oily brown liquid</td>
</tr>
<tr>
<td><strong>pH:</strong> 5.2-5.5 (1% slurry)</td>
</tr>
<tr>
<td><strong>Melting Point:</strong> Not Applicable - liquid</td>
</tr>
<tr>
<td><strong>Relative Density:</strong> 0.96</td>
</tr>
<tr>
<td><strong>Octanol/H₂O Coeff:</strong> Not Determined</td>
</tr>
<tr>
<td><strong>Molecular Weight:</strong> Not Applicable</td>
</tr>
<tr>
<td><strong>Auto Ignition:</strong> Not Determined</td>
</tr>
<tr>
<td><strong>Flash Point:</strong> 360°F</td>
</tr>
<tr>
<td><strong>Vapor Density:</strong> Not Determined</td>
</tr>
<tr>
<td><strong>VOC:</strong> Not determined</td>
</tr>
<tr>
<td><strong>Kinematic Viscosity:</strong> Not Determined</td>
</tr>
</tbody>
</table>

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.

10.3 Possibility of Hazardous Reactions
Does not undergo hazardous polymerization

10.4 Conditions to Avoid
None known

10.5 Incompatible Materials
None known

10.6 Hazardous Decomposition Products
Carbon oxides and unidentified organic compounds.
11. TOXICOLOGICAL INFORMATION

11.1 Information on Toxicological Effects

Likely Routes of Exposure
- Inhalation: Yes
- Eye Contact: Yes
- Skin Contact: Yes
- Ingestion: Not likely

Product (or TGAI where noted) Toxicology

Acute Effects
- Oral Toxicity: $\text{LD}_{50} > 5,050 \text{ mg/kg (rat)}$ [EPA Toxicity Category IV]
- Dermal Toxicity: $\text{LD}_{50} > 5,050 \text{ mg/kg (rabbit)}$
- Inhalation Toxicity: $\text{LD}_{50} > 2.95 \text{ mg/L}$
- Corrosiveness: Not corrosive.
- Dermal Irritation: Non-irritating, [EPA Toxicity Category IV]
- Ocular Irritation: mildly-irritating
- Dermal Sensitization: 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 considered teratogenic
- Special Target Organ: Eye and mucus membrane Irritation.
- Aspiration Hazard: Not Applicable
- Repeat Dose Studies: 90 day oral study on dogs presented no adverse effects

12. ECOLOGICAL INFORMATION

12.1 Ecotoxicity (Data for a Concentrated Technical Powder)

Do not allow into waterways or lakes.
- Fish: $\text{LC}_{50} > 2.87 \times 10^7 \text{ cfu/L (96-H, Rainbow Trout)}$
- Bird: $\text{LC}_{50} > 2857 \text{ mg/kg (5.7} \times 10^{10} \text{ cfu/kg each day for 5 days (Sub-Acute Oral)}$
  (dietary) - Bobwhite Quail)
- Invertebrates: $\text{EC}_{50} > 50 \text{ mg/L (48-Hr) (Daphnia)}$
  21-day NOEC > 5.0 mg/L (Daphnia)
- Honeybee: Essentially Nontoxic to honeybee

12.2 Persistence and Degradability

No data available
12.3 Bioaccumulation potential
No data available

12.4 Mobility in Soil
No data available; active ingredient adheres to soil particles

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 for domestic ground transport by US DOT
UN PROPER SHIPPING NAME: N/A
REMARKS: N/A

IATA/ICAO 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: Exempt
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 EPA Pesticide Regulations

EPA Registration Number: 73049-17
EPA Pesticide Label signal word: CAUTION

Product must have EPA Approved Pesticide Label attached to 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.

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS (AND DOMESTIC ANIMALS)
CAUTION

Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling.

ENVIRONMENTAL HAZARDS
Do not apply directly to water, or to where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment washwaters. This product must not be applied aerially within 1/4 mile of any habitats of endangered species or threatened lepidoptera. No manual application can be made within 300 feet of any threatened or endangered lepidoptera.
STORAGE AND DISPOSAL

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

Storage: Keep containers tightly closed when not in use. Do not store at temperatures greater than 100° F. Roll or shake the container before dispensing.

Pesticide Disposal: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. Do not contaminate water when disposing of equipment washwaters.

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. To find the nearest site, contact your chemical dealer or manufacturer, or contact Ag Container Recycling Council at 202-861-3144 or www.acrecycle.org. If recycling is not available puncture and dispose of the container in a sanitary landfill, or by other procedures approved by state and local authorities.

16. OTHER INFORMATION

<table>
<thead>
<tr>
<th>NFPA Hazard</th>
<th>Ratings</th>
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<th>Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health:</td>
<td>1</td>
<td>Health:</td>
<td>1</td>
</tr>
<tr>
<td>Flammability:</td>
<td>0</td>
<td>Flammability:</td>
<td>0</td>
</tr>
<tr>
<td>Instability:</td>
<td>0</td>
<td>Instability:</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HMIS Hazard</th>
<th>Ratings</th>
</tr>
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<tbody>
<tr>
<td>Health:</td>
<td>0</td>
</tr>
<tr>
<td>Flammability:</td>
<td>1</td>
</tr>
<tr>
<td>Instability:</td>
<td>0</td>
</tr>
</tbody>
</table>

0 = Minimal
1 = Slight
2 = Moderate
3 = Serious
4 = Extreme

REASON FOR ISSUE: Address update
APPROVAL DATE: 01/13/2020
SUPERSEDES DATE: 03/04/2019

LEGEND: N/A = Not Applicable
N/D = Not Determined
N/L = Not Listed
L = Listed
C = Ceiling
S = Short-term
(R) = Registered Trademark of Valent BioSciences LLC
(TM) = Registered Trademark of Valent BioSciences LLC
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 LLC 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 LLC 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 LLC 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.