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

1.1 Product Identifier

MATERIAL NAME: DiPel DF Biological Insecticide Dry Flowable

Synonyms: Dipel WG, DiPel WDG, Bactospeine WG, DiPel Pro DF, DiPel 6.4 WG, Bactospeine DF, BioMax DF, BioBit DF

EPA Reg No.: 73049-39
Code Number: 80250, A580255
List Number: 12046
Chemical Family: Microbial, B.t.k. 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
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

Not Classified

2.2 Labeling Elements

Symbol(s): Symbols not required

Signal Word: WARNING

Hazard Statement(s):
None
Precautionary Statement:
Prevention
Wash hands and face thoroughly after handling
Contaminated work clothing should not be allowed out of the workplace
Wear protective clothing/eye protection/face protection
Avoid release to the environment

Response
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF ON SKIN: Wash with soap and water.

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>None</td>
<td>Btk Fermentation solids</td>
<td>54.0</td>
</tr>
<tr>
<td>Trade Secret</td>
<td>Other ingredients</td>
<td>46.0</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. Cover irritated skin with an emollient. 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
Slight eye and skin irritation

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
Fire Fighting Measures
Areas containing this material should have fire-safe practices and electrical equipment in accordance with applicable governmental regulations for products with the flashpoint as shown in Section 9 (Physical and Chemical Properties).

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)
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. Avoid breathing dust 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.

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

Incompatibilities
None Known
7.3 Specific End Use(s)
Agricultural insecticide.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control Parameters
Component Exposure Limits
None

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 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.

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Granule, yellow to brown</td>
</tr>
<tr>
<td>pH</td>
<td>≈4.1 (10% dilution)</td>
</tr>
<tr>
<td>Melting Point</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>Not Determined</td>
</tr>
<tr>
<td>Octanol/H₂O Coeff</td>
<td>Not Determined</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Auto Ignition</td>
<td>Not Determined</td>
</tr>
<tr>
<td>Odor</td>
<td>Organic/Malt</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>Not determined</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>Not Determined</td>
</tr>
<tr>
<td>Solubility (H₂O)</td>
<td>Not Determined</td>
</tr>
<tr>
<td>Bulk Density</td>
<td>0.473 ± 0.1 g/ml</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Decomposition Temp.</td>
<td>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: LD_{50} > 5,050 mg/kg (rat) [EPA Toxicity Category IV]
Dermal Toxicity: LD_{50} > 2,020 mg/kg (rabbit)
Inhalation Toxicity: Not able to generate sufficient product into the air
Corrosiveness: Not corrosive.
Dermal Irritation: Mild to slightly-irritating, [EPA Toxicity Category IV]
Ocular Irritation: Mildly-irritating, (MMTS 14.5, cleared by day-7)
Dermal Sensitization: Not a 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 teratogenic
   Special Target Organ: Eye and mucus membrane Irritation.
   Aspiration Hazard: Not Applicable
   Repeat Dose Studies: Not Applicable, Acute Toxicity testing was all negative

### 12. ECOLOGICAL INFORMATION

**12.1 Ecotoxicity (Data for a Concentrated Technical Powder)**

Do not allow into waterways or lakes.

- **Fish:** $LC_{50} > 2.87 \times 10^7 \text{ cfu/L (96-H, Rainbow Trout)}$
- **Bird:** $LC_{50} > 2857 \text{ mg/kg (5.7 x 10^{10} \text{ cfu/kg) each day for 5 days (Sub-Acute Oral (dietary) - Bobwhite Quail)}}$
- **Invertebrates:** $EC_{50} > 50 \text{ mg/L (48-Hr (Daphnia)}}$
- **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

**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/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: 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: 73049-12
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

Harmful if inhaled or absorbed through the skin. Causes moderate eye irritation. Avoid breathing dust or spray mist. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove contaminated clothing and wash before reuse.

STORAGE AND DISPOSAL

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

Pesticide Storage: Reclose containers of unused DiPel® DF. Store in a dry place inaccessible to children and out of sunlight.

Pesticide Disposal: Do not contaminate food or feed by 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. Completely empty bag into application equipment by shaking and tapping sides and bottom to loosen clinging particles. Offer for recycling, if available, or dispose of empty bag in a sanitary landfill or by incineration. Do not burn, unless allowed by State and local ordinances.

16. OTHER INFORMATION

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

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

REASON FOR ISSUE: Updated code numbers
APPROVAL DATE: 10/16/17
SUPERSEDES DATE: 10/02/17

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.