DOW AGROSCIENCES CANADA INC. encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: DELEGATE™ Insecticide

Recommended use of the chemical and restrictions on use
Identified uses: End use insecticide product

COMPANY IDENTIFICATION
DOW AGROSCIENCES CANADA INC.
2100 450 1ST STREET SW
CALGARY AB T2P 5H1
CANADA

For MSDS Updates and Product Information: 800-667-3852
Revision Date: 02/02/2015

Customer Information Number: 800-667-3852 solutions@dow.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: 613-996-6666
Local Emergency Contact: 613-996-6666

2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance

<table>
<thead>
<tr>
<th>Physical state</th>
<th>Granules.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>White to off-white</td>
</tr>
<tr>
<td>Odor</td>
<td>Musty</td>
</tr>
</tbody>
</table>

Hazard Summary

<table>
<thead>
<tr>
<th>CAUTION!!</th>
</tr>
</thead>
<tbody>
<tr>
<td>May cause eye irritation.</td>
</tr>
<tr>
<td>May be harmful if inhaled.</td>
</tr>
<tr>
<td>Isolate area.</td>
</tr>
<tr>
<td>Keep upwind of spill.</td>
</tr>
<tr>
<td>Slipping hazard.</td>
</tr>
<tr>
<td>Cancer hazard.</td>
</tr>
<tr>
<td>Can cause cancer.</td>
</tr>
<tr>
<td>Highly toxic to fish and/or other aquatic organisms.</td>
</tr>
</tbody>
</table>

® ™ Trademark of Dow AgroSciences LLC
Potential Health Effects

**Eyes**: May cause moderate eye irritation.
May cause slight corneal injury.

**Skin**: Brief contact is essentially nonirritating to skin.
Prolonged skin contact is unlikely to result in absorption of harmful amounts.

**Inhalation**: Prolonged excessive exposure to dust may cause adverse effects.
Based on the available data, narcotic effects were not observed.

**Ingestion**: Very low toxicity if swallowed.
Harmful effects not anticipated from swallowing small amounts.

**Chronic Exposure**: For the active ingredient(s):
In animals, has been shown to cause vacuolization of cells in various tissues.
Dose levels producing these effects were many times higher than any dose levels expected from exposure due to use.
For the minor component(s):
Repeated excessive inhalation exposures to dusts may cause respiratory effects.
In animals, effects have been reported on the following organs:
Lung.
Lung fibrosis and tumors have been observed in rats exposed to titanium dioxide in two lifetime inhalation studies. Effects are believed to be due to overloading of the normal respiratory clearance mechanisms caused by the extreme study conditions. Workers exposed to titanium dioxide in the workplace have not shown an unusual incidence of chronic respiratory disease or lung cancer. Titanium dioxide was not carcinogenic in laboratory animals in lifetime feeding studies.

### 3. COMPOSITION/ INFORMATION ON INGREDIENTS

This product is a mixture.

<table>
<thead>
<tr>
<th>Component</th>
<th>CASRN</th>
<th>Weight percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spinetoram J &amp; L (CAS# 187166-40-1 &amp; 187166-15-0)</td>
<td>935545-74-7</td>
<td>25.0%</td>
</tr>
<tr>
<td>Kaolin</td>
<td>1332-58-7</td>
<td>&gt;= 1.6 - &lt;= 41.9 %</td>
</tr>
<tr>
<td>Titanium dioxide</td>
<td>13463-67-7</td>
<td>1.1%</td>
</tr>
<tr>
<td>Balance</td>
<td>Not available</td>
<td>&gt;= 32.0 - &lt;= 72.3 %</td>
</tr>
</tbody>
</table>

### 4. FIRST AID MEASURES

**Description of first aid measures**

**General advice**: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

**Inhalation**: Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or 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.

**Eye contact:** Hold eyes 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 eyes. Call a poison control center or doctor for treatment advice. Suitable emergency eye wash facility should be available in work area.

**Ingestion:** No emergency medical treatment necessary.

**Most important symptoms and effects, both acute and delayed:** Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

**Indication of any immediate medical attention and special treatment needed**

**Notes to physician:** No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.

### 5. FIREFIGHTING MEASURES

**Suitable extinguishing media:** Water. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers.

**Unsuitable extinguishing media:** no data available

**Special hazards arising from the substance or mixture**

**Hazardous combustion products:** During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating.

**Unusual Fire and Explosion Hazards:** Do not permit dust to accumulate. When suspended in air dust can pose an explosion hazard. Minimize ignition sources. If dust layers are exposed to elevated temperatures, spontaneous combustion may occur. Dense smoke is produced when product burns.

**Advice for firefighters**

**Fire Fighting Procedures:** Keep people away. Isolate fire and deny unnecessary entry. Consider feasibility of a controlled burn to minimize environment damage. Foam fire extinguishing system is preferred because uncontrolled water can spread possible contamination. Soak thoroughly with water to cool and prevent re-ignition. Cool surroundings with water to localize fire zone. Hand held dry chemical or carbon dioxide extinguishers may be used for small fires. Dust explosion hazard may result from forceful application of fire extinguishing agents. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the “Accidental Release Measures” and the “Ecological Information” sections of this (M)SDS.

**Special protective equipment for firefighters:** Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.
6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Keep upwind of spill. Spilled material may cause a slipping hazard. Ventilate area of leak or spill. Refer to section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. Spills or discharge to natural waterways is likely to kill aquatic organisms.

Methods and materials for containment and cleaning up: Contain spilled material if possible. Small spills: Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Dow AgroSciences for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Precautions for safe handling: Keep out of reach of children. Avoid contact with eyes, skin, and clothing. Avoid breathing dust or mist. Do not swallow. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Conditions for safe storage: Store in a dry place. Store in original container. Do not store near food, foodstuffs, drugs or potable water supplies.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
Exposure limits are listed below, if they exist.

<table>
<thead>
<tr>
<th>Component</th>
<th>Regulation</th>
<th>Type of listing</th>
<th>Value/Notation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kaolin</td>
<td>ACGIH</td>
<td>TWA Respirable  fraction</td>
<td>2 mg/m3</td>
</tr>
<tr>
<td></td>
<td>CA AB OEL</td>
<td>TWA Respirable</td>
<td>2 mg/m3</td>
</tr>
<tr>
<td></td>
<td>CA BC OEL</td>
<td>TWA Respirable</td>
<td>2 mg/m3</td>
</tr>
<tr>
<td></td>
<td>CA QC OEL</td>
<td>TWAEV respirable dust</td>
<td>5 mg/m3</td>
</tr>
<tr>
<td>Titanium dioxide</td>
<td>ACGIH</td>
<td>TWA</td>
<td>10 mg/m3, Titanium dioxide</td>
</tr>
<tr>
<td></td>
<td>CA AB OEL</td>
<td>TWA</td>
<td>10 mg/m3</td>
</tr>
<tr>
<td></td>
<td>CA BC OEL</td>
<td>TWA</td>
<td>10 mg/m3</td>
</tr>
<tr>
<td></td>
<td>CA QC OEL</td>
<td>TWAEV total dust</td>
<td>10 mg/m3</td>
</tr>
</tbody>
</table>

Consult local authorities for recommended exposure limits.

RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.
Exposure controls

**Engineering controls:** Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

**Individual protection measures**

**Skin protection**

**Hand protection:** Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Examples of preferred glove barrier materials include: Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

**Other protection:** Wear clean, body-covering clothing.

**Respiratory protection:** Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use an approved respirator. Selection of air-purifying or positive-pressure supplied-air will depend on the specific operation and the potential airborne concentration of the material. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus.

The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

9. **PHYSICAL AND CHEMICAL PROPERTIES**

<table>
<thead>
<tr>
<th>Appearance</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Granules</td>
</tr>
<tr>
<td>Color</td>
<td>White to off-white</td>
</tr>
<tr>
<td>Odor</td>
<td>Musty</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>No test data available</td>
</tr>
<tr>
<td>pH</td>
<td>8.7  1% <em>Measured</em> (1% aqueous suspension)</td>
</tr>
<tr>
<td>Melting point/range</td>
<td>No test data available</td>
</tr>
<tr>
<td>Freezing point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Boiling point (760 mmHg)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flash point</td>
<td><strong>closed cup</strong> Not applicable</td>
</tr>
<tr>
<td>Evaporation Rate (Butyl Acetate = 1)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td><em>no data available</em></td>
</tr>
<tr>
<td>Lower explosion limit</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Upper explosion limit</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Relative Vapor Density (air = 1)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Relative Density (water = 1)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Water solubility</td>
<td>Disperses in water</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td><em>no data available</em></td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td><em>No test data available</em></td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td><em>No test data available</em></td>
</tr>
</tbody>
</table>
Dynamic Viscosity: Not applicable
Kinematic Viscosity: Not applicable
Explosive properties: no data available
Oxidizing properties: no data available
Liquid Density: Not applicable
Bulk density: 0.5 g/cm³  Tapped Volumetric
Molecular weight: no data available

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: No dangerous reaction known under conditions of normal use.

Chemical stability: Thermally stable at typical use temperatures.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Exposure to elevated temperatures can cause product to decompose.

Incompatible materials: None known.

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Toxic gases are released during decomposition.

11. TOXICOLOGICAL INFORMATION

Toxicological information on this product or its components appear in this section when such data is available.

Acute toxicity

Acute oral toxicity
Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.

As product:
LD50, Rat, female, > 5,000 mg/kg

Acute dermal toxicity
Prolonged skin contact is unlikely to result in absorption of harmful amounts.

As product:
LD50, Rat, male and female, > 5,000 mg/kg

Acute inhalation toxicity
Prolonged excessive exposure to dust may cause adverse effects. Based on the available data, narcotic effects were not observed.
As product:
LC50, Rat, male and female, 4 Hour, Dust, > 5.06 mg/l

Skin corrosion/irritation
Brief contact is essentially nonirritating to skin.

Serious eye damage/eye irritation
May cause eye irritation.
Corneal injury is unlikely.
Solid or dust may cause irritation or corneal injury due to mechanical action.

Sensitization
As product:
Did not demonstrate the potential for contact allergy in mice.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)
Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Specific Target Organ Systemic Toxicity (Repeated Exposure)
For the active ingredient(s):
In animals, has been shown to cause vacuolization of cells in various tissues.
Dose levels producing these effects were many times higher than any dose levels expected from exposure due to use.

For the minor component(s):
Repeated excessive inhalation exposures to dusts may cause respiratory effects.
In animals, effects have been reported on the following organs:
Lung.

Carcinogenicity
Lung fibrosis and tumors have been observed in rats exposed to titanium dioxide in two lifetime inhalation studies. Effects are believed to be due to overloading of the normal respiratory clearance mechanisms caused by the extreme study conditions. Workers exposed to titanium dioxide in the workplace have not shown an unusual incidence of chronic respiratory disease or lung cancer. Titanium dioxide was not carcinogenic in laboratory animals in lifetime feeding studies.

Active ingredient did not cause cancer in laboratory animals.

Teratogenicity
For the active ingredient(s): Did not cause birth defects or other effects in the fetus even at doses which caused toxic effects in the mother.

Reproductive toxicity
In animal studies, active ingredient did not interfere with reproduction.

Mutagenicity
In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Aspiration Hazard
Based on physical properties, not likely to be an aspiration hazard.
Carcinogenicity
Component       List     Classification
Kaolin           IARC     Group 1: Carcinogenic to humans
Titanium dioxide IARC     Group 2B: Possibly carcinogenic to humans

12. ECOLOGICAL INFORMATION

Ecotoxicological information on this product or its components appear in this section when such data is available.

Toxicity

Acute toxicity to fish
Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested).

EC50, Lepomis macrochirus (Bluegill sunfish), semi-static test, 96 Hour, 12.52 mg/l

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), semi-static test, 48 Hour, > 23.52 mg/l

Acute toxicity to algae/aquatic plants
ErC50, diatom Navicula sp., 72 Hour, 0.564 mg/l

Toxicity to Above Ground Organisms
Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg).

oral LD50, Colinus virginianus (Bobwhite quail), > 2,250 mg/kg

contact LD50, Apis mellifera (bees), 96 Hour, 0.079µg/bee

oral LD50, Apis mellifera (bees), 96 Hour, 0.22µg/bee

Toxicity to soil-dwelling organisms
LC50, Eisenia fetida (earthworms), 14 d, > 4,000 mg/kg

Persistence and degradability

Spinetoram J & L (CAS# 187166-40-1 & 187166-15-0)
Biodegradability: Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.
10-day Window: Fail
Biodegradation: 0.1 - 9.1 %
Exposure time: 28 d
Method: OECD Test Guideline 301B or Equivalent

Kaolin
Biodegradability: Biodegradation is not applicable.

Titanium dioxide
Biodegradability: Biodegradation is not applicable.

Balance
Biodegradability: No relevant data found.
Bioaccumulative potential

**Spinetoram J & L (CAS# 187166-40-1 & 187166-15-0)**
- **Bioaccumulation**: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
- **Partition coefficient: n-octanol/water (log Pow)**: 4.49 at 20 °C
- **Bioconcentration factor (BCF)**: 348 Oncorhyncus mykiss (rainbow trout) 28 d

**Titanium dioxide**
- **Bioaccumulation**: Partitioning from water to n-octanol is not applicable.

**Balance**
- **Bioaccumulation**: No relevant data found.

Mobility in soil

**Spinetoram J & L (CAS# 187166-40-1 & 187166-15-0)**
- Potential for mobility in soil is slight (Koc between 2000 and 5000).

**Balance**
- No relevant data found.

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### 13. DISPOSAL CONSIDERATIONS

**Disposal methods**: If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

### 14. TRANSPORT INFORMATION

**TDG**
- **Proper shipping name**: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.(Spinetoram)
- **UN number**: UN 3077
- **Class**: 9
- **Packing group**: III
- **Marine pollutant**: Spinetoram

**Classification for SEA transport (IMO-IMDG):**
- **Proper shipping name**: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.(Spinetoram)
- **UN number**: UN 3077
- **Class**: 9
- **Packing group**: III
- **Marine pollutant**: Spinetoram
- **Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code**: Consult IMO regulations before transporting ocean bulk
Classification for AIR transport (IATA/ICAO):

- **Proper shipping name**: Environmentally hazardous substance, solid, n.o.s. (Spinetoram)
- **UN number**: UN 3077
- **Class**: 9
- **Packing group**: III

Further information:
NOT REGULATED PER TDG EXEMPTION 1.45.1 FOR ROAD OR RAIL

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

### 15. REGULATORY INFORMATION

**Hazardous Products Act Information: CPR Compliance**
This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

**Hazardous Products Act Information: WHMIS Classification**
This product is exempt under WHMIS.

**National Fire Code of Canada**
Not applicable

**Canadian Domestic Substances List (DSL) (DSL)**
This product contains chemical substance(s) exempt from CEPA DSL Inventory requirements. It is regulated as a pesticide subject to Pest Control Products Act (PCPA) requirements.

**Pest Control Products Act Registration Number**: 28778

### 16. OTHER INFORMATION

**Revision**
Identification Number: 101197205 / A215 / Issue Date: 02/02/2015 / Version: 3.1

DAS Code: GF-1640

Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

**Legend**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
<tr>
<td>CA AB OEL</td>
<td>Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)</td>
</tr>
<tr>
<td>CA BC OEL</td>
<td>Canada. British Columbia OEL</td>
</tr>
<tr>
<td>CA QC OEL</td>
<td>Québec. Regulation respecting occupational health and safety, Schedule 1, Part 1: Permissible exposure values for airborne contaminants</td>
</tr>
<tr>
<td>TWA</td>
<td>8-hour time weighted average</td>
</tr>
<tr>
<td>TWA/EV</td>
<td>Time-weighted average exposure value</td>
</tr>
</tbody>
</table>
Information Source and References
This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

DOW AGROSCIENCES CANADA INC. urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer’s/user’s responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer’s/user’s duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.