AgroFresh

SAFETY DATA SHEET

AGROFRESH INC.

Product name: SMARTFRESH™ SmartTabs

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AGROFRESH 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. IDENTIFICATION

Product name: SMARTFRESH™ SmartTabs

Recommended use of the chemical and restrictions on use
Identified uses: Plant growth regulator.

COMPANY IDENTIFICATION
AGROFRESH INC.
400 ARCOLA ROAD
COLLEGEVILLE PA 19426-2914
UNITED STATES

Customer Information Number: 866-206-1001
FGLAGFR@AgroFresh.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: 800-424-9300
Local Emergency Contact: +1 6102446630

2. HAZARDS IDENTIFICATION

Hazard classification
This material is not hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.

Other hazards
No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature: Mixture of solid organic and inorganic compounds
This product is a mixture.

Component	CASRN	Concentration
1-Methylcyclopropene	3100-04-7	0.5 - 0.8 %

Lactose monohydrate	64044-51-5	55.0 - 70.0 %
Sodium Bicarbonate	144-55-8	18.0 - 25.0 %
alpha-Cyclodextrin	10016-20-3	11.0 - 16.0 %
Hydroxypropyl methyl cellulose ether	9004-65-3	1.0 - 3.0 %
Cellulose, 2-hydroxypropyl ether	9004-64-2	1.0 - 3.0 %
Polyethylene glycol	25322-68-3	2.0 - 5.0 %
Blue pigment	Not Required	<= 0.1 %
Yellow pigment	Not Required	<= 100.0 PPM

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. Suitable emergency safety shower facility should be available in work area.

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.

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: Use the following extinguishing media when fighting fires involving this material: Carbon dioxide (CO2) Dry powder Foam Water spray

Unsuitable extinguishing media: No data available

Special hazards arising from the substance or mixture
Hazardous combustion products: No data available

Unusual Fire and Explosion Hazards: Combustion generates toxic fumes of the following: Carbon oxides

Advice for firefighters
Fire Fighting Procedures: Remain upwind. Avoid breathing smoke. Use water spray to cool unopened containers.

Special protective equipment for firefighters: Wear self-contained breathing apparatus and protective suit.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Use personal protective equipment. If exposed to material during clean-up operations, see SECTION 4, First Aid Measures, for actions to follow.

Environmental precautions: CAUTION: Keep spills and cleaning runoff out of municipal sewers and open bodies of water.

Methods and materials for containment and cleaning up: Transfer spilled material to suitable containers for recovery or disposal.

7. HANDLING AND STORAGE

Precautions for safe handling: Do not handle material near food, feed or drinking water.

Conditions for safe storage: Keep containers tightly closed in a dry, cool and well-ventilated place. Do not store this material near food, feed or drinking water.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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

Component	Regulation	Type of listing	Value/Notation
1-Methylcyclopropene	Dow IHG	TWA	0.3 ppm
	Dow IHG	C	1 ppm
Sodium Bicarbonate	Dow IHG	TWA	10 mg/m3
Hydroxypropyl methyl cellulose ether	Dow IHG	TWA Total dust	10 mg/m3

Cellulose, 2-hydroxypropyl ether	Dow IHG	TWA Total dust	10 mg/m3
Polyethylene glycol	US WEEL	TWA aerosol	10 mg/m3

Exposure controls
Engineering controls: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/face protection: Use safety glasses (with side shields).

Skin protection

Hand protection: Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Polyvinyl chloride ("PVC" or "vinyl"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). 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: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

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, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions, no respiratory protection should be needed; however, in dusty atmospheres, use an approved particulate respirator.
The following should be effective types of air-purifying respirators: Particulate filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state	tablet
Color	green
Odor	No data available
Odor Threshold	No data available
pH	Not applicable
Melting point/range	No data available
Freezing point	No data available
Boiling point (760 mmHg)	Not applicable
Flash point	Not applicable
Evaporation Rate (Butyl Acetate = 1)	Not applicable
Flammability (solid, gas)	No data available
Lower explosion limit	Not applicable
Upper explosion limit	Not applicable

Vapor Pressure	Not applicable
Relative Vapor Density (air = 1)	Not applicable
Relative Density (water = 1)	No data available
Water solubility	Soluble
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Dynamic Viscosity	Not applicable
Kinematic Viscosity	No data available
Explosive properties	No data available
Oxidizing properties	No data available
Molecular weight	No data available
Percent volatility	0 %

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

10. STABILITY AND REACTIVITY

Reactivity: No data available

Chemical stability: No data available

Possibility of hazardous reactions: None known.
Product will not undergo polymerization.
Stable

Conditions to avoid: No data available

Incompatible materials: Avoid contact with the following: Acids Contact will cause a very low energy release.

Hazardous decomposition products: No data available

11. TOXICOLOGICAL INFORMATION

Toxicological information appears 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.

LD50, Rat, female, > 5,000 mg/kg

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

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

Acute inhalation toxicity
No adverse effects are anticipated from single exposure to dust. Based on the available data, respiratory irritation was not observed.

LC50, Rat, male and female, 4 Hour, dust/mist, > 5.13 mg/l

Skin corrosion/irritation
Brief contact may cause skin irritation with local redness.

Serious eye damage/eye irritation
May cause slight temporary eye irritation.
Corneal injury is unlikely.

Sensitization
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)
High doses of sodium bicarbonate caused bladder effects in rats; however, repeated ingestion of sodium bicarbonate by humans has not resulted in known significant adverse effects.

Carcinogenicity
For the component(s) tested: Did not cause cancer in laboratory animals.

Teratogenicity
For the component(s) tested: Did not cause birth defects or any other fetal effects in laboratory animals.

Reproductive toxicity
For the component(s) tested: In animal studies, did not interfere with reproduction.

Mutagenicity
For the component(s) tested: In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Aspiration Hazard
Product test data not available.

COMPONENTS INFLUENCING TOXICOLOGY:

1-Methylcyclopropene

Aspiration Hazard
Based on physical properties, not likely to be an aspiration hazard.

Lactose monohydrate

Aspiration Hazard
Based on available information, aspiration hazard could not be determined.

Sodium Bicarbonate
Aspiration Hazard
Based on physical properties, not likely to be an aspiration hazard.

alpha-Cyclodextrin
Aspiration Hazard
Based on available information, aspiration hazard could not be determined.

Hydroxypropyl methyl cellulose ether
Aspiration Hazard
Based on physical properties, not likely to be an aspiration hazard.

Cellulose, 2-hydroxypropyl ether
Aspiration Hazard
Based on physical properties, not likely to be an aspiration hazard.

Polyethylene glycol
Aspiration Hazard
Based on physical properties, not likely to be an aspiration hazard.

12. ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

General Information
There is no data available for this product.

Toxicity

Acute toxicity to fish
Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

EC50, Oncorhynchus mykiss (rainbow trout), 48 Hour, > 190 mg/l

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), 48 Hour, > 186 mg/l

Acute toxicity to algae/aquatic plants
ErC50, Pseudokirchneriella subcapitata (green algae), 96 Hour, > 239 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), > 2250mg/kg bodyweight.

Persistence and degradability

1-Methylcyclopropene

Biodegradability: No relevant data found.

Lactose monohydrate

Biodegradability: No relevant data found.

Sodium Bicarbonate

Biodegradability: Biodegradation is not applicable.

alpha-Cyclodextrin

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Pass
Biodegradation: 80 %
Exposure time: 28 d
Method: OECD Test Guideline 301F or Equivalent

Hydroxypropyl methyl cellulose ether

Biodegradability: Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	0 %
10 d	0 %
20 d	0 %

Cellulose, 2-hydroxypropyl ether

Biodegradability: No relevant data found.

Polyethylene glycol

Biodegradability: For this family of materials: Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.
10-day Window: Fail
Biodegradation: 48 %
Exposure time: 28 d
Method: OECD Test Guideline 301D or Equivalent

Theoretical Oxygen Demand: 1.67 - 1.77 mg/mg

Chemical Oxygen Demand: 1.81 mg/mg

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	0 - 17 %
10 d	3 - 56 %
20 d	39 - 77 %

Bioaccumulative potential

1-Methylcyclopropene

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): Pow: 2.03 estimated

Lactose monohydrate

Bioaccumulation: No relevant data found.

Sodium Bicarbonate

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

alpha-Cyclodextrin

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient: n-octanol/water(log Pow): <= 3

Hydroxypropyl methyl cellulose ether

Bioaccumulation: No bioconcentration is expected because of the relatively high molecular weight (MW greater than 1000).

Cellulose, 2-hydroxypropyl ether

Bioaccumulation: No data available.

Polyethylene glycol

Bioaccumulation: For this family of materials: No bioconcentration is expected because of the relatively high water solubility.

Mobility in soil

1-Methylcyclopropene

Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient (Koc): 35 - 60 Estimated.

Lactose monohydrate

No relevant data found.

Sodium Bicarbonate

Relevant data not available.

alpha-Cyclodextrin

No relevant data found.

Hydroxypropyl methyl cellulose ether

No data available.

Cellulose, 2-hydroxypropyl ether

No data available.

Polyethylene glycol

No data available.

13. DISPOSAL CONSIDERATIONS

Disposal methods: For disposal, incinerate this material at a facility that complies with local, state, and federal regulations.

14. TRANSPORT INFORMATION

DOT

Not regulated for transport

Classification for SEA transport (IMO-IMDG):

Not regulated for transport

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):

Not regulated for transport

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

OSHA Hazard Communication Standard
As supplied, this product is considered non-hazardous under the OSHA Hazard Communication Standard (29CFR 1910.1200). However, in contact with water, the product will release the active ingredient, 1-methylcyclopropene, which is classified as hazardous under the OSHA Hazard Communication Standard (29CFR 1910.1200).

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312
This product is not a hazardous chemical under 29CFR 1910.1200, and therefore is not covered by Title III of SARA.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313
This product does not contain a chemical which is listed in Section 313 at or above de minimis concentrations.

Pennsylvania
Any material listed as "Not Hazardous" in the CAS REG NO. column of SECTION 2, Composition/Information On Ingredients, of this MSDS is a trade secret under the provisions of the Pennsylvania Worker and Community Right-to-Know Act.

California (Proposition 65)
This product contains trace levels of a component or components known to the state of California to cause cancer:

Components	**CASRN**
Dimethylvinyl chloride	513-37-1
Chloro-2-methylpropene	563-47-3

United States TSCA Inventory (TSCA)
This product contains chemical substance(s) exempt from U.S. EPA TSCA Inventory requirements. It is regulated as a pesticide subject to Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requirements.

Federal Insecticide, Fungicide and Rodenticide Act
EPA Registration Number: 71297-3
This chemical is a pesticide product registered 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 required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

CAUTION

Causes slight eye irritation
Harmful if absorbed through skin
Harmful if inhaled
Harmful if swallowed

16. OTHER INFORMATION

Other information
The Material Safety Data Sheet (MSDS) augments the label and should not be used in place of regulatory approved product labels which are attached to or accompanying the product container. This MSDS provides important health, safety and environmental information for personnel that are manufacturing, distributing, transporting and storing the product, including emergency responders and other product handlers. The label provides information specifically for product users.

Hazard Rating System
HMIS

Health	Flammability	Physical Hazard
2*	1	0

* = Chronic Effects (See Hazards Identification)

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

Legend

C	Ceiling limit
Dow IHG	Dow Industrial Hygiene Guideline
TWA	Time weighted average
US WEEL	USA. Workplace Environmental Exposure Levels (WEEL)

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.

AGROFRESH 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.