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**In Case of Emergency, Call
1-800-327-8633 (FAST MED)**

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MSDS prepared by:
Department of Regulatory & Biological Assessment
Syngenta Canada Inc.

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1-877-SYNGENTA (1-877-964-3682)

SECTION – 1: PRODUCT IDENTIFICATION

Product Identifier: PALLADIUM™ Fungicide Formulation No.: A9219B
Registration Number: 30763 (Pest Control Products Act)
Chemical Classes: A mixture of pyrimidine derivative and substituted benzodioxalcarbonitrile fungicides.

Active Ingredient (%): Cyprodinil (37.5 %) CAS No.: 121552-61-2
Chemical Name: 4-Cyclopropyl-6-methyl-N-phenylpyrimidiamine.
Chemical Class: A pyrimidine derivative fungicide.

Active Ingredient (%): Fludioxonil (25.0 %) CAS No.: 131341-86-1
Chemical Name: 4-(2,2-difluoro-1,3-benzodioxol-4-yl)-1H-pyrrole-3-carbonitrile.
Chemical Class: Substituted benzodioxalcarbonitrile fungicide

Product Use: PALLADIUM is water dispersible solid granular fungicide that is mixed with water and sprayed on fruit and vegetable crops for the control of certain diseases. For further details please refer to product label.

SECTION – 2 : COMPOSITION/INFORMATION ON INGREDIENTS

Material	OSHA PEL	ACGIH TLV	Other	NTP/IARC/OSHA Carcinogen	WHMIS†
Diatomaceous Earth (CAS No. 61790-53-2)	80 mg/m ³ /%SiO ₂ (20 mppcf) TWA	Not Established	6 mg/m ³ TWA (respirable) **	IARC 3	Not Established
Fludioxonil	Not Established	Not Established	10 mg/m ³ TWA***	No	Not Established
Cyprodinil	Not Established	Not Established	7 mg/m ³ TWA***	No	Not Established

** Recommended by NIOSH

*** Syngenta Occupational Exposure Limit (OEL)

† Material listed in Ingredient Disclosure List under Hazardous Products Act.

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.
Syngenta Hazard Category: B

SECTION – 3: HAZARDS IDENTIFICATION

Symptoms of Acute Exposure

May be irritating to eyes and skin.

Hazardous Decomposition Products

May form a flammable dust-air mixture. Can decompose at high temperatures and form toxic gases.

Physical Properties

Appearance: Gray to brown granules
Odour: Weak, uncharacteristic

Unusual Fire, Explosion and Reactivity Hazards

Fire will spread by burning with flame. – See Sections 5 & 7. During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

SECTION – 4: FIRST AID MEASURES

IF POISONING IS SUSPECTED, immediately contact the poison information centre, doctor or nearest hospital. Have the product container, label or Material Safety Data Sheet with you when calling Syngenta, a poison control center or doctor, or going for treatment. Tell the person contacted the complete product name, and the type and amount of exposure. Describe any symptoms and follow the advice given. Call the Syngenta Emergency Line [**1-800-327-8633 (1-800-FASTMED)**], for further information.

EYE CONTACT: Flush eyes with clean water, holding eyelids apart for a minimum of 15 - 20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call Syngenta, a poison control center or doctor for treatment advice. Obtain medical attention immediately if irritation persists.

SKIN CONTACT: Immediately remove contaminated clothing and wash skin, hair and fingernails thoroughly with soap and water. Flush skin with plenty of water for 15-20 minutes. Call Syngenta, a poison control centre or doctor for treatment advice.

INHALATION: Move victim to fresh air. If not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call Syngenta, a poison control centre or doctor for treatment advice.

INGESTION: If swallowed, immediately contact Syngenta, a poison control centre, doctor or nearest hospital for treatment advice. Have person sip a glass of water if able to swallow. Do not give anything by mouth to an unconscious person. Do not induce vomiting unless directed by a physician or a poison control center. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer water.

NOTES TO PHYSICIAN:

There is no specific antidote. Treat symptomatically.

MEDICAL CONDITIONS KNOWN TO BE AGGRAVATED:

Asthma or other respiratory conditions may be aggravated by chemical irritants.

SECTION – 5: FIRE FIGHTING MEASURES

Flash point and method: Not applicable.

Upper and lower flammable (explosive) limits in air: Not applicable.

Auto-ignition temperature: Not available.

Flammability: Not highly flammable. May form a flammable dust-air mixture. Fire will spread by burning with flame

Hazardous combustion products: During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

Conditions under which flammability could occur: A fine powder of this material is capable of forming flammable dust clouds in air, which, if ignited, can produce a dust cloud explosion. Flames, hot surfaces, mechanical sparks and electrostatic discharges can serve as ignition sources for this material. Electrical equipment should be compatible with the flammability characteristics of this material. The flammability characteristics will be made worse if the material contains traces of flammable solvents or is handled in the presence of flammable solvents.

Extinguishing media: Use foam, carbon dioxide, dry powder or halon extinguishant (avoid use of water). Wear full protective clothing and self-contained breathing apparatus. Evacuate nonessential personnel from the area to prevent human exposure to fire, smoke, fumes or products of combustion. Prevent use of contaminated buildings, area, and equipment until

decontaminated. Water runoff can cause environmental damage. Contain run-off water with, for example, temporary earth barriers.

Sensitivity to explosion by mechanical impact: No.

Sensitivity to explosion by static discharge: No.

SECTION – 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions: Make sure all personnel involved in the spill cleanup follow good industrial hygiene practices. A small spill can be handled routinely. Use adequate ventilation and equipment and wear clothing as described in Section 8 and/or the product label.

Procedures for dealing with release or spill: Control the spill at its source. Contain the spill to prevent from spreading or contaminating soil or from entering sewage and drainage systems or any body of water. Clean up spills immediately, observing precautions outlined in Sections 7 and 8. Scoop or sweep up material and place into a disposal container. Wash area with detergent and water. Pick up wash liquid with additional absorbent and place into compatible disposal container. On soils, skim off the upper contaminated layer and collect for disposal. Once all material is cleaned up and placed in a disposal container, seal container and arrange for disposal. Spillages or uncontrolled discharges into watercourses must be reported to the appropriate regulatory authority.

SECTION – 7: HANDLING AND STORAGE

Handling practices: A fine powder of this material is capable of forming flammable dust clouds in air, which, if ignited, can produce a dust cloud explosion. Flames, hot surfaces, mechanical sparks and electrostatic discharges can serve as ignition sources for this material. Electrical equipment should be compatible with the flammability characteristics of this material. The flammability characteristics will be made worse if the material contains traces of flammable solvents or is handled in the presence of flammable solvents.

KEEP OUT OF REACH OF CHILDREN. Avoid exposure to dust. Prevent eating, drinking, tobacco use, and cosmetic application in areas where there is a potential for exposure to the material. After work, rinse gloves and remove protective equipment. Wash hands thoroughly with soap and water after handling, and before eating, tobacco use, drinking, or using the toilet. Wash contaminated clothing before re-use and separate from household laundry. Keep containers closed when not in use. Protect product, wash or rinse water, and contaminated materials from uncontrolled release into the environment, or from access by animals, birds or unauthorized people.

Appropriate storage practices/requirements: Store in original container only in a well-ventilated, cool, dry, secure area. Protect from heat, sparks and flame. Protect from sun and humidity. Do not expose sealed containers to temperatures above 40 °C. Keep separate from other products to prevent cross contamination. Rotate stock. Clean up spilled material immediately.

National Fire Code classification: Not applicable.

SECTION – 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Applicable control measures, including engineering controls: This product is intended for use outdoors where engineering controls are not necessary. If necessary, ensure work areas have ventilation, containment, and procedures sufficient to maintain airborne levels below the TLV. Warehouses, production area, parking lots and waste holding facilities must have adequate containment to prevent environmental contamination. Provide separate shower and eating facilities.

THE FOLLOWING RECOMMENDATIONS FOR EXPOSURE CONTROLS/PERSONAL PROTECTION ARE INTENDED FOR THE MANUFACTURE, FORMULATION, PACKAGING AND USE OF THIS PRODUCT.

CONSULT THE PRODUCT LABEL FOR COMMERCIAL APPLICATIONS AND/OR ON-FARM APPLICATIONS.

Personal protective equipment for each exposure route:

General: Avoid breathing dust, vapours or aerosols. Avoid contact with eye, skin and clothing. Wash thoroughly with soap and water after handling and before eating, drinking, applying cosmetics, or handling tobacco.

INGESTION: Do not eat, drink, handle tobacco, or apply cosmetics in areas where there is a potential for exposure to this material. Always wash thoroughly after handling.

EYES: Where eye contact is likely, use chemical splash goggles. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

SKIN: Where contact is likely, wear chemical-resistant (such as nitrile or butyl) gloves, coveralls, socks and chemical-resistant footwear. For overhead exposure, wear chemical-resistant headgear.

INHALATION: A respirator is not normally required when handling this substance. Use effective engineering controls to comply with occupational exposure limits. In case of emergency spills, use a NIOSH approved respirator with any N, R, P or HE filter.

Use a self-contained breathing apparatus in cases of emergency spills, when exposure levels are unknown, or under any circumstances where air-purifying respirators may not provide adequate protection..

SECTION – 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Gray to brown granules.

Formulation Type: Water dispersible granule

Odour: Weak, uncharacteristic.

pH: 9.3 (1% aqueous solution).

Vapour pressure and reference temperature: 3.8×10^{-6} mmHg @ 25 °C (Cyprodinil Technical)
 2.9×10^{-9} mmHg @ 25 °C (Fludioxonil Technical)

Vapour density: Not available.

Boiling point: Not applicable.

Melting point: 199.4 °C.

Freezing point: Not applicable.

Specific gravity or density: 0.54 g/cm³.

Evaporation Rate: Not available.

Water/oil partition coefficient: log Kow = 4.0 (Cyprodinil Technical)
log Kow = 4.1 (Fludioxonil Technical)

Odour threshold: Not available.

Viscosity: Not applicable.

Solubility in Water: Cyprodinil Technical: 12 mg/L @ 20 °C
Fludioxonil Technical: 1.8 mg/L @ 25 °C

SECTION – 10: STABILITY AND REACTIVITY

Chemical stability: Stable under normal use and storage conditions.

Conditions to avoid: None known.

Incompatibility with other materials: None known.

Hazardous decomposition products: Can decompose at high temperatures and form toxic gases.

Hazardous polymerization: Will not occur.

SECTION – 11: TOXICOLOGICAL INFORMATION

Acute toxicity/Irritation Studies (Finished Product):

Ingestion:	<u>Low Acute Toxicity</u> Oral (LD50 Rat):	> 5,000 mg/kg body weight
Dermal:	<u>Low Acute Toxicity</u> Dermal (LD50 Rabbit):	> 2,000 mg/kg body weight
Inhalation:	<u>Low Acute Toxicity</u> Inhalation (LC50 Rat):	> 2.51 mg/L air - 4 hours
Eye Contact:	<u>Mildly Irritating (Rabbit)</u>	
Skin Contact:	<u>Slightly Irritating (Rabbit)</u>	
Skin Sensitization:	<u>Not a Sensitizer (Guinea Pig)</u>	

Reproductive/Developmental Effects

- Cyprodinil Technical: No teratogenic potential was detected with cyprodinil in tests with rats and rabbits. No effects on reproductive performance of rats were detected.
- Fludioxonil Technical: Delayed development at doses causing maternal toxicity.

Chronic/Subchronic Toxicity Studies

- Cyprodinil Technical: Liver, kidneys and thyroid effects at high doses.
- Fludioxonil Technical: Liver and kidney toxicity high dose levels.

Carcinogenicity

- Cyprodinil Technical: Not carcinogenic in studies with rats and mice. Designed as class E "not likely" for human carcinogenicity (1998 USEPA "Pesticide Fact Sheet").
- Fludioxonil Technical: Fludioxonil was not oncogenic in mice. Results of a long-term feeding study with fludioxonil in rats showed a marginally increased incidence of liver tumours in female rats at the maximum tolerated dose (3,000 ppm). This was within historical control range (1 to 10%).

Other Toxicity Information:

None.

Toxicity of Other Components

The acute toxicity test results reported in Section 11, above, for the finished product take into account any acute hazards related to the "other components" in the formulation.

Diatomaceous Earth

The carrier in this product is naturally occurring diatomaceous earth. Natural diatomaceous earth contains a small percentage of naturally occurring crystalline silica, which is considered a probable human carcinogen. Chronic inhalation exposure to crystalline silica is known to cause silicosis and pulmonary fibrosis in humans. The amount of crystalline silica in this product is minimal and the potential for overexposure in manufacturing operations is low.

Other materials that show synergistic toxic effects together with the product: None known.

Target Organs

Active Ingredient

- Cyprodinil Technical: Liver, kidney, thyroid
- Fludioxonil Technical: Liver, kidney.

Inert Ingredients

- Diatomaceous Earth: Respiratory tract.

SECTION – 12: ECOLOGICAL INFORMATION

Summary of Effects

The active ingredient, cyprodinil, is practically nontoxic to mammals, birds and insects, but is moderately toxic to fish and highly toxic to aquatic invertebrates (water flea). The active ingredient, fludioxonil, is moderately to very highly toxic to fish (rainbow trout, bluegill sunfish) and aquatic invertebrates (water flea), but is practically non-toxic to insects and birds.

Eco-Acute Toxicity

- Cyprodinil Technical:
- | | |
|---|-------------|
| Algae (Blue-green) 120-hour EC ₅₀ | 2.25 ppm |
| Invertebrates (Water Flea) 48-hour EC ₅₀ | 32 ppb |
| Fish (Trout) 96-hour LC ₅₀ /EC ₅₀ | 2.4 ppm |
| Bird (Mallard Duck) 14-day LD ₅₀ | > 500 mg/kg |
- Fludioxonil Technical:
- | | |
|---|-----------|
| Green Algae 5-day EC ₅₀ | 830 ppb |
| Invertebrates (<i>Daphnia magna</i>) 48-hour LC ₅₀ /EC ₅₀ | 0.90 mg/L |

Fish (Rainbow Trout) 96-hour LC₅₀/EC₅₀
Bird (Bobwhite Quail) 8-day dietary - LD₅₀

0.23 mg/L
> 25,200 ppm

Environmental Fate

The active ingredient cyprodinil has a low bioaccumulation potential and low mobility in soil. The dissipation half-life in soil is 31 - 80 days and in water it is 16.3 days. The main route of degradation is by microbial degradation and formation of bound residues.

The active ingredient fludioxonil has a low bioaccumulation potential and low mobility in soil. The dissipation half-life in soil is 7-52 days and in water it is <10 days. The main route of degradation is by microbial degradation and photolysis.

SECTION – 13: DISPOSAL CONSIDERATIONS

Waste disposal information: Do not reuse empty containers unless they are specifically designed to be refillable. Empty container retains product residue. Triple rinse, or equivalent, empty container, return rinse water to dilution mixture, and dispose of dilution mixture as a hazardous waste if it cannot be disposed of by use according to label instructions. Dispose of empty containers in accordance with local regulations. Consult provincial environment ministry for advice on waste disposal. Industrial/commercial waste may be handled at licensed facilities only. Waste shipments must be securely packaged and properly labelled. Only licensed carriers may be used, and proper documents must accompany the shipment.

SECTION – 14: TRANSPORT INFORMATION

Shipping information such as shipping classification:

TRANSPORTATION OF DANGEROUS GOODS CLASSIFICATION - ROAD/RAIL.
Not Regulated

SECTION – 15: REGULATORY INFORMATION

WHMIS classification for product: Exempt

A statement that the MSDS has been prepared to meet WHMIS requirements, except for use of the 16 headings.

This MSDS has been prepared in accordance with WHMIS requirements, but the data are presented under 16 headings.

Other regulations; restrictions and prohibitions

Pest Control Products (PCP) Act Registration No.: 30763

SECTION – 16: OTHER INFORMATION

The information contained herein is offered only as a guide to the handling of this specific material and has been prepared in good faith by technically knowledgeable personnel. It is not intended to be all-inclusive and the manner and conditions of use and handling may involve other and additional considerations. No warranty of any kind is given or implied and Syngenta will not be liable for any damages, losses, injuries or consequential damages which may result from the use of or reliance on any information contained herein. This Material Safety Data Sheet is valid for three years. This product is under the jurisdiction of the Pest Control Products Act and is exempt from the requirements for a WHMIS compliant MSDS. Hazardous properties of all ingredients have been considered in the preparation of this MSDS. Read the entire MSDS for the complete hazard evaluation of this product.

Prepared by: Syngenta Canada Inc.
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