

Syngenta Crop Protection Canada, Inc.
140 Research Lane, Research Park
Guelph, ON N1G 4Z3

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

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MSDS prepared by:
Department of Regulatory & Biology Development
Syngenta Crop Protection Canada, Inc.

For further information contact:
1-87-SYNGENTA (1-877-964-3682)

SECTION – 1: PRODUCT IDENTIFICATION

Product Identifier: QUADRIS® FLOWABLE Formulation No.: A12705A
Registration Number: 26153 (Pest Control Products Act)
Chemical Class: A beta-methoxyacrylate fungicide
Synonym: None

Active Ingredient (%): Azoxystrobin (22.9 %) CAS NO.: 131860-33-8
Chemical Name : Methyl (E)-2-[2-[6-(2-cyanophenoxy)pyrimidin-4-yloxy]phenyl]-3-methoxyacrylate
Product Use: Fungicide.

SECTION – 2 : COMPOSITION/INFORMATION ON INGREDIENTS

Material	OSHA PEL	ACGIH TLV	Other	NTP/IARC/OSHA Carcinogen	WHMIS†
Propylene Glycol (CAS # 57-55-6)	Not Established	Not Established	50 ppm TWA AIHA WEEL ****	No	Yes
Bentonite	15 mg/m ³ TWA (total); 5 mg/m ³ TWA (respirable)	10 mg/m ³ TWA (total); 3 mg/m ³ TWA (respirable)	Not Established	No	Not Established
Azoxystrobin (22.9 %)	Not Established	Not Established	2 mg/m ³ TWA***	No	Not Established

*** Syngenta Occupational Exposure Limit (OEL)

**** Recommended by AIHA (American Industrial Hygiene Association)

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

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.

SECTION – 3: HAZARDS IDENTIFICATION

Symptoms of Acute Exposure

May cause mild eye irritation.

Hazardous Decomposition Products

Can decompose at high temperatures forming toxic gases.

Physical Properties

Appearance: Off-white to yellow-orange suspension.

Odour: Not determined.

Unusual Fire, Explosion and Reactivity Hazards

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

Potential Health Effects

Relevant routes of exposure: Skin, eyes, mouth, lungs.

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 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. If a large amount has been swallowed and emesis has been inadequate, lavage stomach. Treat symptomatically.

MEDICAL CONDITIONS KNOWN TO BE AGGRAVATED:

None known.

SECTION – 5: FIRE FIGHTING MEASURES

Flash point and method: Not applicable. Does not flash.

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

Auto-ignition temperature: Not applicable.

Flammability: Not applicable.

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

Conditions under which flammability could occur: Keep fire exposed containers cool by spraying with water.

Extinguishing media: Use foam, carbon dioxide, dry powder, halon extinguishant or water fog or mist, (avoid use of water jet). 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: None known.

Sensitivity to explosion by static discharge: None known.

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. Wear suitable protective clothing and eye protection to prevent skin and eye contact. Use adequate ventilation and wear equipment and 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 material 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. Pump or scoop large amounts of liquid into a disposable container. Absorb remaining liquid or smaller spills with clay, sand or vermiculite. 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, small amounts will naturally decompose. For large amounts, 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: KEEP OUT OF REACH OF CHILDREN and animals. Prevent eating, drinking, tobacco use, and cosmetic application in areas where there is a potential for exposure to the material. Wear full protective clothing and equipment (see Section 8). Rinse gloves and remove protective equipment, and wash hands thoroughly with soap and water after handling or working with the product and before eating, using tobacco, drinking, applying cosmetics or using the toilet. Wash contaminated clothing separate from household laundry and before re-use. Keep containers closed when not in use. Keep product, wash or rinse water, and contaminated materials out of water, and away from access by animals, birds, and 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. 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 required.

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 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 gloves (such as nitrile or butyl), 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 process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below exposure limits. A NIOSH-certified combination air-purifying respirator with an N, P or R 95 or HE class filter and an organic vapor cartridge may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air-purifying respirators is limited. Use a pressure demand atmosphere-supplying respirator if there is any potential for uncontrolled release, exposure levels are not

known, or under any other circumstances where air-purifying respirators may not provide adequate protection.

SECTION – 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Off-white to yellow-orange suspension.

Formulation Type: Liquid suspension.

Odour: Not determined.

pH: 7.

Vapour pressure and reference temperature: 8.25×10^{-13} mmHg @ 20 °C (Azoxystrobin Technical).

Vapour density: Not available.

Boiling point: Not available.

Melting point: Not applicable.

Freezing point: -7 °C.

Specific gravity or density: 1.10 g/mL.

Evaporation Rate: Not available.

Water/oil partition coefficient: log Kow = 2.5 (Azoxystrobin Technical).

Odour threshold: Not available.

Viscosity: 1444 cps @ RT.

Solubility in Water: 6 mg/L @ 20 °C (Azoxystrobin Technical).

SECTION – 10: STABILITY AND REACTIVITY

Chemical stability: Stable under normal use and storage conditions.

Conditions to avoid: None known.

Incompatibility with other materials: Oxidizing agents.

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

Hazardous polymerization: Will not occur.

SECTION – 11: TOXICOLOGICAL INFORMATION

Acute toxicity/Irritation Studies (Finished Product):

Ingestion:	<u>Practically Non-Toxic</u> Oral (LD50 Rat):	> 5,000 mg/kg body weight
Dermal:	<u>Practically Non-Toxic</u> Dermal (LD50 Rat):	> 4,000 mg/kg body weight
Inhalation:	<u>Practically Non-Toxic</u> Inhalation (LC50 Rat):	6.32 mg/L air - 4 hours
Eye Contact:	<u>Minimally Irritating (Rabbit)</u>	
Skin Contact:	<u>Non-Irritating (Rabbit)</u>	
Skin Sensitization:	<u>Not a Sensitizer (Guinea Pig)</u>	

Reproductive/Developmental Effects

Azoxystrobin: Shows weak chromosomal damage in mammalian cells at cytotoxic levels. Negative in whole animal assays for chromosomal and DNA damage at high dosages ($\geq 2,000$ mg/kg). In rabbits, no effect was observed up to the highest dose level (500 mg/kg/day). In rats, developmental effects were seen only at maternally toxic doses (100 mg/kg/day).

Chronic/Subchronic Toxicity Studies

Azoxystrobin: In a rat 90-day feeding study, liver toxicity was observed at 2,000 ppm. This was manifest as gross distension of the bile duct, increased numbers of lining cells and inflammation of the duct. No toxicologically significant effects were seen in repeat dose dog studies. Data reviews

do not indicate any potential for endocrine disruption. There is no evidence of neurotoxicity in any of the studies conducted with azoxystrobin.

Carcinogenicity

Azoxystrobin: No carcinogenic effects observed in rats or mice at doses up to the maximum tolerated dose.

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.

Bentonite

Test results reported in Section 11 for the final product take into account any acute hazards related to the bentonite in the formulation.

Propylene Glycol

Reported to cause central nervous system depression (anesthesia, dizziness, confusion), headache and nausea. Chronic dietary exposure caused kidney and liver injury in experimental animals.

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

Target Organs

Active Ingredient

Azoxystrobin: Liver.

Inert Ingredients

Bentonite Not applicable.

Propylene Glycol CNS. Kidney, liver.

SECTION – 12: ECOLOGICAL INFORMATION

Summary of Effects

QUADRIS® is a fungicide that is mixed with water and applied as a spray for control of various diseases on selected agricultural crops. The active ingredient, azoxystrobin, is practically nontoxic to insects (bees) and birds, but is highly toxic to moderately to highly toxic to fish and aquatic invertebrates (water flea).

Eco-Acute Toxicity

Azoxystrobin:		
	Green Algae 5-day EC ₅₀	0.057 - 10 ppm
	Bees 48-Hour LC ₅₀ /EC ₅₀	> 200 µg/bee
	Invertebrates (Water Flea) LC ₅₀ /EC ₅₀	0.055 to >4.0 ppm
	Fish (Trout) LC ₅₀ /EC ₅₀	0.47 ppm
	Fish (Bluegill) LC ₅₀ /EC ₅₀	1.1 ppm
	Bobwhite Quail Oral LD ₅₀	> 2000 mg/kg
	Birds (8-day dietary - Bobwhite Quail) LC ₅₀ /EC ₅₀	> 5,200 ppm
	Birds (8-day dietary - Mallard Duck) LC ₅₀ /EC ₅₀	> 5,200 ppm

Eco-Chronic Toxicity

Azoxystrobin:		
	Invertebrates: Daphnia (Water Flea)	
	21-Day Chronic EC ₅₀	0.15 mg/L
	Invertebrate (Water Flea) 21-day LOEC	0.084 ppm
	Fish: Fathead minnow: 28 Day NOEC	0.147 mg/L
	Fish: Fathead Minnow 28-day LOEC	0.193 ppm
	Bird: Mallard duck: 28 Day NOEC	1,200 mg/kg
	Mallard Duck Reproduction 23-week LOEL	3000 ppm
	Bobwhite Quail Reproduction 22-week LOEL	3000 ppm

Environmental Fate

The active ingredient, azoxystrobin, has a low bioaccumulation potential, low to moderate mobility in soil, but is moderately persistent to persistent in soil or water. The dissipation half-life in soil is 54 - 135 days and in water it is 187 - 239 days. Under field conditions the half-life in soil is 14 days. The main routes of degradation are by microbial degradation, hydrolysis, and formation of bound residues.

For QUADRIS, the bulk material sinks in water (after 24 h) but will eventually dissolve into an emulsion.

SECTION – 13: DISPOSAL CONSIDERATIONS

Waste disposal information: Do not reuse empty containers unless they are specifically designed to be re-used. 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.: 26153

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 Crop Protection Canada, Inc.
1-87-SYNGENTA (1-877-964-3682)

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