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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 & Biology Assessment  
Syngenta Canada Inc.

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

## SECTION – 1: PRODUCT IDENTIFICATION

**Product Identifier:** **SIERRA® 70 WDG Herbicide** Formulation No.: N/A  
**Registration Number:** 29558 (Pest Control Products Act)  
**Chemical Class:** A Sulfonylurea Herbicide.

**Active Ingredient (%):** Flucarbazone-sodium (70.0%) CAS No.: 181274-17-9  
**Chemical Name:** 4,5-Dihydro-3-methoxy-4-methyl-5-oxo-N-((2-(trifluoromethoxy)phenyl)sulfonyl)-1H-1,2,4-triazole-1-carboxamidate, sodium salt.

**Product Use:** A water dispersible granule herbicide for control of wild oats, green foxtail and selected broadleaf weeds in spring wheat and durum wheat. Please refer to product label for further details.

## SECTION – 2: COMPOSITION/INFORMATION ON INGREDIENTS

Material	OSHA PEL	ACGIH TLV	Other	NTP/IARC/OSHA Carcinogen	WHMIS†
Flucarbazone-sodium (70.0%)	Not Established	Not Established	Not Established	No	Not Established

† 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 eye irritation.

### Hazardous Decomposition Products

Can decompose at high temperatures forming toxic gases.

### Physical Properties

Appearance: Tan granules.

Odour: Slight musty odour.

### Unusual Fire, Explosion and Reactivity Hazards

This product is a granular solid that can generate dust if not handled with care. Mixtures of dust in air should be avoided.

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 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 applicable.

**Flammability:** Not flammable.

**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:** Keep fire exposed containers cool by spraying with water.

**Extinguishing media:** Use water fog or mist, (avoid use of water jet), foam, carbon dioxide, dry powder or halon extinguishant. 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:** Possible dust explosion hazard.

### **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. See Section 8 for personal protective equipment and clothing.

**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 disposable 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. Prevent eating, drinking, tobacco use, and cosmetic application in areas where there is a potential for exposure to the material. Avoid breathing vapours or spray mist. Wear full protective clothing and equipment (see Section 8). After work, rinse gloves and remove protective equipment, and wash hands thoroughly with soap and water after handling, and before eating, tobacco use, drinking, applying cosmetics 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. Storage temperature minimum is 0°C and not to exceed a maximum of 38°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 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, vapour 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 (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 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 vapour 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:** Tan granules.

**Formulation Type:** Water dispersible granule.

**Odour:** Slight musty odour.

**pH:** 7 - 8 @ 25C (5% aqueous suspension)

**Vapour pressure and reference temperature:** Not Volatile.

**Vapour density:** Not applicable.

**Boiling point:** Not applicable.

**Melting point:** 200 °C (Flucarbazon Technical; decomposition)

**Freezing point:** Not applicable.

**Specific gravity or density:** 0.55 g/cm<sup>3</sup> @ 20 °C.

**Evaporation Rate:** Not available.

**Water/oil partition coefficient:** log Kow = -0.89, -1.84 and -1.88 @ pH 4, 7 and 9, respectively (Flucarbazon Technical).

**Odour threshold:** Not available.

**Viscosity:** Not applicable.

**Solubility in Water:** 3.1% (w/w) @ 20 °C (Flucarbazon Technical).

## 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 forming 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):	> 5,000 mg/kg body weight
Inhalation:	<u>Low Acute Toxicity</u>	
	Inhalation (LC50 Rat):	> 5.13 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**

Flucarbazon Technical:

No teratogenic potential or effects on reproductive performance were detected.

### **Chronic/Subchronic Toxicity Studies**

Flucarbazon Technical:

Toxicity following repeated dosing at very high doses included stomach and liver effects, decreased body weight and increased or decreased food consumption.

### **Carcinogenicity**

Flucarbazon Technical:

Not carcinogenic in studies with rats and mice. The US EPA classified flucarbazon-sodium as "not likely to be carcinogenic to humans" by all routes of exposure based upon lack of evidence of carcinogenicity in rats and mice.

### **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.

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

### **Target Organs**

#### Active Ingredient

Flucarbazone Technical: Liver, stomach.

#### Inert Ingredients

Not Applicable.

## **SECTION – 12: ECOLOGICAL INFORMATION**

### **Summary of Effects**

Sierra is an herbicide to be mixed with water and used for control wild oats, green foxtail and selected broadleaf weeds in spring wheat and durum wheat. The active ingredient, flucarbazone, is practically non-toxic to honey bees, aquatic invertebrates, fish, birds and mammals, but is phytotoxic to non-target terrestrial and aquatic plants. Based upon these findings, the use of Sierra on wheat does not present a significant environmental hazard. However, due to this active's very high mobility in all soil types, care should be taken to protect nearby non-target terrestrial plants from excessive exposure due to runoff.

### **Eco-Acute Toxicity**

#### Flucarbazone Technical:

Algae (Green) 96-hour IC <sub>50</sub>	6.4 mg/L
Bees (Contact) LC <sub>50</sub> /EC <sub>50</sub>	> 200 µg/bee
Invertebrates ( <i>Daphnia magna</i> ) 48-hour LC <sub>50</sub> /EC <sub>50</sub>	38.8 mg/L
Fish (Trout) 96-hour LC <sub>50</sub> /EC <sub>50</sub>	> 96.7 mg/L
Fish (Bluegill) 96-hour LC <sub>50</sub> /EC <sub>50</sub>	> 99.3 mg/L
Bobwhite Quail Oral LD <sub>50</sub>	> 2,000 mg/kg bw
Birds (Sub-chronic Oral - Bobwhite Quail) LC <sub>50</sub> /EC <sub>50</sub>	> 4646 mg/kg
Birds (Sub-chronic Oral - Mallard Duck) LC <sub>50</sub> /EC <sub>50</sub>	> 4969 mg/kg

### **Eco-Chronic Toxicity**

#### Flucarbazone Technical:

Bobwhite Quail Reproduction NOEC	1311 mg/kg
Mallard Duck Reproduction NOEC	223 mg/kg

### **Environmental Fate**

Flucarbazone-sodium is slightly persistent in soils under field conditions. The parent compound and transformation products have a low potential to leach and contaminate groundwater under field conditions.

For Sierra, the bulk material sinks in water (after 24 h) and gradually disperses in water to form a suspension.

## **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, 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.: 29558

## 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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