

SECTION 1: PRODUCT IDENTIFICATION
Product Identifier: DUAL II MAGNUM® HERBICIDE

Formulation No.: A9558C

Registration Number: 25729 (Pest Control Products Act)

Product Use: Emulsifiable concentrate for selective weed control. Please refer to product label for further details.

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

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

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

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

SECTION 2: HAZARDS IDENTIFICATION
Hazard Classification(s):

Acute Toxicity (Inhalation) – Category 4
Aquatic Acute Toxicity – Category 1
Aquatic Acute Toxicity – Category 1
Aspiration Hazard – Category 2
Carcinogenicity – Category 2
Eye Irritation – Category 2A
Skin Sensitizer – Category 2
Specific Target Organ Toxicity (STOT) Single Exposure – Category 1
Specific Target Organ Toxicity (STOT) Single Exposure – Category 3
Specific Target Organ Toxicity (STOT) Repeated Exposure – Category 1

Hazard Symbol(s):

Signal Word(s):

Danger

Warning

Warning

Hazard Statement(s):

H305 – May be harmful if swallowed and enters airway.
H317 – May cause an allergic skin reaction.
H320 – Causes eye irritation.
H332 – Harmful if inhaled.
H335 – May cause respiratory irritation.
H336 – May cause drowsiness or dizziness.
H351 – Suspected of causing cancer.
H370 – Causes damage to organs.
H372 – Causes damage to organs through prolonged or repeated exposure.
H400+H410 – Very toxic to aquatic life with long lasting effects.

Precautionary Statement(s):
Prevention:

P102 – Keep out of reach of children.
P201 – Obtain special instructions before use.
P202 – Do not handle until all safety precautions have been read and understood.
P260 – Do not breathe dust/fume/gas/mist/vapours/spray.
P264 – Wash thoroughly after handling.

P270 – Do not eat, drink or smoke when using this product.
P272 – Contaminated work clothing should not be allowed out of the workplace.
P271 – Use only outdoors or in a well-ventilated area.
P273 – Avoid release to the environment.
P280 – Wear protective gloves/protective clothing/eye protection/face protection.

Response:

P301+P310 – IF SWALLOWED: Immediately call a POISON CENTER/doctor.
P304+P340 – IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313 – If exposed or concerned: Get medical advice/attention.
P312 – Call a POISON CENTER/doctor if you feel unwell.
P314 – Get medical advice/attention if you feel unwell.
P331 – Do NOT induce vomiting.
P337+P313 – If eye irritation persists: Get medical advice/attention.
P362+P364 – Take off contaminated clothing and wash it before reuse.
P391 – Collect spillage.

Storage:

P403+P233 – Store in a well ventilated place. Keep container tightly closed.
P405 – Store locked-up.

Disposal:

P501 – Dispose of contents/container to an approved waste disposal plant.

Other Hazards Which do not Result in GHS Classification: To avoid risk to human health and the environment, comply with the instructions for use.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	Common Name	CAS Number	Average % by weight
2-chloro-N-(2-ethyl-6-methylphenyl)-N-[(1S)-2-methoxy-1-methylethyl]acetamide	S-Metolachlor	87392-12-9	82.4
2H-1,4-benzoxazine, 4-(dichloroacetyl)-3,4-dihydro-3-methyl-	Benoxacor	98730-04-2	< 5
Naphthalene	Naphthalene	91-20-3	< 5
Solvent naphtha (petroleum), heavy aromatic	Petroleum solvent	Trade Secret	Trade Secret

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

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 Safety Data Sheet with you when calling Syngenta, a poison control centre 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 eyes. Call Syngenta, a poison control centre 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 running water for a minimum of 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. Do not give **any** liquid to the person. Do not give anything by mouth to an unconscious person. Do not induce vomiting unless directed by a physician or a poison control centre. If spontaneous vomiting occurs, have the victim lean forward with head down to avoid breathing in of vomitus.

Most Important Symptoms/Effects, Acute and Delayed:

Causes eye irritation.

Harmful if inhaled.

Suspected of causing cancer.

Causes damage to organs (acute).

Causes damage to organs through prolonged or repeated exposure.

May be harmful if swallowed and enters airway.

May cause an allergic skin reaction.

May cause respiratory irritation.

May cause drowsiness or dizziness.

Indication of Immediate Medical Attention and Special Treatment:

There is no specific antidote.

Treat symptomatically.

Contains petroleum distillates, vomiting may cause aspiration pneumonia.

Persons suffering from a temporary allergic reaction may respond to treatment with oral antihistamines or steroid creams and/or systemic steroids.

SECTION 5: FIRE FIGHTING MEASURES

Suitable (and Unsuitable) Extinguishing Media: Use foam, carbon dioxide, dry powder, halon extinguishant or water fog or mist. Cool closed containers exposed to fire with water spray. Do not use a solid water stream as it may scatter and spread the fire.

Specific Hazards Arising from the Chemical: Can decompose at high temperatures forming toxic gases. During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion. Thermal decomposition products may include carbon monoxide, carbon dioxide, hydrogen cyanide, acetonitrile, oxides of sulfur, hydrogen sulfide, oxides of nitrogen and phosphorus.

Special Protective Equipment and Precautions for Fire-Fighters: Wear full protective clothing and self-contained breathing apparatus. Evacuate non-essential personnel from the area to prevent human exposure to fire, smoke, fumes or products of combustions. Prevent use of contaminated buildings, area, and equipment until decontaminated. Water run-off can cause environmental damage. Contain run-off water with, for example, temporary earth barriers.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures: Control the spill at its source. Clean up spills immediately, observing precautions outlined in Sections 7 and 8. Use adequate ventilation and equipment and wear clothing as described in Section 8 and/or the product label.

Environmental Precautions: Contain the spill to prevent from spreading or contaminating soil or from entering sewage and drainage systems or any body of water. Spillages or uncontrolled discharges into watercourses must be reported to the appropriate regulatory body.

Methods and Materials for Containment and Cleaning Up: Pump or scoop large amounts of liquid into a disposable container. Absorb remaining liquid or smaller spills with clay, sand or vermiculite. Scoop or seep up material and place into a disposal container. Wash area with detergent and water. Pick up wash liquid with additional absorbent and place into a 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.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling: 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, dust 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.

Conditions for Safe Storage, Including Any Incompatibilities: Store in original container in a well-ventilated, cool, dry, secure area. Protect from heat, sparks and flame. Do not expose sealed containers to temperatures above 40 °C. Refer to the product label for specific storage recommendations, including minimum storage temperature and freeze/thaw stability. Keep separate from other products to prevent cross contamination. Rotate stock. Clean up spilled material immediately.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

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 AND/OR ON-FARM APPLICATIONS.

Control Parameters:

Component	OSHA PEL	ACGIH TLV	Other	NTP/IARC/OSHA Carcinogen	WHMIS†
S-Metolachlor	Not established	Not established	5 mg/m ³ TWA***	No	Not established
Benoxacor	Not established	Not established	1 mg/m ³ TWA***	No	Not established
Naphthalene	10 ppm (50 mg/m ³) TWA	10 ppm (50 mg/m ³) TWA (skin)	10 ppm (50 mg/m ³) TWA**; 10 ppm TLV (ON/QC/BC/AB)	IARC Group 2B; NTP Anticipated Carcinogen	Yes
Petroleum solvent	Not established	Not established	50 mg/m ³ TWA*; 300 ppm TWA (QC/AB); use calculation required (ON/BC)	No	Not established

* Recommended by Manufacturer

** Recommended by NIOSH

*** Syngenta Occupational Exposure Limit (OEL)

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

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

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

Appropriate Engineering Controls: If necessary, ensure work areas have ventilation, containment, and procedures sufficient to maintain airborne levels below the TLV (threshold limit value). Warehouses, production areas, parking lots and waste holding facilities must have adequate containment to prevent environmental contamination. Provide separate shower and eating facilities.

Individual Protection Measures:

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 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 particulate filter respirator may be necessary until effective engineering controls are installed to comply with occupational exposure limits. Use a NIOSH certified 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
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Appearance: Dark-brown liquid.

Formulation Type: Emulsifiable concentrate.

Physical State: Liquid.

Odour: Petroleum-like odour.

Odour Threshold: Not available.

pH: 7-8 (1% aqueous solution @ 25 °C).

Melting Point: Not applicable.

Freezing Point: - 20 °C.

Initial Boiling Point and Boiling Range: Not available.

Flash Point: > 93.3 °C (Setaflash CC).

Evaporation Rate: Not available.

Flammability (solid/gas): Not applicable.

Lower Explosive Limit: Not available.

Upper Explosive Limit: Not available.

Vapour Pressure: S-Metolachlor: 2.8×10^{-5} mmHg @ 20 °C.

Vapour Density: Not available.

Relative Density: 1.11 g/cm³ @ 20 °C.

Solubility(ies): S-Metolachlor: 480 mg/L @ 20 °C, pH 7 (water).

Partition Coefficient (n-octanol water): S-Metolachlor: 3.1

Auto-Ignition Temperature: Not available.

Decomposition Temperature: Not available.

Viscosity: 119 mPas (or cps) @ 20 °C.

Other Information: Not applicable.

SECTION 10: STABILITY AND REACTIVITY

Reactivity: Not reactive.

Chemical Stability: Stable under normal use and storage conditions.

Possibility of Hazardous Reactions: Not applicable.

Conditions to Avoid: Excessive heat or cold.

Incompatible Materials: Certain plastics, particularly PVC and rubber dissolve or soften in contact with S-Metolachlor. Avoid strong oxidizing agents such as hydrogen peroxide, bromic, chromic acid. S-Metolachlor is hydrolyzed by strong alkalis and strong mineral acids.

Hazardous Decomposition Products: Can decompose at high temperatures forming toxic gases. During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion. Thermal decomposition products may include carbon monoxide, carbon dioxide, hydrogen cyanide, acetonitrile, oxides of sulfur, hydrogen sulfide, oxides of nitrogen and phosphorus.

SECTION 11: TOXICOLOGICAL INFORMATION

Likely Routes of Exposure: Inhalation, dermal, oral.

Symptoms of Acute Exposure: Causes eye irritation. Harmful if inhaled. Suspected of causing cancer. Causes damage to organs (acute). Causes damage to organs through prolonged or repeated contact.

Potential Health Effects: May be harmful if swallowed and enters airway. May cause an allergic skin reaction. May cause respiratory irritation. May cause drowsiness or dizziness.

Acute Toxicity/Irritation Studies (Finished Product):

Ingestion:	<u>Low Acute Toxicity</u> Oral (LD50 Rat)	2,149 mg/kg body weight
Dermal:	<u>Low Acute Toxicity</u> Dermal (LD50 Rabbit)	> 2,020 mg/kg body weight
Inhalation:	<u>Low Acute Toxicity</u> Inhalation (LC50 Rat)	> 3.8 mg/L air – 4 hours
Eye Contact:	<u>Moderately Irritating (Rabbit)</u>	
Skin Contact:	<u>Slightly Irritating (Rabbit)</u>	
Skin Sensitization:	<u>Skin Sensitizer (Guinea Pig)</u>	

Specific Target Organ Toxicity (STOT) Single Exposure:

S-Metolachlor: Not classified as a specific target organ toxicant, single exposure.

Specific Target Organ Toxicity (STOT) Repeated Exposure:

S-Metolachlor: No adverse effect has been observed in chronic toxicity tests.

Carcinogenicity:

S-Metolachlor: Did not show carcinogenic effects in animal experiments.

Reproductive Toxicity:

S-Metolachlor: Did not show reproductive toxicity effects in animal experiments.

Mutagenicity:

S-Metolachlor: Did not show mutagenic effects in animal experiments.

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.

Benoxacor: Results in stomach, liver and kidney toxicity at high doses. Cause tumours in non-glandular portions of the stomach of rodents (histo-morphologic region not found in humans). Exposure may cause slight eye irritation. Repeated skin contact may cause a sensitization (allergic) reaction in sensitive individuals.

Naphthalene: Exposure to naphthalene can cause cataracts, liver damage, kidney failure, respiratory failure, hematuria, anemia, damage to red blood cells, leukocytosis, or coma.
Carcinogen status:
NTP: Anticipated Carcinogen
IARC: Group 2B Possible Human Carcinogen.

Petroleum solvent: Repeated exposure may cause skin dryness or cracking. If swallowed, may be aspirated and cause lung damage. May be irritating to the eyes, nose, throat and lungs. Breathing of high vapour concentrations may cause central nervous system (CNS) depression resulting in dizziness, light headedness, headache, nausea and loss of concentration.

SECTION 12: ECOLOGICAL INFORMATION
Eco-Acute Toxicity:

S-Metolachlor:

Invertebrates (Water Flea) LC ₅₀ /EC ₅₀	26 ppm
Fish (Rainbow Trout) 96-hour LC ₅₀ /EC ₅₀	11.9 ppm
Birds (Bobwhite Quail) LD ₅₀	> 2,510 ppm

Persistence & Degradability:

S-Metolachlor: Low to moderate persistence in soil. Moderately persistent in total system.

Bioaccumulation Potential:

S-Metolachlor: BCF < 500; does not bioaccumulate.

Mobility in Soil:

S-Metolachlor: Moderately mobile in soils.

Other Adverse Effects: Not applicable.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Information: Do not reuse containers unless they are specifically designed to be refillable. Empty container retains product residue. 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**TDG Classification – Road/Rail:**

Not regulated.

Water Transport – International (IMDG):

UN Number: UN 3082

Proper Shipping Name: < 12,113 L: Environmentally Hazardous Substance, Liquid, n.o.s. (S-Metolachlor), Marine Pollutant.

> 12,113 L: RQ Environmentally Hazardous Substance, Liquid, n.o.s. (S-Metolachlor/Naphthalene), Marine Pollutant.

Transport Hazard Class: Class 9

Packing Group: PG III

Environmental Hazards: Marine pollutant.

Air Transport (IATA-DGR):

UN Number: UN 3082

Proper Shipping Name: Environmentally Hazardous Substance, Liquid, n.o.s. (S-Metolachlor)

Transport Hazard Class: Class 9

Packing Group: PG III

Environmental Hazards: Environmental hazard.

Special Precautions for User:

Not applicable.

Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code:

Not applicable.

SECTION 15: REGULATORY INFORMATION**Hazardous Products Act Information:**

This product has been classified in accordance with the amended Hazardous Products Act and the Hazard Criteria of the Hazardous Products Regulations (HPR), and the SDS contains all the information required by the HPR.

Hazardous Products Act Information: WHMIS 2015 Classification

This product is exempt under WHMIS 2015.

Pest Control Products (PCP) Act Registration No.: 25729**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 product is under the jurisdiction of the Pest Control Products Act and is exempt from the requirements for a WHMIS compliant SDS. Hazardous properties of all ingredients have been considered in the preparation of this SDS. Read the entire SDS for the complete hazard evaluation of this product.



SAFETY DATA SHEET

DUAL II MAGNUM® HERBICIDE

Revision Date (Y-M-D): 2015-12-18

Revision Date (Y-M-D): 2015-12-18

Supersedes Date (Y-M-D): 2015-01-22

Prepared by: Syngenta Canada Inc.
1-87-SYNGENTA (1-877-964-3682)

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