

BOUNDARY® 6.5 EC Herbicide

Date: 12/8/2016
Replaces: 5/24/2016

1. PRODUCT IDENTIFICATION

Product identifier on label: **BOUNDARY® 6.5 EC Herbicide**

Product No.: A12831A

Use: Herbicide

Manufacturer: Syngenta Crop Protection, LLC
Post Office Box 18300
Greensboro NC 27419

Manufacturer Phone: 1-800-334-9481

Emergency Phone: 1-800-888-8372

2. HAZARDS IDENTIFICATION

Classifications: Oral: Category 4
Specific Target Organ Toxicity: Repeated Category 2
Specific Target Organ Toxicity: Drowsiness Category 3
Specific Target Organ Toxicity: Respiratory Irritation Category 3
Aspiration Hazard: Category 1
Flammable Liquid: Category 4
Eye Damage/Irritation: Category 2B
Carcinogenicity: Category 1B

Signal Word (OSHA): Danger

Hazard Statements: Combustible liquid
Harmful if swallowed
May be fatal if swallowed and enters airways
Causes eye irritation
May cause respiratory irritation
May cause drowsiness or dizziness
May cause cancer
May cause damage to organs through prolonged or repeated exposure

Hazard Symbols:



Precautionary Statements: Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat, sparks, open flames, hot surfaces. No smoking.
Do not breathe mist, vapors, spray.

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Wash hands and face thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Wear protective gloves, protective clothing, eye protection.
If inhaled: Remove person to fresh air and keep comfortable for breathing.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice.
If exposed or concerned: Get medical advice/attention.
Do NOT induce vomiting.
In case of fire: Use dry chemical, foam or CO2 for extinction.
Store in a well-ventilated place. Keep cool.
Store locked up.
Dispose of contents and container in accordance with local regulations.
If swallowed: Immediately call a poison center, doctor or Syngenta. Rinse mouth.

Other Hazard Statements: None

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Common Name	CAS Number	Concentration
1,2,4-Trimethylbenzene	1,2,4-Trimethylbenzene	95-63-6	Trade Secret
Naphthalene	Naphthalene	91-20-3	Trade Secret
Petroleum Solvent	Petroleum Solvent	64742-94-5	Trade Secret
Other inert ingredients	Other inert ingredients	Trade Secret	28.0%
Acetamide, 2-chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl)-, (S)	S-Metolachlor	87392-12-9	58.2%
4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-1,2,4-triazin-5 (4H)-one	Metribuzin	21087-64-9	13.8%

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

4. FIRST AID MEASURES

Have the product container, label or Safety Data Sheet with you when calling Syngenta (800-888-8372), a poison control center or doctor, or going for treatment.

Ingestion: If swallowed: Call Syngenta (800-888-8372), a poison control center or doctor immediately for treatment advice. Do not give any liquid to the person. Do not induce vomiting unless told to do so after calling 800-888-8372 or by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

Eye Contact: If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.

Skin Contact: If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.

Inhalation: If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial

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respiration, preferably mouth-to-mouth if possible. Call Syngenta (800-888-8372), a poison control center or doctor for further treatment advice.

Most important symptoms/effects:

Eye irritation
Drowsiness or dizziness
Respiratory irritation

Indication of immediate medical attention and special treatment needed:

There is no specific antidote if this product is ingested.
Treat symptomatically.
Contains petroleum distillate - vomiting may cause aspiration pneumonia.

5. FIRE FIGHTING MEASURES

Suitable (and unsuitable) extinguishing media:

Use dry chemical, foam or CO2 extinguishing media. If water is used to fight fire, dike and collect runoff.

Specific Hazards:

Combustible liquid. Can release vapors that form explosive mixtures at temperatures at or above the flash point. Heavy vapors can flow along surfaces to distant ignition sources and flash back.

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

Special protective equipment and precautions for firefighters:

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.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures:

Follow exposure controls/personal protection outlined in Section 8.

Methods and materials for containment and cleaning up:

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 Section 8. Cover entire spill with absorbing material and place into compatible disposal container. Scrub area with hard water detergent (e.g. commercial products such as Tide, Joy, Spic and Span). Pick up wash liquid with additional absorbent and place into compatible disposal container. Once all material is cleaned up and placed in a disposal container, seal container and arrange for disposition.

7. HANDLING AND STORAGE

Precautions for safe handling:

Store the material in a well-ventilated, secure area out of reach of children and domestic animals. Do not store food, beverages or tobacco products in the storage area. Prevent eating, drinking, tobacco use, and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

Conditions for safe storage, including any incompatibilities:

Store locked up.

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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

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

Occupational Exposure Limits:

Chemical Name	OSHA PEL	ACGIH TLV	Other	Source
1,2,4-Trimethylbenzene	Not Established	25 ppm TWA	25 ppm TWA	NIOSH
Naphthalene	10 ppm TWA	10 ppm TWA (skin)	10 ppm TWA	NIOSH
Petroleum Solvent	Not Established	Not Established	300 ppm (2,700 mg/m ³) TWA	Manufacturer
Other inert ingredients	Not Applicable	Not Applicable	Not Applicable	Not Applicable
S-Metolachlor	Not Established	Not Established	5 mg/m ³ TWA	Syngenta
Metribuzin	Not Established	5 mg/m ³ TWA	5 mg/m ³ TWA	NIOSH

Appropriate engineering controls:

Use effective engineering controls to comply with occupational exposure limits (if applicable).

Individual protection measures:

Ingestion:

Prevent eating, drinking, tobacco usage and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

Eye Contact:

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 Contact:

Where contact is likely, wear chemical-resistant gloves (such as barrier laminate, butyl rubber, nitrile rubber or Viton), coveralls, socks and chemical-resistant footwear.

Inhalation:

A combination particulate/organic vapor respirator should be used until effective engineering controls are installed to comply with occupational exposure limits, or until exposure limits are established. Use a NIOSH approved respirator with an organic vapor (OV) cartridge or canister with any 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.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Transparent amber liquid

Odor: Aromatic sulfur-like

Odor Threshold: Not Available

pH: 3 - 5 (1% solution in H₂O @ 77°F (25°C))

Melting point/freezing point: Not Applicable

Initial boiling point and boiling range: Not Available

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Flash Point (Test Method): 184°F
Flammable Limits (% in Air): Not Available
Flammability: Combustible liquid
Vapor Pressure: Metribuzin 1.2 x 10⁽⁻⁷⁾ mmHg @ 68°F (20°C)
S-Metolachlor 2.8 x 10⁽⁻⁵⁾ mmHg @ 77°F (25°C)
Vapor Density: Not Available
Relative Density: 1.08 g/ml ; 9.01 lbs/gal @ 68°F (20°C)
Solubility (ies): Metribuzin 1050 ppm @ 68°F (20°C)
S-Metolachlor 0.48 g/l @ 77°F (25°C)
Partition coefficient: n-octanol/water: Not Available
Autoignition Temperature: 734°F
Decomposition Temperature: Not Available
Viscosity: Not Available
Other: None

10. STABILITY AND REACTIVITY

Reactivity: Not reactive.
Chemical stability: Stable under normal use and storage conditions.
Possibility of hazardous reactions: Will not occur.
Conditions to Avoid: None known.
Incompatible materials: Oxidizing agents.
Hazardous Decomposition Products: None known.

11. TOXICOLOGICAL INFORMATIONHealth effects information

Likely routes of exposure: Dermal, Inhalation

Symptoms of exposure: Eye irritation, Drowsiness or dizziness, Respiratory irritation

Delayed, immediate and chronic effects of exposure: Possible carcinogenicity, Eye irritation, Drowsiness or dizziness, Respiratory system effects

Numerical measures of toxicity (acute toxicity/irritation studies (finished product))

Ingestion:	Oral (LD50 Rat) :	1805 mg/kg body weight
Dermal:	Dermal (LD50 Rat) :	> 5000 mg/kg body weight
Inhalation:	Inhalation (LC50 Rat) :	> 2.53 mg/l air - 4 hours
Eye Contact:	Moderately Irritating (Rabbit)	
Skin Contact:	Slightly Irritating (Rabbit)	
Skin Sensitization:	Not a Sensitizer (Guinea Pig)	

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Reproductive/Developmental Effects

Metribuzin: Reproductive toxicity shown in a two-generation study in rats only at dose levels toxic to the parent animals. This reproductive toxicity is related to parental toxicity. Developmental effects seen only at dose levels toxic to the dams. The developmental effects seen are related to maternal toxicity.

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

Chronic/Subchronic Toxicity Studies

Metribuzin: Dog and rat feeding studies showed decreases in body weight and food consumption, anemia, liver effects, kidney effects, testicular effects and mortality.

A dermal toxicity study in rabbits showed effects on cholesterol levels and liver function.

A rat inhalation study showed behavioral changes, decreased body weight gains, liver enzyme induction and organ weight effects.

Neurotoxicity: Animal studies showed evidence of transient neurobehavioral effects after single oral dosing at 5 mg/kg and above. Other screening studies showed no evidence of neurotoxicity at dietary concentrations up to 900 ppm.

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

Carcinogenicity

Metribuzin: Metribuzin was investigated for carcinogenicity in chronic feeding studies using rats and mice at maximum levels of 900 and 3200 ppm, respectively. There was no evidence of a carcinogenic potential observed in either species.

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

Chemical Name	NTP/IARC/OSHA Carcinogen
1,2,4-Trimethylbenzene	No
Naphthalene	See "Toxicity", Sec. 11
Petroleum Solvent	No
Other inert ingredients	No
Acetamide, 2-chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl)-, (S)	No
4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-1,2,4-triazin-5 (4H)-one	No

Other Toxicity Information

None

Toxicity of Other Components

1,2,4-Trimethylbenzene

Inhalation of 1,2,4-trimethylbenzene at high concentrations can cause central nervous system depression, respiratory tract irritation, asphyxiation, cardiac stress and coma. Effects of chronic exposure to this solvent can include blood disorders (anemia, leukopenia) and kidney or liver damage.

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

Other inert ingredients

Not Applicable

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Petroleum Solvent

Exposure may cause eye and skin irritation.

Effects of Overexposure: High vapor concentrations (greater than approximately 700 ppm, attainable at elevated temperatures well above ambient) are irritating to the eyes and the respiratory tract, and may cause headaches, dizziness, anesthesia, drowsiness, unconsciousness and other central nervous system effects, including death.

Target Organs**Active Ingredients**

Metribuzin: Liver, kidney, thyroid, testes

S-Metolachlor: Liver

Inert Ingredients

1,2,4-Trimethylbenzene: CNS, liver, kidney, blood, respiratory tract, skin, eye

Naphthalene: Eye, liver, kidney, respiratory tract, blood, CNS

Other inert ingredients: Not Applicable

Petroleum Solvent: Eye, skin, respiratory tract, CNS

12. ECOLOGICAL INFORMATION**Eco-Acute Toxicity****S-Metolachlor:**

Fish (Rainbow Trout) 96-hour LC50 1.23 mg/l

Green Algae 96-hour ErC50 0.077 mg/l

Invertebrate (Water Flea) 48-hour EC50 11.24 mg/l

Metribuzin:

Fish (Rainbow Trout) 96-hour LC50 42 ppm

Invertebrate (Water Flea) Daphnia Magna 48-hour EC50 4.18 ppm

Bird (Bobwhite Quail) 21-day LD50 164 mg/kg

Green Algae 6-day EC50 20.8 ppb

Environmental Fate**Metribuzin:**

The information presented below is for the active ingredient, metribuzin.

Not persistent in soil. Stable in water. Moderate mobility in soil. Sinks in water (after 24 h).

S-Metolachlor:

The information presented here is for the active ingredient, S-Metolachlor.

Low bioaccumulation potential. Not persistent in soil. Stable in water. Sinks in water (after 24 h).

13. DISPOSAL CONSIDERATIONS**Disposal:**

Do not reuse product containers. Dispose of product containers, waste containers, and residues according to local, state, and federal health and environmental regulations.

Characteristic Waste: Not Applicable

Listed Waste: Not Applicable

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14. TRANSPORT INFORMATION

DOT Classification

Ground Transport - NAFTA

Packages <= 119 gal. Not regulated.

Packages > 119 gal.

Proper Shipping Name: Compounds, Weed Killing, Liquid, (Naphthalene)

Hazard Class: Combustible Liquid

Identification Number: NA 1993

Packing Group: PG III

Comments

Water Transport - International

Proper Shipping Name: Environmentally Hazardous Substance, Liquid, N.O.S. (S-Metolachlor/Naphthalene), Marine Pollutant

Hazard Class: Class 9

Identification Number: UN 3082

Packing Group: PG III

Air Transport

Proper Shipping Name: Environmentally Hazardous Substance, Liquid, N.O.S. (S-Metolachlor/Naphthalene)

Hazard Class: Class 9

Identification Number: UN 3082

Packing Group: PG III

15. REGULATORY INFORMATION

Pesticide Registration:

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: Contains petroleum distillate. Harmful if swallowed. Causes moderate eye irritation. Avoid contact with eyes, skin, or clothing.

EPA Registration Number(s):

100-1162

EPCRA SARA Title III Classification:

Section 311/312 Hazard Classes: Acute Health Hazard
Fire Hazard

Section 313 Toxic Chemicals: Metribuzin 13.8% (CAS No. 21087-64-9)
1,2,4-Trimethylbenzene Trade Secret (CAS No. 95-63-6)
Naphthalene Trade Secret (CAS No. 91-20-3)

CERCLA/SARA 304 Reportable Quantity (RQ):

Report product spills > 750 gal (based on naphthalene [RQ = 100 lbs.] content in the formulation) (CERCLA)

RCRA Hazardous Waste Classification (40 CFR 261):

Not Applicable

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TSCA Status:
Exempt from TSCA, subject to FIFRA

16. OTHER INFORMATION

NFPA Hazard Ratings

Health: 2
Flammability: 2
Instability: 0

HMIS Hazard Ratings

Health: 2
Flammability: 2
Physical Hazard: 0

0	Minimal
1	Slight
2	Moderate
3	Serious
4	Extreme
*	Chronic

Syngenta Hazard Category: D,S

For non-emergency questions about this product call:

1-800-334-9481

Original Issued Date: 10/14/2003
Revision Date: 12/8/2016 Replaces: 5/24/2016
Section(s) Revised: 2

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein.