

Fierce® MTZ Master Herbicide



Safety Data Sheet (GHS)

1. IDENTIFICATION

Product identifier

PRODUCT NAME: Fierce® MTZ Master Herbicide

PCPA REGISTRATION NUMBER: Not Registered; Experimental Material

VC NUMBER(S): 2030, 2096 (and other similar formulations)

Synonyms None

PRODUCT DESCRIPTION: Experimental herbicide

Fierce is a Registered trademark of Valent U.S.A. LLC

Recommended use of the chemical and restrictions on use

Recommended Use No information available

Restrictions on use No information available

Details of the supplier of the safety data sheet

MANUFACTURER/DISTRIBUTOR

VALENT CANADA, INC.
201-230 Hanlon Creek Blvd.
Guelph, Ontario N1C 0A1
(519) 767-9262
www.valent.ca

EMERGENCY TELEPHONE NUMBERS

HEALTH EMERGENCY OR SPILL (24 hr):
(800) 682-5368
TRANSPORTATION (24 hr.): CHEMTREC
(800) 424-9300 or (202) 483-7616

24 Hour Emergency Phone Number: 800-682-5368

Restrictions on emergency number None

2. HAZARDS IDENTIFICATION

Classification: Per WHMIS 2015

This product has been classified under the Guidelines of 2015 Health Canada requirements and the implementation of the GHS (Revision 5) under HPR and the HPA.

Acute toxicity - Oral	Category 4
Acute toxicity - Inhalation (Dusts/Mists)	Category 4
Reproductive toxicity	Category 2

Label elements

Emergency Telephone: (800) 892-0099
REVISION NUMBER: 1

SDS NO.: CAN-0523
REVISION DATE: 04/27/2020

WARNING**Hazard statements**

Harmful if swallowed

Harmful if inhaled.

Suspected of damaging fertility or the unborn child

**Precautionary Statements - Prevention**

Obtain special instructions before use

Do not handle until all safety precautions have been read and understood

Wear protective gloves/protective clothing/eye protection/face protection

Wash face, hands and any exposed skin thoroughly after handling

Do not eat, drink or smoke when using this product

Avoid breathing dust/fume/gas/mist/vapors/spray

Use only outdoors or in a well-ventilated area

Precautionary Statements - Response

IF EXPOSED OR CONCERNED: Get medical advice/attention

Inhalation

IF INHALED: Remove person to fresh air and keep comfortable for breathing

Call a POISON CENTRE or doctor/physician if you feel unwell

Ingestion

IF SWALLOWED: Call NHS DIRECT or doctor if you feel unwell

Rinse mouth

Precautionary Statements - Storage

Store locked up

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)**OTHER INFORMATION**

Very toxic to aquatic life with long lasting effects.

3. COMPOSITION/INFORMATION ON INGREDIENTS**Substance**

Chemical name	CAS No.	Weight-%	Hazardous Material Information Review Act registry number (HMIRA registry #)	Date HMIRA filed and date exemption granted (if applicable)
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Flumioxazin	103361-09-7	5.29	-	-
Pyroxasulfone	447399-55-5	6.76	-	-
Metribuzin	21087-64-9	15.86	-	-
Propylene glycol	57-55-6	4 - 5	-	-
Ammonium sulfate	7783-20-2	2.8	-	-
Other ingredients	Various CAS#s	67 - 68	-	-

4. FIRST AID MEASURES

General advice	Have the product container or label with you when calling a poison control centre or doctor, or going for treatment. You may also contact 1-800-682-5368 for emergency medical treatment information.
Inhalation	Move the person to fresh air. If the person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control centre or doctor for further treatment advice.
Eye contact	Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, and after the first 5 minutes, then continue rinsing eye. Call a poison control centre or doctor for treatment advice.
Skin contact	Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control centre or doctor for treatment advice.
Ingestion	Clean mouth with water and drink afterwards plenty of water.

Most important symptoms and effects, both acute and delayed

Symptoms	No information available.
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Indication of any immediate medical attention and special treatment needed

Note to physicians	Treat symptomatically.
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5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Large Fire	Do NOT use water jet or straight streams.
Unsuitable extinguishing media	Do not scatter spilled material with high pressure water streams.
Specific hazards arising from the chemical	No information available.
Hazardous combustion products:	During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating.
Explosion data	
Sensitivity to mechanical impact	None.
Sensitivity to static discharge	None.
Special protective equipment for fire-fighters	Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

6. ACCIDENTAL RELEASE MEASURES

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Personal precautions, protective equipment and emergency procedures

Personal precautions Ensure adequate ventilation.

Methods and material for containment and cleaning up

Methods for containment Keep out of drains, sewers, ditches and waterways. Soak up condensate with inert absorbent material and collect in ventilated waste container for disposal.

Methods for cleaning up Clean up spill immediately. Absorb spill with inert material (such as dry sand or earth), then place in a chemical waste container. Wash area with soap and water. Pick up wash liquid with additional absorbent and place in a chemical waste container. Prevent wash water from entering surface water or drains. Wear proper personal protective equipment.

7. HANDLING AND STORAGE**Precautions for safe handling**

Advice on safe handling Do not eat, drink or smoke when using this product. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove contaminated clothing and shoes immediately. Then wash thoroughly and put on clean clothing. After work, change clothing and wash entire body thoroughly. Wash contaminated working clothing separately from other laundry before reuse.

Conditions for safe storage, including any incompatibilities

Storage Conditions Do not contaminate water, food or feed by storage or disposal. Keep pesticide in original container. Do not store or transport near food or feed. Do not contaminate food or feed. Do not put concentrate into food or drink containers. Do not dilute concentrate in food or drink containers. Store in a cool, dry place, out of direct sunlight.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Control parameters****Exposure Limits**

Chemical name	Alberta	British Columbia	Ontario	Quebec
Metribuzin	TWA: 5 mg/m ³	TWA: 5 mg/m ³	TWA: 5 mg/m ³	TWA: 5 mg/m ³
Propylene glycol			TWA: 10 mg/m ³ TWA: 50 ppm TWA: 155 mg/m ³	

Appropriate engineering controls

Engineering controls Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment

Eye/face protection Do not get this material in your eyes. Eye contact can be avoided by wearing protective eyewear.

Skin and body protection Avoid contact with skin or clothing. Skin contact should be minimized by wearing protective

clothing including long pants, long-sleeved shirt and shoes plus socks and chemical-resistant gloves. Remove contaminated clothing.

Respiratory protection Use this material only in well-ventilated areas. If operating conditions result in airborne concentrations of this material, the use of an approved respirator is recommended.

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state Liquid
Appearance Opaque
Colour Off-white to beige
Odour pungent
Odor threshold: No information available

<u>PROPERTIES</u>	<u>Values</u>	<u>Remarks • Method</u>
pH	6.07	@ 22° C
Melting point/freezing point	No Data Available	None known
Boiling point/boiling range	No data available	None known
Flash point	No Data Available	None known
Evaporation rate	No Data Available	None known
Flammability (solid, gas)	No Data Available	None known
Flammability Limits in Air		None known
Upper flammability limits	No Data Available	
Lower Flammability Limit:	No Data Available	
Vapour pressure	No Data Available	None known
Vapour density	No Data Available	None known
Relative density	No Data Available	None known
Water solubility	Miscible in water	None known
Solubility in other solvents	No Data Available	None known
Partition coefficient	No Data Available	None known
Autoignition temperature	No Data Available	None known
Decomposition temperature	No Data Available	None known
Kinematic viscosity	No Data Available	None known
Dynamic viscosity	34.7 cP at 20°C	None known
	19.4 cP at 40°C	

OTHER INFORMATION

Explosive properties No information available.
Oxidizing properties No information available.
Softening point No information available
Molecular weight No information available
VOC (EPA METH.24) (G/L): No information available
Liquid Density 1.12 - 1.13 g/mL
Bulk density No information available

10. STABILITY AND REACTIVITY

Reactivity No information available.

Chemical stability Stable under normal conditions.

Possibility of Hazardous Reactions None under normal processing.

Conditions to avoid None known based on information supplied.

Incompatible materials	None known based on information supplied.
Hazardous Decomposition Products:	Thermal decomposition can lead to release of irritating and toxic gases and vapours.

11. TOXICOLOGICAL INFORMATION

Acute toxicity:

The following information is for this product formulation.

Oral Toxicity LD ₅₀ (rats)	1,750 mg/kg	EPA Tox Category	III
Dermal Toxicity LD ₅₀ (rats)	> 5,000 mg/kg	EPA Tox Category	IV
Inhalation Toxicity LC ₅₀ (rats)	> 2.15 mg/L (4 h)	EPA Tox Category	IV
Eye Irritation (rabbits)	Minimally irritating	EPA Tox Category	IV
Skin Irritation (rabbits)	Slightly irritating	EPA Tox Category	IV
Skin Sensitization (guinea pigs)	Non-sensitizer	EPA Tox Category	Not applicable

CARCINOGEN CLASSIFICATION

Chemical name	IARC	OSHA - Select Carcinogens	NTP Carcinogen List
Flumioxazin	Not listed	Not listed	Not listed
Pyroxasulfone	Not listed	Not listed	Not listed
Metribuzin	Not listed	Not listed	Not listed
Propylene glycol	Not listed	Not listed	Not listed
Ammonium sulfate	Not listed	Not listed	Not listed
Other ingredients	Not listed	Not Listed	Not listed

TOXICITY OF FLUMIOXAZIN TECHNICAL:

Subchronic: Compound related effects of Flumioxazin Technical noted in rats following subchronic exposures at high dose levels were hematotoxicity including anemia, and increases in liver, spleen, heart, kidney and thyroid weights. In dogs, the effects produced at high dose levels included a slight prolongation in activated partial thromboplastin time, increased cholesterol and phospholipid, elevated alkaline phosphatase, increased liver weights and histological changes in the liver. The lowest no-observable-effect-level (NOEL) in subchronic studies was 30 ppm in the three-month toxicity study in rats.

Chronic/Carcinogenicity: In a one year dog feeding study, Flumioxazin Technical produced treatment-related changes in blood chemistry and increased liver weights at 100 and 1000 mg/kg/day. Minimal treatment-related histological changes were noted in the livers of animals in the 1000 mg/kg/day group. Based on these data the NOEL is 10 mg/kg/day. Dietary administration of Flumioxazin Technical for 18 months produced liver changes in mice of the 3000 and 7000 ppm groups. There was no evidence of any treatment-related oncogenic effect. The NOEL for this study is 300 ppm. Dietary administration of Flumioxazin Technical for 24 months produced anemia and chronic nephropathy in rats of the 500 and 1000 ppm groups. The anemia lasted throughout the treatment period, however, it was not progressive nor aplastic in nature. No evidence of an oncogenic effect was observed. The NOEL for this study is 50 ppm.

Developmental Toxicity: Flumioxazin Technical produces developmental toxicity in rats in the absence of maternal toxicity at doses of 30 mg/kg/day by the oral route and 300 mg/kg/day by the dermal route. The developmental effects noted consisted primarily of decreased number of live fetuses and fetal weights, cardiovascular abnormalities, wavy

ribs and decreased number of ossified sacrococcygeal vertebral bodies. The developmental NOEL in the rat oral and dermal developmental toxicity studies were 10 and 100 mg/kg/day, respectively. The response in rabbits was very different from that in rats. No developmental toxicity was noted in rabbits at doses up to 3000 mg/kg/day, a dose well above the maternal NOEL of 1000 mg/kg/day.

Mechanistic studies indicate that the effects seen in the rat are highly unlikely to occur in the human and that flumioxazin would not be a developmental toxicant in the human.

Reproduction: Reproductive toxicity was observed in F1 males, P1 females and F1 females at 300 ppm Flumioxazin Technical, the highest dose tested and a dose that also produced signs of systemic toxicity. Toxicity was also observed in the F1 and F2 offspring at doses of 200 ppm and greater.

Mutagenicity: Flumioxazin Technical was not mutagenic in most *in vitro* assays: gene mutation and a chromosome aberration assay in the absence of metabolic activation. In three *in vivo* assays, chromosome aberration, unscheduled DNA synthesis and micronucleus assay, Flumioxazin Technical was not mutagenic. The only positive response was observed in the *in vitro* chromosome aberration assay in the presence of metabolic activation. Overall, Flumioxazin Technical does not present a genetic hazard.

TOXICITY OF PYROXASULFONE TECHNICAL:

Subchronic: Pyroxasulfone related effects include increased AST, slight liver and kidney weight increases, increased cardiomyopathy, centrilobular hepatocellular hypertrophy and hyperplastic urinary bladder mucosa. The NOAEL in rats was 50 ppm. No neurotoxicity was observed at acute doses to rats as high as 2000 mg/kg.

Chronic/Carcinogenicity: Pyroxasulfone was not carcinogenic in lifetime feeding studies in mice. Pyroxasulfone produced an increased incidence of urinary bladder transitional cell papillomas in male rats in a two-year carcinogenicity study. The tumours seen with Pyroxasulfone were caused through a non-genotoxic mechanism, which is not relevant at low doses.

Reproduction: Pyroxasulfone did not produce effects on fertility or the embryo at the dosage of which general toxicity to parental animals was observed.

Mutagenicity: Pyroxasulfone is not mutagenic according to results for an *in vitro* reverse mutation test, chromosomal aberration test and *in vivo* mouse bone marrow micronucleus test.

TOXICITY OF METRIBUZIN TECHNICAL:

Chronic/Carcinogenicity: Chronic Toxicity – Metribuzin: Dogs were administered metribuzin for 2 years at dietary concentrations of 25, 100 and 1500 ppm. Effects were observed at high concentration included decreases in body weight and food consumption, anemia, liver effects, kidney effects, testicular effects and mortality. The NOEL was 100 ppm. In 2 year dietary study with rats, concentrations ranging from 25 to 900 ppm were administered. At concentrations of 300 ppm and greater, effects observed included decreased body weight gains, increased thyroid weights and changes in thyroid hormones. At 900 ppm, there was an increased incidence of follicular hyperplasia seen in the thyroid. The systemic NOEL was 30 ppm. Carcinogenicity. Metribuzin carcinogenicity – 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 carcinogenic potential observed in either species.

Developmental Toxicity: Metribuzin caused developmental toxicity only at dose levels toxic to the dams. The developmental effects seen with Metribuzin are related to maternal toxicity.

Reproduction: Metribuzin caused reproduction toxicity in a two-generation study in rats only at dose levels also toxic to the parent animals. The reproduction toxicity seen with Metribuzin is related to parental toxicity.

Mutagenicity: Metribuzin was not mutagenic or genotoxic based on the overall weight of evidence in a battery of *in vitro* and *in vivo* tests.

STOT-RE: Metribuzin caused specific target organ toxicity in experimental animal studies in the following organ(s): Liver, Kidney.

For a summary of the potential for adverse health effects from exposure to this product, refer to Section 2. For information regarding regulations pertaining to this product, refer to Section 15.

12. ECOLOGICAL INFORMATION

AVIAN TOXICITY:

Based upon EPA designation, Flumioxazin Technical is practically non-toxic to avian species. The following results were obtained from studies with Flumioxazin Technical:

Oral LD₅₀ bobwhite quail: greater than 2,250 ppm
Dietary LC₅₀ bobwhite quail: greater than 5,620 ppm
Dietary LC₅₀ mallard duck: greater than 5,620 ppm

No reproductive effects were observed in bobwhite quail exposed to 500 ppm Flumioxazin Technical in the diet. In mallard ducks, a slight, but not statistically significant reduction in hatchlings and 14-day old survivors was observed. Based on a possible, slight effect on egg production at 500 ppm, the NOEL for this study was 250 ppm.

The following results were obtained from studies with Pyroxasulfone Technical:

LD₅₀ bobwhite quail: greater than 2250 mg/kg

AQUATIC ORGANISM TOXICITY: Based upon EPA designation, Flumioxazin Technical is slightly to moderately toxic to freshwater fish; moderately toxic to freshwater invertebrates; moderately toxic to estuarine/marine fish and moderately to highly toxic estuarine/marine invertebrates, based on the following tests:

96-hour LC₅₀ rainbow trout: 2.3 mg/L
96-hour LC₅₀ bluegill sunfish: greater than 21 mg/L
48-hour LC₅₀ Daphnia magna: 5.5 mg/L
96-hour LC₅₀ sheepshead minnow: greater than 4.7 mg/L
96-hour (shell deposition) EC₅₀ eastern oyster: 2.8 mg/L
96-hour LC₅₀ mysid shrimp: 0.23 mg/L
Fish early life-stage (rainbow trout): NOEC >7.7 µg/L, <16 µg/L
Chronic toxicity (mysid shrimp): NOEC >15 µg/L, <27 µg/L
Chronic toxicity (Daphnia magna): NOEC >52 µg/L, <99 µg/L

Pyroxasulfone Technical is very toxic to aquatic organisms; special attention should be given to aquatic plants. Based upon EPA designation, the following test results are based on Pyroxasulfone Technical:

96-hour LC₅₀ rainbow trout: greater than 2.2 mg/L
96-hour LC₅₀ bluegill: greater than 2.8 mg/L
48-hour LC₅₀ Daphnia magna: greater than 4.4 mg/L
96-hour LC₅₀ sheepshead minnow: greater than 3.3 mg/L
96-hour EC₅₀ algae = 0.00038 mg/L
7-day EC₅₀ Spirodela polyrhiza = 0.0055 mg/L
14-day LC₅₀ Earthworm = 997 mg/kg

OTHER NON-TARGET

ORGANISM TOXICITY: Flumioxazin Technical is practically non-toxic to bees. The acute contact LC50 in bees was greater than 105 µg/bee.
Pyroxasulfone Technical is practically non-toxic to bees. The acute contact (48-hour) LD₅₀ in bees was greater than 100 µg/bee.

OTHER ENVIRONMENTAL INFORMATION:

This product is toxic to non-target plants and aquatic invertebrates. Do not apply directly to water, to areas where surface water is present, or to intertidal areas below mean high water mark. Do not apply where runoff is likely to occur. Do not apply where weather conditions favor drift from areas treated. Do not contaminate water when cleaning equipment or disposing of equipment washwater or rinsate.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste from residues/unused products	Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.
Contaminated packaging	Non-refillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Make the empty container unsuitable for further use. If there is no container collection site in your area, dispose of the container in accordance with provincial requirements.

14. TRANSPORTATION INFORMATION

DOT (ground) shipping name:	Not regulated for domestic ground transport by US DOT or Canada TDG.
Emergency Response Guidebook No.:	Not applicable
ICAO/IATA proper shipping name:	UN3082 Environmentally Hazardous Substance, Liquid, N.O.S. (Flumioxazin, Metribuzin), 9, III, Marine Pollutant
Remarks:	•Single or inner packaging less than 5 L (liquid) or 5 Kg net (solids) excepted from Dangerous Goods regulations – see IATA Special Provision A197 •For US shipping, Emergency Response Guidebook No. 171
IMDG proper shipping name:	UN3082 Environmentally Hazardous Substance, Liquid, N.O.S. (Flumioxazin, Metribuzin), 9, III, Marine Pollutant
Remarks:	•Single or inner packaging less than 5 L (liquid) or 5 Kg net (solids) excepted from Dangerous Goods regulations – see IMDG 2.10.2.7 •For US shipping, Emergency Response Guidebook No. 171
EMS No.:	F-A, S-F

15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

PMRA LABEL INFORMATION THAT DIFFERS FROM WHMIS-GHS REQUIREMENTS:

Pesticide products in Canada are registered by PMRA and are subject to certain labeling requirements under federal pesticide law. The label, as specified in the Pest Control Products Act, is the main document to be followed for safety, use, and handling. These label requirements may differ from the classification criteria and hazard information required under WHMIS GHS for the data sheets and for workplace labels of non-pesticide chemicals. The following hazard information is required on the product label:

PMRA SIGNAL WORD: • Caution

PMRA pesticide label hazard information: Harmful if absorbed through skin Avoid Contact with skin or clothing. Keep out of reach of children.

Chemical name	Canada DSL Inventory List -	Canada NDSL Inventory List -	EINECS Inventory List -
Metribuzin			Present
Propylene glycol	Present		Present
Ammonium sulfate	Present		Present

For information regarding potential adverse health effects from exposure to this product, refer to Sections 2 and 11.

PESTICIDE REGULATIONS:

All pesticides are governed under PCPA (Pest Control Products Act). Therefore, the regulations presented below are pertinent only when handled outside of the normal use and applications of pesticides. This includes waste streams resulting from manufacturing/formulation facilities, spills or misuse of products, and storage of large quantities of products containing hazardous or extremely hazardous substances.

PROVINCIAL REGULATIONS: This product did not trigger any provincial regulations.

International Regulations

The Montreal Protocol on Substances that Deplete the Ozone Layer Not applicable

The Stockholm Convention on Persistent Organic Pollutants Not applicable

The Rotterdam Convention Not applicable

16. OTHER INFORMATION

REASON FOR ISSUE: New Product.
SDS NO.: CAN-0523
PCPA REGISTRATION NUMBER: Not Registered; Experimental Material

REVISION NUMBER: 1
REVISION DATE: 04/27/2020
SUPERCEDES DATE: None
RESPONSIBLE PERSON(S): Valent U.S.A. LLC, Corporate EH&S, (925) 256-2803

The information provided in this Safety Data Sheet (SDS) is provided in good faith and believed to be accurate at the time of preparation of the SDS. However, to the extent consistent with applicable law, Valent Canada, Inc. and its subsidiaries or affiliates extend no warranties, make no representations, and assume no responsibility as to the accuracy, suitability, or completeness of such information. Additionally, to the extent consistent with applicable law, neither Valent Canada, Inc. nor any of its subsidiaries or affiliates represents or guarantees that this information or product may be used without infringing the intellectual property rights of others. Except to the extent a particular use and particular information are expressly stated on the product label, it is the users' own responsibility to determine the suitability of this information for their own particular use of this product. If necessary, contact Valent Canada, Inc. to confirm that you have the most current product label and SDS.

The Safety Data Sheet (SDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE PMRA-APPROVED PRODUCT LABEL (attached to and accompanying the product container). This SDS provides important health, safety, and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use.

The product label provides information specifically for product use in the ordinary course. Use, storage and disposal of pesticide products is regulated by the PMRA under the authority of the *Pest Control Products Act* through the product

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label. All necessary hazard classification and appropriate precautionary use, storage, and disposal information is set forth on that label or labeling accompanying the pesticide or to which reference is made on the label. It is a violation of federal law to use a PMRA-registered pesticide product in any manner inconsistent with its labeling.

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