MATERIAL SAFETY DATA SHEET

Syngenta Crop Protection Canada, Inc.
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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 Development
Syngenta Crop Protection Canada, Inc.

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1-87-SYNGENTA (1-877-964-3682)

SECTION – 1: PRODUCT IDENTIFICATION

Product Identifier: **VENTURE® L** Formulation No.: A12791N
Registration Number: 21209 (Pest Control Products Act)
Chemical Class: A post emergence herbicide.
Synonym: None

Active Ingredient (%): Fluazifop-P-Butyl Technical (13 %) CAS No.: 79241-46-6
Chemical Name : Butyl(R,S)-2-[4-[[5-(trifluoromethyl)-2-pyridinyl]oxy]phenoxy]propanoate.
Product Use: A post emergence herbicide for control of grasses in broadleaf crops. 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†
Fluazifop-P-Butyl Technical (13 %)	Not Established	Not Established	0.5 mg/m³ TWA***	No	Not Established
1,2,4-Trimethylbenzene (CAS # 95-63-6) (≤ 1.1%)	Not Established	25 ppm TWA	25 ppm TWA**	No	Yes
Naphthalene (CAS # 91-20-3) (≤ 5.8%)	10 ppm TWA	10 ppm TWA (skin)	10 ppm TWA**	Group IIB; See "Toxicity", Section 11.	Yes
Isobutanol	100 ppm TWA	50 ppm TWA	50 ppm TWA**	No	Not Established
Polyethylene glycol octylphenyl ether (CAS # 9036-19-5)	Not Established	Not Established	Not Established	Not Established	Yes
Petroleum Solvent	Not Established	Not Established	100 mg/m³ (15 ppm) TWA*	No	Not Established

* Recommended by manufacturer
** Recommended by NIOSH
*** Syngenta Occupational Exposure Limit (OEL)
† 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

Toxic if inhaled, swallowed or absorbed through the skin. Causes eye, skin and respiratory irritation. Exposure to high vapour levels may cause headache, dizziness, numbness, nausea, incoordination, or other central nervous system effects.

Hazardous Decomposition Products

Mists from heated solution may cause respiratory irritation. Can decompose at high temperatures and form toxic gases.

Physical Properties

Appearance: Amber to dark brown liquid.
Odour: Hydrocarbon.

Unusual Fire, Explosion and Reactivity Hazards

Combustible liquid. Can release vapours that form explosive mixtures at temperatures at or above the flash point. Heavy vapours 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.

Potential Health Effects

CNS depression is characterized by headache, dizziness, drowsiness, nausea vomiting and incoordination. Severe overexposure may lead to comma and possible death due to respiratory failure. Peripheral neuropathy is a progressive disorder of the nervous system characterized by sensory and motor abnormalities, muscle spasms, weakness and pain in the arms and legs, numbness and tingling of the fingers and toes and paralysis. Intentional misuse of organic solvents (eg. "glue sniffing") over prolonged periods of time may be habit forming and lead to behavioral changes.

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: Immediately 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 running water for a minimum of 20 minutes. Obtain medical attention if irritation occurs.

INHALATION: Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is laboured, give oxygen. Obtain immediate medical attention.

INGESTION: If swallowed, immediately contact Syngenta, a poison control centre, doctor or nearest hospital for treatment advice. Provided the patient is conscious, wash out mouth with water. 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 this product is ingested.
Contains petroleum distillate - vomiting may cause aspiration pneumonia.

This product contains materials that may cause severe pneumonitis if aspirated. If ingestion has occurred less than 2 hours earlier, carry out careful gastric lavage; use endotracheal cuff if available, to prevent aspiration. Observe patient for respiratory difficulty from aspiration pneumonitis. Give artificial resuscitation and appropriate chemotherapy if respiration is depressed. Symptomatic treatment and supportive therapy as indicated.

MEDICAL CONDITIONS KNOWN TO BE AGGRAVATED: None known.

SECTION – 5: FIRE FIGHTING MEASURES

Flash point and method: 45.6 ^{o}C (Setaflash Closed Cup).
Upper and lower flammable (explosive) limits in air: Not applicable.
Auto-ignition temperature: Not applicable.
Flammability: Combustible liquid.
Hazardous combustion products: Can release vapours that form explosive mixtures at temperatures at or above the flash point. Heavy vapours 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.
Conditions under which flammability could occur: Keep fire exposed containers cool by spraying with water. Heavy vapours can flow along surfaces to distant ignition sources and flash back.
Extinguishing media: 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: Take precautionary measures against static discharges. Use spark-resistant tools and avoid "splash-filling" of containers.

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 an air-supplied respirator to prevent inhalation.
Procedures for dealing with release or spill: Warning - flammable vapours may be present. Eliminate sources of ignition and ventilate spill area. Use non-sparking clean-up equipment to prevent vapour ignition. 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. 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, 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 disposition. Spillages or uncontrolled discharges into watercourses must be alerted to the appropriate regulatory body.

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. 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, or using the toilet. Wash contaminated clothing before re-use and separate from household laundry. Keep containers closed when not in use. Keep product, wash or rinse water, and contaminated materials out of water, away from crops, and away from access by people, animals and birds.
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: 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.

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

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, 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: Amber to dark brown liquid.
Formulation Type: Emulsifiable concentrate.
Odour: Petroleum / hydrocarbon solvent.
pH: 5.16 @ 23 ^{o}C (4% emulsion).
Vapour pressure and reference temperature: 4.5×10^{-7} mmHg @ 20 ^{o}C (Fluazifop-P-Butyl Technical).
Vapour density: Not available.
Boiling point: Not available.
Melting point: Not available.
Freezing point: < -25 ^{o}C.
Specific gravity or density: 0.95 g/mL @ 20 ^{o}C.
Evaporation Rate: Not available.
Water/oil partition coefficient: Not available.
Odour threshold: Not available.
Viscosity: 6.9 cps.
Solubility in Water: Almost insoluble in water (1 mg/L@ pH 5 - 6.5) [Fluazifop-P-Butyl Technical].

SECTION – 10: STABILITY AND REACTIVITY

Chemical stability: Stable under normal use and storage conditions.
Conditions to avoid: Unstable under highly alkaline conditions. High temperatures, sparks, open flames. Keep away from sources of ignition.
Incompatibility with other materials: Strong oxidizing agents. Unstable under highly alkaline conditions.
Hazardous decomposition products: Mists from heated solution may cause respiratory irritation. Thermal decomposition products are toxic and may include hydrocarbons, oxides of carbon, nitrogen and fluorine compounds.
Hazardous polymerization: Will not occur.

SECTION – 11: TOXICOLOGICAL INFORMATION

Acute toxicity/Irritation Studies (Finished Product):

Ingestion:	Slightly Toxic	
	Oral (LD50 Rat):	2,451 mg/kg body weight
Dermal:	Slightly Toxic	
	Dermal (LD50 Rabbit):	> 2,076 mg/kg body weight
Inhalation:	Slightly Toxic	
	Inhalation (LC50 Rat):	> 5.24 mg/L air - 4 hours
Eye Contact:	Irritating (Rabbit)	
Skin Contact:	Mildly Irritating (Rabbit)	
Skin Sensitization:	Not a Sensitizer (Guinea Pig)	

Reproductive/Developmental Effects

Fluazifop-P-Butyl Technical:

In a 3-generation reproductive study in rats, effects included reductions in weight gain, fetal weight, ossification, testicular weight, spleen weight, increased prostate weight and gestation length. No Effect Level (NOEL) was 1 mg/kg/day. Fetotoxic effects seen in the rabbit, including reduced fetal weight and reduced ossification at higher doses. The NOEL was 30 mg/kg/day in rabbits. The NOEL for teratogenic effects is at least 10/mg/day in the rat, with diaphragmatic hernia at higher doses. Not teratogenic at highest dose tested in rabbits (90 mg/kg/day). While fluazifop-p-butyl is fetotoxic when fed to pregnant rats, human exposure data has concluded that female formulation workers are not at increased risk of fetotoxic effects when skin protection measures are applied.

Chronic/Subchronic Toxicity Studies

Fluazifop-P-Butyl Technical:

Chronic toxicity studies in rodents have shown liver changes (cellular hypertrophy). The NOEL in rats is 10 ppm (0.5 mg/kg/day). Long term feeding studies in dogs produced a range of potentially serious effects at high dose rates (red cell, bone marrow and lymphadenopathy changes and liver and spleen damage) with a NOEL of 25 mg/kg/day. No specific neurotoxicity tests have been conducted on fluazifop-p-butyl. However, there was no evidence of neurotoxicity in acute, subchronic or chronic studies.

Carcinogenicity

Fluazifop-P-Butyl Technical:

Laboratory studies show no evidence that fluazifop-p-butyl is a carcinogen. Specific rat and mouse lifetime studies on fluazifop butyl (a related compound) showed no carcinogenic effects (highest doses 250 ppm rat and 80 ppm mouse).

Other Toxicity Information:

In humans, fluazifop-p-butyl is rapidly metabolized to fluazifop (the acid product of metabolism) and eliminated in urine. Converted fluazifop does not accumulate in the body. It penetrates very slowly through human skin. Large doses of fluazifop-p-butyl may cause reproductive/teratogenic/embryotoxic effects based on studies in laboratory animals. There is no evidence of mutagenic potential. It is our belief that, under conditions of normal occupational exposure, this product should not pose such a hazard to the worker.

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.

1,2,4-Trimethylbenzene (≤ 1.1%)

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.

Isobutanol

High concentrations may result in dizziness, confusion and signs of intoxication. May cause irritation to eye, skin or muscous membranes.

Naphthalene (≤ 5.8%)

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

Inhalation of vapours at high concentrations can cause central nervous system effects (dizziness, headache), irritation to eyes or respiratory tract.

Polyethylene glycol octylphenyl ether

Exposure to polyethylene glycol octylphenyl ether may cause irritation to skin and respiratory tract, severe eye injury, and aspiration may cause lung damage.

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

Target Organs

Active Ingredient	
Fluazifop-P-Butyl Technical:	Liver, skin, kidney, eye, bone marrow, blood, reproductive system.
Inert Ingredients	
1,2,4-Trimethylbenzene:	CNS, liver, kidney, blood, respiratory tract, skin, eye.
Isobutanol:	CNS, skin, eye.
Naphthalene:	Eye, liver, kidney, respiratory tract, blood, CNS.
Petroleum Solvent:	Respiratory tract, stomach, liver, thyroid, urinary bladder, CNS, skin.
Polyethylene glycol octylphenyl ether:	Eye, skin

SECTION – 12: ECOLOGICAL INFORMATION

Summary of Effects

VENTURE is a post-emergence herbicide that is mixed with water and applied as a spray for the control of grasses in broadleaf crops. The active ingredient, Fluazifop-P-Butyl Technical, is practically non-toxic to insects (bees), but is slightly toxic to birds and toxic to fish and aquatic invertebrates (water flea).

Eco-Acute Toxicity

Fluazifop-P-Butyl Technical:

Bees LC_{50}/EC_{50} (contact)	> 200 µg/bee
Invertebrates (Water Flea) LC_{50}/EC_{50} (48 hr)	1.0 ppm
Fish (Trout) LC_{50}/EC_{50} (96 hr)	1.4 ppm
Fish (Bluegill) LC_{50}/EC_{50} (96 hr)	0.53 ppm
Birds (8-day dietary - Bobwhite Quail) LC_{50}/EC_{50}	> 4,659 ppm
Birds (8-day dietary - Mallard Duck) LC_{50}/EC_{50}	4,321 ppm

Eco-Chronic Toxicity

Fluazifop-P-Butyl Technical:

Not Available

Environmental Fate

VENTURE has low bioaccumulation potential. The active ingredient, Fluazifop-p-butyl, is relatively non-persistence in soil; reported half-life < 1 week. Fluazifop-p-butyl breaks down or hydrolyzes rapidly in soils or water to the fluazifop acid, which is also of low persistence. Fluazifop-p-butyl and fluazifop-p have low mobility in soils and not to present appreciable risks for groundwater contamination.

For VENTURE, the bulk material water completely mixed with water (after 24 h).

SECTION – 13: DISPOSAL CONSIDERATIONS

Waste disposal information: Do not reuse empty containers. 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.: 21209

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.
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