

PUMA® ADVANCE HERBICIDE

Version 3.0 / CDN Revision Date: 06/21/2021 102000017228 Print Date: 06/22/2021

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product identifier

Trade name PUMA® ADVANCE HERBICIDE

Product code (UVP) 79390394

SDS Number 102000017228

PCP Registration No. 29615

Relevant identified uses of the substance or mixture and uses advised against

Use Herbicide

Restrictions on useSee product label for restrictions.

Information on supplier

Supplier Bayer CropScience Inc

#200, 160 Quarry Park Blvd, SE Calgary, Alberta T2C 3G3

Canada

Responsible Department Email: SDSINFO.BCS-NA@bayer.com

Emergency telephone no.

Emergency Telephone Number (24hr/ 7 days) 1-800-334-7577

Product Information Telephone Number

1-888-283-6847

SECTION 2: HAZARDS IDENTIFICATION

Classified in accordance with Part 2 of the Hazardous Products Regulations

Aspiration hazard, Eye irritation: Category 1 Skin irritation, Carcinogenicity: Category 2

Specific target organ toxicity - single exposure: Category 3

Acute toxicity(Inhalation): Category 4

Labelling in accordance with Part 3 of the Hazardous Products Regulations







|| Signal word: Danger Hazard statements



PUMA® ADVANCE HERBICIDE

Version 3.0 / CDN 102000017228

Revision Date: 06/21/2021 Print Date: 06/22/2021

May be fatal if swallowed and enters airways.

Causes serious eye damage.

Causes skin irritation.

Suspected of causing cancer.

Harmful if inhaled.

May cause drowsiness or dizziness.

Precautionary statements

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

Wash thoroughly after handling.

Obtain special instructions before use.

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

Avoid breathing mist/ spray.

Use only outdoors or in a well-ventilated area.

IF SWALLOWED: Immediately call a POISON CENTER/doctor/ physician.

Do NOT induce vomiting.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present

and easy to do. Continue rinsing.

Immediately call a POISON CENTER/doctor/ physician.

IF ON SKIN: Wash with plenty of water/ soap.

Specific treatment (see supplemental first aid instructions on this label).

If skin irritation occurs: Get medical advice/ attention.

Take off contaminated clothing and wash before reuse.

IF exposed or concerned: Get medical advice/ attention.

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

Call a POISON CENTER/doctor/physician if you feel unwell.

Store locked up.

Store in a well-ventilated place. Keep container tightly closed.

Dispose of contents/container in accordance with local regulation.

Hazards Not Otherwise Classified (HNOC)

No physical hazards not otherwise classified.

No health hazards not otherwise classified.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Component Name	CAS-No.	Concentration % by weight
Fenoxaprop-P-ethyl	71283-80-2	8.8
Mefenpyr-diethyl	135590-91-9	4.4
Benzenesulfonic acid, C10-13-alkyl derivs., calcium salt		2.7
2-Methylpropan-1-ol	78-83-1	1.2
Alcohols, C11-14-iso-, C13-rich, ethoxylated	78330-21-9	13.0
Solvent Naphtha (petroleum), heavy aromatic	64742-94-5	58.7
Naphthalene	91-20-3	1.2



PUMA® ADVANCE HERBICIDE

Version 3.0 / CDN Revision Date: 06/21/2021 102000017228 Print Date: 06/22/2021

SECTION 4: FIRST AID MEASURES

Description of first aid measures

General advice When possible, have the product container or label with you when

calling a poison control center or doctor or going for treatment.

Inhalation Move to fresh air. If person is not breathing, call 911 or an ambulance,

then give artificial respiration, preferably mouth-to-mouth if possible.

Call a physician or poison control center immediately.

Skin contact Take off contaminated clothing and shoes immediately. Wash off

immediately with plenty of water for at least 15 minutes. Call a

physician or poison control center immediately.

Eye contact Hold eye open and rinse slowly and gently with water for 15-20

minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a physician or poison control center

immediately.

Ingestion Call a physician or poison control center immediately. Do not give

liquids to drink. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an

unconscious person. Do not leave victim unattended.

Most important symptoms and effects, both acute and delayed

Symptoms Aspiration may cause pulmonary oedema and pneumonitis.

Indication of any immediate medical attention and special treatment needed

Risks Contains hydrocarbon solvents. May pose an aspiration pneumonia

hazard. Watch victim for at least 48 hours because of possible delayed

signs of poisoning.

Treatment Appropriate supportive and symptomatic treatment as indicated by the

patient's condition is recommended.

SECTION 5: FIREFIGHTING MEASURES

Extinguishing media

Suitable Water spray, Foam, Dry chemical, Carbon dioxide (CO2)

Unsuitable High volume water jet

Special hazards arising from the substance or

Dangerous gases are evolved in the event of a fire.

mixture

Advice for firefighters

Special protective Firefighters should wear NIOSH approved self-contained breathing

equipment for firefighters apparatus and full protective clothing.



PUMA® ADVANCE HERBICIDE

Version 3.0 / CDN Revision Date: 06/21/2021 102000017228 Print Date: 06/22/2021

Further information Keep out of smoke. Fight fire from upwind position. Cool closed

containers exposed to fire with water spray. Do not allow run-off from

fire fighting to enter drains or water courses.

Flash point 103 °C

Auto-ignition temperature No data available

Lower explosion limit No data available

Upper explosion limit No data available

Explosivity Not applicable

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Precautions Keep unauthorized people away. Avoid contact with spilled product or

contaminated surfaces.

Methods and materials for containment and cleaning up

Methods for cleaning up Soak up with inert absorbent material (e.g. sand, silica gel, acid

binder, universal binder, sawdust). Collect and transfer the product

into a properly labelled and tightly closed container. Clean

contaminated floors and objects thoroughly, observing environmental

regulations.

Additional advice Use personal protective equipment. If the product is accidentally

spilled, do not allow to enter soil, waterways or waste water canal. Do

not allow product to contact non-target plants.

Reference to other sections Information regarding safe handling, see section 7.

Information regarding personal protective equipment, see section 8.

Information regarding waste disposal, see section 13.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handlingUse only in area provided with appropriate exhaust ventilation. Handle

and open container in a manner as to prevent spillage.

Advice on protection against fire and explosion

Keep away from heat and sources of ignition.

Hygiene measures Wash hands thoroughly with soap and water after handling and before

eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics. Remove Personal Protective Equipment (PPE) immediately after handling this product. Before removing gloves clean them with soap and water. Remove soiled clothing immediately and clean thoroughly before using again. Wash thoroughly and put on clean



PUMA® ADVANCE HERBICIDE

Version 3.0 / CDN 102000017228

5/13 Revision Date: 06/21/2021 Print Date: 06/22/2021

clothing.

Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers

Keep away from direct sunlight. Store in a cool, dry place and in such a manner as to prevent cross contamination with other crop protection products, fertilizers, food, and feed. Store in original container and out of the reach of children, preferably in a locked storage area. Protect from freezing.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Components	CAS-No.	Control parameters	Update	Basis
Fenoxaprop-P-ethyl	71283-80-2	2.6 mg/m3 (TWA)		OES BCS*
Mefenpyr-diethyl	135590-91-9	10 mg/m3 (TWA)		OES BCS*
2-Methylpropan-1-ol	78-83-1	152 mg/m3/50 ppm (TWA)	07 2009	CAD AB OEL
2-Methylpropan-1-ol	78-83-1	50 ppm (TWA)	09 2011	CAD BC OEL
2-Methylpropan-1-ol	78-83-1	50 ppm (TWA)	03 2011	CAD MB OEL
2-Methylpropan-1-ol	78-83-1	50 ppm (TWA)	11 2010	CAD ON OEL
2-Methylpropan-1-ol	78-83-1	60 ppm (15 MIN ACL)	05 2009	CAD SK OEL
2-Methylpropan-1-ol	78-83-1	50 ppm (8 HR ACL)	05 2009	CAD SK OEL
2-Methylpropan-1-ol	78-83-1	152 mg/m3/50 ppm (TWA)	09 2017	OEL (QUE)
Solvent Naphtha (petroleum), heavy aromatic	64742-94-5	200 mg/m3 (TWA)	07 2009	CAD AB OEL
(Vapor.)	0.17.10.01.7			015.50
Solvent Naphtha (petroleum), heavy aromatic	64742-94-5	200 mg/m3 (TWA)	05 2013	CAD BC OEL
(Non-aerosol.)				
Solvent Naphtha (petroleum), heavy aromatic	64742-94-5	200 mg/m3 (TWA)	03 2014	CAD MB OEL



PUMA® ADVANCE HERBICIDE

Version 3.0 / CDN 102000017228

6/13 Revision Date: 06/21/2021 Print Date: 06/22/2021

			1	1
(Non-aerosol.)				
Solvent Naphtha (petroleum), heavy aromatic	64742-94-5	200 mg/m3 (TWA)	11 2010	CAD ON OEL
(Non-aerosol.) Solvent Naphtha	64742-94-5	525 mg/m3	11 2010	CAD ON
(petroleum), heavy aromatic	04742-34-3	(TWA)	11 2010	OEL
Solvent Naphtha (petroleum), heavy aromatic	64742-94-5	200 mg/m3 (8 HR ACL)	05 2009	CAD SK OEL
(Vapor.)				
Solvent Naphtha (petroleum), heavy aromatic	64742-94-5	250 mg/m3 (15 MIN ACL)	05 2009	CAD SK OEL
(Vapor.)				
Naphthalene	91-20-3	52 mg/m3/10 ppm (TWA)	07 2009	CAD AB OEL
Naphthalene	91-20-3	79 mg/m3/15 ppm (STEL)	07 2009	CAD AB OEL
Naphthalene	91-20-3	10 ppm (TWA)	09 2011	CAD BC OEL
Naphthalene	91-20-3	15 ppm (STEL)	09 2011	CAD BC OEL
Naphthalene	91-20-3	10 ppm (TWA)	03 2011	CAD MB OEL
Naphthalene	91-20-3	10 ppm (TWA)	11 2010	CAD ON OEL
Naphthalene	91-20-3	15 ppm (STEL)	11 2010	CAD ON OEL
Naphthalene	91-20-3	10 ppm (8 HR ACL)	05 2009	CAD SK OEL
Naphthalene	91-20-3	15 ppm (15 MIN ACL)	05 2009	CAD SK OEL
Naphthalene	91-20-3	79 mg/m3/15 ppm (STEL)	11 2011	OEL (QUE)
Naphthalene	91-20-3	52 mg/m3/10 ppm (TWA)	11 2011	OEL (QUE)
Naphthalene	91-20-3	10 ppm		OES BCS*



PUMA® ADVANCE HERBICIDE

Version 3.0 / CDN Revision Date: 06/21/2021 102000017228 Print Date: 06/22/2021

(TLV)

*OES BCS: Internal Bayer AG, Crop Science Division "Occupational Exposure Standard"

Exposure controls

Personal protective equipment

In normal use and handling conditions please refer to the label and/or leaflet. In all other cases the following recommendations would apply.

Respiratory protection When respirators are required, select NIOSH approved equipment

based on actual or potential airborne concentrations and in

accordance with the appropriate regulatory standards and/or industry

recommendations.

Chemical resistant nitrile rubber gloves Hand protection Eye protection Chemical resistant goggles must be worn.

Skin and body protection Wear long-sleeved shirt and long pants and shoes plus socks.

Coveralls over short-sleeved shirt and short pants.

General protective measures Follow manufacturer's instructions for cleaning/maintaining PPE. If

no such instructions for washables, use detergent and warm/tepid

Keep and wash PPE separately from other laundry.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Form Liquid

Colour beige to brown

Odour aromatic

Odour Threshold No data available

pН ca. 5.4 (10 %) (23 °C) (deionized water)

Melting point/range No data available

Boiling Point

No data available

103 °C Flash point

Flammability No data available Auto-ignition temperature No data available Thermal decomposition Not applicable

Minimum ignition energy Not applicable Self-accelarating

decomposition temperature

(SADT)

No data available



PUMA® ADVANCE HERBICIDE

Version 3.0 / CDN Revision Date: 06/21/2021 102000017228 Print Date: 06/22/2021

Upper explosion limit

Lower explosion limit

Vapour pressure

Evaporation rate

Relative vapour density

Relative density

No data available

1.03 g/cm³ (20 °C)

Water solubility No data available

Partition coefficient: n-

octanol/water

Fenoxaprop-P-ethyl: log Pow: 4.58 (30 °C)

Mefenpyr-diethyl: log Pow: 3.83 (21 °C)

Viscosity, dynamic 15.7 mPa.s

Viscosity, kinematic 0.15 mm²/s

Oxidizing properties No oxidizing properties

Explosivity Not applicable

Other information Further safety related physical-chemical data are not known.

SECTION 10: STABILITY AND REACTIVITY

Reactivity Stable under normal conditions.

Chemical stability Stable under recommended storage conditions.

Possibility of hazardous

reactions

No dangerous reaction known under conditions of normal use.

Conditions to avoid Heat, flames and sparks.

Extremes of temperature and direct sunlight.

Incompatible materials No incompatible materials known.

Hazardous decomposition

products

No decomposition products expected under normal conditions of use.

SECTION 11: TOXICOLOGICAL INFORMATION

Exposure routes Eye contact, Skin Absorption, Ingestion, Inhalation

Immediate Effects

Eye Corrosive to eyes.



PUMA® ADVANCE HERBICIDE

Version 3.0 / CDN Revision Date: 06/21/2021 102000017228 Print Date: 06/22/2021

Skin Causes skin irritation. Harmful if absorbed through skin.

Ingestion Harmful if swallowed.

Inhalation Inhalation may cause central nervous system effects.

Information on toxicological effects

Acute oral toxicity LD50 (female Rat) > 2,000 mg/kg

Acute inhalation toxicity LC50 (Rat) > 2.1 mg/l

Exposure time: 4 h

Determined in the form of liquid aerosol.

Acute dermal toxicity LD50 (Rat) > 2,000 mg/kg

Skin corrosion/irritation Moderate skin irritation. (Rabbit)

Serious eye damage/eye

irritation

Risk of serious damage to eyes. (Rabbit)

Respiratory or skin

sensitisation

Skin: Non-sensitizing. (Guinea pig)

Assessment STOT Specific target organ toxicity – single exposure

Fenoxaprop-P-ethyl: Based on available data, the classification criteria are not met. Mefenpyr-diethyl: Based on available data, the classification criteria are not met. Solvent naphtha (petroleum), heavy arom., ≥ 1% naphthalene: This information is not available.

Assessment STOT Specific target organ toxicity – repeated exposure

Fenoxaprop-P-ethyl did not cause specific target organ toxicity in rats. Fenoxaprop-P-ethyl caused specific target organ toxicity in experimental animal studies in mice in the following organ(s): Kidney. Mefenpyr-diethyl did not cause specific target organ toxicity in experimental animal studies. Solvent naphtha (petroleum), heavy arom., ≥ 1% naphthalene: Based on available data, the classification criteria are not met.

Assessment mutagenicity

Fenoxaprop-P-ethyl was not mutagenic or genotoxic in a battery of in vitro and in vivo tests. Mefenpyr-diethyl was not mutagenic or genotoxic in a battery of in vitro and in vivo tests. Solvent naphtha (petroleum), heavy arom., ≥ 1% naphthalene was not mutagenic or genotoxic in a battery of in vitro and in vivo tests.

Assessment carcinogenicity

Fenoxaprop-P-ethyl demonstrated no carcinogenic potential in a lifetime feeding study in rats. Fenoxaprop-P-ethyl caused an increased incidence of liver tumours in mice at high doses. Fenoxaprop-P-ethyl causes tumours through peroxisome proliferation. The mechanism that triggers tumours in rodents and the type of tumours observed are not relevant to humans.

Mefenpyr-diethyl was not carcinogenic in lifetime feeding studies in rats and mice.

Solvent naphtha (petroleum), heavy arom., ≥ 1% naphthalene: Suspected of causing cancer.

ACGIH

Solvent Naphtha (petroleum), heavy aromatic 64742-94-5 Group A3 Naphthalene 91-20-3 Group A3

NTP

Naphthalene 91-20-3



10/13

PUMA® ADVANCE HERBICIDE

Version 3.0 / CDN Revision Date: 06/21/2021 102000017228 Print Date: 06/22/2021

IARC

Naphthalene 91-20-3 Overall evaluation: 2B

OSHA None.

Assessment toxicity to reproduction

Fenoxaprop-P-ethyl did not cause reproductive toxicity in a two-generation study in rats. Mefenpyr-diethyl did not cause reproductive toxicity in a two-generation study in rats. Solvent naphtha (petroleum), heavy arom., ≥ 1% naphthalene: Based on available data, the classification criteria are not met.

Assessment developmental toxicity

Fenoxaprop-P-ethyl did not cause developmental toxicity in rats and rabbits. Mefenpyr-diethyl caused developmental toxicity only at dose levels toxic to the dams. The developmental effects seen with Mefenpyr-diethyl are related to maternal toxicity. Solvent naphtha (petroleum), heavy arom., ≥ 1% naphthalene: Based on available data, the classification criteria are not met.

Aspiration hazard

May be fatal if swallowed and enters airways.

SECTION 12: ECOLOGICAL INFORMATION

Toxicity to fish LC50 (Oncorhynchus mykiss (rainbow trout)) 0.39 mg/l

Exposure time: 96 h

The value mentioned relates to the active ingredient fenoxaprop-P-ethyl.

Toxicity to aquatic

invertebrates Exposure time: 48 h

The value mentioned relates to the active ingredient fenoxaprop-P-ethyl.

No acute toxicity was observed at its limit of water solubility.

EC50 (Daphnia magna (Water flea)) > 1.058 mg/l

Toxicity to aquatic plants EC50 (Raphidocelis subcapitata (freshwater green alga)) 0.54 mg/l

Exposure time: 72 h

The value mentioned relates to the active ingredient fenoxaprop-P-ethyl.

Biodegradability Fenoxaprop-P-ethyl:

Not rapidly biodegradable

Mefenpyr-diethyl:

Not rapidly biodegradable

Koc Fenoxaprop-P-ethyl: Koc: 11354

Mefenpyr-diethyl: Koc: 625

Bioaccumulation Fenoxaprop-P-ethyl: Bioconcentration factor (BCF) 338

Does not bioaccumulate.

Mefenpyr-diethyl: Bioconcentration factor (BCF) 232



11/13

PUMA® ADVANCE HERBICIDE

 Version 3.0 / CDN
 Revision Date: 06/21/2021

 102000017228
 Print Date: 06/22/2021

Does not bioaccumulate.

Mobility in soil Fenoxaprop-P-ethyl: Immobile in soil

Mefenpyr-diethyl: Slightly mobile in soils

Results of PBT and vPvB assessment

PBT and vPvB assessment Fenoxaprop-P-ethyl: This substance is not considered to be persistent,

bioaccumulative and toxic (PBT). This substance is not considered to be

very persistent and very bioaccumulative (vPvB).

Mefenpyr-diethyl: This substance is not considered to be persistent, bioaccumulative and toxic (PBT). This substance is not considered to be

very persistent and very bioaccumulative (vPvB).

Additional ecological

information

No further ecological information is available.

Environmental precautions Do not allow to get into surface water, drains and ground water.

Apply this product as specified on the label.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods

Product Dispose in accordance with all local, state/provincial and federal

regulations.

Follow advice on product label and/or leaflet.

Contaminated packaging Do not re-use empty containers.

Follow advice on product label and/or leaflet.

SECTION 14: TRANSPORT INFORMATION

TDG

UN number 3082
Labels 9
Packaging group III

Marine pollutant Marine pollutant

Proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,

N.O.S.

(FENOXAPROP-P-ETHYL)

49CFR

UN number 3082
Class 9
Packaging group III

Marine pollutant Marine pollutant

Proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID,

N.O.S.

(FENOXAPROP-P-ETHYL, NAPHTHALENE)

RQ Reportable Quantity is reached with 8,333 lb of product.



12/13

PUMA® ADVANCE HERBICIDE

Version 3.0 / CDN Revision Date: 06/21/2021 102000017228 Print Date: 06/22/2021

IMDG

UN number 3082
Class 9
Packaging group III
Marine pollutant YES

Proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,

N.O.S.

(FENOXAPROP-P-ETHYL SOLUTION)

IATA

UN number 3082
Class 9
Packaging group III
Environm. Hazardous Mark YES

Proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,

N.O.S.

(FENOXAPROP-P-ETHYL SOLUTION)

This transportation information is not intended to convey all specific regulatory information relating to this product. It does not address regulatory variations due to package size or special transportation requirements.

Further Information Exempt from regulation when transported by road or rail, in

accordance with TDG Regulations 1.45.1.

This exemption provides that this product does not require dangerous goods shipping documentation or safety marks

when transported on land by road or rail.

Freight Classification: COMPOUNDS, TREE OR WEED KILLING, N.O.I. other than

poison, HAVING A DENSITY OF 20 LBS OR GREATER PER

CUBIC FOOT

SECTION 15: REGULATORY INFORMATION

PCP Registration No. 29615

PMRA Information:

Read the label, authorized under the Pest Control Products Act, prior to using or handling the pest control product.

This chemical is a pest control product regulated by Health Canada Pest Management Regulatory Agency and is subject to certain labelling requirements under the Pest Control Products Act. These requirements differ from the classification criteria and hazard information required for GHS-consistent safety data sheets. The following is the hazard information required on the pest control product label:



13/13

PUMA® ADVANCE HERBICIDE

Version 3.0 / CDN Revision Date: 06/21/2021 102000017228 Print Date: 06/22/2021

Signal word: Danger!

Hazard statements: Eye and skin irritant.

There are Canada-specific environmental requirements for handling, use, and disposal of this pest control product that are indicated on the label.

SECTION 16: OTHER INFORMATION

Abbreviations and acronyms

49CFR Code of Federal Regulations, Title 49
ACGIH US. ACGIH Threshold Limit Values

ATE Acute toxicity estimate

CAS-Nr. Chemical Abstracts Service number

CERCLA Comprehensive Environmental Response, Compensation, and Liability Act

EINECS European inventory of existing commercial substances

ELINCS European list of notified chemical substances IARC International Agency for Research on Cancer IATA International Air Transport Association IMDG International Maritime Dangerous Goods

N.O.S. Not otherwise specified

NTP US. National Toxicology Program (NTP) Report on Carcinogens
OECD Organization for Economic Co-operation and Development

TDG Transportation of Dangerous Goods

TWA Time weighted average

UN United Nations

WHO World health organisation

NFPA 704 (National Fire Protection Association):

Health - 2 Flammability - 1 Instability - 0 Others - none

HMIS (Hazardous Materials Identification System, based on the Third Edition Ratings Guide)

Health - 2 Flammability - 1 Physical Hazard - 0 PPE -

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

Reason for Revision: The following sections have been revised: Section 2: Hazards Identification. Section 3: Composition / Information on Ingredients. Reviewed and updated for general editorial purposes.

Revision Date: 06/21/2021

Changes since the last version are highlighted in the margin. This version replaces all previous versions.

This information is provided in good faith but without express or implied warranty. The customer assumes all responsibility for safety and use not in accordance with label instructions. The product names are registered trademarks of Bayer.