



AXIOM® DF HERBICIDE

Version 3.0 / USA
102000006939

1/12
Revision Date: 03/09/2015
Print Date: 01/04/2017

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

Product identifier

Trade name AXIOM® DF HERBICIDE

Product code (UVP) 05173299

SDS Number 102000006939

EPA Registration No. 264-766

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

Use Herbicide

Restrictions on use See product label for restrictions.

Information on manufacturer

Bayer CropScience
2 T.W. Alexander Drive
Research Triangle PK, NC 27709
United States

Emergency telephone no.

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

**Product Information
Telephone Number**

SDS Information or Request SDSINFO.BCS-NA@bayer.com

SECTION 2: HAZARDS IDENTIFICATION

Classification in accordance with regulation HCS 29CFR §1910.1200

Eye irritation : Category 2B

Signal word: Warning

Hazard statements

Causes eye irritation.

Precautionary statements

Wash face, hands and any exposed skin thoroughly after handling.

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/ attention.

Other hazards

No particular hazards known.



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SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Component Name	CAS-No.	Concentration % by weight
Flufenacet	142459-58-3	54.4
Metribuzin	21087-64-9	13.6
Synthetic amorphous silica	112926-00-8	4.0
Crystalline quartz (respirable)	14808-60-7	0.064

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. Rinse out mouth and give water in small sips 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 To date no symptoms are known.

Indication of any immediate medical attention and special treatment needed

Treatment Appropriate supportive and symptomatic treatment as indicated by the patient's condition is recommended. There is no specific antidote.

SECTION 5: FIREFIGHTING MEASURES

Extinguishing media

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

Unsuitable None known.



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Special hazards arising from the substance or mixture	Dangerous gases are evolved in the event of a fire.
Advice for firefighters	
Special protective equipment for fire-fighters	Firefighters should wear NIOSH approved self-contained breathing apparatus and full protective clothing.
Further information	Avoid contact with spilled product or contaminated surfaces. Keep out of smoke. Cool closed containers exposed to fire with water spray. Fight fire from upwind position. Do not allow run-off from fire fighting to enter drains or water courses.
Flash point	not applicable
Dust explosion class	no data available

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Precautions Keep unauthorized people away. Isolate hazard area. Avoid contact with spilled product or contaminated surfaces.

Methods and materials for containment and cleaning up

Methods for cleaning up Avoid dust formation. Sweep up or vacuum up spillage and collect in suitable container for disposal. Clean contaminated floors and objects thoroughly, observing environmental regulations. Decontaminate tools and equipment following cleanup. Use dry absorbent material such as clay granules to absorb and collect wash solution for proper disposal.

Additional advice 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 handling Use only in area provided with appropriate exhaust ventilation. Maintain exposure levels below the exposure limit through the use of general and local exhaust ventilation.

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. Remove soiled clothing immediately and clean thoroughly before using again. Wash thoroughly and put on clean



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clothing.

Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers

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. Store in a place accessible by authorized persons only. Keep containers tightly closed in a dry, cool and well-ventilated place.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Components	CAS-No.	Control parameters	Update	Basis
Flufenacet	142459-58-3	0.3 mg/m3 (SK-SEN)		OES BCS*
Metribuzin	21087-64-9	5 mg/m3 (TWA)	02 2012	ACGIH
Metribuzin	21087-64-9	5 mg/m3 (REL)	2010	NIOSH
Metribuzin	21087-64-9	5 mg/m3 (TWA)	1989	OSHA Z1A
Metribuzin	21087-64-9	5 mg/m3 (TWA)	06 2008	TN OEL
Metribuzin	21087-64-9	50ug/m3 (ST ESL)	07 2011	TX ESL
Metribuzin	21087-64-9	5ug/m3 (AN ESL)	07 2011	TX ESL
Metribuzin	21087-64-9	5 mg/m3 (TWA PEL)	08 2010	US CA OEL
Metribuzin	21087-64-9	0.56 mg/m3 (TWA)		OES BCS*
Synthetic amorphous silica	112926-00-8	6 mg/m3 (REL)	2010	NIOSH
Synthetic amorphous silica	112926-00-8	6 mg/m3 (TWA)	1989	OSHA Z1A
Synthetic amorphous silica	112926-00-8	6 mg/m3 (TWA)	06 2008	TN OEL
Synthetic amorphous silica (Particulate.)	112926-00-8	27ug/m3 (ST ESL)	02 2013	TX ESL
Synthetic amorphous silica (Particulate.)	112926-00-8	2ug/m3 (AN ESL)	02 2013	TX ESL
Synthetic amorphous silica	112926-00-8	0.8 mg/m3 (TWA)	2000	Z3
Synthetic amorphous silica	112926-00-8	20millions of particles per cubic foot of air (TWA)	2000	Z3
Crystalline quartz	14808-60-7	0.025 mg/m3	02 2012	ACGIH



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(respirable) (Respirable fraction.)		(TWA)		
Crystalline quartz (respirable) (Respirable dust.)	14808-60-7	0.05 mg/m3 (REL)	2010	NIOSH
Crystalline quartz (respirable) (Respirable dust.)	14808-60-7	0.1 mg/m3 (TWA)	1989	OSHA Z1A
Crystalline quartz (respirable) (Respirable dust.)	14808-60-7	0.1 mg/m3 (TWA)	06 2008	TN OEL
Crystalline quartz (respirable) (Particulate.)	14808-60-7	0.27ug/m3 (AN ESL)	02 2013	TX ESL
Crystalline quartz (respirable) (Particulate.)	14808-60-7	14ug/m3 (ST ESL)	02 2013	TX ESL
Crystalline quartz (respirable) (Respirable dust.)	14808-60-7	0.1 mg/m3 (TWA PEL)	08 2010	US CA OEL
Crystalline quartz (respirable) (Total dust.)	14808-60-7	0.3 mg/m3 (TWA PEL)	08 2010	US CA OEL
Crystalline quartz (respirable) (Total dust.)	14808-60-7	0.3 mg/m3 (TWA)	2000	Z3
Crystalline quartz (respirable) (Respirable.)	14808-60-7	2.4millions of particles per cubic foot of air (TWA)	2000	Z3
Crystalline quartz (respirable) (Respirable.)	14808-60-7	0.1 mg/m3 (TWA)	2000	Z3

*OES BCS: Internal Bayer CropScience "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.

Hand protection

Wear suitable gloves.

Eye protection

Tightly fitting safety goggles

Skin and body protection

Wear long-sleeved shirt and long pants and shoes plus socks.



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General protective measures Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and warm/tepid water.
Keep and wash PPE separately from other laundry.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	tan
Physical State	water-dispersible granules
Odor	weak characteristic
Odour Threshold	no data available
pH	4 - 5 at 10 % (23 °C) (Distilled water)
Vapor Pressure	no data available
Vapor Density (Air = 1)	no data available
Bulk density	32 - 36 lb/ft ³
Evaporation rate	not applicable
Boiling Point	not applicable
Melting / Freezing Point	not applicable
Water solubility	dispersible
Minimum Ignition Energy	no data available
Decomposition temperature	no data available
Partition coefficient: n-octanol/water	no data available
Viscosity	not applicable
Flash point	not applicable
Dust explosion class	no data available

SECTION 10: STABILITY AND REACTIVITY

Reactivity	
Thermal decomposition	no data available
Chemical stability	Stable under recommended storage conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.



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Conditions to avoid	no data available
Incompatible materials	Bases
Hazardous decomposition products	No decomposition products expected under normal conditions of use.

SECTION 11: TOXICOLOGICAL INFORMATION

Exposure routes	Ingestion, Inhalation, Skin Absorption, Eye contact
Immediate Effects	
Eye	Causes eye irritation.
Skin	Harmful if absorbed through skin. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.
Ingestion	Harmful if swallowed.
Inhalation	Harmful if inhaled.

Information on toxicological effects

Acute oral toxicity	LD50 (male rat) 2,347 mg/kg LD50 (female rat) 2,072 mg/kg
Acute inhalation toxicity	LC50 (male/female combined rat) > 0.977 mg/l Exposure time: 4 h Determined in the form of liquid aerosol. Highest attainable concentration. No deaths (analytical) LC50 (male/female combined rat) > 3.90 mg/l Exposure time: 1 h Determined in the form of liquid aerosol. Extrapolated from the 4 hr LC50. (analytical)
Acute dermal toxicity	LD50 (male/female combined rat) > 2,000 mg/kg
Skin irritation	No skin irritation (rabbit)
Eye irritation	Mild eye irritation. (rabbit)
Sensitisation	Non-sensitizing. (guinea pig)

Assessment repeated dose toxicity

Flufenacet caused neurobehavioral effects and/or neuropathological changes in animal studies.
Metribuzin caused specific target organ toxicity in experimental animal studies in the following organ(s):
liver, kidneys.

Assessment mutagenicity

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



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vitro and in vivo tests.

Assessment carcinogenicity

Flufenacet was not carcinogenic in lifetime feeding studies in rats and mice.
Metribuzin was not carcinogenic in lifetime feeding studies in rats and mice.

ACGIH

Metribuzin	21087-64-9	Group A4
Crystalline quartz (respirable)	14808-60-7	Group A2

NTP

Crystalline quartz (respirable)	14808-60-7	2000
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IARC

Synthetic amorphous silica	112926-00-8	Overall evaluation: 3
Crystalline quartz (respirable)	14808-60-7	Overall evaluation: 1

OSHA

None.

Assessment toxicity to reproduction

Flufenacet did not cause reproductive toxicity in a two-generation study in rats.
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.

Assessment developmental toxicity

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

Further information

The toxicological data refer to a similar formulation.
The non-acute information pertains to the active ingredient(s).

SECTION 12: ECOLOGICAL INFORMATION

Chronic toxicity to fish

Lepomis macrochirus (Bluegill sunfish)
LC50: 2.13 mg/l
Exposure time: 96 h
The value mentioned relates to the active ingredient flufenacet.

Oncorhynchus mykiss (rainbow trout)
LC50: 74.6 mg/l
Exposure time: 96 h
The value mentioned relates to the active ingredient metribuzin.

Toxicity to aquatic invertebrates

EC50 (Daphnia magna (Water flea)) 30.9 mg/l
Exposure time: 48 h



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The value mentioned relates to the active ingredient flufenacet.

EC50 (*Daphnia magna* (Water flea)) 49.6 mg/l

Exposure time: 48 h

The value mentioned relates to the active ingredient metribuzin.

Toxicity to aquatic plants

EC50 (*Pseudokirchneriella subcapitata*) 0.00699 mg/l

Exposure time: 96 h

The value mentioned relates to the active ingredient flufenacet.

EC50 (*Desmodemus subspicatus*) 0.022 mg/l

Exposure time: 72 h

The value mentioned relates to the active ingredient metribuzin.

Biodegradability

Flufenacet: ; not rapidly biodegradable

Metribuzin: ; not rapidly biodegradable

Koc

Flufenacet: Koc: 202

Metribuzin: Koc: 24 - 106

Bioaccumulation

Flufenacet: Bioconcentration factor (BCF) 71; Does not bioaccumulate.

Metribuzin: ; Does not bioaccumulate.

Mobility in soil

Flufenacet: Moderately mobile in soils

Metribuzin: Mobile in soils

Environmental precautions

Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark.

Do not apply when weather conditions favor runoff or drift.

Do not contaminate surface or ground water by cleaning equipment or disposal of wastes, including equipment wash water.

Retain and dispose of contaminated wash water.

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

SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods

Product

Do not contaminate water, food, or feed by disposal.

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

Follow container label instructions for disposal of wastes generated during use in compliance with the product label.

Contaminated packaging

Do not re-use empty containers.

Triple rinse containers.

Puncture container to avoid re-use.

Follow advice on product label and/or leaflet.



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RCRA Information

Characterization and proper disposal of this material as a special or hazardous waste is dependent upon Federal, State and local laws and are the user's responsibility. RCRA classification may apply.

SECTION 14: TRANSPORT INFORMATION

49CFR Not dangerous goods / not hazardous material

IMDG

UN number	3077
Class	9
Packaging group	III
Marine pollutant	YES
Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (FLUFENACET, METRIBUZIN MIXTURE)

IATA

UN number	3077
Class	9
Packaging group	III
Environm. Hazardous Mark	YES
Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (FLUFENACET, METRIBUZIN MIXTURE)

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.

Freight Classification: COMPOUNDS, TREE OR WEEDKILLING, N.O.I., other than poison; HAVING A DENSITY OF GREATER THAN 20 LBS. PER CUBIC FOOT

SECTION 15: REGULATORY INFORMATION

EPA Registration No. 264-766

US Federal Regulations

TSCA list

Crystalline quartz (respirable) 14808-60-7

US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)

None.

SARA Title III - Section 302 - Notification and Information

None.

SARA Title III - Section 313 - Toxic Chemical Release Reporting

Metribuzin 21087-64-9

1.0%

US States Regulatory Reporting



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CA Prop65

This product contains a chemical known to the State of California to cause cancer.
Crystalline quartz (respirable) 14808-60-7

US State Right-To-Know Ingredients

Metribuzin	21087-64-9	MN, NJ, RI
Synthetic amorphous silica	112926-00-8	CA, MN
Crystalline quartz (respirable)	14808-60-7	MN

Canadian Regulations

Canadian Domestic Substance List

Crystalline quartz (respirable) 14808-60-7

Environmental

CERCLA

None.

Clean Water Section 307 Priority Pollutants

None.

Safe Drinking Water Act Maximum Contaminant Levels

None.

International Regulations

European Inventory of Existing Commercial Substances (EINECS)

Crystalline quartz (respirable) 14808-60-7

EPA/FIFRA Information:

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 required on the pesticide label:

Signal word: Caution!

Hazard statements: Harmful if swallowed, inhaled or absorbed through the skin.
Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.
Avoid contact with skin, eyes and clothing.
Avoid breathing dust.
Wash thoroughly with soap and water after handling.

SECTION 16: OTHER INFORMATION



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NFPA 704 (National Fire Protection Association):

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

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

Health - 3 Flammability - 0 Physical Hazard - 1 PPE -

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

Reason for Revision: Revised according to the current OSHA Hazard Communication Standard (29CFR1910.1200)

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